SEISMOLOGICAL INSTITUTE
BOX 517
S-751 20 UPPSALA
SWEDEN

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BOX 517
751 20 UPPSALA 1
SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

NOTE Starting with this bulletin, magnitudes of regional events, M_L, will be calculated according to improved formulae given in Report No 3-78 from our institute. The average difference in magnitudes calculated from Swedish events, 1963 - 1976, is M_L (Report No 3-78) - M_L (Report No 5-76) = 0.07.

J A N U A R Y 1 - 31, 1977

1977
Jan. 1 Up iP 06 35 34.1
Ki eP 06 35 04
Um iP 06 35 14.5
Ud iP 06 35 44.2
Ryukyu Islands (h = N).

" 1 Ud iP 10 50 33.4

" 1 Ud iP 11 05 45.1
Mindanao (h = 55 km).

" 1 Up iP 11 44 44.1 C
Ki iP 11 44 11.2 C
micr sec
P Z' 0.1 0.8
Sk iP 11 44 41.4
Um iP 11 44 25.0 C
Ud iP 11 44 52.1 C
iPP 11 47 58.4
De iP 11 45 05.0
Japan (h = 480 km).

" 1 Ki i 12 32 05.2
Ud iP 12 32 22.2
i 12 32 33.9
Philippine Islands (h = 90 km).

" 1 Ud iPKP1 14 44 05.7
Kermadec Islands (h = N).

" 1 Ud iP 15 56 09.6

" 1 Ki eP 16 13 35
Panama (h = N).

" 1 Ud eP 16 29 09

1977
Jan. 1 Up iP 17 49 16.7 C
micr sec
P Z' 0.1 0.7
Ki iP 17 49 13.1 C
micr sec
P Z' 0.2 0.6
Sk iP 17 49 29.1
Um iP 17 49 13.0 C
Ud iP 17 49 25.9 C
De iP 17 49 25.9
Java (h = 110 km).
m = 6.6 (Up,Ki).

" 1 Up Mx 20 02
micr sec
Mx E 2.7 20
Mx N 3.6 20
Mx Z 5.7 24
Ki iP 19 15 15.3
i 19 15 23.8
iPP 19 19 20.1
micr sec
i Z' 0.2 1.3
Mx E 6.1 21
Mx N 3.9 20
Um iP 19 15 19.7
i 19 15 27.5
iSKS 19 25 58
Ud iP 19 15 38.0
i 19 15 45.7
iPP 19 19 55.3
Ceram Sea (h = N).
M = 6.1 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977						
Jan.	1	Up	iP		21 48 32.7	
			i		21 48 34.3	
			iS		21 55 47	
					micr	sec
			i	Z'	0.5	1.0
			Mx	E	11	17
			Mx	N	36	15
			Mx	Z	27	15
		Ki	iP		21 48 19.8	C
			i		21 48 22.3	
					micr	sec
			i	Z'	0.5	1.5
			Mx	E	14	13
			Mx	N	19	15
		Sk	iP		21 48 48.9	C
		Um	iP		21 48 21.3	C
			iS		21 55 25	
		Ud	iP		21 48 47.7	
			i		21 48 49.1	
			i		21 49 09.2	
		De	iP		21 48 53.7	
		Tsinghai, China (h = 25 km).				
		m = 6.3, M = 6.4 (Up,Ki).				
"	2	Um	iP		08 17 31.2	
		Ud	i		08 17 55.3	
"	2	Up	iPP		10 13 58.4	
			iSKS		10 20 14	
					micr	sec
			Mx	E	10	25
			Mx	N	11	24
			Mx	Z	14	25
		Ki	iP		10 09 24.9	
			iPP		10 13 47.1	
					micr	sec
			Mx	E	8.1	22
			Mx	N	8.2	20
			Mx	Z	5.8	22
		Sk	i(PP)		10 14 00.7	
		Um	iSKS		10 20 05	
		Ud	iP		10 09 41.9	
			iPP		10 14 13.1	
		Sumba Island (h = 20 km).				
		M = 6.4 (Up,Ki).				
"	2	Up	iPKP1		12 02 59.0	
		Ud	iPKP1		12 03 00.1	
"	2	Ud	iP		17 25 27.3	
		Philippine Islands (h = 25 km).				
"	2	Up	iP		22 40 44.0	
		Um	iP		22 40 22.7	
		Japan (h = 30 km).				

1977						
Jan.	3	Up	iP		06 08 42.2	
		Um	iP		06 08 17.3	
"	3	Ud	iP		12 46 46.9	
"	3	Ud	iPKP1		14 11 41.8	
		De	iPKP1		14 11 52.7	
		Tonga-Kermadec Islands				
		(h = 540 km).				
"	3	Up	iPKP2		21 15 59.5	
		Ud	iPKP1		21 15 55.4	
"	4	Ud	iP		00 46 30.2	
			i		00 46 39.3	
		De	iP		00 46 39.9	
"	4	Up	iP		02 51 42.5	
		Ud	iP		02 51 48.4	
		Kurile Islands (h = 55 km).				
"	4	Up	iSgl		12 27 21.6	
		Ud	iSgl		12 26 17.9	
		Off coast of southwest				
		Norway.				
		Origin time = 12 23 56.				
		M_L = 2.7 (Up,Ud).				
		By combination with Bergen				
		readings.				
"	4	Up	iP		15 09 33.8	
		Ki	iP		15 09 21.6	
		Sk	iP		15 09 15.7	
		Um	iP		15 09 30.6	
		Ud	iP		15 09 24.6	
		De	iP		15 09 31.7	
		Mexico (h = N).				
"	4	Up	iP		16 16 33.2	
					micr	sec
			P	Z'	0.1	1.0
		Um	iP		16 16 48.5	
		Ud	iP		16 16 48.6	
		De	iP		16 16 31.0	
		Iran (h = 45 km).				
"	5	Up	iP		05 52 26.7	C
			iPP		05 54 04.5	
					micr	sec
			P	Z'	0.3	1.3
		Ki	iP		05 53 00.3	
					micr	sec
			P	Z'	0.7	1.5
		Sk	eP		05 53 01	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 5 (cont.)

Um	iP	05 52 39.8	
Ud	iP	05 52 42.5	C
	i	05 54 32.2	
De	iP	05 52 27.8	C

Iran (h = 30 km).
m = 6.1 (Up,Ki).

" 5

Ud	iP	09 32 46.1	
De	iP	09 32 45.9	

" 5

Ud	iPKPl	10 38 55.4	

Tonga-Kermadec Islands
(h = 540 km).

" 5

Up	iP	10 49 50.0	
Ki	iP	10 49 19.4	
Um	iP	10 49 32.2	
Ud	iP	10 49 57.1	
De	iP	10 50 09.1	

Bonin Islands (h = 20 km).

" 5

Up	iPKPl	13 48 02.2	
Ki	iPKP	13 47 56.3	
Ud	iPKPl	13 48 04.1	
De	iPKPl	13 48 15.1	D

Fiji Islands (h = 580 km).

" 5

Up	iP	14 21 08.5	
	i	14 21 20.1	
	ipP	14 21 29.4	
Ki	iP	14 20 59.7	
	ipP	14 21 20.9	
Sk	iP	14 21 22.2	
	ipP	14 21 44.1	
Um	iP	14 20 58.2	
	ipP	14 21 20.2	
Ud	iP	14 21 21.6	
	ipP	14 21 43.8	
De	iP	14 21 23.8	
	ipP	14 21 45.0	

Burma-India.
h = 90 km (Up,Ki,Sk,Um,Ud,De).

" 5

Up	iP		22 57 37.0	
			micr	sec
	P	Z'	0.1	1.0
Ki	iP		22 57 07.0	
			micr	sec
	P	Z'	0.2	0.8
Sk	iP		22 57 34.3	
Um	iP		22 57 20.2	C
Ud	iP		22 57 44.2	
De	iP		22 57 55.3	

Volcano Islands (h = N).
m = 6.1 (Up,Ki).

1977
Jan. 6

Up	iPP		06 30 49	
	iPS		06 40 12	
	iPKKP		06 41 09	
	iSS		06 46 39	
			micr	sec
	Mx	E	36	18
	Mx	N	35	19
	Mx	Z	25	18
Ki	Mx		07	13
			micr	sec
	Mx	E	32	20
	Mx	N	38	20

New Guinea (h = N).
M = 6.4 (Up,Ki).

" 6

Up	iP	08 06 43.1	
Um	iP	08 06 15.3	
Ud	iP	08 06 45.8	
	i	08 06 48.2	
De	eP	08 07 07	

Kurile Islands (h = N).

" 6

Ud	iP	15 10 56.4	

" 6

Up	iP		16 13 07.6	
			micr	sec
	P	Z'	0.1	1.0
Ki	eP		16 12 15	
Um	iP		16 12 41.9	
	i		16 12 54.0	
Ud	iP		16 13 07.4	
De	iP		16 13 29.3	

Aleutian Islands (h = 40 km).

" 6

Up	iPKPl	16 16 47.6	
Ud	iPKPl	16 16 48.8	

" 6

Up	iPKPl	16 18 44.2	
Ud	iPKPl	16 18 45.8	

" 6

Ki	eP	18 45 01	
Um	iP	18 44 32.4	
Ud	iP	18 44 13.5	
De	iP	18 43 50.3	

Lake Tanganyika (h = 20 km).

" 6

Up	iP	21 59 29.7	
Ud	iP	21 59 43.1	

Tibet (h = N).

" 7

Up	iP	06 39 04.9	C
Ki	iP	06 39 15.8	
Um	iP	06 39 04.4	
Ud	iP	06 39 22.1	
De	iP	06 39 19.1	

Pakistan (h = 45 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Jan.	7	Ud	iPKPl		17 34 12.3	
		De	iPKPl		17 34 22.6	
		Tonga-Kermadec Islands (h = 80 km).				
"	7	Up	iP		19 48 44.4	
					micr	sec
			P	Z'	0.4	1.4
			Mx	E	3.3	12
			Mx	Z	6.9	13
		Ki	iP		19 48 21.4	
					micr	sec
			P	Z'	0.1	1.0
		Um	iP		19 48 30.4	
		Ud	iP		19 48 54.3	
		Formosa (h = N).				
		m = 6.0 (Up,Ki).				
"	7	Up	iP		21 43 34.4	
			i		21 43 44.7	
					micr	sec
			i	Z'	0.2	1.3
		Ki	iP		21 43 13.8	
			i		21 43 25.1	
		Um	iP		21 43 19.1	
			i		21 43 30.9	
		Ud	iP		21 43 43.3	
			i		21 43 55.0	
		Luzon (h = 50 km).				
"	8	Ud	eP		01 19 39	
		Mariana Islands (h = 45 km).				
"	8	Up	iP		06 53 30.9	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		06 53 12.2	
					micr	sec
			P	Z'	0.1	1.1
		Sk	iP		06 53 36.0	
		Um	iP		06 53 18.4	
		Ud	iP		06 53 40.0 C	
		Luzon (h = 35 km).				
		m = 5.8 (Up,Ki).				
"	8	Up	iPKP		07 59 40.0	
		Ki	iPKP		07 59 26.9	
			i		07 59 39.7	
		Um	iPKP		07 59 32.2	
		Ud	iPKP		07 59 42.2	
		De	iPKP		07 59 48.8	
		Santa Cruz Islands (h = 40 km).				
"	8	De	iPKP		12 43 28.4	
		New Britain (h = 60 km).				
1977 Jan.	8	Ki	eP		13 28 48	
			i		13 29 06.5	
			i		13 29 59.4	
			iTPgl		13 34 21.9	
			i		13 34 31.8	
		Sk	iS		13 31 02.9	
		Um	iP		13 29 31.9	
			iS		13 31 38.3	
		Ud	iP		13 30 08.5	
			iS		13 32 52.6	
		Norwegian Sea, near 73 1/2°N, 2°E.				
		Origin time = 13 26 49.				
"	8	Up	iP		23 30 48.1	
			ipP		23 31 03.2	
		Ki	ipP		23 30 32.3	
		Sk	eP		23 30 46	
		Um	iP		23 29 30.5	
			ipP		23 29 45.1	
		Ud	iP		23 30 55.2	
			ipP		23 31 10.3	
		De	iP		23 31 07.7	
		Volcano Islands.				
		h = 55 km (Up,Um,Ud).				
"	9	Ud	iP		05 01 27.7	
			i		05 01 31.1	
		De	iP		05 01 37.9	
"	9	Ud	i(P)		08 47 11.2	
"	9	Um	iPKPl		08 51 50.1	
		Ud	iPKPl		08 52 03.9	
"	9	Up	iP		09 39 05.1	
					micr	sec
			P	Z'	0.1	1.5
		Ki	iP		09 39 41.7	
		Um	iP		09 39 26.5	
			i		09 39 31.6	
		Ud	iP		09 39 00.7	
			i		09 39 06.0	
		South Atlantic Ocean (h = N).				
"	9	Um	ipP		17 42 21.5	
		Ud	ipP		17 42 47.3	
		Japan (h = 70 km).				
"	9	Um	iP		21 11 02.0	
		Ud	iP		21 11 31.2	
		Japan (h = 30 km).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Jan.						
	10	Up	iP		03 41 20.3	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		03 41 02.1	
		Sk	iP		03 41 25.2	
		Um	iP		03 41 07.2	C
		Ud	iP		03 41 29.2	C
		Luzon (h = 45 km).				
"	10	Ki	eP		08 31 47	
		Um	iP		08 31 52.1	
			i		08 31 55.5	
		Ud	iP		08 32 13.0	
		Mindanao (h = 40 km).				
"	10	Ki	iPKP		09 49 49.5	
		Um	iPKP		09 49 54.5	
		Ud	iPKPl		09 49 57.0	
		De	iPKPl		09 50 08.6	
		Fiji Islands (h = 650 km).				
"	10	Up	iPKPl		23 03 20.4	
			i		23 03 30.3	
		Sk	iPKPl		23 03 15.7	
			i		23 03 26.7	
		Um	iPKPl		23 03 10.0	
		Ud	iPKPl		23 03 22.5	
		De	iPKPl		23 03 31.5	
		Kermadec Islands (h = N).				
"	10	Ud	iP		23 34 18.5	
"	11	Um	iPKP		07 21 19.1	
		Chile (h = 35 km).				
"	11	Ud	iP		13 05 13.8	
"	11	Up	iP		15 00 36.4	
		Ki	iP		15 01 08.7	
		Um	iP		15 00 48.8	
		Ud	iP		15 00 48.3	
		Arabian Sea (h = N).				
"	12	Up	iP		01 55 56.4	
		Ki	eP		01 56 35	
		Um	iP		01 56 11.1	
		Ud	iP		01 56 11.8	
		De	iP		01 55 54.7	
		Iran (h = 70 km).				
"	12	Up	iP		17 54 02.0	
		Ki	eP		17 53 47	
		Um	iP		17 53 50.6	
		Ud	iP		17 54 14.2	
		Szechwan, China (h = N).				

1977 Jan.						
	12	Ud	iP		18 16 13.8	
"	12	Up	iP		18 50 44.6	
		Ki	eP		18 49 59	
		Um	iP		18 50 19.9	
		Ud	iP		18 50 50.3	
		Kurile Islands (h = 120 km).				
"	12	Ud	i(P)		19 47 46.1	
"	12	Up	iP		23 47 33.9	C
			ipP		23 48 18.1	
			iS		23 57 39.0	
					micr	sec
			P	Z'	0.2	1.0
			pP	Z'	1.1	1.5
		Ki	iP		23 47 33.6	C
			ipP		23 48 17.4	
			iS		23 57 42.7	
					micr	sec
			P	Z'	0.6	1.3
			pP	Z'	1.2	1.8
		Sk	iP		23 47 48.0	
			ipP		23 48 32.8	
		Um	iP		23 47 30.2	C
			ipP		23 48 14.7	
			iS		23 57 33	
		Ud	iP		23 47 44.1	C
			ipP		23 48 28.5	
		De	iP		23 47 42.2	C
			ipP		23 48 27.3	
		Sumatra.				
		h = 180 km (Up,Ki,Sk,Um,Ud,De).				
		m = 6.1 (Up,Ki).				
"	13	Ki	iP		06 02 51.3	
		Um	iP		06 02 43.2	
		Ud	iP		06 03 05.8	
		China (h = N).				
"	13	Up	iP		09 22 58.6	C
					micr	sec
			P	Z'	0.7	1.5
			Mx	E	1.7	10
			Mx	N	2.3	9
			Mx	Z	2.8	10
		Ki	iP		09 24 24.1	C
					micr	sec
			P	Z'	0.3	1.0
			Mx	E	1.6	11
			Mx	N	1.5	11
			Mx	Z	1.4	12
		Sk	iP		09 23 41.2	
		Um	iP		09 23 43.1	C
		Ud	iP		09 23 01.3	C
		Yugoslavia (h = 20 km).				
		m = 5.8 (Up,Ki).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977

Jan.	13	Ki	eP	14 40 38
		Talaud Island (h = 160 km).		
"	13	Ki	iP	21 20 11.3
		Ud	iP	21 21 06.8
		Aleutian Islands (h = 50 km).		
"	14	Up	i(P)	11 01 09.7
"	14	Ki	ePKP	11 07 23
		De	iPKP	11 07 39.4
		New Ireland (h = 80 km).		
"	14	Up	iP	12 18 14.3
				micr sec
			Mx N	1.2 14
		Ki		micr sec
			Mx N	1.8 13
		Ud	iP	12 18 28.9
		Tibet (h = N).		
		M = 5.1 (Up,Ki).		
"	14	Up	iP	15 53 41.4
		Um	iP	15 53 39.2
		Ud	iP	15 53 57.6
		De	eP	15 53 55
		Afghanistan-USSR (h = 150 km).		
"	14	Ki	ePKP	18 17 02
			iSKPl	18 19 57.5
		Um	iPKP	18 17 02.7
			iSKPl	18 20 10.1
		Ud	ePKP	18 17 13
		De	iPKP	18 17 21.7
		Fiji Islands (h = 350 km).		
"	14	Um	eP	22 56 50
		China (h = N).		
"	15	Up	iP	11 01 51.9
			i	11 02 07.0
		Ki	iP	11 01 32.6
			ipP	11 01 45.0
				micr sec
			P Z'	0.2 0.9
		Um	iP	11 01 39.9
			ipP	11 01 51.7
		Ud	iP	11 02 00.6
			ipP	11 02 12.2
		Philippine Islands.		
		h = 40 km (Ki,Um,Ud).		
"	15	Up	iP	11 08 32.7 C
		(cont.)		

1977

Jan.	15	(cont.)		
		Up		micr sec
			P Z'	0.1 1.0
		Ki	iP	11 08 13.9
			ipP	11 08 25.5
				micr sec
			P Z'	0.2 1.0
		Um	iP	11 08 20.2
			ipP	11 08 32.2
		Ud	iP	11 08 41.6
			ipP	11 08 53.9
		Philippine Islands.		
		h = 40 km (Ki,Um,Ud).		
		m = 6.1 (Up,Ki).		
"	15	Um	iPKP	21 28 54.7
		New Hebrides Islands (h = N).		
"	15	Um	iP	22 13 51.3
		Ud	iP	22 14 18.7
		Japan (h = N).		
"	16	Up	iP	00 37 46.2
		Ki	iP	00 37 56.1
		Sk	iP	00 38 13.2
		Um	iP	00 37 45.4 C
			ipP	00 38 10.3
		Ud	iP	00 38 03.1 C
			ipP	00 38 26.9
		De	eP	00 37 56
		Hindu Kush.		
		h = 110 km (Um,Ud).		
"	16	Um	iP	04 15 23.6
		Ud	iP	04 15 44.5
		Hindu Kush (h = 50 km).		
"	16	Up	iP	09 21 41.3
		Ki	eP	09 22 54
		Sk	iP	09 27 22.0
			i	09 22 29.6
		Um	iP	09 22 18.0
		Ud	iP	09 21 48.8
		Greece (h = 50 km).		
"	16	Up	iP	10 42 51.4
		Ki	iP	10 43 15.0
		Um	iP	10 43 06.8
		Ud	iP	10 42 36.9
		North Atlantic Ocean (h = N).		
"	16	Um	eP	15 58 34
		Ud	iP	15 58 38.9
		Caucasus (h = N).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 16 Up iPKPl 16 33 51.3
Ud iPKPl 16 33 52.3
i 16 34 07.1
De iPKPl 16 34 01.9
Kermadec Islands (h = 30 km).

" 16 Ud eP 20 38 58

" 16 Ki iP 23 29 10.5
Um iP 23 29 06.3
Ud iP 23 29 28.2
De eP 23 29 29
Tadzhik-Sinkiang (h = 55 km).

" 17 Ki iP 05 06 11.2
Mariana Islands (h = 90 km).

" 17 Up iP 05 24 58.3
micr sec
P Z' 0.3 1.5
Mx E 1.9 10
Mx N 2.1 10
Mx Z 3.3 10
Ki iP 05 25 43.1
i 05 25 47.2
micr sec
P Z' 0.1 1.3
i Z' 0.1 1.2
Mx E 3.3 11
Mx N 3.7 11
Mx Z 4.6 11
Sk iP 05 25 36.7
iPP 05 26 40.3
Um iP 05 25 15.8
iS 05 30 09
Ud iP 05 25 12.7
i 05 25 33.7
De iP 05 24 54.9
i 05 25 07.1
Turkey (h = N).
m = 5.7, M = 5.3 (Up,Ki).

" 17 Up iP 06 35 56.8 C
iPP 06 39 10.4
iS 06 46 12
micr sec
P Z' 0.4 1.2
Mx E 4.8 18
Mx N 5.8 19
Mx Z 3.1 19
Ki iP 06 35 23.9
i 06 35 40.6
micr sec
P Z' 0.2 1.0
(cont.)

1977
Jan. 17 (cont.)
Ki micr sec
Mx E 6.35 19
Mx N 12 22
Mx Z 5.8 17
Sk iP 06 35 53.5
iPP 06 38 59.6
Um iP 06 35 38.5 C
iPP 06 38 39.5
iS 06 45 37
Ud iP 06 36 04.7
i 06 36 15.8
iPP 06 39 20.4
De iP 06 36 16.3
i 06 36 23.5
Bonin Islands (h = N).
m = 6.3, M = 6.2 (Up,Ki).

" 17 Up iP 08 41 32.0
Ki iP 08 41 07.2 C
Sk iP 08 41 35.2
Um iP 08 41 16.4 C
Ud iP 08 41 41.7
Ryukyu Islands (h = 80 km).

" 17 Up iPKPl 09 00 28.5
Ud iPKPl 09 00 30.4
De iPKPl 09 00 39.7
Tonga-Kermadec Islands
(h = 510 km).

" 17 Ki iP 09 52 21.8
Um iP 09 52 48.4
Ud iP 09 53 12.2
De iP 09 53 34.7
South of Alaska (h = 20 km).

" 17 Up iP 16 24 07.0 C
il 16 24 13.4
Ki il 16 24 12.2
Um il 16 24 07.1
Ud iP 16 24 24.1
i 16 24 27.5
India (h = N).

" 17 Um iP 19 08 01.4
Ud iP 19 08 26.3
De iP 19 08 49.0

" 17 Ki iPKP 19 23 35.9
Um iPKP 19 23 42.2
Ud ePKP 19 23 53
Fiji Islands (h = 35 km).

" 17 Up iPdiff 21 41 39
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 17 (cont.)

Up	iPP		21 46 08.5	
	iS		21 53 46	
	i		21 57 05.2	
			micr	sec
	PP	Z'	0.4	1.6
	Mx	E	3.8	20
	Mx	N	5.4	20
	Mx	Z	8.9	21
Ki	iPKP		21 45 44.8	
	i		21 45 54.0	
	iPKKP		21 56 42.8	
	i		21 56 52.1	
			micr	sec
	i	Z'	0.6	2.0
	Mx	E	2.6	22
	Mx	Z	4.7	23
Sk	iPKP		21 45 41.5	
	iPKKP		21 56 59.1	
	iP'P'		22 05 22.5	
Um	iPKP		21 45 44.1	
	i		21 45 52.4	
	iS		21 54 03	
	iPKKP		21 56 47.4	
	i		21 56 56.2	
	iP'P'		22 05 16.9	
Ud	iPKP		21 45 33.1	
	i		21 46 30.9	
	iPKKP		21 57 03.7	
	i		21 57 09.7	
De	iP		21 41 30.7	
	iPKP		21 45 34.1	
	i		21 45 43.2	
	iP'P'		22 05 23.5	

Chile-Argentina (h = N).
M = 6.0 (Up,Ki).

" 17	Up	iP	21 57 29.9	
		i	21 57 41.0	
	Ud	iP	21 57 38.9	
		i	21 57 49.5	
" 17	Up	iPKP1	23 01 46.4	
	Um	iPKP	23 01 40.4	
	Ud	iPKP1	23 01 48.6	
	De	iPKP1	23 01 59.5	

Tonga-Kermadec Islands
(h = 510 km).

" 17	Um	iP	23 04 26.4	
" 18	Up	iPKP1	06 01 48.8	
			micr	sec
	Mx	E	2.4	24
	Mx	N	2.8	22

(cont.)

1977
Jan. 18 (cont.)

Up			micr	sec
	Mx	Z	5.0	24
Ki	iPKP		06 01 28.6	
	iPKP1		06 01 34.2	
			micr	sec
	PKP	Z'	0.1	1.0
	PKP1	Z'	0.3	1.0
	Mx	N	2.2	22
	Mx	Z	5.1	23
Sk	iPKP1		06 01 46.8	
Um	iPKP		06 01 33.4 C	
	iPKP1		06 01 40.9	
Ud	iPKP		06 01 39.3	
	i		06 02 11.1	
De	iPKP		06 01 43.1	

New Zealand (h = 50 km).
M = 6.0 (Up,Ki).

" 18	Up	iP	08 55 27.8	
		iPP	08 56 34.1	
			micr	sec
	P	Z'	0.1	0.8
	Ki	iP	08 56 10.6	
		iPP	08 57 23.9	
			micr	sec
	P	Z'	0.2	1.0
	Sk	iP	08 56 05.1	
	Um	iP	08 55 43.5	
	Ud	iP	08 55 43.9	
	De	iP	08 55 25.5	

Iran (h = 50 km).
m = 5.8 (Up,Ki).

" 18	Up	iP	09 01 52.6 C	
	Ki	iP	09 02 08.8	
	Sk	iP	09 02 01.5	
	Um	iP	09 01 58.5	
	Ud	iP	09 01 58.5	
	De	iP	09 01 51.8	
" 18	Sk	iSgl	11 04 04.1	
	Um	iSgl	11 05 39.1	
	Ud	i	11 03 40.9	
		i	11 03 49.7	

Off coast of southwest Norway, near 60 1/2°N, 4 1/2°E.
Origin time = 11 01 25.
M_L = 2.9 (Ud).
By combination with Bergen readings

" 18	Um	iSgl	11 06 42.5	
	Ud	i	11 04 43.4	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 18 (cont.)

Ud	i		11 04 53.0

Same location as the preceding event.
Origin time = 11 02 28.
M_L = 2.7 (Ud).
By combination with Bergen readings.

" 18	Ud	ePKPl	14 53 50
	De	iPKPl	14 54 00.1

Tonga-Kermadec Islands (h = 540 km).

" 18	Up	iP	17 52 39.9
	Ki	iP	17 52 10.2
	Um	iP	17 52 22.9
	Ud	iP	17 52 45.9
	De	iP	17 52 58.1

Mariana Islands (h = 100 km).

" 18	Sk	eSgl	19 25 32
	Ud	iPgl	19 24 29.7
		eSgl	19 25 34

Off coast of southwest Norway, 61°N, 4°E.
Origin time = 19 23 08.
By combination with Bergen readings.

" 18	Up	iP	20 52 14.9
	Ud	iP	20 52 24.1
	De	eP	20 51 56

Mediterranean Sea (h = 55 km).

" 18	Up	iPKP2	23 03 43.3
	Ki	iPKPl	23 03 11.3
	Sk	iPKPl	23 03 25.9
	Um	iPKPl	23 03 19.9
	Ud	iPKPl	23 03 31.3

North Island, New Zealand (h = 140 km).

" 19	Up	iP		00 55 33.8	C
		i		00 55 39.7	
		iS		01 03 05	
				micr	sec
		P	Z'	0.6	1.0
		i	Z'	1.3	1.2
		Mx	E	9.0	16
		Mx	N	5.7	13
		Mx	Z	17	17
	Ki	iP		00 55 16.6	C
		i		00 55 22.6	

(cont.)

1977
Jan. 19 (cont.)

Ki	iS			01 02 33	
				micr	sec
	P	Z'		0.6	1.5
	i	Z'		0.6	1.3
	Mx	E		7.0	13
	Mx	N		6.8	10
	Mx	Z		7.5	13
Sk	iP			00 55 45.8	C
	i			00 55 51.5	
Um	iP			00 55 19.4	C
	i			00 55 25.4	
	iS			01 02 39	
Ud	iP			00 55 47.4	C
	i			00 55 53.5	
De	iP			00 55 53.6	C
	i			00 55 59.7	

Tsinghai, China (h = N).
m = 6.6, M = 6.1 (Up,Ki).
Double P, in average 6.0 sec apart. The second phase can be interpreted as pP, implying a focal depth of 20 km.

" 19	Up	iP	01 04 52.3

" 19	Ki	eP	02 19 52
	Ud	eP	02 20 39

Alaska Peninsula (h = 45 km).

" 19	Up	iP	02 25 27.7
	Ud	iP	02 25 42.2

" 19	Up	iPKP	03 53 35.8
	Ki	iPKP	03 53 24.2
	Sk	ePKP	03 53 36
	Um	iPKP	03 53 28.7
	Ud	iPKP	03 53 38.3
	De	iPKP	03 53 44.2
		ipPKP	03 54 08.3

Solomon Islands.
h = 90 km (De).

" 19	Ki	iP	12 05 40.6
	Um	iP	12 06 08.9

" 19	Um	iPKPl	12 58 55.9
		i	12 59 07.4
	Ud	iPKPl	12 59 08.6
		i	12 59 19.7

" 19	Ki	eP	13 07 58
	Um	iP	13 08 16.9
		i	13 08 27.2
	Ud	i	13 09 06.8

Japan (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 19 Up iP 14 07 22.9
i 14 07 28.4
iSKS 14 17 53
micr sec
P Z' 0.2 1.5
Mx E 3.2 21
Mx N 2.8 22
Mx Z 9.6 22
Ki iP 14 07 05.1
i 14 07 10.8
micr sec
P Z' 0.3 1.4
Mx E 6.6 26
Mx N 7.8 24
Mx Z 13 28
Sk eP 14 07 30
Um iP 14 07 11.4
i 14 07 15.4
iSKS 14 17 41
Ud iP 14 07 29.8
i 14 07 36.8
De eP 14 07 38
Mindanao (h = 50 km).
m = 6.4, M = 6.0 (Up,Ki).

" 19 Ud iPKPl 15 13 17.2
De iPKPl 15 13 28.0
Fiji Islands (h = 630 km).

" 19 Up iP 20 52 05.9
i 20 52 22.7
Ki iP 20 53 17.9
Um iP 20 52 44.2 C
Ud iP 20 52 03.5
De iP 20 51 29.2 C
Tunisia (h = N).

" 20 Up iP 01 17 14.0 D
Ki iP 01 16 42.2
Sk iP 01 17 11.2
Um iP 01 16 55.8 D
Ud iP 01 17 21.5
De iP 01 17 33.4
Japan (h = 500 km).

" 20 Ud i(P) 01 43 07.6

" 20 Ki e 03 00 47
Sk iP 03 00 10.7
iS 03 02 26.9
Um iP 03 00 54.7
Ud eP 03 00 43
Iceland.
Origin time = 02 57 16.
Compare with the following event.

1977
Jan. 20 Ki eP 04 38 04
i 04 38 15.9
Sk iP 04 37 38.2
iS 04 39 52.9
Um iP 04 38 22.3
i 04 38 25.2
i 04 38 37.5
Ud iP 04 38 07.0
i 04 38 15.0
Iceland (h = 10 km).

" 20 Up iPKPl 12 52 22.9
Ki iPKP 12 52 12.8
Sk ePKPl 12 52 15
Um ePKPl 12 52 12
Ud iPKPl 12 52 25.1 D
De iPKPl 12 52 35.8
Tonga-Kermadec Islands
(h = 550 km).

" 20 Up iSgl 14 27 32.4
Sk eSgl 14 27 31
i 14 27 42.6
Ud iSgl 14 26 32.6
De eSgl 14 26 48
Coast of south Norway,
58.3°N, 6.4°E.
Origin time = 14 24 26.
M_L = 2.8 (Ud).
By combination with Bergen and Kongsberg readings.

" 20 De ePKP 14 45 29
Solomon Islands (h = 70 km).

" 20 Up iP 20 22 07.7
Ki iP 20 21 46.0
Um iP 20 21 53.3 D
Ud iP 20 22 17.1 D
i 20 26 36.7
De iP 20 22 24.2
Formosa (h = 30 km).

" 20 Up iP 21 04 12.5 C
i 21 04 19.5
micr sec
P Z' 0.1 1.0
Ki iP 21 03 57.9
i 21 04 04.1
Sk eP 21 04 18
Um iP 21 04 02.0
Ud iP 21 04 21.4 C
i 21 04 28.7
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 20 (cont.)

De	iP	21 04 26.7
	i	21 04 33.6

Mindanao (h = 35 km).

" 21

Ki	iSgl	00 01 08.2
Sk	i	00 01 11.4
	iSgl	00 01 14.6
Um	iSn	00 01 22.0
	iSgl	00 01 35.4
Ud	iSgl	00 02 56.1

Nordland, Norway, 66.5°N, 14.1°E.
Origin time = 23 59 41 (77-01-20).
M_L = 2.7 (Ki,Um).
Possibly mine explosion.

" 21

Up	iP		02 31 52.7	
			micr	sec
	Mx	E	1.6	17
Ki	iP		02 31 29.7	
			micr	sec
	Mx	N	1.2	18
Um	iP		02 31 39.0	
Ud	iP		02 32 02.9	
De	eP		02 32 12	

Formosa (h = 35 km).
M = 5.3 (Up,Ki).

" 21

Um	iP	02 36 09.2

Japan (h = 55 km).

" 21

Up	iPKPl	06 29 08.8
	i	06 29 13.1
Ki	iPKP	06 29 04.6
	ipPKP	06 31 26.7
	iSKPl	06 31 32.0
Sk	e(PKP)	06 29 08
Um	i(PKP)	06 29 02.6
	i(PKP)	06 29 08.0
	iPKP	06 29 11.7
	ipPKPl	06 31 32.6
	iSKPl	06 31 46.1
Ud	iPKPl	06 29 10.9
	i	06 29 15.3
	iSKPl	06 31 44.7
De	iPKPl	06 29 21.1
	iSKPl	06 31 49.5

Fiji Islands.
h = 610 km (Ki,Um).

" 21

Up	i	10 52 43.1

(cont.)

1977
Jan. 21 (cont.)

Up	iRg	10 52 47.2
Ud	iRg	10 52 33.2

Central Sweden.
Near-surface event.

" 21

Up	ipP	15 06 20.6
Ki	ipP	15 06 24.9
Um	ipP	15 06 18.7
Ud	iP	15 06 21.5
	ipP	15 06 38.2

Kashmir-India.
h = 55 km (Ud).

" 22

Ki	iP	04 32 11.8
Um	iP	04 32 16.5

Ceram (h = 70 km).

" 22

Um	iPKP	05 49 41.0

Tonga Islands (h = N).

" 23

Up	iPKP	01 57 27.2
Ki	iPKP	01 57 12.1
Sk	iPKP	01 57 23.4
Um	iPKP	01 57 18.1
Ud	iPKP	01 57 28.6
	iSKPl	02 00 55.3
De	iPKP	01 57 36.6
	iSKPl	02 01 08.6

New Hebrides Islands (h = 40 km).

" 23

Up	iP	05 51 29.1
	i	05 51 37.0
Ki	iP	05 51 00.3
	i	05 51 08.7
Sk	eP	05 51 28
	i	05 51 35.6
Um	iP	05 51 13.1
Ud	iP	05 51 36.6

Mariana Islands (h = 220 km).

" 23

Um	iP	12 22 09.1
Ud	iP	12 22 24.3

" 23

Um	iP	12 36 04.6
Ud	ipP	12 36 35.4

Sumatra (h = 70 km).

" 23

Up	iP	15 06 37.5
Ki	iP	15 06 02.6
Um	iP	15 06 16.6
Ud	iP	15 06 43.7

Bonin Islands (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 23 Ki iP 15 46 38.1
Ud iP 15 47 05.9
Philippine Islands (h = N).

" 23 Ki iP 17 13 08.7
Sk iP 17 13 01.6
Um iP 17 13 16.6
Ud iP 17 13 10.0
Guatemala (h = 90 km).

" 23 Ud iP 19 51 45.2
De iP 19 51 10.7
Greece (h = 70 km).

" 23 Um iP 21 12 51.7
Ryukyu Islands (h = N).

" 23 Up iP 22 30 22.3
Ki eP 22 30 31
Ud iP 22 30 39.1
De iP 22 30 36.4
Afghanistan-USSR (h = 220 km).

" 24 Ki iP 06 21 32.9
Um iP 06 21 55.2
Ud iP 06 22 25.4
Kurile Islands (h = N).

" 24 Ki iP 06 44 32.6
De iP 06 43 02.7
Crete (h = 110 km).

" 24 Up iPKPl 20 02 17.7
Um iPKPl 20 02 05.2
Ud iPKPl 20 02 20.8
De iPKPl 20 02 30.5 C
Tonga-Kermadec Islands
(h = 460 km).

" 25 Um iP 00 33 46.7
Sea of Japan (h = 420 km).

" 25 Um iPKP 01 09 35.0
Argentina (h = 15 km).

" 25 Up iP 02 16 53.0
Ki iP 02 16 51.2
ipP 02 16 56.3
Um iP 02 16 48.2
ipP 02 16 53.7
Ud iP 02 17 05.9
ipP 02 17 11.4
Burma.
h = 20 km (Ki,Um,Ud).

1977
Jan. 25 Up Mx 03 30
micr sec
Mx N 4.2 28
Ki Mx 03 12
micr sec
Mx N 2.4 18
New Guinea (h = N).
M = 5.7 (Up,Ki).

" 25 Up iP 05 32 19.3
Um iP 05 32 00.2
Ud iP 05 32 27.5
Japan (h = N).

" 25 Up iP 06 45 40.5
Ki iP 06 46 12.0
Ud eP 06 45 32
Atlantic Ocean (h = N).

" 25 Up iPKPl 08 36 55.3
Ud iPKPl 08 36 57.7
De iPKPl 08 37 06.7

" 25 Up iSgl 10 15 51.2
Sk iSgl 10 15 05.0
Um iSgl 10 16 45.8
Ud iPgl 10 13 51.7
iSgl 10 14 48.5
Coast of southwest Norway,
60.2°N, 5.0°E.
Origin time = 10 12 35.
M_L = 2.9 (Ud).
By combination with Kongsberg
readings.

" 25 Um iPKP 10 49 56.7
De iPKP 10 50 12.0
Santa Cruz Islands (h = 25 km)

" 25 De iPKPl 17 16 49.6
Fiji Islands (h = 600 km).

" 25 Um iP 23 59 41.3
Ud iP 23 59 21.0
Turkey (h = 25 km).

" 26 Ud iP 14 45 42.2

" 27 Ud iP 00 30 43.8

" 27 Ud iSgl 12 55 06.7
Near Bergen, Norway.
Origin time = 12 52 53.
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Jan. 27 (cont.)
M_L = 2.5 (Ud).
By combination with Bergen and Kongsberg readings.

"	27	Up	iP 16 26 20.1
		Ki	iP 16 25 34.5
		Um	iP 16 25 54.8
		Ud	iP 16 26 26.4

Kurile Islands (h = 40 km).

"	27	Up	iP 17 03 13.4
		Ki	iP 17 02 27.8
		Um	iP 17 02 48.3
		Ud	iP 17 03 19.6

Kurile Islands (h = 40 km).

"	28	Ud	eP 01 18 17

North Atlantic Ocean (h = N).

"	28	Ki	iP 03 57 37.8
		Ud	iP 03 57 48.8

Tibet-India (h = 55 km).

"	28	Up	iP 04 36 31.8
		Ki	iP 04 35 58.9
		Um	iP 04 36 13.1
		Ud	iP 04 36 39.0
		De	iP 04 36 50.8

Japan (h = 410 km).

"	28	Ud	iSgl 10 15 15.4

Near Bergen, Norway.
Origin time = 10 13 02.
M_L = 2.4 (Ud).
By combination with Bergen and Kongsberg readings.

"	28	Up	iP 14 17 01.6
		Sk	iP 14 16 28.9
		Um	iP 14 17 04.4
		Ud	iP 14 16 39.6
			i 14 16 44.0
		De	iP 14 16 53.8

North Atlantic Ocean (h = N).

"	28	Ki	iPKP 18 19 52.6
			ipPKP 18 19 57.0
		Um	ipPKP 18 20 03.2
		Ud	i 18 20 18.3
		De	ipPKP 18 20 17.0

New Hebrides Islands.
h = 15 km (Ki).

1977
Jan. 28 Up i(P) 20 41 40.0

"	29	Um	iPKP 01 11 21.3
		De	iPKP 01 11 35.9

New Britain (h = 55 km).

"	29	Up	iP 05 22 09.8
			i 05 22 34.9
		Ki	eP 05 22 07
		Um	iP 05 22 04.4
		Ud	iP 05 22 20.7
			i 05 22 35.3

Burma (h = 40 km).

"	29	Up	iPKPl 05 46 49.6
		Um	iPKPl 05 46 38.5
		Ud	iPKPl 05 46 51.8

"	29	Um	iPKPl 06 14 31.4
		Ud	iPKPl 06 14 43.9

South of Kermadec Islands (h = N).

"	29	Up	iPKPl 07 22 30.6
		Um	iPKPl 07 22 20.4
		Ud	iPKPl 07 22 32.5

South of Kermadec Islands (h = N).

"	29	Up	iSgl 09 39 21.6
		Ki	iSgl 09 38 29.3
		Sk	iSgl 09 39 33.3
		Um	iSgl 09 37 43.0
		Ud	iSgl 09 39 57.1

Central Finland, 64.2°N, 27.2°E.
Origin time = 09 36 09.
M_L = 2.6 (Up,Um,Ud).
By combination with Finnish station readings.

"	29	Um	iPKP 10 37 17.4

New Hebrides Islands (h = 170 km).

"	29	Up	iPKPl 10 41 52.4
		Um	iPKPl 10 41 08.9
		Ud	iPKPl 10 41 54.0
		De	iPKPl 10 42 03.5
			iPKP2 10 42 10.6

Kermadec Islands (h = 70 km).

"	29	Um	iP 23 47 40.6
		Ud	iP 23 47 42.9

Iran (h = 60 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977							
Jan.	30	Up	iP		10 43 39.2		
		Ki	iP		10 43 40.6		
		Sk	eP		10 44 04		
		Um	iP		10 43 32.6		
		Ud	iP		10 43 54.5		
		De	iP		10 43 53.7		
		Tadzhik-Sinkiang (h = 35 km).					
"	30	Um	iP		15 51 54.6		
"	31	Ud	iP		06 19 49.1		
"	31	Up	iP		14 33 34.7	C	
			iPP		14 35 03.7		
			iS		14 39 24		
					micr	sec	
			P	Z'	1.7	1.3	
			Mx	E	20	11	
			Mx	N	18	8	
			Mx	Z	43	12	
		Ki	iP		14 33 40.0	C	
			iPP		14 35 14.8		
					micr	sec	
			P	Z'	0.9	1.5	
			Mx	E	26	11	
			Mx	N	28	8	
			Mx	Z	21	11	
		Sk	iP		14 33 59.3	C	
			iPP		14 35 32.7		
		Um	iP		14 33 30.6	C	
			iPP		14 34 56.9		
			iS		14 39 21		
		Ud	iP		14 33 51.4	C	
		De	iP		14 33 49.2	C	
		Tadzhik SSR (h = 20 km).					
		m = 6.4 (Up,Ki).					
"	31	Ki	iP		18 12 17.8		
		Um	iP		18 12 22.5		
		Ud	iP		18 12 42.0		
		Molucca Passage (h = 35 km).					
"	31	Ud	iP		21 15 39.3		
"	31	Um	iP		23 41 07.0		

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November 10, 1978

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BOX 517
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BOX 517
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S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å

U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

F E B R U A R Y 1 - 28, 1977

1977 Feb.	1	Ki	iP	00 05 46.1
		Ud	iP	00 06 10.6
		Mindanao (h = 140 km).		
"	1	Up	iPKPl	03 10 15.8
		Sk	iPKPl	03 10 08.5
		Um	iPKPl	03 10 03.2
		Ud	iPKPl	03 10 17.7
		De	iPKPl	03 10 27.0
"	1	Up	i(P)	10 30 20.1
"	1	Up	iP	13 13 50.8
		Ki	eP	13 13 01
		Um	iP	13 13 24.9
		Ud	iP	13 13 56.0
		De	iP	13 14 15.3
		Kurile Islands (h = 40 km).		
"	1	Ud	iP	14 51 10.6
		Peru-Brazil (h = 160 km).		
"	1	Up	iPKP	17 03 38.4
		Ud	iPKP	17 03 39.7
"	1	Um	iP	22 40 13.2
		Ud	iP	22 41 03.2
		South of Svalbard, near 75 1/4°N, 12 1/2°E. Origin time = 22 37 31. Solution from Helsinki regional bulletin.		
"	2	Up	iPKPl	05 19 19.4
		Ud	iPKPl	05 19 21.7
"	2	Ud	iP	11 13 55.1
		Tadzhik SSR (h = 55 km).		
1977 Feb.	2	Ki	i(P)	12 53 29.0
		Um	i(P)	12 53 38.8
"	2	Um	iP	15 48 16.7
		Kodiak Island (h = 70 km).		
"	2	Um	iPKP	23 07 41.2 C
		Ud	iPKPl	23 07 44.9
		Fiji Islands (h = 650 km).		
"	3	Ki	iP	04 10 39.6
		Um	iP	04 10 43.7
		Ud	iP	04 11 06.5
		Philippine Islands (h = N).		
"	3	Um	iP	04 52 22.9
		New Hebrides Islands (h = 130 km).		
"	3	Um	iP	06 30 35.5
		Ud	iP	06 31 03.4
		Japan (h = 360 km).		
"	3	Up	iP	10 49 21.1
		Ki	iP	10 48 33.5
		Um	iP	10 48 55.7
		Ud	iP	10 49 26.6
		Kurile Islands (h = N).		
"	3	Up	iP	10 59 39.6
		Ki	iP	10 59 28.6
		Um	iP	10 59 28.3
		Ud	iP	10 59 50.1
		Burma.		
"	3	Up	iP	16 07 27.4
		Sk	eP	16 08 07
		Um	iP	16 08 07.2
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 3 (cont.)

Ud	iP	16 07 34.2	

Ionian Sea (h = 60 km).

" 3	Um	iPKP	20 31 31.3	

Loyalty Islands (h = N).

" 3	Up	iP	21 41 31.9	C
	Ki	iP	21 40 53.1	
	Um	iP	21 41 09.2	C
	Ud	iP	21 41 40.3	

USSR-China (h = 510 km).

" 3	Um	iP	22 45 43.3	
" 4	Up	iPP	08 04 09.9	
		iSKS	08 09 34	
		iPKKP	08 15 33.3	
			micr	sec
		PP Z'	0.3	1.3
		Mx E	1.1	19
		Mx N	1.4	20
	Ki	iPKP	08 04 03.6	
		iPP	08 04 43.8	
		iPKKP	08 15 17.8	
			micr	sec
		PP Z'	0.8	2.0
		Mx E	1.7	16
		Mx N	1.0	16
	Sk	iPP	08 04 09.9	
		iPKKP	08 15 37.8	
	Um	iPKP	08 04 00.8	
		iPP	08 04 37.4	
		iPKKP	08 15 22.8	
	Ud	iPP	08 04 02.5	
		iPKKP	08 15 41.8	

Argentina (h = 550 km).
M = 5.7 (Up,Ki).
M not corrected for focal depth.

" 4	Up	iP	10 34 22.9	
	Ki	iP	10 34 05.6	
	Um	iP	10 34 09.8	
	Ud	iP	10 34 30.8	

Luzon (h = 60 km).

" 4	Up	iPKP1	21 56 29.7	C
		iPKP2	21 56 35.2	
	Ki	ePKP1	21 56 10	
	Sk	iPKP1	21 56 22.7	C
	Um	iPKP1	21 56 17.3	C
	Ud	iPKP1	21 56 31.7	C
	De	iPKP1	21 56 40.2	C

Kermadec Islands (h = 40 km).

1977
Feb. 5

Up	iP	03 16 45.8		
Ki	iP	03 16 54.1		
Um	iP	03 16 44.4		
Ud	iP	03 17 02.3		
De	iP	03 16 59.1		

Hindu Kush (h = 170 km).

" 5	Up	iPKP1	03 48 53.5	C
		i	03 49 05.9	
			micr	sec
		PKP1 Z'	3.7	1.6
		Mx E	1.7	18
		Mx N	1.6	18
		Mx Z	3.8	19
	Ki	iPKP	03 49 01.5	
		iPKP1	03 49 09.5	
		i	03 49 22.3	
			micr	sec
		PKP Z'	0.9	2.1
		PKP1 Z'	1.0	1.2
		i Z'	2.7	1.9
		Mx E	1.6	15
		Mx N	1.9	16
		Mx Z	1.0	17
	Sk	iPKP1	03 48 56.1	C
		i	03 49 07.5	
	Um	iPKP	03 49 00.9	
		iPKP1	03 49 02.9	
	Ud	iPKP1	03 48 48.9	C
		i	03 49 01.9	
	De	iPKP1	03 48 41.8	

South Pacific Ocean (h = N).
M = 6.1 (Up,Ki).

" 5	Up	iSKP1	09 49 12.5	
	Ki	iPKP	09 45 35.7	
		ipPKP	09 45 39.3	
	Um	iPKP	09 45 41.5	
		ipPKP	09 45 44.5	
	Ud	iPKP	09 45 51.3	
		iSKP1	09 49 17.9	
	De	ipPKP	09 45 59.9	
		iSKP1	09 49 26.0	

New Hebrides Islands.
h = 10 km (Ki,Um).

" 5	Ki	iP	15 54 08.1	
	Um	iP	15 54 10.4	
	Ud	iP	15 53 55.4	
	De	iP	15 53 58.4	

Dominican Republic (h = N).

" 5	Up	iP	18 51 58.6	
	Ki	iP	18 51 49.9	
	Ud	iP	18 52 12.0	

Burma (h = 55 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Feb.	5	Um	iP	20 56 45.4	
		Japan (h = 40 km).			
"	6	Up	iP	00 41 16.3	
		Ki	iP	00 41 35.7	D
				micr sec	
			P Z'	0.1 1.0	
		Sk	iP	00 41 07.2	
			i	00 41 20.8	
		Um	iP	00 41 30.0	
		Ud	iP	00 41 04.1	D
		De	iP	00 40 59.0	D
		North Atlantic Ocean (h = N).			
"	6	Up	iPKPl	03 28 35.4	
		Ki	iPKP	03 28 27.2	
		Sk	iPKPl	03 28 28.9	
		Um	iPKP	03 28 33.9	
		Ud	i(PKP)	03 28 35.1	
			iPKPl	03 28 37.1	
		De	iPKPl	03 28 46.9	
		Tonga Islands (h = N).			
"	6	Up	iP	03 33 28.3	
		Um	iP	03 33 09.0	
		Ud	iP	03 33 35.2	
		Japan (h = 430 km).			
"	6	Ud	iP	04 03 47.8	
		De	iP	04 03 58.6	
"	6	Ud	iP	04 08 28.9	
		Afghanistan-USSR (h = 190 km).			
"	6	Up	iP	05 19 25.7	
				micr sec	
			Mx Z	2.8 15	
		Ki	iP	05 19 04.2	
		Um	iP	05 19 12.0	
		Ud	iP	05 19 36.0	
		Philippine Islands (h = N).			
"	6	Up	i(P)	07 50 42.9	
"	6	Up	iP	17 04 14.2	
			ipP	17 04 25.2	
		Sk	epP	17 04 44	
		Um	iP	17 04 07.0	
			ipP	17 04 19.0	
		Ud	iP	17 04 28.1	
			ipP	17 04 39.1	
		De	iP	17 04 29.6	
		India-Bangladesh.			
		h = 40 km (Up,Um,Ud).			

1977 Feb.	7	Um	iPl	00 22 17.5	
		Ud	iPl	00 21 40.2	
			iP2	00 21 42.2	
		De	iP2	00 21 06.6	
		Tunisia (h = N).			
"	7	Up	iP	01 08 01.6	
			i	01 08 04.7	
		Ki	iP	01 07 46.6	
		Um	iP	01 07 49.5	
			i	01 07 53.5	
		Ud	iP	01 08 14.5	
			i	01 08 18.0	
		Szechwan, China (h = N).			
"	7	Up	iPKPl	06 01 24.5	
		Sk	iPKPl	06 01 16.9	
		Ud	iPKPl	06 01 25.0	
		De	iPKPl	06 01 34.7	
"	7	Up	iP	08 53 49.5	
			i	08 54 05.6	
		Ki	iP	08 53 11.7	
		Sk	iP	08 53 44.1	
		Um	iP	08 53 28.0	C
		Ud	iP	08 53 56.6	C
		De	iP	08 54 11.5	
		Japan (h = 45 km).			
"	7	Up	iPKP2	12 20 11.9	
		Sk	ePKPl	12 20 02	
		Um	iPKPl	12 19 55.5	
		Ud	iPKPl	12 20 09.4	
		De	ePKPl	12 20 19	
"	7	Um	iP	21 42 41.1	
		Ud	iP	21 43 11.9	
		Kurile Islands (h = 280 km).			
"	8	Ud	iPKPl	03 08 45.1	
		Tonga-Kermadec Islands (h = 530 km).			
"	8	Up	iP	03 13 17.5	
		Sk	iP	03 13 01.1	
		Um	iP	03 13 49.3	
		Ud	iP	03 13 21.5	
		De	iP	03 13 42.2	
		Kamchatka (h = N).			
"	8	Um	iP	19 16 04.6	
		Kurile Islands (h = 60 km).			
"	9	Ki	iP	12 18 35.8	
		Um	iP	12 18 31.4	
			i	12 18 38.6	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 9 (cont.)

Ud	iP	12 18 47.1	

Andaman Islands (h = N).

" 9	Ud	iP	14 00 15.1

Tunisia (h = N).

" 9	Up	iPKP2	16 39 05.8
	Ki	iPKP	16 38 30.1
		iPKP1	16 38 31.9
	Sk	iPKP1	16 38 47.6
	Um	iPKP1	16 38 42.6
	Ud	iPKP1	16 38 55.7

North Island, New Zealand (h = 90 km).

" 9	Ki	iP	21 47 06.3
	Um	iP	21 46 55.1
	Ud	iP	21 47 13.8
	De	eP	21 47 11

Hindu Kush (h = 220 km).

" 10	Um	i	03 46 15.8
		i	03 46 22.6
	Ud	i	03 46 27.9
	De	iPKP	03 46 25.7

Loyalty Islands (h = 40 km).

" 10	Up	iPKP1	08 15 07.4
	Ki	i	08 15 06.7
	Sk	ePKP	08 15 14
	Um	iPKP	08 15 09.5
		iSKP1	08 18 36.5
	Ud	iPKP1	08 15 10.7
	De	iPKP1	08 15 19.7

Loyalty Islands (h = 40 km).

" 10	Um	iP	10 17 12.4
	Ud	iP	10 17 44.9
" 10	Um	iSgl	12 08 34.8
" 10	Up	iSgl	14 20 26.6
	Sk	iSgl	14 20 31.9
	Ud	iSgl	14 19 24.3

Coast of south Norway, 58.2°N, 6.6°E.
Origin time = 14 17 22.
M_L = 2.8 (Sk,Ud).
By combination with Bergen readings.

" 10	Up	iPKP	23 00 00.8

(cont.)

1977
Feb. 10 (cont.)

Ki	iPKP		23 00 16.4	
			micr	sec
	Mx	N	1.7	16
	Mx	Z	1.5	18
Sk	iPKP		23 00 06.3	
Um	iPKP		23 00 09.4	
Ud	iPKP		22 59 59.6	

South Sandwich Islands (h = N).

" 10	Up	iPKP1	23 24 49.9
		iPKP2	23 24 52.6
	Sk	iPKP1	23 24 42.7 C
	Um	iPKP1	23 24 37.3
	Ud	iPKP1	23 24 51.0 C
		iPKP2	23 24 55.1
	De	iPKP1	23 24 00.6

Kermadec Islands (h = 55 km).

" 10	Up	iPKP1	23 39 53.0
	Sk	iPKP1	23 39 45.9
		i	23 39 57.2
	Um	iPKP1	23 39 40.7
		i	23 39 52.2
	Ud	iPKP1	23 39 54.6
	De	iPKP1	23 40 03.3

Kermadec Islands (h = 50 km).

" 10	Up	iPKP1	23 46 51.3
	Sk	iPKP1	23 46 40.7
	Um	iPKP1	23 46 36.8
	Ud	iPKP1	23 46 53.3
	De	iPKP1	23 47 01.6

Kermadec Islands.

" 11	Ud	iP	04 48 16.3
		i	04 48 21.3
" 11	Up	iPKP1	11 20 34.6
	Sk	iPKP1	11 20 27.3
	Um	iPKP1	11 20 21.9
		i	11 20 33.3
	Ud	iPKP1	11 20 35.6

Kermadec Islands (h = 55 km).

" 11	Up	iPKP1	11 32 22.4
		i	11 32 32.6
	Sk	iPKP1	11 32 12.3
		i	11 32 25.0
	Um	iPKP1	11 32 08.4
	Ud	iPKP1	11 32 24.3
		i	11 32 33.3

Kermadec Islands (h = 70 km).

" 11	Um	iP	20 33 08.7

Molucca Sea (h = 70 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Feb.	11	Ud	iP	21 43 25.8	
"	11	Up	eP	21 45 16	
		Ki	eP	21 46 19	
		Um	iP	21 45 47.7	
		Ud	iP	21 45 21.3	
		Crete (h = N).			
"	11	Ki	eP	22 07 45	
		Sk	iP	22 07 06.2	
		Um	iP	22 07 36.8	
			i	22 07 43.3	
		Ud	eP	22 07 08	
		North Atlantic Ocean (h = N).			
"	12	Um	iP	02 35 05.4	
		Japan (h = 40 km).			
"	12	Up	iP	04 56 48.4	C
			ipP	04 57 11.5	
				micr sec	
			P Z'	0.2 0.9	
		Ki	iP	04 56 55.5	C
			ipP	04 57 18.7	
				micr sec	
			P Z'	0.1 1.0	
		Sk	iP	04 57 13.7	C
			ipP	04 57 37.5	
		Um	iP	04 56 46.5	C
			i	04 57 08.3	
		Ud	iP	04 57 04.8	C
			ipP	04 57 28.8	
			i	04 57 37.8	
		De	iP	04 57 01.3	C
			i	04 57 34.5	
		Afghanistan-USSR.			
		h = 100 km (Up,Ki,Sk,Um,Ud).			
		m = 5.8 (Up,Ki).			
"	12	Ud	iPKPl	13 05 16.2	
		De	iPKPl	13 05 26.7	
"	12	Ud	iP	20 13 33.3	
		De	eP	20 13 17	
		Iran (h = 40 km).			
"	13	Up	iP	04 19 04.6	
		Ki	iP	04 18 45.8	
		Sk	eP	04 19 12	
		Um	iP	04 18 52.4	
		Ud	iP	04 19 14.0	
		Luzon (h = 45 km).			
"	13	Up	iP	04 19 31.9	
			iS	04 29 47	
				micr sec	
			P Z'	0.3 1.3	
		(cont.)			

1977					
Feb.	13	(cont.)			
		Up		micr	sec
			Mx E	2.0	15
			Mx N	4.0	16
			Mx Z	3.0	15
		Ki	iP	04 19 14.5	
				micr	sec
			P Z'	0.3	1.2
			Mx E	1.7	12
			Mx N	1.6	13
			Mx Z	2.2	12
		Sk	iP	04 19 39.0	
		Um	iP	04 19 20.1	
			iS	04 29 22	
		Ud	iP	04 19 41.9	
		De	iP	04 19 47.5	
		Luzon (h = N).			
		m = 6.2, M = 5.8 (Up,Ki).			
"	13	Um	iP	05 01 06.3	
		Ud	eP	05 01 26	
"	13	Up	iPKPl	05 41 36.5	
		Sk	ePKPl	05 41 28	
		Um	iPKPl	05 41 22.3	
		Ud	iPKPl	05 41 38.9	
"	13	Up	iPKPl	05 44 42.3	
		Sk	iPKPl	05 44 34.0	
		Um	iPKPl	05 44 30.4	
		Ud	iPKPl	05 44 44.4	
"	13	Up	iP	06 01 49.7	
		Sk	iP	06 01 32.8	
		Um	iP	06 01 21.3	
		Ud	iP	06 01 52.5	
		Kamchatka (h = 170 km).			
"	13	Up	iP	11 06 49.3	
		Ki	eP	11 06 02	
		Um	iP	11 06 24.5	
		Ud	iP	11 06 55.5	
		Kurile Islands (h = N).			
"	13	Up	iP	13 20 27.5	
				micr	sec
			Mx N	1.4	26
		Ki	iP	13 20 13.2	C
				micr	sec
			P Z'	0.1	1.0
			Mx E	1.4	17
			Mx N	1.2	18
			Mx Z	1.2	18
		Sk	iP	13 20 33.5	
		Um	iP	13 20 17.7	
		Ud	iP	13 20 36.0	
		De	iP	13 20 39.6	
		Molucca Sea (h = N).			
		M = 5.5 (Up,Ki).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Feb.	13	Ki	iP		13 23 13.7	
		Um	iP		13 23 24.9	
		Ud	iP		13 23 20.7	
"	13	Ki	iPn		15 11 18.3	
			eSn		15 13 29	
		Sk	iSn		15 13 28.1	
		Um	iSn		15 14 18.8	
		Ud	iP		15 12 03.6	
		Jan Mayen (h = N).				
"	13	Um	iP		17 46 10.7	
		Japan (h = 50 km).				
"	13	Um	iP		19 07 04.5	
"	14	Up	iP		00 30 47.3	D
			i		00 30 50.9	
			iPP		00 32 28.8	
					micr sec	
			i	Z'	0.1 1.0	
		Ki	iP		00 30 54.8	D
			i		00 30 59.1	
					micr sec	
			P	Z'	0.1 0.6	
			i	Z'	0.1 1.0	
		Sk	iP		00 31 11.7	
		Um	iP		00 30 45.1	D
			i		00 30 49.8	
		Ud	iP		00 31 03.0	D
			i		00 31 07.3	
		De	eP		00 31 00	
		Pakistan (h = N).				
		m = 5.7 (Up,Ki).				
"	14	Um	iP		05 39 09.5	
		Ud	iP		05 38 15.1	
		De	eP		05 37 59	
		Iran (h = N).				
"	14	Up	iP		09 19 52.3	
		Ki	iP		09 19 14.1	
		Um	iP		09 19 30.7	
		Ud	iP		09 19 59.7	
		Japan (h = 80 km).				
"	14	Um	iP		13 37 21.9	
		Ud	iP		13 37 43.4	
		Luzon (h = 45 km).				
"	15	Ud	i(P)		12 21 18.4	
"	15	Up	iP		22 00 14.1	
		(cont.)				

1977 Feb.	15	(cont.)				
		Ki	iP		21 59 55.6	
		Sk	iP		22 00 18.4	
		Um	iP		22 00 01.8	
		Ud	iP		22 00 20.6	
		Mindanao (h = 70 km).				
"	15	Ud	ePKPl		23 00 18	
		De	ePKPl		23 00 29	
		Tonga Islands (h = 90 km).				
"	16	Up	iP		00 57 46.8	C
					micr sec	
			P	Z'	0.2 0.8	
			Mx	Z	1.5 18	
		Ki	iP		00 58 26.5	C
					micr sec	
			P	Z'	0.3 1.1	
		Sk	iP		00 57 46.5	C
		Um	iP		00 58 10.3	C
		Ud	iP		00 57 34.2	C
		De	iP		00 57 20.1	C
		North Atlantic Ocean (h = N).				
		m = 6.1 (Up,Ki).				
"	16	Ki	iP		01 18 09.4	
		Um	iP		01 18 21.5	
		Ud	iP		01 18 44.3	
		Mariana Islands (h = 270 km).				
"	16	Ki	iP		02 47 20.8	
		Um	iP		02 48 09.5	
			i		02 48 16.5	
		Ud	iP		02 48 49.3	
		North of Svalbard (h = N).				
"	16	Ki	iP		06 43 24.0	
		Um	iP		06 43 34.5	
		South of Mariana Islands (h = 50 km).				
"	16	Up	iP		10 53 56.4	C
			i		10 54 02.0	
			i		10 54 14.8	
			iSKS		11 04 32	
					micr sec	
			P	Z'	0.1 1.2	
			i	Z'	0.1 1.0	
			Mx	E	1.9 20	
			Mx	N	1.8 20	
			Mx	Z	4.7 23	
		Ki	iP		10 53 41.6	C
			i		10 54 00.9	
		cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 16 (cont.)

Ki	iPKKP		11 10 35.1		
			micr	sec	
	P	Z'	0.2	1.3	
	Mx	E	1.7	19	
	Mx	N	2.8	20	
	Mx	Z	2.4	20	
Sk	iP		10 54 01.9		C
	i		10 54 20.0		
Um	iP		10 53 46.6		C
	iSKS		11 04 21		
	iPKKP		11 10 32.2		
Ud	iP		10 54 05.0		C
	i		10 54 10.6		
	i		10 54 22.6		
	iPKKP		11 10 21.2		
De	iP		10 54 10.3		

Molucca Passage (h = N).
m = 6.3, M = 5.8 (Up,Ki).

" 16 Um iP 12 38 55.8
Ud iP 12 39 28.1
Japan (h = 200 km).

" 16 Ud i(P) 15 32 17.6

" 16 Um iP 16 38 03.5
Ud iP 16 38 29.7
Aleutian Islands (h = 30 km).

" 16 Um eP 19 38 23
Yugoslavia (h = 15 km).

" 16 Ki eP 20 02 59
Um iP 20 02 52.5
Ud eP 20 03 14
Tadzhik-Sinkiang (h = N).

" 16 Um iP 20 28 00.1
Ud iP 20 27 29.5

" 17 Up iP 00 05 32.8
Um iP 00 05 18.5
Ud iP 00 05 47.8
De eP 00 05 52

" 17 Up eP 03 22 28
Ud iP 03 22 33.7
De iP 03 21 59.5
Mediterranean Sea (h = N).

" 17 De i(P) 12 52 53.1

1977
Feb. 17

Up	iP		13 42 26.1		
Ki	iP		13 41 28.7		
			micr	sec	
	P	Z'	0.1	0.9	
Sk	iP		13 42 07.0		
Um	iP		13 41 55.9		
Ud	iP		13 42 28.7		C
De	iP		13 42 52.1		

Kamchatka (h = N).

" 17 Up iP 16 39 00.5
Um iP 16 38 49.0
Yunnan, China (h = N).

" 17 Um iP 19 08 02.5
Afghanistan-USSR (h = 60 km).

" 18 Up iP 00 14 19.7
Um eP 00 14 37
Ud iP 00 14 34.9
De iP 00 14 14.4
Turkey (h = N).

" 18 Um iP 00 20 19.1
Ud iP 00 20 39.7

" 18 Up ePKPl 02 16 17
Um ePKP 02 16 10
Ud iPKPl 02 16 17.3
De iPKPl 02 16 28.0
Tonga-Kermadec Islands
(h = 35 km).

" 18 Ud i(P) 02 59 29.1

" 18 Ud i(P) 03 45 15.5

" 18 Up iPl 04 19 16.9
iP2 04 19 21.8

			micr	sec
	P2	Z'	0.1	1.0
	Mx	E	2.1	22
	Mx	N	3.0	21
	Mx	Z	5.1	22
Ki	iPl		04 18 34.5	
	iP2		04 18 39.4	
			micr	sec
	P2	Z'	0.1	1.0
	Mx	E	1.8	18
	Mx	N	3.5	18
	Mx	Z	2.1	16
Sk	iP2		04 19 14.0	
Um	iP2		04 18 58.1	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 18 (cont.)

Um	iS	04 27 36
Ud	iP1	04 19 24.1
	iP2	04 19 29.0
De	iP1	04 19 39.6
	iP2	04 19 44.7

Japan (h = 5 km).
m = 6.0, M = 5.6 (Up,Ki).
Double P small and large, about 4.9 sec apart.
Arrival times of the second larger P-phases, denoted P2 fit the NEIS solution.

" 18

Up	iPKP1	06 50 40.8
Ud	iPKP1	06 50 42.8
De	iPKP1	06 50 53.8

Tonga-Kermadec Islands (h = 120 km).

" 18

Um	iP	14 25 48.4
Ud	iP	14 25 20.5
	i	14 25 28.6

Atlantic Ocean (h = N).

" 18

Up	iPKP1	18 15 14.8
	i	18 15 23.5
Ki	iPKP1	18 14 55.4
	i	18 15 03.0
Sk	iPKP1	18 15 08.3
	ipPKP1	18 15 12.3
Um	iPKP1	18 15 02.6
	ipPKP1	18 15 07.4
Ud	iPKP1	18 15 16.2
	iP	18 15 21.0
De	iPKP1	18 15 24.8
	ipPKP1	18 15 29.3

Kermadec Islands.
h = 15 km (Sk,Um,Ud,De).

" 18

Up	iP		21 03 14.7	D
	iS		21 12 52.8	
			micr	sec
	P	Z'	1.1	1.5
	Mx	E	6.7	26
	Mx	N	3.5	18
	Mx	Z	7.7	24
Ki	iP		21 02 38.1	D
	iS		21 11 43	
			micr	sec
	P	Z'	1.1	2.1
	Mx	E	4.2	15
	Mx	N	6.7	16
	Mx	Z	5.5	16

(cont.)

1977
Feb. 18 (cont.)

Sk	iP	21 03 09.7	D
Um	iP	21 02 53.8	D
	iS	21 12 14.6	
Ud	iP	21 03 22.0	D
	iS	21 13 07.2	
De	iP	21 03 36.1	

Japan (h = 40 km).
m = 6.6, M = 6.0 (Up,Ki).

" 19

Ki	eP	02 25 18
Um	iP	02 25 27.6
Ud	iP	02 25 48.7

Philippine Islands (h = N).

" 19

Up	iP	04 14 08.5
Ki	iP	04 13 31.7
Sk	eP	04 14 04
Um	iP	04 13 47.4
Ud	iP	04 14 15.5

Japan (h = 50 km).

" 19

Ki	iP	06 00 47.8
Um	iP	06 01 12.6
Ud	iP	06 01 44.2

Kamchatka (h = 25 km).

" 19

Up	iP		06 24 05.0	
	i		06 24 08.0	
			micr	sec
	i	Z'	0.3	1.4
Ki	iP		06 24 09.1	
	i		06 24 10.6	
			micr	sec
	i	Z'	0.2	1.2
Sk	eP		06 24 29	
Um	eP		06 24 02	
	i		06 24 03.1	
Ud	iP		06 24 21.1	
	i		06 24 23.7	
De	eP		06 24 19	

Tibet-India (h = 40 km).
m = 6.0 (Up,Ki).

" 19

Ki	iP	06 48 29.0
Um	iP	06 48 21.2

Tibet-India (h = N).

" 19

Up	Mx		08 56	
			micr	sec
	Mx	N	2.4	22
Ki	Mx		09 00	
			micr	sec
	Mx	E	2.0	21

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 19 (cont.)

Ki			micr	sec
	Mx	N	2.3	19
	Mx	Z	2.4	20

Mid-Indian Ocean (h = N).
M = 5.8 (Up,Ki).

"	19	Up	iPgl	09	59 53.2
			iSgl	10	00 38.8
		Sk	eSgl	10	00 02
		Um	iSgl	10	01 26.1
		Ud	iPgl	09	59 18.8
			iSgl	09	59 42.1
		De	iSgl	10	01 13.7

Southeast Norway, 61.2°N, 11.0°E.
Origin time = 09 58 49.
M_L = 2.5 (Up,Um,Ud,De).

"	19	Up	iP	10	46 06.2
		Ki	iP	10	46 07.9
		Um	iP	10	46 03.1
		Ud	iP	10	46 18.0

Nicobar Islands (h = N).

"	19	Up	iP	13	01 21.4
		Um	iP	13	01 44.8
		Ud	iP	13	01 43.6
"	19	Ki	eP	14	11 29
		Um	iP	14	11 42.1
"	19	Ki	eP	17	45 42
		Um	iP	17	45 19.1
		Ud	iP	17	45 20.8
		De	iP	17	45 04.0

Iran (h = 15 km).

"	19	Up	iP		22	44 38.8
			i		22	44 40.5
			i		22	44 45.5
			iS		22	53 22.2
					micr	sec
			i	Z'	0.2	0.9
			i	Z'	2.3	1.3
			Mx	E	39	17
			Mx	N	57	20
			Mx	Z	80	21
		Ki	iP		22	43 44.9
			i		22	43 46.4
			i		22	43 51.3
			iS		22	51 39
					micr	sec
			i	Z'	1.1	1.8

(cont.)

1977
Feb. 19 (cont.)

Ki			micr	sec
	i	Z'	2.6	1.5
	Mx	E	30	18
	Mx	N	37	17
	Mx	Z	43	19
Sk	iP		22	44 19.6
	i		22	44 21.3
	i		22	44 26.3
	iS		22	52 43.3
Um	iP		22	44 10.4
	i		22	44 12.1
	i		22	44 17.1
	iS		22	52 32.6
	iP'P'		23	13 25.6
Ud	iP		22	44 40.2
	i		22	44 42.2
	i		22	44 46.7
	iS		22	53 27.9
De	iP		22	45 03.0
	i		22	45 04.5
	i		22	45 10.1

Aleutian Islands (h = N).
m = 7.1, M = 6.8 (Up,Ki).
Multiple event with successively increasing amplitudes.

"	19	Up	iP	22	58 17.3
			ipP	22	58 26.0
				micr	sec
			pP Z'	0.1	1.0
		Ki	iP	22	57 22.3
			ipP	22	57 31.5
				micr	sec
			pP Z'	0.1	1.0
		Sk	eP	22	57 59
		Um	iP	22	57 48.7
			ipP	22	57 57.7
		Ud	iP	22	58 19.7
			ipP	22	58 28.3

Aleutian Islands.
h = 30 km (Up,Ki,Um,Ud).

"	19	Up	iP	23	52 03.0
			ipP	23	52 07.8
				micr	sec
			P Z'	0.1	0.9
			pP Z'	0.2	1.1
		Ki	iP	23	52 00.9
			ipP	23	52 05.5
		Sk	iP	23	52 23.4
			ipP	23	52 28.2
		Um	iP	23	51 55.8

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 19 (cont.)

Um	ipP	23 52 00.4
Ud	iP	23 52 18.7
	ipP	23 52 23.0
De	iP	23 52 18.5

Tibet.
h = 15 km (Up,Ki,Sk,Um,Ud).

" 20 Ud iP 01 54 21.5
Tibet (h = N).

" 20

Ki	iP	06 59 27.7
Um	iP	06 59 32.6

Banda Sea (h = 190 km).

" 20

Up	iP	07 12 44.5
Ki	iP	07 11 49.3 C
Sk	iP	07 12 17.6
Um	iP	07 12 18.2
Ud	iP	07 12 41.2
De	eP	07 13 06

Kodiak Island (h = 50 km).

" 20

Ki	iP	08 10 41.4
Um	iP	08 11 06.8
Ud	iP	08 11 37.6

Aleutian Islands (h = 40 km).

" 20 Ud eP 09 19 06

" 20

Ki	iP	22 39 33.2
Um	iP	22 39 39.9
Ud	iP	22 39 57.5

Mindanao (h = 120 km).

" 21

Ki	iP	00 35 45.0
Um	iP	00 35 51.7
Ud	iP	00 36 20.0

" 21

Ki	eP	03 19 35
Ud	iP	03 19 17.6

" 21

Ki	iP	13 08 37.1
Um	iP	13 08 07.7
Ud	iP	13 08 01.4
De	iP	13 07 42.0

Turkey (h = N).

" 21

Um	iPKP1	15 15 17.0
Ud	iPKP1	15 15 30.6

" 21

Up	iP	17 49 10.7
	i	17 49 17.4
Ki	iP	17 50 24.0

(cont.)

1977
Feb. 21 (cont.)

Sk	iP	17 49 50.1
	i	17 49 58.6
Ud	iP	17 49 16.8
	i	17 49 23.6
De	iP	17 48 41.5

Ionian Sea (h = 55 km).

" 21 Ki eP 18 00 22
Venezuela (h = 20 km).

" 21

Up	iP		20 12 25.3	
			micr	sec
	P	Z'	0.1	1.0
Ki	iP		20 11 31.0	C
	ipP		20 12 09.3	
			micr	sec
	P	Z'	0.1	1.0
Sk	iP		20 12 00.2	
Um	iP		20 11 58.2	C
	ipP		20 12 41.7	
Ud	iP		20 12 23.6	
	ipP		20 13 02.9	
De	iP		20 12 46.9	C

Alaska Peninsula.
h = 180 km (Ki,Um,Ud).
m = 5.6 (Up,Ki).

" 22

Ki	iP	01 42 48.0
Um	iP	01 43 11.8
Ud	iP	01 43 45.7

Kamchatka (h = 100 km).

" 22

Um	iPKP	03 18 53.5
Ud	ePKP	03 18 50

South Sandwich Islands (h = N).

" 22 Ud iP 04 42 04.4

" 22 Ud iP 06 35 44.7
California-Nevada (h = 5 km).

" 22 Ud i(P) 07 55 06.9

" 22 Ud i(P) 08 46 27.6

" 22 Ki iP 09 26 27.0
West Irian (h = 40 km).
The P-arrival is about 12 sec early compared with the NEIS solution.

" 22 De i(P) 14 35 08.9

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 22 Up Mx 15 27
micr sec
Mx E 1.5 20
Mx N 1.1 20
Mx Z 2.1 19
Ki Mx 15 26
micr sec
Mx E 0.7 15
Mx N 0.7 16
Chile (h = N).
M = 5.7 (Up,Ki).

" 22 Ud eP 17 52 27
Talaud Islands (h = 55 km).

" 22 Up iP 19 57 02.6
micr sec
P Z' 0.1 1.5
Ki iP 19 57 23.7
micr sec
P Z' 0.1 1.0
Sk iP 19 56 50.6
Um iP 19 57 16.5 D
Ud iP 19 56 46.7
De iP 19 56 42.1
North Atlantic Ocean (h = N).
m = 5.6 (Up,Ki).

" 22 Ki iP 20 02 25.2
Um iP 20 02 18.4

" 23 Um iPKP 00 26 26.9
i 00 26 43.9
Ud i 00 26 47.2
Tonga Islands (h = N).

" 23 Ki iPKP 00 40 52.1
Um i(PKP) 00 40 53.9
iPKP 00 40 59.6
iSKPl 00 43 36.4
Ud iPKPl 00 40 01.6
iSKPl 00 43 47.9
De iPKPl 00 41 12.8 C
iSKPl 00 43 58.0
Tonga-Kermadec Islands
(h = 640 km).

" 23 Um iP 01 47 07.4
Japan (h = 40 km).

" 23 Up iP 06 42 34.5
Ki iP 06 43 04.6
Um iP 06 42 53.4
Ud eP 06 42 18
Azores Islands (h = N).

1977
Feb. 23 Um eP 08 15 57
Ud iP 08 16 16.3
Luzon (h = N).

" 23 Um ipP 10 47 11.7
Ud iP 10 47 24.9
De ipP 10 47 42.8
Philippine Islands (h = 50 km).

" 23 Up iP 12 49 27.0
Ki iP 12 49 03.4
Um iP 12 49 14.4
Ud iP 12 49 38.0
De iP 12 49 43.1
Luzon (h = 70 km).

" 23 Up iP 14 18 48.2
Ki iP 14 19 30.6
Um iP 14 19 04.4
Ud iP 14 19 03.8
De iP 14 18 45.1
Iran-Iraq (h = N).

" 23 Ki iP 18 16 09.3
Um iP 18 16 19.9
South of Mariana Islands
(h = N).

" 23 Up iP 19 48 35.2
Ki iP 19 48 22.7
Um iP 19 48 31.9
ipP 19 49 08.4
Ud iP 19 48 25.4
Mexico.
h = 150 km (Um).

" 23 Um iPKP 20 06 09.4
South Sandwich Islands
(h = N).

" 23 Up iP 20 26 16.2 C
Ki iP 20 27 28.5
Sk iP 20 26 55.2
Um iP 20 26 52.0
Ud iP 20 26 22.9
De iP 20 25 47.2
Greece (h = 80 km).

" 23 Up iP 20 57 40.3
Um iP 20 57 27.3
Ud iP 20 57 50.3
Luzon (h = 130 km).

" 23 Um iP 21 27 20.6
South of Mariana Islands
(h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Feb.	23	Ud	iP		21 58 16.5	
"	24	Ud	iP		07 25 05.7	
		Peru-Brazil (h = 140 km).				
"	24	Up	iP		09 02 59.3	
			iS		09 12 44	
					micr	sec
			Mx	E	2.0	21
			Mx	N	2.8	22
			Mx	Z	3.8	23
		Ki	eP		09 03 40	
					micr	sec
			Mx	E	3.0	23
			Mx	N	2.2	22
			Mx	Z	1.7	22
		Um	iP		09 03 22.3	
			iS		09 13 27	
		Ud	iP		09 02 54.6	
		De	iP		09 02 36.7	
		Ascension Island (h = N).				
		M = 5.7 (Up,Ki).				
"	24	Ki	eP		11 47 02	
		Um	iP		11 47 21.2	
			i		11 47 30.4	
		Sea of Japan (h = 30 km).				
"	24	Up	iP		11 50 54.9	
			ipP		11 51 09.7	
					micr	sec
			P	Z'	0.1	1.0
			pP	Z'	0.1	1.0
		Ki	iP		11 50 11.0	
			ipP		11 50 27.2	
					micr	sec
			pP	Z'	0.1	1.0
			Mx	E	1.8	22
			Mx	N	1.2	21
		Sk	iP		11 50 46.7	
			ipP		11 51 02.2	
		Um	iP		11 50 30.5	
			ipP		11 50 46.1	
		Ud	iP		11 51 01.3	
			ipP		11 51 17.7	
		De	iP		11 51 18.4	
		Japan.				
		h = 60 km (Up,Ki,Sk,Um,Ud).				
		m = 5.8 (Up,Ki).				
"	24	Ud	i(P)		12 20 29.4	
"	24	Ud	eP		16 17 44	
		Dodecanese Islands (h = N).				

1977 Feb.	24	Up	iP		16 48 25.8	
		Ki	iP		16 47 38.2	
		Um	iP		16 47 59.2	
		Ud	iP		16 48 30.4	
		Kurile Islands (h = 45 km).				
"	24	Ud	i(P)		18 16 54.6	
"	24	Um	iP		18 23 25.5	
		Ud	iP		18 23 47.3	
			i		18 24 36.0	
"	24	Up	iP		20 52 13.0	
			iS		20 56 22	
					micr	sec
			P	Z'	0.2	1.5
			Mx	E	3.5	17
			Mx	N	2.1	15
			Mx	Z	1.5	11
		Ki	iP		20 53 22.9	
					micr	sec
			P	Z'	0.1	1.2
			Mx	E	1.7	10
			Mx	N	0.8	12
			Mx	Z	1.0	10
		Sk	iP		20 52 55.7	
		Um	iP		20 52 46.6	
			iS		20 57 25	
		Ud	iP		20 52 23.9	
		De	iP		20 51 51.5	
		Turkey (h = 45 km).				
		m = 5.4, M = 5.0 (Up,Ki).				
"	24	Ud	iPKPl		22 23 08.7	
		De	iPKPl		22 23 19.8	
		Fiji Islands (h = 600 km).				
"	25	Ud	iP		00 22 27.8	
"	25	Up			micr	sec
			Mx	E	5.1	22
			Mx	N	3.9	24
			Mx	Z	4.4	23
		Ki			micr	sec
			Mx	E	2.3	22
			Mx	N	2.6	22
			Mx	Z	5.0	24
		Um	iPKP		01 37 22.2	
		Ud	ePKP		01 37 28	
		De	ePKP		01 37 34	
		New Guinea (h = 50 km).				
		M = 6.0 (Up,Ki).				
"	25	Um	iP		01 40 57.4	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Feb.	25	Um	iP	02 03 07.5
"	25	Up	iP	04 43 58.4
		Ki	iP	04 44 39.1
		Sk	iP	04 44 35.5
		Um	iP	04 44 13.5
		Ud	iP	04 44 14.1 C
		De	iP	04 43 57.2 C
			i	04 44 03.0
		Iran (h = 70 km).		
"	25	Up	iP	06 13 26.2
		Ki	iP	06 13 13.1
		Um	iP	06 13 15.0
		Ud	eP	06 13 38
		Szechwan, China (h = N).		
"	25	Up	iPKPl	07 57 07.9
		Ud	iPKPl	07 57 08.1
"	25	Up	iP	08 13 22.8
"	26	Up	iPKPl	03 43 10.9
		Ud	iPKPl	03 43 12.6
"	26	Ki	iP	09 19 38.9
		Um	iP	09 19 47.6
		Ud	iP	09 20 12.7
		Ryukyu Islands (h = 40 km).		
"	26	Um	iP	19 28 57.1
		Ud	iP	19 28 42.0
"	26	Up	iP	22 51 30.8
			i	22 51 42.3
		Ki	iP	22 52 15.7
		Um	iP	22 51 57.4
			i	22 52 09.0
		Ud	iP	22 51 18.7
			i	22 51 30.8
		De	iP	22 51 02.3
		Canary Islands (h = 10 km).		
"	27	Up	iP	00 03 10.2
		Um	iP	00 03 06.7
		Ud	iP	00 03 27.0
"	27	Um	iP	00 16 15.0
		Kurile Islands (h = 70 km).		
"	27	Ki	iP	04 10 57.3
		Um	iP	04 10 46.2
		Azores Islands (h = N).		

1977				
Feb.	27	Up	iP	08 43 13.5
		Ki	iP	08 43 12.5
				micr sec
			P Z'	0.1 1.0
		Um	iP	08 43 10.7
		Ud	iP	08 43 23.1
		Sunda Strait (h = 60 km).		
"	27	Up	iP	09 29 27.4 D
			iPP	09 31 01.1
				micr sec
			P Z'	0.1 0.9
		Ki	iP	09 29 32.1 D
				micr sec
			P Z'	0.1 0.9
		Sk	iP	09 29 51.5 D
			iPP	09 31 32.9
		Um	iP	09 29 23.7 D
		Ud	iP	09 29 43.8 D
			iPP	09 31 18.6
		De	iP	09 29 41.8 D
			iPP	09 31 18.6
		Tadzhik SSR (h = 110 km).		
		m = 5.6 (Up,Ki).		
"	27	Um	iP	12 37 55.3
		Ud	iP	12 38 27.1
		Kamchatka (h = 45 km).		
"	27	Ud	iP	13 18 37.7
"	27	Um	iP	13 39 33.7
"	27	Ud	iP	15 03 25.9
"	27	Um	iP	15 43 08.2
		Ud	iP	15 43 38.7
		Japan (h = 80 km).		
"	27	Ki	eP	16 32 04
			i	16 32 17.2
		Um	iP	16 32 30.7
			i	16 32 43.7
		Ud	iP	16 32 55.6
			i	16 33 08.7
		Aleutian Islands (h = N).		
"	27	Up	iP	18 46 10.5
				micr sec
			P Z'	0.1 1.4
		Ki	iP	18 45 43.0 D
				micr sec
			P Z'	0.2 1.4
		Sk	eP	18 46 08
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Feb. 27 (cont.)

Um	iP		18 45 53.9	D
Ud	iP		18 46 16.3	

Mariana Islands (h = 580 km).
m = 5.6 (Up,Ki).

" 28	Um	iP		01 45 10.3
		il		01 45 16.3
	Ud	il		01 45 03.6

South of Panama (h = N).

" 28	Up	iP		02 03 30.0 C
				micr sec
		P	Z'	0.1 1.0
	Ki	iP		02 03 12.4 C
				micr sec
		P	Z'	0.1 0.9
	Sk	iP		02 03 34.6
	Um	iP		02 03 18.5 C
	Ud	iP		02 03 38.1 C
	De	iP		02 03 44.5

Mindanao (h = 60 km).
m = 6.1 (Up,Ki).

" 28	Up	iP	02 38 19.3
	Ki	iP	02 37 48.2
	Um	iP	02 37 58.6
	Ud	eP	02 38 19

" 28	Up	iP	08 53 06.6
	Ki	iP	08 53 42.1
	Sk	eP	08 53 39
	Um	iP	08 53 20.1
	Ud	iP	08 53 18.5
	De	iP	08 53 02.6

Arabian Sea (h = N).

" 28	Up	iPKP	12 59 12.0
	Ud	iPKP	12 59 16.7
		i	12 59 26.1
	De	iPKP	12 59 28.3

" 28	Up	iP		17 44 18.6
		iS		17 51 44
				micr sec
		P	Z'	0.1 0.6
	Ki	eP		17 44 54
				micr sec
		P	Z'	0.1 1.0
	Um	iP		17 44 32.4
	Ud	iP		17 44 30.8
	De	iP		17 44 14.8

Arabian Sea (h = N).
m = 5.9 (Up,Ki).

1977
Feb. 28

Up	iP	18 01 54.0
Um	iP	18 01 27.8
Ud	iP	18 01 59.3

Kurile Islands (h = 10 km).

November 15, 1978

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BOX 517
751 20 UPPSALA 1
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BOX 517
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S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

M A R C H 1 - 31, 1977

1977				
Mar.	1	Up	iP	00 48 07.4
			i	00 48 15.6
		Ki	eP	00 47 49
		Um	iP	00 47 55.6 C
		Ud	iP	00 48 14.8
			ipP	00 48 24.4
		Mindanao (h = 45 km).		
"	1	Up	iP	01 56 06.3
		Ki	i	01 56 35.1
		Um	iP	01 56 15.4
		Ud	iP	01 56 16.5
		Mid-Indian Ocean (h = N).		
"	1	Ud	i(P)	08 49 13.5
"	1	Ki	iP	20 50 11.5 C
			ipP	20 50 15.7
		Um	iP	20 50 14.4
		Colombia (h = 23 km).		
"	2	Up	iPKPl	00 15 43.8
		Ud	iPKPl	00 15 46.3 C
		De	iPKPl	00 15 56.8
		Tonga-Kermadec Islands (h = 480 km).		
"	2	Ud	i(P)	01 38 04.4
"	2	Um	iP	09 57 36.4
		Sumatra (h = N).		
"	2	Up	iP	10 06 27.1 C
			ipP	10 06 42.4
			iPP	10 10 10.5
			iSKS	10 16 56
			iS	10 17 30
				micr sec
			P Z'	0.5 1.4
		(cont.)		

1977				
Mar.	2	(cont.)		
		Up		micr sec
			pP Z'	0.9 1.5
			Mx E	7.4 17
			Mx N	8.4 17
			Mx Z	13 18
		Ki	iP	10 06 11.6 C
			ipP	10 06 26.9
			iPP	10 09 47.7
			iS	10 16 58
				micr sec
			P Z'	0.6 1.5
			pP Z'	2.6 2.3
			Mx E	9.7 18
			Mx N	8.7 17
			Mx Z	8.5 19
		Sk	iP	10 06 32.6 C
			ipP	10 06 48.3
		Um	iP	10 06 16.4 C
			ipP	10 06 32.4
			ePP	10 09 57
			iSKS	10 16 42
			iS	10 17 05
		Ud	iP	10 06 35.6
			ipP	10 06 50.7
			iPP	10 10 29.0
		De	iP	10 06 41.1 C
			ipP	10 06 56.4
			i(PP)	10 10 06.5
			iPP	10 10 44.8
		Mindanao. h = 55 km (Up,Ki,Sk,Um, Ud,De). m = 6.7, M = 6.4 (Up,Ki).		
"	2	Ud	iP	12 03 43.5
"	2	Ki	i	14 48 09.1
		Um	iP	14 48 03.4
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 2 (cont.)

Ud	iP	14 48 21.0	

Mindanao (h = 80 km).

"	2	Um	iPgl	15 44 48.8
			iSgl	15 45 04.3
			i	15 45 07.9
			iRg	15 45 10.2

Regional, near-surface event.
Origin time = 15 44 28.

"	2	Up	iP	23 21 21.7
			ipP	23 21 34.2
		Ki	iP	23 20 27.9
			ipP	23 20 39.6
		Um	iP	23 20 51.0
		Ud	iP	23 21 25.5
			ipP	23 21 37.1

Kamchatka.
h = 40 km (Up,Ki,Ud).

"	3	Ud	i(P)	11 48 26.0
"	3	Um	i(PKP)	12 14 26.7
			iPKP	12 14 28.9
		De	iPKPl	12 14 40.6

Fiji Islands (h = 380 km).

"	3	Ud	i(P)	13 12 18.7
"	3	Ki	iP	14 02 22.2

Kurile Islands (h = 150 km).

"	3	Up	iPKP	20 06 22.6
		Ud	iPKP	20 06 25.0
		De	iPKP	20 06 34.5
"	4	Ki	iP	01 35 48.7
		Um	iP	01 36 02.6 C
		Ud	iP	01 36 28.0

Bonin Islands (h = 500 km).

"	4	Sk	eP	05 26 21
		Um	iP	05 26 37.5 C
		Ud	iP	05 26 05.9

Ascension Island (h = N).

"	4	Um	iP	06 57 29.7
		Ud	iP	06 57 03.5

Sakhalin Island (h = N).

"	4	Ud	i(P)	10 41 32.7
"	4	Up	i	11 14 23.4

(cont.)

1977
Mar. 4 (cont.)

Up	iSgl	11 14 34.2	
Sk	iSgl	11 13 43.1	
Um	iSgl	11 15 21.2	
Ud	iPn	11 12 14.6	
	i	11 13 23.5	
	iSgl	11 13 32.3	
De	iSgl	11 14 19.3	

Off coast of southwest Norway, near 60 1/4°N, 4 1/2°E.
Origin time = 11 11 10.
M_L = 2.9 (Up,Um,Ud).

"	4	Ki	iP	13 57 05.5
		Um	iP	13 57 31.5
		Ud	iP	13 58 00.1

Aleutian Islands (h = 10 km).

"	4	Up	iP		19 25 17.9 D
			i		19 25 20.2
			iS		19 28 00
					micr sec
			P	Z'	0.7 1.5
			i	Z'	4.2 0.8
			Mx	E	376 13
			Mx	N	382 12
		Ki	iP		19 26 43.1 D
			i		19 26 46.1
			iS		19 30 32
					micr sec
			P	Z'	0.2 0.5
			i	Z'	8.5 0.7
		Sk	iP		19 26 13.9
			i		19 26 16.4
		Um	iP		19 25 58.9 D
		Ud	iP		19 25 34.1
			i		19 25 36.4
		De	iP		19 24 54.9 D

Romania (h = 90 km).
Double P, small and large average separation 2.5 s.
Up surface wave ground amplitudes obtained from Wiechert.

"	4	Ki	iP		20 00 30.5
					micr sec
			P	Z'	0.1 1.0
		Sk	eP		20 00 48
		Um	iP		20 00 24.5
		Ud	iP		20 00 55.3
"	4	Um	iP		20 14 45.9
			i		20 14 53.1

North Atlantic Ocean (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Mar.	4	Up	iP		21 24 32.3
		Romania (h = 140 km).			
"	4	Up	iP		23 06 29.4
		Um	iP		23 06 24.9
		Ud	iP		23 06 45.4
		Afghanistan-USSR (h = 50 km).			
"	4	Um	iP		23 36 40.6
		West Irian (h = N).			
"	5	Up	iP		00 04 18.8
			i		00 04 26.1
			iS		00 07 04.7
					micr sec
			P	Z'	0.1 0.7
		Ki	iP		00 05 41.2
		Sk	e		00 05 24
		Um	iP		00 04 57.0
			i		00 05 02.6
		Ud	iP		00 04 35.8
			i		00 04 38.5
		De	iP		00 03 56.2
		Romania (h = 100 km).			
"	5	Up	iP		00 16 39.3
		Um	iP		00 17 15.6
		Ud	iP		00 16 57.2
"	5	Ki	ipP		06 22 00.9
		Alaska (h = 120 km).			
"	5	Up	iRg		09 48 58.3
		Ud	iSgl		09 48 38.5
			iRg		09 48 46.4
		Central Sweden.			
		Near-surface event.			
"	5	Um	iPKP		16 33 22.4
		Ud	iPKPl		16 33 28.0
		De	iPKPl		16 33 37.5
		Tonga-Kermadec Islands			
		(h = 600 km).			
"	5	Up	iP		20 46 16.6
		Ud	eP		20 46 25
"	5	Ud	iP		21 45 29.0
		Tibet (h = N).			
"	6	Ki	eP		05 37 39
"	6	Um	iP		12 09 07.0
		Mariana Islands (h = 50 km).			
"	7	Up	iP		00 39 00.4
		(cont.)			

1977					
Mar.	7	(cont.)			
		Up			micr sec
			Mx	E	2.5 11
			Mx	N	4.2 12
			Mx	Z	3.9 11
		Ki	iP		00 38 27.3
					micr sec
			P	Z'	0.2 1.5
			Mx	E	2.2 10
			Mx	N	2.6 11
			Mx	Z	1.6 10
		Um	iP		00 38 40.1 C
		Ud	iP		00 39 11.7
		De	iP		00 39 26.6
		China (h = N).			
		M = 5.8 (Up,Ki).			
"	7	Sk	iP		01 08 59.7
"	7	Ud	iP		04 56 42.4
		Galapagos Islands (h = N).			
"	7	Um	iP		07 12 00.7
		Ud	iP		07 12 24.4
		Mariana Islands (h = 120 km).			
"	7	De	iPg		08 20 01.8
		Germany (h = N).			
"	7	Up	iP		09 23 31.7 C
			i		09 23 55.4
					micr sec
			P	Z'	0.2 0.8
		Ki	iP		09 22 47.5
					micr sec
			P	Z'	0.1 0.8
		Sk	iP		09 23 22.3
		Um	iP		09 23 06.9 C
		Ud	iP		09 23 38.1 C
			i		09 24 03.0
		De	iP		09 23 54.4
		Japan (h = 25 km).			
		m = 6.1 (Up,Ki).			
"	7	Up	eP		10 50 05
		Ki	iP		10 50 36.5
					micr sec
			P	Z'	0.2 1.5
		Um	iP		10 50 24.2
		Ud	iP		10 49 54.6
		Atlantic Ocean (h = N).			
"	7	Ki	iP		14 00 40.8
		Sk	iP		14 00 58.8
		Um	iP		14 00 42.6
		Ud	iP		14 01 00.2
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 7 (cont.)

De	eP	14 01 06	

Celebes Sea (h = 60 km).

" 7	Up	iSgl	14 27 58.9
	Sk	iSgl	14 28 06.7
	Ud	iPgl	14 26 04.3
		iSgl	14 26 59.9

Coast of south Norway,
58.2°N, 6.2°E.
Origin time = 14 24 50.
M_L = 2.8 (Up,Ud).

" 7	Sk	iP	14 46 15.3
	Um	iP	14 46 10.1
" 8	Ki	iP	03 07 54.9
	Um	iPP	03 08 19.2
	Ud	eP	03 06 58
	De	iP	03 06 29.0
		i	03 06 43.8

Dodecanese Islands
(h = 60 km).

" 8	Ud	iPKPl	03 20 41.5
		iSKPl	03 23 33.4
	De	iPKPl	03 20 51.0

Fiji Islands (h = 570 km).

" 8	Ud	iP	05 21 48.4

Celebes (h = 60 km).

" 8	Um	iPKP	08 26 00.8

Solomon Islands (h = N).

" 8	Ud	iP	13 22 34.4

Peru (h = 40 km).

" 8	Um	iP	15 36 13.4
		i	15 36 39.2
	Ud	iP	15 36 31.4

Tadzhik SSR (h = 10 km).

" 8	Um	iP	19 22 50.9
	Ud	i	19 22 25.8

Yugoslavia (h = 35 km).

" 8	Up	iP	20 06 47.4 C
	Um	iP	20 06 25.7
	Ud	i	20 06 53.0

Japan (h = 45 km).

" 8	Sk	iP	22 59 46.4
	Ud	iP	22 59 48.0

Peru (h = 15 km).

1977
Mar. 8

Up	iP		23 30 04.4		
	iS		23 40 36.5		
			micr	sec	
	P	Z'	1.1	2.0	
	Mx	E	4.5	28	
	Mx	N	14	30	
	Mx	Z	7.9	28	
Ki	iP		23 30 05.0		
	ipP		23 30 10.6		
			micr	sec	
	P	Z'	0.1	1.0	
	pP	Z'	0.8	1.6	
	Mx	E	3.9	16	
	Mx	N	11	20	
	Mx	Z	3.3	13	
Sk	iP		23 30 20.2		
	ipP		23 30 24.9		
Um	iP		23 30 02.7		
	ipP		23 30 07.7		
	iS		23 40 32		
Ud	iP		23 30 13.7		
	ipP		23 30 19.1		
	iPP		23 33 50.0		
De	iP		23 30 14.9	C	
	ipP		23 30 21.0		

Sumatra.
h = 15 km (Ki,Sk,Um,Ud,De).
m = 6.7, M = 6.3 (Up,Ki).

" 9	Up	iP		04 10 24.8	
		ipP		04 10 35.2	
				micr	sec
		P	Z'	0.2	1.3
	Ki	iP		04 09 36.4	C
				micr	sec
		P	Z'	0.1	1.2
	Sk	eP		04 10 11	
	Um	iP		04 09 58.6	C
		ipP		04 10 09.1	
	Ud	iP		04 10 29.9	C
		ipP		04 10 40.2	
	De	iP		04 10 48.8	

Kurile Islands.
h = 35 km (Up,Um,Ud).
m = 5.9 (Up,Ki).

" 9	Up	iP		04 25 56.5	
		ipP		04 26 08.3	
				micr	sec
		P	Z'	0.3	1.5
	Ki	iP		04 25 07.8	
				micr	sec
		P	Z'	0.1	1.0
	Sk	iP		04 25 43.4	
	Um	iP		04 25 30.8	C

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 9 (cont.)

Um	ipP	04 25 43.8	
Ud	iP	04 26 01.7	
	ipP	04 26 15.3	
De	iP	04 26 21.7	

Kurile Islands.
h = 50 km (Up,Um,Ud).
m = 6.0 (Up,Ki).

" 9

Um	iP	04 54 24.1	

" 9

Up	iP	06 17 24.0	
Ki	iP	06 16 30.4	C
Sk	iP	06 17 00.0	
Um	iP	06 16 57.8	
Ud	iP	06 17 22.8	C
De	iP	06 17 45.8	

Aleutian Islands (h = N).

" 9

Up	iP	06 41 28.1	
Sk	iP	06 41 22.3	
Um	iP	06 41 05.6	C
Ud	iP	06 41 36.4	
De	iP	06 41 52.3	

Sea of Japan (h = N).

" 9

Um	iP	07 39 24.4	

Peru (h = 30 km).

" 9

Ud	iP	10 34 31.4	

" 9

Up	iP	10 41 01.3	
Um	iP	10 41 46.9	
Ud	iP	10 41 19.3	
De	iP	10 40 46.1	

Romania (h = 110 km).

" 9

Ud	iP	11 07 00.3	

Tadzhik SSR (h = 15 km).

" 9

Up	iP	12 46 05.0	
Um	iP	12 45 46.8	
Ud	iP	12 46 18.2	
De	eP	12 46 37	

" 9

Up	iP	14 37 41.7	D
	i	14 37 43.5	
	ipP	14 39 34.8	
	iPP	14 40 15.1	
	iS	14 45 38.4	
	i	14 45 57.3	
	iScS	14 46 36.1	
	iP'P'	15 06 07.1	
	i	15 06 16.1	
	i	15 06 24.7	

(cont.)

1977
Mar. 9 (cont.)

			micr	sec	
Up					
	P	Z'	0.4	1.1	
	i	Z'	6.9	1.4	
	Mx	E	12	18	
	Mx	N	15	19	
	Mx	Z	14	16	
Ki	iP		14 37 04.0		D
	i		14 37 05.6		
	ipP		14 38 55.9		
	iPP		14 39 22.0		
	iS		14 44 28.4		
	i		14 44 39.6		
	iP'P'		15 06 21.8		
	i		15 06 39.3		
			micr	sec	
	P	Z'	0.7	1.3	
	i	Z'	2.5	1.0	
	Mx	E	29	17	
	Mx	N	14	12	
	Mx	Z	4.6	11	
Sk	iP		14 37 37.9		D
	i		14 37 39.5		
	ipP		14 39 33.9		
	iPP		14 40 04.1		
	iS		14 45 32.5		
	iP'P'		15 06 08.6		
Um	iP		14 37 20.3		D
	ipP		14 39 14.2		
	iS		14 44 58.6		
	iP'P'		15 06 14.8		
Ud	iP		14 37 50.1		D
	i		14 37 51.9		
	iPP		14 40 23.5		
	iS		14 45 54.1		
	iScS		14 46 45.0		
	iP'P'		15 06 02.1		
	i		15 06 20.3		
De	iP		14 38 04.7		D
	i		14 38 06.2		
	iPP		14 40 46.7		
	iS		14 46 22.7		
	iP'P'		15 06 07.8		

Korea.
h = 620 km (Up,Ki,Sk,Um).
m = 6.6, M = 6.5 (Up,Ki).
M uncorrected for focal depth.
Double P, small and large,
average separation 1.6 s.

" 9

Sk	iP	15 05 37.5	
Um	iP	15 05 51.2	
Ud	iP	15 05 30.3	

" 9

Up	iP	15 35 32.7	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 9 (cont.)

	Um	iP		15 35 13.8
	Ud	iP		15 35 37.9
" 9	Ud	iP		15 38 48.0
" 9	Up	iP		21 44 00.9
	Ki	iP		21 43 24.8
	Um	iP		21 43 42.6
	Ud	iP		21 44 07.2

Bonin Islands (h = N).

" 9	Ki	iP		23 14 28.8
	Um	iP		23 14 31.8
	Ud	iP		23 14 54.6

Molucca Passage (h = 60 km).

" 9	Um	iP		23 44 21.3
	Ud	i		23 44 56.2

Afghanistan-USSR (h = 70 km).

" 10	Up	iP		04 02 31.2
	Um	iP		04 02 11.7
	Ud	iP		04 02 36.9

Japan (h = 320 km).

" 10	Um	ipP		04 09 09.0

Japan (h = N).

" 10	Ki	i(P)		10 46 04.5
	Ud	i(P)		10 46 49.5
" 10	Ud	iP		10 49 24.0

Greece-Bulgaria (h = 35 km).

" 10	Um	iP		15 22 32.8
	Ud	iP		15 22 23.9

Mexico (h = 110 km).

" 10	Up	iP		17 26 57.0
	Um	iP		17 27 28.5
	Ud	iP		17 27 05.9

Greece (h = N).

" 10	Um	iP		17 49 48.8
		i		17 49 56.4
	De	iP		17 49 41.4

Caribbean Sea (h = N).

" 10	Ud	iP		20 26 47.5
" 11	Up	iP		07 10 09.3 C
				micr sec
		P	Z'	0.1 1.0

(cont.)

1977
Mar. 11 (cont.)

Up				micr sec
	Mx		E	2.0 15
	Mx		N	1.3 15
	Mx		Z	4.0 15
Ki	iP			07 09 48.7
	ipP			07 09 55.3
				micr sec
	P		Z'	0.1 0.6
	pP		Z'	0.1 0.8
Sk	iP			07 10 11.7
Um	iP			07 09 55.1
	ipP			07 10 02.4
	iS			07 19 43
Ud	iP			07 10 18.3 C
	ipP			07 10 25.8
De	ipP			07 10 32.4

Philippine Islands.
h = 25 km (Ki,Um,Ud).
m = 5.8 (Up,Ki).

" 11	Up	iP		10 47 37.2
	Um	iP		10 47 33.6
	Ud	iP		10 47 53.7

Tadzhik SSR (h = N).

" 11	De	i(P)		12 27 28.5
		i		12 28 02.1
" 11	Ud	i(P)		12 28 38.4
" 11	Up	iP		13 25 17.6
	Um	iP		13 25 14.6
	Ud	iP		13 25 39.4
" 11	Ud	iP		18 20 15.8

Molucca Passage (h = 90 km).

" 12	Up	iP		02 15 58.9
	Ki	iP		02 16 05.5
	Um	iP		02 15 55.0
		i		02 15 57.0
	Ud	iP		02 16 14.1
		i		02 16 17.7

Hindu Kush (h = 200 km).

" 12	Up	iP		03 07 28.0
		iS		03 15 20
				micr sec
		P	Z'	0.3 1.6
		Mx	E	3.1 20
		Mx	N	3.2 22
		Mx	Z	8.1 20
	Ki	iP		03 07 49.0

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 12 (cont.)

Ki			micr	sec
	P	Z'	1.7	2.6
	Mx	E	1.1	20
	Mx	Z	2.5	16
Sk	iP		03 07 18.3	
Um	iP		03 07 43.0 C	
	iS		03 15 50	
Ud	iP		03 07 14.1 C	
De	iP		03 07 09.2 C	

North Atlantic Ocean (h = N).
m = 6.4, M = 5.3 (Up,Ki).

" 12	Ud	iP	06 15 54.1

Mindanao (h = 100 km).

" 12	Um	iP	14 52 33.0
	Ud	iP	14 53 09.1
		i	14 53 20.2

Kurile Islands (h = 15 km).

" 13	Um	iP	02 51 59.0
		i	02 52 08.1

Aleutian Islands (h = N).

" 13	Up	iPKPl	10 14 55.8
	Ud	iPKPl	10 14 58.6
	De	iPKPl	10 15 11.1
" 13	Um	iP	11 07 23.6
	Ud	iP	11 07 40.5
" 13	Up	iP	15 33 17.1
	Ki	iP	15 32 59.9 C
	Um	iP	15 33 06.3
	Ud	eP	15 33 26
	De	iP	15 33 32.5

Talaud Islands (h = 90 km).

" 13	Up	iP	19 10 24.3
	Um	iP	19 09 53.6
		i	19 09 58.3
" 13	Up	iP	19 54 06.4
	Um	iP	19 53 49.6
" 13	Up	iP	20 47 06.8
	Ud	i	20 47 27.3
	De	i	20 46 57.4

Aegean Sea (h = N).

" 13	Up	iP	21 27 51.2
		ipP	21 28 29.9
		eP	21 31 47

(cont.)

1977
Mar. 13 (cont.)

Ki	iP		21 27 57.0
Sk	eP		21 27 39
Um	iP		21 27 56.6
	ipP		21 28 35.6
Ud	iP		21 27 41.4
	ipP		21 28 22.7
De	iP		21 27 40.9
	iPP		21 31 32.5

Peru-Brazil.
h = 160 km (Up,Um,Ud).

" 13	Um	iP	22 26 34.6
" 13	Up	iPKPl	22 45 30.2
	Sk	iPKPl	22 45 23.3
	Um	iPKPl	22 45 18.1
	Ud	iPKPl	22 45 31.8
	De	iPKPl	22 45 42.7
		iPKP2	22 45 56.4
" 14	Up	iP	08 51 28.7
		i	08 51 40.4
	Sk	iP	08 52 12.3
	Um	eP	08 52 09
	Ud	iP	08 51 38.3

Greece-Albania (h = 50 km).

" 14	Up	iP	10 07 14.0
	Sk	iP	10 07 56.5
	Um	iP	10 07 52.6
	Ud	iP	10 07 18.1

Greece-Albania (h = 55 km).

" 14	Up	iP	11 27 00.5
	Um	iP	11 26 37.0 C
	Ud	iP	11 27 07.1

Japan (h = 70 km).

" 14	Up	iPKP2	12 51 49.4
	Ki	iPKPl	12 51 17.8
	Um	i(PKP)	12 51 14.3
		iPKP	12 51 18.6
		iPKPl	12 51 24.7
		iPKP2	12 51 33.8
	Ud	iPKP2	12 51 45.4
	De	iPKP2	12 52 06.9

New Zealand (h = 210 km).

" 14	De	iPKP	16 52 39.4

Solomon Islands (h = 130 km).

" 14	Ud	iP	17 56 50.1

Hindu Kush (h = 70 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Mar.	14	Up	i(PKP)	19 21 20.6	
			iPKP1	19 21 22.6	
			iSKP1	19 24 11.0	
				micr sec	
			PKP1	Z' 0.1 0.9	
		Ki	iPKP	19 21 13.7	
		Sk	i(PKP)	19 21 18.1	
			iPKP	19 21 22.9	
			iSKP1	19 24 04.1	
		Um	i(PKP)	19 21 09.0	
			iPKP	19 21 21.2	
			iSKP1	19 23 59.2	
		Ud	iPKP1	19 21 22.7	
			iSKP1	19 24 12.6	
		De	iPKP1	19 21 33.9	
			iSKP1	19 24 21.4	
			Fiji Islands (h = 580 km).		
"	14	Up	i	19 48 26.2	
		Ki	iP	19 49 01.6	
		Um	i	19 48 37.2	
		Ud	iP	19 48 35.1	
			i	19 48 44.0	
		De	i	19 48 24.4	
		Caucasus (h = 15 km).			
"	14	Up	iP	20 53 24.4	
			i	20 56 24.8	
		Ki	iPn	20 52 06.0	
		Sk	iPn	20 52 24.5	
			iSn	20 54 18.7	
		Um	iP	20 52 45.8	
			iS	20 55 13.2	
		Ud	iP	20 53 10.6	
		Jan Mayen Island (h = N).			
"	14	Up	iPKP1	21 11 40.9	D
			iPKP2	21 11 46.9	
				micr sec	
			PKP1	Z' 0.1 0.7	
			PKP2	Z' 0.1 0.7	
		Ki	iPKP1	21 11 19.2	
			iPKP	21 11 24.6	
		Sk	iPKP1	21 11 35.4	
		Um	iPKP1	21 11 30.4	D
		Ud	iPKP1	21 11 43.1	
			iPKP2	21 11 49.7	
		De	iPKP1	21 11 51.9	
			iPKP2	21 12 03.8	
		Kermadec Islands (h = 370 km).			
"	15	Um	iP	00 05 41.4	
		Ud	iP	00 06 00.9	
		Mindanao (h = N).			

1977					
Mar.	15	Up	iP	01 11 05.0	C
				micr sec	
			Mx N	0.9 16	
		Ki		micr sec	
			Mx N	3.6 20	
		Sk	eP	01 11 22	
		Um	iP	01 10 56.3	
		Ud	iP	01 11 19.6	C
		De	iP	01 11 21.2	
		Tibet (h = N).			
		M = 5.2 (Up,Ki).			
"	15	Sk	iP	02 04 55.4	
		Um	iP	02 04 53.3	
		Ud	eP	02 04 20	
"	15	Um	iP	07 34 00.3	
		Ud	iP	07 34 30.2	
		Ryukyu Islands (h = 10 km).			
"	15	Up	iP	09 09 05.4	
			iSKS	09 19 42	
				micr sec	
			Mx E	0.7 18	
			Mx N	0.8 21	
			Mx Z	1.4 21	
		Ki	iP	09 08 49.7	
			iPP	09 13 06.0	
				micr sec	
			P Z'	0.1 1.0	
			Mx E	1.4 22	
			Mx N	2.4 23	
		Sk	iP	09 09 10.6	
			iPP	09 13 37.6	
		Um	iP	09 08 54.8	C
			i	09 13 16.3	
			iSKS	09 19 30	
		Ud	iP	09 09 14.0	C
			i(PP)	09 13 27.9	
		De	iP	09 09 19.3	C
		Banda Sea (h = 40 km).			
		M = 5.6 (Up,Ki).			
"	15	Up	iP	11 14 10.7	
		Um	iP	11 13 44.5	
		Ud	iP	11 14 11.0	
		Aleutian Islands (h = 50 km).			
"	15	Up	iP	13 59 46.9	
		Ki	iP	13 58 41.1	
		Um	iP	13 59 24.8	
"	15	Ud	iP	14 14 35.7	
		Kirgiz SSR (h = N).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 15 Ud iPKPl 17 31 03.9
iSKPl 17 33 58.9
De iPKPl 17 31 10.5
iSKPl 17 34 08.4
Fiji Islands (h = 440 km).

" 15 Up iPKP 20 14 25.7
micr sec
Mx E 0.7 19
Mx N 0.7 20
Mx Z 1.9 20
Ki
micr sec
Mx E 0.8 21
Mx N 1.1 20
Mx Z 1.0 20
Um iPKP 20 14 20.8
De iPKP 20 14 34.3
Solomon Islands (h = 30 km).
M = 5.5 (Up,Ki).

" 15 Sk iP 21 40 41.6
i 21 41 03.1
Um iP 21 40 56.8
Ud iP 21 40 49.0
El Salvador (h = 100 km).

" 15 Up iPKPl 22 54 33.2
ipPKPl 22 54 42.4
Um iPKPl 22 54 21.8
ipPKPl 22 54 30.0
Ud iPKPl 22 54 34.6 C
De iPKP2 22 54 45.4
Tonga-Kermadec Islands.
h = 30 km (Up,Um).

" 16 Um iP 00 23 32.8

" 16 Ki iP 03 40 05.4
Um iP 03 40 08.6
Molucca Passage (h = N).

" 16 Ki iP 06 32 02.9
i 06 32 10.5
micr sec
P Z' 0.1 1.0
Sk iP 06 32 30.9
Um iP 06 32 31.3 C
De iP 06 33 17.7
Alaska (h = 20 km).

" 16 Um iP 11 02 51.8

" 16 Up iP 13 06 18.0
Ki iP 13 06 09.3
(cont.)

1977
Mar. 16 (cont.)
Ki
micr sec
Mx E 0.6 14
Mx N 1.6 19
Mx Z 0.6 15
Ud iP 13 06 32.2
Tibet (h = N).

" 16 Ki iPKP 15 40 13.7
Um iPKP 15 40 23.4
Santa Cruz Islands (h = 25 km).

" 16 Um iSKPl 18 02 22.8
Ud iPKPl 17 59 46.2
De iPKPl 17 59 59.2
Fiji Islands (h = 620 km).

" 16 Up iP 22 18 59.7
i 22 19 09.7
Ki iP 22 18 40.0
Um iP 22 18 43.8
Ud iP 22 19 13.0
Szechwan, China (h = N).

" 17 Up iP 00 05 34.0 C
micr sec
P Z' 0.1 1.2
Mx N 0.7 20
Ki iP 00 05 23.1 C
micr sec
P Z' 0.1 1.0
Mx N 1.2 18
Sk iP 00 05 48.7
Um iP 00 05 24.9
Ud iP 00 05 46.8
De iP 00 05 52.4
Yunnan, China (h = N).
m = 5.9, M = 5.0 (Up,Ki).

" 17 Up iP 00 08 05.9
Ki iP 00 07 55.0
Sk iP 00 08 22.4
Um iP 00 07 58.4
Ud iP 00 08 20.8
De iP 00 08 25.2
Yunnan, China (h = N).

" 17 Ud iP 04 42 20.1
Pakistan (h = 100 km).

" 17 Um iP 05 22 58.4
Ud iP 05 23 28.5
Japan (h = 100 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 17 Ki iPKP 09 08 09.2
Um iPKP 09 08 16.9
Ud iSKPl 09 10 50.7
Santa Cruz Islands (h = 650 km).

" 17 Ud iSKPl 09 37 28.8
Santa Cruz Islands (h = 660 km).

" 17 Ki ePKP 13 00 08
Sk iPKP 13 00 22.7
Um iPKP 13 00 18.4
Ud i 13 00 54.9
iSKPl 13 02 52.9
De iPKP 13 00 31.7
Santa Cruz Islands (h = 650 km).

" 17 Um iPKP 17 06 26.5
Solomon Islands (h = 410 km).

" 18 Up iP 06 47 23.4
Ki iP 06 47 22.2 C
micr sec
P Z' 0.1 1.0
Sk iP 06 47 36.5
Um iP 06 47 20.0 C
Ud iP 06 47 32.5
Sumatra (h = N).

" 18 Ki iP 07 04 22.2 C
i 07 04 37.8
iS 07 06 14.0
Um iS 07 07 44.2
iLg2 07 09 39.4
Ud e 07 06 25
South Svalbard region.
Origin time = 07 01 58.
By combination with Tromsö and Finnish station readings.

" 18 Um iP 19 22 37.3
Ud i 19 23 18.1
Japan (h = 50 km).

" 18 Up iP 21 56 13.6 C
iS 22 06 34.7
micr sec
P Z' 2.2 1.0
Mx E 184 18
Mx N 458 25
Mx Z 320 19
Ki iP 21 55 53.9 C
iS 22 05 57
micr sec
P Z' 5.1 1.4
(cont.)

1977
Mar. 18 (cont.)
Ki micr sec
Mx E 101 19
Mx N 278 24
Mx Z 85 14
Sk iP 21 56 18.3 C
Um iP 21 56 00.4 C
Ud iP 21 56 22.6 C
De iP 21 56 29.2 C
Luzon (h = 35 km).
m = 7.3, M = 7.7 (Up,Ki).

" 18 Up iP 22 13 29.6
Ki iP 22 13 08.6
Um iP 22 13 15.6
Ud iP 22 13 38.2
Luzon.
Origin time = 22 01 09.
Approximate origin times based upon the same focal coordinates as for the earthquake at 21 43 52, March 18 are given for those Luzon aftershocks, wich have not been reported by NEIS.

" 18 Up iP 22 17 33.0
micr sec
P Z' 0.1 1.0
Ki iP 22 17 13.4 D
Sk iP 22 17 38.4
Um iP 22 17 20.0 D
Ud iP 22 17 42.3
Luzon.
Origin time = 22 05 13.

" 18 Up iP 22 20 06.7
Ud iP 22 20 16.1
Luzon.
Origin time = 22 07 47.

" 18 Up iP 22 21 33.8

" 18 Up iP 22 22 16.4
i 22 22 21.2
Ki i 22 22 06.0
Um iP 22 22 02.6
Ud iP 22 22 25.1
i 22 22 29.7
De eP 22 22 39
i 22 22 44.5
Luzon.
Origin time = 22 09 56.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 18 Up iP 22 22 44.7
i 22 22 49.7
micr sec
P Z' 0.1 0.8
Ki iP 22 22 25.0
micr sec
P Z' 0.1 1.0
Sk iP 22 22 49.7
Um iP 22 22 31.4
Ud iP 22 22 54.3
De iP 22 23 01.0
Philippine Islands (h = N).
m = 5.8 (Up,Ki).
Late arrivals when compared with the NEIS solution.

" 18 Up iP 22 28 54.4
Ki iP 22 28 34.4
Sk iP 22 28 58.9
Um iP 22 28 41.2
Ud iP 22 29 04.0 C
De iP 22 29 09.9
Luzon.
Origin time = 22 16 34.

" 18 Up iP 22 31 56.0
i 22 32 04.2
Ud iP 22 32 06.0
Luzon.
Origin time = 22 19 36.

" 18 Up iP 22 32 42.4
i 22 32 51.1
Ki eP 22 32 22
Um iP 22 32 28.9
Ud iP 22 32 50.9
i 22 32 59.4
Luzon.
Origin time = 22 20 22.

" 18 Up iP 22 33 13.8
i 22 33 22.0
Ud iP 22 33 24.8
i 22 33 33.7
Luzon.
Origin time = 22 20 54.

" 18 Up iP 22 35 39.1
Ud iP 22 35 48.7
Luzon.
Origin time = 22 23 19.

" 18 Up iP 22 39 19.3
Ud iP 22 39 27.7
Luzon.
Origin time = 22 26 59.

1977
Mar. 18 Up iP 22 41 14.9
Ud iP 22 41 23.0
i 22 41 29.7
Luzon.
Origin time = 22 28 54.

" 18 Up iP 22 41 59.0
Ki iP 22 41 39.3
Um iP 22 41 45.5
Ud iP 22 42 09.0
Luzon.
Origin time = 22 29 39.

" 18 Up iP 22 46 22.0
i 22 46 25.5
micr sec
i Z' 0.1 0.8
Ki iP 22 46 05.4
Sk iP 22 46 28.9
Um iP 22 46 07.4
i 22 46 12.4
Ud iP 22 46 30.8
i 22 46 34.7
De eP 22 46 39
i 22 46 42.3
Luzon (h = N).
Double P, small and large, average separation 3.9 s. The second phase when interpreted as pP, gives a focal depth of 10 km.

" 18 Up iP 22 47 17.4
Sk iP 22 47 25.8
Um iP 22 47 03.3
Ud iP 22 47 24.6
De iP 22 47 34.7
Luzon.
Origin time = 22 34 57.

" 18 Up iP 22 50 20.7 D
micr sec
P Z' 0.1 0.9
Ki i 22 50 07.2
Sk iP 22 50 26.5
Um iP 22 50 07.8
Ud iP 22 50 31.2
De iP 22 50 37.0
Luzon (h = N).

" 18 Up iP 22 51 07.3
i 22 51 21.6
Ud i 22 51 29.7

" 18 Up iP 22 55 08.5
Ud iP 22 55 19.1
Luzon.
Origin time = 22 42 41.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Mar.	18	Up	iP	23 07 23.2	
"	18	Up	iP	23 13 07.1	
"	18	Ud	iP	23 14 07.6	
"	18	Up	iP	23 16 01.1	
		Ud	iP	23 16 05.0	
"	18	Up	iP	23 21 56.2	
			i	23 22 04.6	
		Um	iP	23 21 41.5	
			i	23 21 56.9	
		Probably Luzon.			
"	18	Um	iP	23 33 39.9	
		Ud	iP	23 34 03.3	
		Probably Luzon.			
"	18	Up	iP	23 35 02.0	
		Um	iP	23 34 50.9	
		Probably Luzon.			
"	18	Up	iP	23 37 00.6	
"	18	Up	iP	23 38 53.5	
"	18	Up	iP	23 40 32.9	
		Um	iP	23 40 22.0	
		Probably Luzon.			
"	18	Up	iP	23 52 01.0	
		Um	iP	23 51 44.9	
		Probably Luzon.			
"	18	Up	iP	23 54 21.1	D
			i	23 54 30.6	
		Um	iP	23 54 07.9	
		Ud	iP	23 54 30.2	
		Luzon.			
		Origin time = 23 42 01.			
"	18	Up	iP	23 59 43.0	
"	19	Ud	iP	00 01 48.3	
"	19	Up	iP	00 09 11.7	
		Ud	iP	00 09 20.1	
		Probably Luzon.			
"	19	Up	iP	00 10 00.3	
			ipP	00 10 08.8	
				micr sec	
			P	Z' 0.2 0.9	
		(cont.)			

1977					
Mar.	19	(cont.)			
		Ki	iP	00 09 40.5	
			ipP	00 09 49.1	
				micr sec	
			P	Z' 0.1 1.0	
		Sk	iP	00 10 04.6	
			ipP	00 10 13.2	
		Um	iP	00 09 47.4	
		Ud	iP	00 10 09.0	C
			ipP	00 10 18.1	
		De	iP	00 10 16.3	
		Luzon.			
		h = 30 km (Up,Ki,Sk, Ud).			
		m = 6.0 (Up,Ki).			
"	19	Up	iP	00 12 20.0	
		Ki	iP	00 12 00.6	C
				micr sec	
			P	Z' 0.1 1.0	
		Sk	iP	00 12 25.3	
			ipP	00 12 32.9	
		Um	iP	00 12 07.3	
		Ud	iP	00 12 29.2	C
			ipP	00 12 37.2	
		De	iP	00 12 36.4	
		Luzon.			
		h = 25 km (Sk,Ud).			
		Origin time = 00 00 00.			
"	19	Up	iP	00 15 28.0	
		Um	iP	00 15 16.6	
		Ud	iP	00 15 38.3	
		Luzon.			
		Origin time = 00 03 08.			
"	19	Up	iP	00 23 24.4	
		Ki	eP	00 23 04	
		Um	iP	00 23 11.9	
		Ud	iP	00 23 33.2	
		Luzon.			
		Origin time = 00 11 04.			
"	19	Up	iP	00 26 21.8	
		Um	iP	00 26 06.8	
		Ud	iP	00 26 31.2	
		Luzon.			
		Origin time = 00 14 02.			
"	19	Up	iP	00 27 37.1	
		Um	iP	00 27 24.1	
		Ud	iP	00 27 46.3	
		Luzon.			
		Origin time = 00 15 17.			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 19 Up iP 00 30 46.7
Ki iP 00 30 26.7
Um iP 00 30 31.5
Ud iP 00 30 55.0
De iP 00 30 01.9
Luzon.
Origin time = 00 18 27.

" 19 Ki iP 00 30 52.6
Tadzhik SSR (h = 5 km).

" 19 Up iP 00 37 47.2
Ud iP 00 37 39.5

" 19 Up iP 00 44 07.7
Um iP 00 43 55.5
Ud iP 00 44 21.6
Luzon.
Origin time = 00 31 48.

" 19 Up iP 00 45 30.9

" 19 Up iP 00 53 29.8
ipP 00 53 44.1
micr sec
P Z' 0.2 1.0
Ki iP 00 53 11.0 C
micr sec
P Z' 0.1 1.0
Sk iP 00 53 34.9 C
Um iP 00 53 17.7 C
Ud iP 00 53 39.3 C
ipP 00 53 53.4
De iP 00 53 46.2 C
Luzon.
h = 50 km (Up,Ud).
m = 6.0 (Up,Ki).

" 19 De iPKP1 00 54 10.7
Fiji Islands (h = 580 km).

" 19 Up iP 00 54 52.4
ipP 00 55 00.8
Ki iP 00 54 32.5
Sk iP 00 54 56.4
Um iP 00 54 38.4
Ud iP 00 55 01.4
ipP 00 55 09.5
De iP 00 55 11.7
Luzon.
h = 30 km (Up,Ud).
Origin time = 00 42 32.

" 19 Up iP 00 56 06.4
(cont.)

1977
Mar. 19 (cont.)
Um iP 00 55 44.9
Ud iP 00 56 06.5

" 19 Up iP 00 56 28.7
i 00 56 41.4
Um iP 00 56 15.9
Probably Luzon.

" 19 Up iP 01 03 34.0
ipP 01 03 44.3
Ki iP 01 03 15.1
Um iP 01 03 21.9
Ud iP 01 03 44.7
ipP 01 03 53.4
Luzon.
h = 30 km (Up,Ud).

" 19 Um iP 01 09 20.4
Ud iP 01 09 43.2
Probably Luzon.

" 19 Up iP 01 16 36.1
i 01 16 44.1
Ki eP 01 16 20
Um iP 01 16 26.3
Ud iP 01 16 49.6
Luzon (h = 45 km).

" 19 Up iP 01 28 22.3
i 01 28 28.7

" 19 Up iP 01 29 52.5
Um iP 01 29 39.0
Ud iP 01 30 01.4
Luzon.
Origin time = 01 17 33.

" 19 Ki iP 01 35 09.5
Sk iP 01 35 34.7
Um iP 01 35 16.7
Ud iP 01 35 39.4
De iP 01 35 46.3
Luzon (h = 70 km).

" 19 Up iP 01 42 21.4
Ki iP 01 42 00.3
Sk iP 01 42 25.9
Um iP 01 42 06.9
Ud iP 01 42 30.1
Luzon (h = N).

" 19 Up iP 01 46 12.6
Ud iP 01 46 21.1

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Mar.	19	Up	iP		01 47 41.3
		Ud	iP		01 47 49.8
		Probably Luzon.			
"	19	Up	iP		01 58 11.9
"	19	Up	iP		01 59 22.1
		Um	iP		01 59 09.4
		Probably Luzon.			
"	19	Up	iP		02 05 37.9
			ipP		02 05 45.5
					micr sec
			P	Z'	0.2 0.9
		Ki	iP		02 05 17.4 C
					micr sec
			P	Z'	0.1 1.0
		Sk	iP		02 05 41.8 C
		Um	iP		02 05 24.4 C
			ipP		02 05 30.9
		Ud	iP		02 05 46.8 C
		De	iP		02 05 53.3 C
		Luzon.			
		h = 25 km (Up,Um).			
		m = 6.0 (Up,Ki).			
"	19	Up	iP		02 12 48.3
"	19	Up	iP		02 27 15.7
			i		02 27 21.0
		Ud	iP		02 27 24.6
		Probably Luzon.			
"	19	Up	iP		02 27 57.7
			i		02 28 02.9
		Um	iP		02 27 41.9
		Ud	iP		02 28 06.5
		Luzon.			
		Origin time = 02 15 38.			
"	19	Um	iP		02 32 38.0
		Ud	iP		02 33 05.3
		Probably Luzon.			
"	19	Up	iP		02 43 09.5
"	19	Ud	iP		02 44 14.0
"	19	Up	iP		02 55 26.1
			i		02 55 30.9
		Um	iP		02 55 12.2
		Ud	iP		02 55 34.7
			i		02 55 42.8
		Luzon (h = 35 km).			

1977 Mar.	19	Up	iP		03 02 06.0
		Ud	iP		03 02 15.5
		Probably Luzon.			
"	19	Up	iP		03 15 03.2
			i		03 15 14.3
					micr sec
			P	Z'	0.1 1.0
		Ki	iP		03 14 42.9
		Sk	eP		03 15 07
		Um	iP		03 14 49.5 C
		Ud	iP		03 15 12.0 C
		De	iP		03 15 19.3
		Luzon (h = 35 km).			
"	19	Up	iP		03 30 05.7
			i		03 30 09.3
"	19	Up	iP		03 36 22.2
			iPP		03 37 52.3
		Um	iP		03 36 26.4
		Ud	iP		03 36 38.3
		Iran (h = 30 km).			
"	19	Up	iP		03 44 56.0
			i		03 45 03.4
"	19	Up	iP		03 58 38.3
		Ki	iP		03 58 17.9
		Um	iP		03 58 24.9
		Ud	iP		03 58 46.8
		Luzon (h = N).			
"	19	Up	iP		04 19 14.9
			i		04 19 18.2
		Ki	iP		04 18 54.8
		Sk	i		04 19 35.0
		Um	iP		04 19 02.9
		Ud	iP		04 19 26.3
			i		04 19 30.2
		Luzon.			
		Origin time = 04 06 55.			
"	19	Up	iP		04 31 13.1
			i		04 31 19.8
"	19	Ud	iP		04 44 35.2
"	19	Up	iP		05 04 32.5
"	19	Up	iP		05 12 26.7
			ipP		05 12 30.9
		Ki	eP		05 12 07
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 19 (cont.)

Um	iP	05 12 12.8
	ipP	05 12 16.9
Ud	iP	05 12 34.0
	ipP	05 12 39.8

Luzon.
h = 15 km (Up,Um,Ud).
Origin time = 05 00 07.

" 19

Up	iP	05 19 20.3
	i	05 19 30.1
Ki	eP	05 19 55
Sk	iP	05 19 25.3
	i	05 19 36.0
Um	iP	05 19 08.4
Ud	iP	05 19 29.1
	i	05 19 38.2

Luzon (h = N).

" 19 Ud iP 05 38 08.5

" 19 Up iP 05 47 53.4

" 19

Up	iP	06 18 17.7 D
Ki	iP	06 17 57.2
Um	iP	06 18 03.8
Ud	iP	06 18 26.7
De	iP	06 18 33.3

Luzon (h = N).

" 19

Up	iP	07 01 08.6
Um	iP	07 01 07.9
Ud	iP	07 01 26.9

Tadzhik SSR (h = 35 km).

" 19

Up	iP	07 11 21.9
	ipP	07 11 27.1
Um	iP	07 11 08.4
Ud	iP	07 11 30.7
	ipP	07 11 36.2

Luzon.
h = 20 km (Up,Ud).
Origin time = 06 59 02.

" 19

Up	iPKP	07 29 45.4
Ud	iPKP	07 29 47.8
De	iPKP	07 29 58.5

" 19

Up	iP	07 34 56.4
Ki	iP	07 34 36.6
Sk	iP	07 35 00.0
Um	iP	07 34 42.5
Ud	iP	07 35 05.0
De	iP	07 35 13.5

Luzon (h = N).

1977
Mar. 19 Ud iP 08 24 23.1

" 19 Up iP 08 31 28.6

" 19

Up	iP	08 33 54.7
Ki	iPn	08 32 17.2
	i	08 32 24.4
Sk	iP	08 33 03.7
Um	iP	08 33 08.6
	i	08 33 15.4
Ud	iP	08 33 49.0
De	iP	08 34 32.4

Svalbard (h = 10 km).

" 19

			micr	sec	
Up	iP				08 34 37.4
	ipP				08 34 44.0
	P	Z'	0.1	0.8	
Ki	iP				08 34 17.1
	ipP				08 34 23.8
Sk	iP				08 34 42.0
	ipP				08 34 49.0
Um	iP				08 34 23.9 C
Ud	iP				08 34 46.3 C
	ipP				08 34 53.4
De	iP				08 34 53.0
	ipP				08 34 59.5

Luzon.
h = 20 km (Up,Ki,Sk,Ud,De).

" 19 Ud iP 08 41 50.7

" 19 Ud iP 09 05 26.2

" 19 Up iP 09 13 35.9

" 19

Um	iPKP	09 41 37.5
Ud	iPKP	09 41 45.3
De	iPKPl	09 41 48.2
	i	09 41 53.6

Tonga Island (h = 180 km).

" 19

Up	iP	10 24 54.6
Um	iP	10 24 39.6
Ud	iP	10 25 02.2
	i	10 25 10.0

Luzon.
Origin time = 10 12 35.

" 19

Up	iP	10 45 42.9
	i	10 45 51.1

" 19

Up	iP	11 07 20.2 C
	i	11 07 28.9

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 19 (cont.)

Up	iPcP		11 07 45.8	
	iS		11 16 14.7	
			micr	sec
	P	Z'	0.1	0.7
	Mx	E	1.2	21
	Mx	N	1.4	20
	Mx	Z	2.7	20
Ki	iP		11 06 34.4	
	iPcP		11 07 16.6	
			micr	sec
	P	Z'	0.2	1.1
Sk	iP		11 07 10.3	
	i		11 07 39.4	
Um	iP		11 06 55.4	
	i		11 07 02.6	
	iPcP		11 07 29.4	
Ud	iP		11 07 26.1	
	iPcP		11 07 49.8	
De	iP		11 07 44.9 C	
	iPcP		11 08 06.4	

Kurile Islands (h = 70 km).
m = 6.0 (Up,Ki).

" 19

Up	iP		11 35 31.1	
Ki	iP		11 36 17.6	
Um	iP		11 35 47.2	
Ud	iP		11 35 27.2	

" 19

Up	iP		12 06 27.2	
	i		12 06 32.8	
Ki	iP		12 06 07.8	
Um	iP		12 06 13.6	
Ud	iP		12 06 36.2 C	

Luzon (h = N).

" 19

Up	iP		12 20 53.6	
Ud	iP		12 21 00.4	

" 19

Up	iP		12 29 26.6 D	
	ipP		12 29 32.7	
			micr	sec
	P	Z'	0.2	1.1
	Mx	N	1.7	23
Ki	iP		12 29 06.2	
	ipP		12 29 11.0	
			micr	sec
	P	Z'	0.4	1.4
Sk	iP		12 29 30.4	
Um	iP		12 29 12.9	
	ipP		12 29 18.9	
Ud	iP		12 29 35.2	
	ipP		12 29 40.3	
De	iP		12 29 41.6	

(cont.)

1977
Mar. 19 (cont.)

Luzon.
h = 15 km (Up,Ki,Um,Ud).
m = 6.2 (Up,Ki).

" 19

Ki	iP		12 32 49.7	
Um	iP		12 32 58.8	
Ud	iP		12 33 19.9 C	

Luzon.
Origin time = 12 20 30.

" 19

Up	iP		13 08 25.4	
			micr	sec
	P	Z'	0.2	0.8
	Mx	E	2.1	22
	Mx	N	3.2	22
	Mx	Z	3.2	23
Ki	iP		13 08 05.6	
			micr	sec
	P	Z'	0.1	1.0
	Mx	N	2.9	18
Sk	iP		13 08 30.8	
Um	eP		13 08 13	
Ud	iP		13 08 34.7	
De	iP		13 08 41.2	

Luzon (h = N).
m = 6.0, M = 5.7 (Up,Ki).

" 19

Up	iP		13 12 45.5	
			micr	sec
	P	Z'	0.1	1.0
Ki	iP		13 12 26.2 C	
			micr	sec
	P	Z'	0.2	1.4
Sk	iP		13 12 51.6	
Um	iP		13 12 31.4	
Ud	iP		13 12 55.4	
De	iP		13 13 03.1	

Luzon (h = N).
m = 5.9 (Up,Ki).

" 19

Up	iP		13 15 40.4	
Um	iP		13 15 27.4	
Ud	iP		13 15 49.7	

Luzon.
Origin time = 13 03 20.

" 19

Up	iP		13 17 06.5	
Ki	eP		13 16 46	
Um	iP		13 16 52.9	
Ud	iP		13 17 15.6	

Luzon.
Origin time = 13 04 47.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977							
Mar.	19	Ud	iP		13 24 01.8		
"	19	Ud	iP		13 31 02.4		
"	19	Up	iP		13 39 30.1		
			i		13 39 33.7		
					micr	sec	
			P	Z'	0.1	1.0	
			i	Z'	0.1	0.9	
		Ki	iP		13 39 10.7		
					micr	sec	
			P	Z'	0.1	1.0	
		Sk	iP		13 39 34.9		
		Um	iP		13 39 17.4		
			i		13 39 20.0		
		Ud	iP		13 39 39.4		
			i		13 39 42.8		
		De	iP		13 39 45.3		
			i		13 39 49.3		
		Luzon (h = 55 km).					
		m = 5.8 (Up,Ki).					
		Double P, small and large,					
		average separation 1.9 s.					
"	19	Ud	iP		13 48 27.1		
"	19	Ud	iP		14 07 09.1		
"	19	Ud	iP		14 16 07.4		
"	19	Up	iP		14 24 54.7		
		Ki	iP		14 24 33.3		
		Um	iP		14 24 42.9		
		Ud	iP		14 25 04.0		
			i		14 25 06.9		
"	19	Up	iP		14 43 14.9		
			i		14 43 18.6		
		Ki	iP		14 42 55.4		
					micr	sec	
			P	Z'	0.1	1.0	
		Sk	iP		14 43 19.8		
		Um	iP		14 42 59.9		
		Ud	iP		14 43 24.6		
			i		14 43 27.6		
		De	iP		14 43 32.5		
		Luzon (h = N).					
"	19	Ud	eP		15 44 28		
"	19	Up	iPKPl		16 30 26.1		
		Ud	iPKPl		16 30 28.6		
		De	iPKPl		16 30 38.7		
		Fiji Islands (h = 540 km).					

1977							
Mar.	19	Up	iP		17 11 13.1		
		Ud	iP		17 11 21.9		
"	19	Ud	iP		17 40 55.1		
"	19	Up	iP		17 56 01.5		
		Ud	iP		17 56 11.4		
"	19	Up	iP		18 35 31.6		
"	19	Up	iP		19 47 28.8	C	
			ipP		19 47 35.1		
			i		19 48 10.0		
			iS		19 57 43.3		
					micr	sec	
			P	Z'	0.8	0.9	
			Mx	E	4.8	17	
			Mx	N	12	24	
			Mx	Z	9.8	17	
		Ki	iPcP		19 47 08.9	C	
			i		19 47 21.3		
			iS		19 57 03		
					micr	sec	
			PcP	Z'	0.3	1.0	
			Mx	E	3.3	17	
			Mx	N	8.2	22	
			Mx	Z	3.7	16	
		Sk	iP		19 47 33.6	C	
			ipP		19 47 40.0		
		Um	iP		19 47 15.7	C	
			iS		19 57 18		
		Ud	iP		19 47 38.2	C	
			ipP		19 47 43.8		
		De	iP		19 47 44.4	C	
			ipP		19 47 51.3		
		Luzon.					
		h = 20 km (Up,Sk,Ud,De).					
		m = 6.6, M = 6.2 (Up,Ki).					
"	19	Ud	iP		20 53 39.8		
		Greece-Bulgaria (h = N).					
"	19	Up	iP		21 36 53.5		
		Ki	eP		21 36 33		
		Um	iP		21 36 39.4		
		Ud	iP		21 37 01.6		
		Luzon.					
		Origin time = 21 24 34.					
"	19	Ud	iP		22 26 17.2		
"	19	Up	i(PKP)		23 20 11.9		
		Ki	iPKP		23 20 11.2		
		(cont.)					

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 19 (cont.)

Ki	i	23 20 15.1
Sk	ePKP	23 20 17
Um	i(PKP)	23 20 11.1
	iPKP	23 20 22.5
Ud	i(PKP)	23 20 14.0
	iPKP	23 20 22.7
De	iPKP	23 20 27.5
	i	23 20 29.8

Tuamotu Archipelago (h = 0).

" 19 Ud iP 23 25 22.6

" 19 Ud iP 23 53 09.5

" 20 Um iP 00 18 52.1
Japan (h = 70 km).

" 20 Um iP 00 29 15.0
Japan (h = 70 km).

" 20

Up	iP	02 09 13.2
Ki	iP	02 08 51.7
Sk	i	02 09 22.7
Um	iP	02 08 58.5
Ud	iP	02 09 23.5
De	iP	02 09 31.8

Philippine Islands (h = N).

" 20

Up	iP	02 44 06.3
Um	iP	02 43 51.5
Ud	iP	02 44 14.5

Luzon.
Origin time = 02 31 46.

" 20

Ki	iP	05 57 14.9
	i	05 57 34.9

Chile-Bolivia (h = 140 km).

" 20

Up	iP	06 46 34.5
Um	iP	06 46 21.5
Ud	iP	06 46 43.7

Luzon.
Origin time = 06 34 15.

" 20 Ud iP 07 16 04.6

" 20 Um iP 07 46 12.9
Yugoslavia (h = N).

" 20

Up	iP	07 58 19.2
	ipP	07 58 27.6
Ki	iP	07 58 00.3
	ipP	07 58 07.5

(cont.)

1977
Mar. 20 (cont.)

Um	iP	07 58 06.4 C
	ipP	07 58 14.0
Ud	iP	07 58 28.2 C
	ipP	07 58 35.8

Luzon.
h = 25 km (Up,Ki,Um,Ud).

" 20

Up	iP	08 45 28.5
Sk	iP	08 45 46.6
Um	iP	08 45 21.9
Ud	iP	08 45 42.7
De	iP	08 45 43.3

Tibet (h = N).

" 20 Up iP 09 42 53.6

" 20 Ud iP 10 14 40.3
Kurile Islands (h = N).

" 20

Up	iP	10 51 28.8
	i	10 51 38.2
Ki	iP	10 51 09.5
	i	10 51 18.8
Um	iP	10 51 15.5
Ud	iP	10 51 37.6

Luzon (h = N).

" 20

Ki	eP	11 13 00
Um	iP	11 14 07.4
Ud	iP	11 14 29.6

Luzon (h = 25 km).

" 20 Ud iP 13 49 30.9

" 20

Up	iP	14 27 41.1
Um	iP	14 27 27.5
Ud	iP	14 27 50.6

Luzon (h = N).

" 20 Um i(P) 15 16 08.4

" 20 Um iP 15 21 27.5
Japan (h = 55 km).

" 20

Up	iP	15 37 20.8
	ipP	15 37 25.9
Um	iP	15 37 07.5
	ipP	15 37 12.5
Ud	iP	15 37 30.4
	ipP	15 37 35.1

Luzon.
h = 15 km (Up,Um,Ud).

" 20 Ki iP 23 01 08.7

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 20 (cont.)

	Ki			micr	sec
		P	Z'	0.1	1.3
	Um	i		23 02 09.2	
	Ud	iP		23 02 37.7	

Greenland Sea (h = 10 km).

"	20	Up	iP	23 40 46.7	
		Ud	iP	23 40 54.3	
"	21	Up	eP	00 42 55	
		Ki	iP	00 42 35.9	
		Um	iP	00 42 40.6	
		Ud	iP	00 43 04.4	

Luzon.
Origin time = 00 30 35.

"	21	Up	iP	02 52 04.9	
"	21	Up	iPKPl	04 22 51.4	
		Um	iPKP	04 22 47.4	
		Ud	iPKPl	04 22 54.1	
		De	iPKPl	04 23 04.6	

Tonga-Kermadec Islands
(h = 570 km).

"	21	Up	iP	04 49 21.6	
		Ki	iP	04 48 55.6	
				micr	sec
			P	Z' 0.2	1.6
		Um	iP	04 49 06.6	C
		Ud	iP	04 49 28.2	

Mariana Islands (h = 55 km).

"	21	Ud	iP	06 21 32.1	
"	21	Ud	iP	06 31 18.1	
"	21	Up	iP	06 41 03.3	
			i	06 41 09.0	
		Ki	eP	06 40 41	
		Um	iP	06 40 48.1	
		Ud	iP	06 41 11.9	
			i	06 41 17.8	

Luzon (h = N).

"	21	Up	iP	07 11 09.0	
				micr	sec
			P	Z' 0.1	1.2
			Mx	E 1.1	19
			Mx	N 1.3	18
			Mx	Z 3.8	19
		Ki	iP	07 10 40.8	
				micr	sec
			P	Z' 0.1	1.1

(cont.)

1977
Mar. 21 (cont.)

	Ki			micr	sec
		Mx	E	0.7	20
		Mx	N	2.5	20
	Sk	iP		07 11 09.0	
	Um	iP		07 10 52.1	C
		iSKS		07 21 27	
	Ud	iP		07 11 12.9	C

Mariana Islands (h = N).
m = 6.1, M = 5.6 (Up,Ki).

"	21	Up	iP	07 43 03.2	
				micr	sec
			P	Z' 0.1	1.3
		Ki	iP	07 43 10.9	C
		Sk	iP	07 43 23.4	
		Um	iP	07 43 00.8	C
		Ud	iP	07 43 19.5	C

Afghanistan-USSR (h = 120 km).

"	21	Up	iP	08 04 58.6	
		Ki	i	08 04 37.8	
		Um	iP	08 04 42.7	
		Ud	iP	08 05 04.0	

Mariana Islands (h = 55 km).

"	21	Up	iP	08 17 55.7	
		Ki	iP	08 17 35.8	
		Sk	iP	08 18 00.8	
		Um	iP	08 17 42.1	
		Ud	iP	08 18 04.4	
		De	iP	08 18 10.2	

Luzon (h = 40 km).

"	21	Up	iP	08 53 52.6	C
		Ki	iP	08 53 31.2	
		Um	iP	08 53 38.0	
		Ud	iP	08 54 00.3	
		De	iP	08 54 07.1	

Luzon (h = 55 km).

"	21	Ud	i(P)	12 25 46.2	
"	21	Um	iP	16 01 32.9	

Turkey (h = 5 km).

"	21	Up	iP	20 27 38.8	
		Ud	iP	20 27 41.7	D
"	21	Up	iP	20 53 48.4	
		Um	iP	20 53 35.6	
		Ud	iP	20 53 57.3	

Luzon.
Origin time = 20 41 28.

"	21	Ud	iP	20 56 28.6	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977						
Mar.	21	Up	iP		21 02 31.0	
		Ud	iP		21 02 39.7	
"	21	Up	iP		21 26 39.7	C
			i		21 26 41.9	
			iPP		21 28 16.4	
			iS		21 32 55.2	
					micr	sec
			i	Z'	1.9	0.9
			Mx	E	44	13
			Mx	N	54	13
			Mx	Z	62	12
		Ki	iP		21 27 12.5	C
			i		21 27 14.6	
			iPP		21 28 59.2	
			iS		21 33 57	
					micr	sec
			i	Z'	3.4	0.9
			Mx	E	125	13
			Mx	N	139	12
			Mx	Z	128	13
		Sk	eP		21 27 14	
			i		21 27 15.6	
		Um	iP		21 26 51.5	C
			i		21 26 53.6	
			iPP		21 28 35.7	
			iS		21 33 09	
		Ud	iP		21 26 55.0	C
			i		21 26 57.3	
			iPP		21 28 35.2	
		De	iP		21 26 40.3	C
			i		21 26 42.3	
		Iran (h = 30 km).				
		m = 7.1, M = 7.0 (Up,Ki).				
		Double P, small and large,				
		average separation 2 s.				
"	21	Up	iP		21 36 13.0	
"	21	Up	iP		21 39 05.9	
"	21	Up	iP		21 41 04.4	C
					micr	sec
			P	Z'	0.3	1.4
		Ki	iP		21 41 37.1	
					micr	sec
			P	Z'	0.3	1.5
		Sk	iP		21 41 38.6	
		Um	iP		21 41 16.0	
		Ud	iP		21 41 20.0	C
		De	iP		21 41 05.6	C
		Iran (h = N).				
		m = 5.9 (Up,Ki).				
"	21	Up	iP		21 49 13.6	
		(cont.)				

1977						
Mar.	21	(cont.)				
		Um	iP		21 49 25.1	
		Ud	iP		21 49 28.6	
		De	iP		21 49 14.2	
		Iran (h = N).				
"	21	Ki	iP		21 59 05.4	
		Sk	iP		21 59 08.5	
		Um	iP		21 58 45.1	
		Ud	iP		21 58 49.8	
		Iran (h = N).				
"	21	Up	iP		21 59 25.0	
					micr	sec
			P	Z'	0.1	0.9
		Ki	iP		21 59 58.5	
		Sk	iP		21 59 58.9	
		Um	iP		21 59 37.1	
		Ud	iP		21 59 40.7	
		De	iP		21 59 26.1	
		Iran (h = N).				
"	21	Up	iP		22 17 13.3	
		De	iP		22 17 49.9	
"	21	Ud	iP		22 19 51.3	
"	21	Um	iP		22 20 40.0	
		Ud	iP		22 20 44.2	
"	21	Up	iP		22 25 28.1	
		Um	iP		22 25 40.2	
		Ud	iP		22 25 43.2	
		Iran.				
		Origin time = 22 17 43.				
		Approximate origin times,				
		based upon the same focal				
		coordinates as for the				
		earthquake at 21 18 54,				
		March 21 are given for those				
		Iran aftershocks, which have				
		not been reported by NEIS.				
"	21	Um	iP		22 30 07.1	
		Ud	iP		22 30 11.4	
"	21	Up	iP		22 35 35.5	
		Ki	iP		22 36 05.8	
		Um	iP		22 35 42.8	
		Ud	iP		22 35 49.2	
		De	iP		22 35 35.6	
		Iran (h = N).				
"	21	Up	iP		22 49 53.0	C
			iPP		22 51 29.1	
			iS		22 56 06.1	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 21 (cont.)

Up			micr	sec
	P	Z'	0.9	1.2
	Mx	E	4.8	17
	Mx	N	6.0	17
	Mx	Z	6.8	17
Ki	iP		22 50 25.6 C	
	iPP		22 52 14.3	
			micr	sec
	P	Z'	0.8	1.2
	Mx	E	5.7	14
	Mx	N	18	16
	Mx	Z	16	14
Sk	iP		22 50 26.5 C	
	iPP		22 52 07.3	
Um	iP		22 50 03.8	
	iPP		22 51 41.2	
	iS		22 56 26.6	
Ud	iP		22 50 07.4	
	iPP		22 51 48.7	
	iS		22 56 34.6	
De	iP		22 49 48.8	

Iran (h = 35 km).
m = 6.4, M = 5.9 (Up,Ki).

" 21	Up	iP	23 01 33.7
	Um	iP	23 01 46.7
	Ud	iP	23 01 50.8 C
	De	iP	23 01 35.6

Iran.
Origin time = 22 53 48.

" 21	Ud	iP	23 04 34.5
" 21	Ud	iP	23 05 05.3
" 21	Up	iP	23 57 51.8
	Ud	iP	23 57 09.4
" 22	Up	iP	00 04 44.4
		i	00 04 50.0
	Ki	iP	00 05 17.5
	Sk	iP	00 05 18.0
	Um	iP	00 04 56.1
	Ud	iP	00 04 59.8 C
		i	00 05 05.3
	De	iP	00 04 45.2

Iran (h = 40 km).

" 22	Ud	iP	01 11 05.4
" 22	Ud	iP	01 27 29.1
" 22	Up	iP	01 36 04.4
	Ki	iP	01 36 38.8

(cont.)

1977
Mar. 22 (cont.)

	Um	iP	01 36 17.2
	Ud	iP	01 36 19.7
	De	iP	01 36 06.0

Iran (h = N).

" 22	Up	iP	01 44 53.3
	Ki	iP	01 45 25.3
	Sk	iP	01 45 26.3
	Um	iP	01 45 04.8
	Ud	iP	01 45 07.7
	De	iP	01 44 53.8

Iran (h = 55 km).

" 22	Up	iP	01 47 51.9
	Ki	iP	01 48 24.2
	Sk	iP	01 48 26.2
	Um	iP	01 48 03.1
	Ud	iP	01 48 07.4

Iran.
Origin time = 01 40 06.

" 22	Up	iP	01 59 01.4 C
	Um	iP	01 58 48.2
	Ud	iP	01 59 11.2

Luzon.
Origin time = 01 46 41.

" 22	Um	iP	02 27 27.4
" 22	Up	iP	02 33 44.1 C
			micr sec
	P	Z'	0.1 1.0
	Ki	iP	02 34 17.1
			micr sec
	P	Z'	0.1 1.1
	Sk	iP	02 34 17.6 C
	Um	iP	02 33 55.6 C
	Ud	iP	02 33 59.3 C
		i	02 34 01.4
	De	iP	02 33 44.0
		i	02 33 47.1

Iran (h = 45 km).
m = 5.6 (Up,Ki).

" 22	Up	iPKP	02 42 24.8
		iPKP1	02 42 31.1
		iPKP2	02 42 39.7
		ipPKP1	02 43 47.3
			micr sec
		PKP1 Z'	0.3 1.0
	Ki	iPKP1	02 42 10.0 C
		i	02 42 41.0
			micr sec
		PKP1 Z'	0.5 1.6

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 22 (cont.)

Sk	iPKP	02 42 20.6	
	iPKP1	02 42 26.1	
Um	iPKP	02 42 18.2	
	iPKP1	02 42 21.1	
	ipPKP1	02 43 37.1	
Ud	iPKP	02 42 25.0	
	iPKP1	02 42 32.9	
	iPKP2	02 42 42.2	
	ipPKP1	02 43 51.4	
De	i(PKP)	02 42 25.8	
	iPKP	02 42 30.4	
	iPKP1	02 42 39.6	
	i	02 43 00.8	

South of Kermadec Islands.
h = 310 km (Up,Um,Ud).

" 22	Up	iP		02 49 52.6	
				micr sec	
		P	Z'	0.1 0.9	
	Ki	iP		02 50 25.2	
	Sk	iP		02 50 26.7	
	Um	iP		02 50 03.8	
		iPP		02 51 40.1	
	Ud	iP		02 50 07.9	
	De	iP		02 49 54.0	

Iran (h = 60 km).

" 22	Up	iP	02 52 31.1
	Ud	iP	02 52 28.6
" 22	Ki	iP	03 26 46.0
	Um	iP	03 26 26.1
	Ud	iP	03 26 28.2
	De	iP	03 26 13.8

Iran (h = N).

" 22	Um	iP	03 28 42.7
	Ud	iP	03 28 46.7
" 22	Up	iP	04 16 50.8
	Ki	iP	04 15 42.0
	Sk	iP	04 15 48.5
	Um	iP	04 16 13.1
	Ud	iP	04 16 35.1
" 22	Up	iP	04 23 26.5
	Um	iP	04 23 49.6
	Ud	iP	04 23 21.5
		i	04 23 34.6

South Atlantic Ocean (h = N).

" 22	Up	iP	04 55 41.8
	Ki	iP	04 56 13.7
	Sk	eP	04 56 17

(cont.)

1977
Mar. 22 (cont.)

	Um	iP	04 55 56.1
	Ud	iP	04 55 56.3
	De	iP	04 55 43.7

Iran (h = N).

" 22	Up	iP	04 56 27.5
" 22	Ud	iP	05 15 25.3
	De	iP	05 15 11.1
" 22	Up	iP	05 39 18.3
	Ki	iP	05 39 56.5
	Ud	iP	05 39 33.6 C
	De	iP	05 39 16.4

Iran (h = 40 km).

" 22	Up	iPKP1	06 19 03.3
	Ud	iPKP1	06 19 04.9
	De	iPKP1	06 19 15.4
" 22	Up	iP	06 43 16.9
	Ki	iP	06 44 22.9
	Sk	iP	06 43 56.3
	Um	iP	06 43 49.2
	Ud	iP	06 43 25.5
	De	iP	06 42 58.9

Crete (h = N).

" 22	Up	iP	07 09 30.0
	Ki	iP	07 09 07.9
	Sk	iP	07 09 36.7
	Um	iP	07 09 15.7
	Ud	iP	07 09 39.5

Luzon (h = 70 km).

" 22	Up	iP	07 37 23.5
	Ki	iP	07 37 56.1 D
	Um	iP	07 37 34.6
	Ud	iP	07 37 38.5
	De	iP	07 37 23.5

Iran (h = 55 km).

" 22	Up	iP		09 22 25.9
		i		09 22 27.0
				micr sec
		i	Z'	0.1 0.9
	Ki	iP		09 22 58.2
	Sk	iP		09 22 59.3
	Um	iP		09 22 37.1
	Ud	iP		09 22 41.2
		i		09 22 42.7
	De	iP		09 22 26.6

Iran (h = N).

" 22	Up	iP	09 23 08.5 C

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 22 (cont.)

Up			micr	sec
	P	Z'	0.2	1.0
	Mx	E	0.8	20
	Mx	N	1.6	18
	Mx	Z	1.5	18
Ki	iP		09 23 40.4	C
			micr	sec
	P	Z'	0.1	0.9
	Mx	E	1.6	15
	Mx	N	3.7	15
	Mx	Z	2.9	14
Sk	iP		09 23 41.6	
Um	iP		09 23 19.7	C
Ud	iP		09 23 24.0	
De	iP		09 23 09.2	

Iran.
Origin time = 09 15 23
m = 5.8, M = 5.2 (Up,Ki).

" 22 Up iP 10 35 44.2
Ud iP 10 35 52.8
Probably Luzon.

" 22 Ud iP 10 45 19.9

" 22 Um iP 10 56 11.5
Japan (h = 55 km).

" 22

Up	iP		12 05 16.2	
	i		12 05 17.4	
	iS		12 11 31.5	
			micr	sec
	i	Z'	0.6	0.9
	Mx	E	5.1	18
	Mx	N	6.6	15
	Mx	Z	7.5	16
Ki	iP		12 05 49.0	
	i		12 05 50.0	
	iS		12 12 31	
			micr	sec
	i	Z'	0.8	1.2
	Mx	E	7.7	13
	Mx	N	8.5	13
	Mx	Z	9.8	12
Sk	iP		12 05 50.7	
Um	iP		12 05 27.6	
	i		12 05 29.1	
	iPP		12 07 14.7	
	iS		12 11 48.7	
Ud	iP		12 05 31.1	
	i		12 05 32.6	
	iPP		12 07 22.0	
	iS		12 11 59.6	

(cont.)

1977
Mar. 22 (cont.)

De	iP		12 05 16.7	
	i		12 05 17.9	
	iS		12 11 33.8	

Iran (h = 40 km).
m = 6.4, M = 5.9 (Up,Ki).
Double P, small and large,
average separation 1.3 s.

" 22 Ki iP 12 15 32.5
Ud iP 12 15 15.0
De iP 12 15 00.1
Iran.
Origin time = 12 07 14.

" 22 Ud iP 12 25 26.0

" 22

Up	iP		12 40 41.4	
			micr	sec
	P	Z'	0.1	1.0
Ki	iP		12 41 13.4	
			micr	sec
	P	Z'	0.1	1.0
Sk	iP		12 41 14.3	
Um	iP		12 40 52.6	C
Ud	iP		12 40 56.3	
De	iP		12 40 41.9	C

Iran (h = 60 km).
m = 5.6 (Up,Ki).

" 22 Ki i(P) 13 54 35.0

" 22 Up i(P) 14 12 33.0

" 22 Ud i(P) 15 48 01.8

" 22 Um iP 15 54 24.6

" 22

Up	iP	16 44 47.2
Ki	iP	16 45 19.5
Sk	iP	16 45 20.4
Um	iP	16 44 58.1
Ud	iP	16 45 02.1
De	iP	16 44 47.9

Iran (h = 60 km).

" 22 Um iP 19 08 22.1
Ud iP 19 08 24.9

" 22 Um iP 19 42 07.6
El Salvador (h = 80 km).

" 22 Up iP 20 06 35.2

" 22 Up iP 20 06 55.5
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 22 (cont.)

Sk	i	20 07 40.8	
Um	iP	20 07 35.5	
Ud	iP	20 07 02.1	

Greece (h = 80 km).

" 22

Up	iP	20 17 10.7	C
Ki	iP	20 17 19.1	
Um	iP	20 17 08.5	
Ud	iP	20 17 27.4	C
De	iP	20 17 24.4	

Afghanistan-USSR (h = 130 km).

" 22

Up	iP	21 35 56.0	
Ki	iP	21 36 38.3	
Sk	iP	21 36 29.6	
Um	iP	21 36 06.6	
Ud	iP	21 36 10.9	
De	iP	21 35 56.3	

Iran (h = 55 km).

" 22

Up	iP	21 38 48.2	
	i	21 38 51.6	
		micr sec	
	i	Z' 0.1 1.0	
Ki	iP	21 39 20.2	
	i	21 39 23.8	
		micr sec	
	i	Z' 0.1 0.9	
Sk	iP	21 39 22.0	
	i	21 39 25.0	
Um	iP	21 38 59.1	
Ud	iP	21 39 02.9	
	i	21 39 07.0	
De	iP	21 38 48.6	

Iran (h = N).
m = 5.6 (Up,Ki).
Double P, average separation 3.5 s.

" 22

Up	iP	23 40 33.8	
Ki	iP	23 40 04.4	
Um	iP	23 40 17.6	C

Mariana Islands (h = 55 km).

" 22

Ki	iP	23 48 02.6
Um	iP	23 47 44.1
Ud	iP	23 47 45.2
De	iP	23 47 30.1

Iran.
Origin time = 23 39 44.

" 23

Ud	iPKPl	00 05 18.5
De	iPKPl	00 05 30.2

Fiji Islands (h = 570 km).

1977
Mar. 23

Up	iP	00 25 37.9	
	i	00 25 42.2	
Ki	iP	00 26 09.5	
	i	00 26 13.1	
Sk	iP	00 26 10.9	
Um	iP	00 25 48.8	
	i	00 25 54.7	
Ud	iP	00 25 51.8	
	i	00 25 56.8	
De	iP	00 25 37.3	

Iran (h = 35 km).

" 23

Up	iP	02 23 30.1	
		micr sec	
	P	Z' 0.1 1.0	
Ki	iP	02 23 33.4	
		micr sec	
	P	Z' 0.4 1.5	
Sk	iP	02 23 16.9	
Um	iP	02 23 34.6	
Ud	iP	02 23 19.0	
De	iP	02 23 20.6	

Colombia (h = 160 km).
m = 5.8 (Up,Ki).

" 23

Ki	iP	02 33 22.8
Ud	iP	02 33 05.4
De	iP	02 32 50.5

Iran.
Origin time = 02 25 05.

" 23

Up	iP	02 39 23.3	
	i	02 39 27.8	
Ki	iP	02 39 55.7	C
		micr sec	
	P	Z' 0.1 0.5	
Sk	iP	02 39 57.3	
Um	iP	02 39 34.6	C
	i	02 39 39.6	
Ud	iP	02 39 38.7	C
	i	02 39 43.7	
De	iP	02 39 24.2	
	i	02 39 27.7	

Iran (h = 55 km).
Double P, average separation 4.5 s.

" 23

Ud	iP	03 28 37.2

" 23

Up	iP	03 57 03.6	
	i	03 57 27.2	
		micr sec	
	P	Z' 0.1 1.0	
Ki	iP	03 56 17.8	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 23 (cont.)

Ki			micr	sec
	P	Z'	0.1	1.0
Sk	iP		03 56 54.7	
Um	iP		03 56 39.1	
Ud	iP		03 57 09.9	
De	iP		03 57 27.3 C	

Kurile Islands (h = 35 km).
m = 5.9 (Up,Ki).

" 23

Sk	iP		04 36 29.7	
Um	iP		04 36 04.1	
Ud	iP		04 36 34.8	

" 23

Up			micr	sec
	Mx	E	2.0	21
	Mx	N	5.8	23
	Mx	Z	11	23
Ki	iPKP		07 38 06.0	
			micr	sec
	Mx	E	2.9	21
	Mx	N	5.2	19
	Mx	Z	2.4	20
Um	iPKP		07 38 17.1	
Ud	iPKP		07 38 22.0	
De	i		07 38 45.4	

Fiji Islands (h = N).
M = 6.3 (Up,Ki).

" 23

Up	iP		07 54 42.9 C	
			micr	sec
	P	Z'	0.1	0.9
Ki	iP		07 55 14.8 C	
			micr	sec
	P	Z'	0.1	1.0
Sk	iP		07 55 16.5 C	
Um	iP		07 54 54.1 C	
Ud	iP		07 54 57.8 C	
De	iP		07 54 43.8 C	

Iran (h = 55 km).
m = 5.7 (Up,Ki).

" 23

Ud	i(P)		08 38 20.5

" 23

Up	iP		10 14 02.1
Ud	iP		10 14 11.9

Philippine Islands (h = 110 km).

" 23

Up	iP		10 18 51.7
Ki	iP		10 19 24.3
Um	iP		10 19 03.1
Ud	iP		10 19 07.4
De	iP		10 18 52.6

Iran (h = N).

1977
Mar. 23

Up	iP		12 00 40.0
Ki	eP		12 01 47
Um	iP		12 01 08.6
Ud	iP		12 00 55.8 C

Turkey (h = 25 km).

" 23

Ud	iP		13 38 47.7

" 23

Up	iP		13 52 56.3
Ki	iP		13 53 29.3
Um	iP		13 53 10.6
Ud	iP		13 53 11.6 C
De	iP		13 52 56.7

Iran (h = 60 km).

" 23

Ud	iP		13 59 36.6

" 23

Ud	iPKP		15 36 05.4
De	iPKP		15 36 17.1

" 23

Ud	iP		16 33 37.1

" 23

Ud	iP		16 36 51.3

Tadzhik SSR (h = 35 km).

" 23

Up	iSgl		16 39 46.7
Um	eSgl		16 41 53
Ud	iSgl		16 40 35.8
De	eSgl		16 39 51

Coast of Latvia.
Approximate location 56 1/2°N, 21°E.
Explosion?

" 23

Up	iPKP		17 29 35.1	
			micr	sec
	Mx	E	0.8	21
	Mx	N	5.0	23
	Mx	Z	7.0	23
Ki	iPKP		17 29 20.1	
			micr	sec
	Mx	E	1.7	19
	Mx	N	3.2	19
	Mx	Z	3.4	18
Sk	iPKP		17 29 29.3	
Um	iPKP		17 29 31.1	
Ud	i		17 29 39.7	
De	iPKP		17 29 43.5	

Fiji Islands (h = 0).
M = 6.1 (Up,Ki).

" 23

Up	iP		18 04 34.1
Um	iP		18 04 09.6
Ud	iP		18 04 40.7

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 23 (cont.)

De	iP	18 04 56.1	
Japan (h = N).			
" 23 Um	iPKP	19 16 43.4	
Ud	iPKP	19 16 50.8	
De	ePKP	19 16 56	
Tonga Islands (h = 35 km).			
" 23 Up	iP	20 48 43.9	
		micr	sec
	P	Z' 0.1	1.1
Ki	iP	20 49 16.6	C
		micr	sec
	P	Z' 0.1	1.0
Sk	iP	20 49 17.6	
Um	iP	20 48 55.1	C
Ud	iP	20 48 59.3	C
De	iP	20 48 44.0	C
	i	20 48 49.7	
Iran (h = 40 km).			
m = 5.6 (Up,Ki).			
" 23 Um	iP	21 32 15.8	
Ud	iP	21 32 45.7	
Japan (h = 40 km).			
" 23 Ud	iP	23 24 42.8	
" 23 Up	iP	23 28 24.3	
Ki	iP	23 28 04.2	
Um	iP	23 28 11.1	
Ud	iP	23 28 33.6	
Luzon (h = 80 km).			
" 23 Up	iP	23 59 02.4	C
	iS	24 05 22.7	
		micr	sec
	P	Z' 0.6	1.0
	Mx	E 1.4	11
	Mx	N 1.2	17
	Mx	Z 1.9	11
Ki	iP	23 59 34.7	C
	iPP	24 01 26.5	
		micr	sec
	P	Z' 0.4	1.2
	Mx	E 3.9	11
	Mx	N 3.5	11
	Mx	Z 3.5	11
Sk	iP	23 59 35.6	C
Um	iP	23 59 13.6	C
	iPP	24 01 04.0	
	iS	24 05 37	
Ud	iP	23 59 17.8	C

(cont.)

1977
Mar. 23 (cont.)

Ud	iS	24 05 45.2	
De	iP	23 59 03.4	C
Iran (h = 35 km).			
m = 6.3, M = 5.4 (Up,Ki).			
" 24 Up	iP	00 12 35.8	
		micr	sec
	P	Z' 0.1	1.0
Ki	iP	00 13 06.5	
Sk	iP	00 13 09.4	
Um	iP	00 12 47.2	C
Ud	iP	00 12 51.2	C
De	iP	00 12 36.5	C
Iran (h = N).			
" 24 Up	iP	00 21 37.3	C
	i	00 21 41.0	
		micr	sec
	P	Z' 0.1	1.0
	i	Z' 0.2	0.9
Ki	iP	00 22 10.0	C
	i	00 22 14.7	
		micr	sec
	P	Z' 0.1	1.0
	i	Z' 0.2	1.0
Sk	iP	00 22 10.9	C
	i	00 22 14.8	
Um	iP	00 21 48.9	C
	i	00 21 52.6	
Ud	iP	00 21 52.7	C
	i	00 21 56.2	
	i(PP)	00 23 29.9	
De	iP	00 21 37.8	C
	i	00 21 41.8	
Iran (h = 45 km).			
m = 5.9 (Up,Ki).			
" 24 Up	iP	00 27 46.4	C
Ki	iP	00 28 18.7	
Sk	iP	00 28 19.6	
Um	iP	00 27 58.2	
Ud	iP	00 28 01.7	C
De	iP	00 27 47.4	
Iran.			
Origin time = 00 20 00.			
" 24 Up	iP	01 26 03.8	
Um	iP	01 25 42.6	
Japan (h = 55 km).			
" 24 Ud	iP	02 20 23.9	
" 24 Up	i(P)	04 12 04.7	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Mar.	24	Up	iP		04 50 11.3 C
			i		04 50 15.7
					micr sec
			P	Z'	0.2 1.0
		Ki	iP		04 50 43.5 C
			i		04 50 47.1
					micr sec
			P	Z'	0.2 1.3
			Mx	N	0.9 13
		Sk	iP		04 50 45.0
			i		04 50 48.4
		Um	iP		04 50 22.7 C
			i		04 50 25.7
		Ud	iP		04 50 27.0 C
			i		04 50 31.0
		De	iP		04 50 12.3
		Iran (h = 30 km).			
		m = 5.8 (Up,Ki).			
		Double P, average separation 3.7 s.			
"	24	Ud	iP		05 52 41.6
"	24	Up	iP		06 25 19.3
		Ki	iP		06 25 02.0
		Um	iP		06 25 07.9
		Ud	iP		06 25 27.5 C
		De	iP		06 25 33.6
		Talaud Islands (h = N).			
"	24	Ud	iP		06 56 37.0
"	24	Up	iP		07 16 11.6
		Ud	iP		07 16 21.9
		Banda Sea (h = 35 km).			
"	24	Up	iPn		07 34 29.4
			i		07 34 38.3
			i		07 36 23.8
			i		07 36 36.6
			iS*		07 36 56.1
			iSg1		07 37 03.7
			iSg2		07 37 12.7
					micr sec
			Pn	Z'	0.1 1.0
		Ki	iP		07 36 15.7
		Sk	iP		07 35 19.5
			iS		07 37 34.7
		Um	iP		07 35 25.3
			iS		07 37 59.6
		Ud	iPn		07 34 31.3
			i		07 34 41.4
			iSn		07 36 10.7
			iSg2		07 37 13.8
		(cont.)			

1977				
Mar.	24	(cont.)		
		De	iPn	07 33 42.5
		Poland (h = N).		
"	24	Ki	i(P)	07 35 09.4
"	24	Ud	iP	07 54 26.1
		Tadzhik-Sinkiang (h = 120 km).		
"	24	Up	iP	09 29 34.8
		Sk	eP	09 28 47
		Um	iP	09 29 34.8
		Ud	iP	09 29 21.4
		Iceland (h = 10 km).		
"	24	Ki	iP	10 51 16.1
		Sk	iP	10 51 10.3
		Um	iP	10 51 35.3
		Ud	iP	10 51 55.2
"	24	Ud	iP	12 00 40.9
		Formosa (h = 30 km).		
"	24	Up	iP	14 05 43.4
		Um	iP	14 05 55.3 C
		Ud	iP	14 05 58.7
		De	iP	14 05 43.7
		Iran (h = N).		
"	24	Up	iP	14 18 29.2
		Um	iP	14 18 37.7
		Ud	iP	14 18 44.6 C
		De	iP	14 18 30.2 C
		Iran (h = 60 km).		
"	24	Up	iSg1	14 23 11.1
		Sk	iSg1	14 23 13.4
		Ud	iSg1	14 22 10.3
		South Norway, 58.4°N, 6.5°E.		
		Origin time = 14 20 07.		
		M_L = 2.7 (Up,Ud).		
		By combination with Bergen and Kongsberg readings.		
"	24	Up	iP	14 30 33.8
		Ud	iP	14 30 41.6
		Philippine Islands (h = 160 km).		
"	24	Ud	i(P)	15 02 31.5
"	24	Ud	iP	15 10 05.3
"	24	Um	iPKP	18 00 15.9
		New Hebrides Islands (h = 120 km).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 24 Ki iSgl 19 27 03.9
Sk i 19 27 15.1
iSgl 19 27 20.6
Um iSn 19 27 19.7
iSgl 19 27 33.8
Ud iSgl 19 29 01.3
Nordland, Norway, 66.5°N, 14.6°E.
Origin time = 19 25 43.
M_L = 2.7 (Ki,Sk,Um).
Explosion?

" 24 Up iP 19 45 54.9
i 19 46 06.4
Ki iP 19 45 33.9
micr sec
P Z' 0.2 1.5
Um iP 19 45 42.8 C
Ud iP 19 46 04.3 C
De iP 19 46 10.9
Luzon (h = N).

" 24 Up iP 20 18 10.0
Ud iP 20 18 21.6
Probably Iran.

" 24 Um iP 20 36 43.8
Ud iP 20 36 51.9

" 24 Ud iP 21 47 02.3

" 24 Up iPKP 22 32 11.2 C
Um iPKP 22 31 54.2 C
Ud iPKP 22 32 14.4

" 24 Up iP 22 53 28.9
Ud iP 22 53 31.0 C
De iP 22 53 30.3

" 24 Up iP 23 04 27.7
Ud iP 23 04 36.0
Mindanao (h = N).

" 25 Ud iP 02 06 59.2

" 25 Up iP 02 45 28.1
i 02 45 39.7
iPP 02 45 57.9
iS 02 50 04
micr sec
i Z' 0.1 1.0
Mx E 1.9 20
Mx N 0.9 17
Ki iP 02 46 17.4
(cont.).

1977
Mar. 25 (cont.)
Ki micr sec
P Z' 0.1 1.1
Um iP 02 45 47.9
i 02 45 52.2
iPP 02 46 44.6
iS 02 50 54
Ud iP 02 45 42.4
De iP 02 45 20.7
Turkey (h = 20 km).
m = 5.5 (Up,Ki).

" 25 Um iP 02 49 46.0

" 25 Ud iP 03 01 10.4

" 25 Up iP 03 03 28.6
Ud iP 03 03 36.5
Probably Luzon.

" 25 Ki iP 04 09 11.4
iS 04 10 24.3
Norwegian Sea. Approximate location 73 1/2°N, 16°E.
Origin time = 04 07 37.
Location from Helsinki regional bulletin.

" 25 Up iP 05 44 35.2
Um iP 05 44 48.6
Ud iP 05 44 49.1
De iP 05 44 36.8

" 25 Up iP 08 38 34.7
Ud iP 08 38 37.9

" 25 Ud iP 10 21 46.7

" 25 Up iP 12 08 08.5
Um iP 12 08 53.7 C
Probably Luzon.

" 25 Ki iP 13 38 35.3
Ud iP 13 37 35.1
De iP 13 37 03.5

" 25 Up iP 13 49 41.3
Ki iP 13 48 45.0
Um iP 13 49 13.7
Ud iP 13 49 37.5
De iP 13 50 01.6
Alaska (h = 55 km).

" 25 Up iPn 15 16 53.2
iPgl 15 16 59.6
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 25 (cont.)

Up	iSn	15 17 33.2	
	iSgl	15 17 44.3	
	i	15 17 51.1	
Sk	iSgl	15 20 08.1	
Um	iSn	15 19 04.6	
	iSgl	15 19 46.1	
Ud	iSgl	15 18 32.6	
De	iPn	15 16 55.0	
	iPgl	15 17 03.4	
	iSgl	15 17 54.0	

Off coast of Latvia.
Approximate location 57°N, 21°E.
Origin time = 15 15 58.
M_L = 2.9 (Up,Um,Ud,De).
Explosion?

" 25	Ud	iP	16 19 10.3	
" 25	Up	iP	16 26 43.1	
	Um	iP	16 26 17.1	
	Ud	iP	16 26 48.6	
" 25	Ud	iP	17 51 28.9	

Iran-USSR (h = 20 km).

" 25	Ki	iP	18 24 52.3	
	Ud	iP	18 25 11.3	
" 25	Up	iP	23 03 07.4	C
			micr sec	
		P Z'	0.1 1.0	
	Ki	iP	23 03 39.8	
	Sk	iP	23 03 41.4	
	Um	iP	23 03 18.7	C
	Ud	iP	23 03 22.9	C
	De	iP	23 03 07.8	
		i	23 03 15.6	

Iran (h = 55 km).

" 26	Ud	iP	00 37 28.4	

North Atlantic Ocean (h = N).

" 26	Up	iP	00 40 23.3	
			micr sec	
		P Z'	0.1 1.0	
	Ki	iP	00 40 55.2	
	Sk	iP	00 39 56.2	
	Um	iP	00 40 34.8	
	Ud	iP	00 40 38.5	
	De	iP	00 40 23.5	

Iran (h = 45 km).

1977
Mar. 26

Up	iP		04 47 11.1	
	iS		04 56 17	
			micr sec	
	P	Z'	0.6 1.1	
	Mx	E	3.1 18	
	Mx	N	5.7 18	
	Mx	Z	5.7 17	
Ki	iP		04 46 16.6	
	iS		04 54 40	
			micr sec	
	P	Z'	0.8 1.0	
	Mx	E	4.9 17	
	Mx	N	5.7 20	
	Mx	Z	4.1 17	
Sk	iP		04 46 47.3	
Um	iP		04 46 44.3	
	iS		04 55 28	
	iP'P'		05 15 34.9	
Ud	iP		04 47 10.2	
De	iP		04 47 32.6	

Aleutian Islands (h = 40 km).
m = 6.7, M = 5.9 (Up,Ki).

" 26	Ki	iP	05 06 27.5
	Um	iP	05 06 54.3
	Ud	iP	05 07 20.3
" 26	Ki	iP	05 10 55.8
	Um	iP	05 10 27.8
	Ud	iP	05 10 26.7

Turkey (h = 20 km).

" 26	Ud	iP	05 53 45.7

Greece (h = 35 km).

" 26	Ki	iPKP	08 38 17.2
	Um	i(PKP)	08 38 21.3
		iPKP	08 38 24.6
	Ud	iPKPl	08 38 23.8
		i	08 38 32.9
	De	iPKPl	08 38 36.5
		i	08 38 42.2

Tonga Islands (h = 90 km).

" 26	Ud	i(P)	08 43 37.1
" 26	Ud	i(P)	08 44 02.8
" 26	Up	iPKPl	12 50 10.9
	Sk	iPKPl	12 50 04.2
	Um	iPKPl	12 49 58.8 C
		i	12 50 03.1
	Ud	iPKPl	12 50 11.9 C
	De	ePKPl	12 50 21

Kermadec Islands (h = 60 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 26 Ki iP 14 19 24.7
Um iP 14 19 54.1
Ud iP 14 20 19.8
Aleutian Islands (h = 45 km).

" 26 Ki iP 14 36 14.6
Um i 14 35 59.0
Ud iP 14 35 57.1
De eP 14 35 47
Iran (h = 35 km).

" 26 Ud iP 15 07 09.6
Hindu-Kush (h = 190 km).

" 26 Ud iP 16 12 33.3

" 26 Up iP 16 40 32.1
Ki iP 16 39 39.9
Um iP 16 40 09.8
Ud iP 16 40 35.4
Aleutian Islands (h = 30 km).

" 26 Um iP 16 41 45.3
Ud iP 16 42 10.7

" 26 Um iP 17 24 55.3
Ud iP 17 25 20.8

" 26 Up iPKPl 19 15 54.6
Sk iPKPl 19 15 48.4
Um iPKP 19 15 48.6
i 19 15 53.1
Ud iPKPl 19 15 55.1
De iPKPl 19 16 05.7
i 19 16 09.2
Tonga-Kermadec Islands
(h = 400 km).

" 26 Up iP 22 37 34.1 C
i 22 37 39.1
iS 22 46 20
micr sec
P Z' 0.2 1.5
Mx E 1.1 19
Mx N 0.8 21
Mx Z 2.7 17
Ki iP 22 38 18.8
micr sec
P Z' 0.2 1.6
Mx E 1.1 15
Mx N 1.6 17
Mx Z 1.0 17
Sk iP 22 37 46.6
i 22 37 51.6
(cont.)

1977
Mar. 26 (cont.)
Um iP 22 37 59.8 C
i 22 38 04.8
iS 22 47 07
Ud iP 22 37 28.4 C
i 22 37 32.9
De iP 22 37 08.6
Ascension Island (h = N).
m = 6.0, M = 5.3 (Up,Ki).
Double P, average separation
4.9 s.

" 27 Up iP 05 45 26.4
micr sec
P Z' 0.1 1.0
Ki iP 05 45 29.5
micr sec
P Z' 0.1 0.6
Sk iP 05 45 48.7
Um iP 05 45 21.8
Ud iP 05 45 41.4
De iP 05 45 40.9
Kashmir-Tibet (h = 25 km).
m = 5.9 (Up,Ki).

" 27 Up iP 07 27 28.3
Um iP 07 27 39.4
Ud iP 07 27 43.9
De iP 07 27 30.6
Iran (h = 70 km).

" 27 Up iPKPl 07 44 07.0
Ud iPKPl 07 44 09.2 C
De iPKPl 07 44 19.9
Tonga-Kermadec Islands
(h = 440 km).

" 27 Up iP 12 06 49.8
Ki iP 12 07 27.2
Um iP 12 07 04.6
Ud iP 12 07 02.7
De iP 12 06 45.3
Iran (h = 45 km).

" 27 Ki iP 18 51 27.8
Um iP 18 51 55.3
Ud iP 18 52 22.7
De iP 18 52 47.6
Pribilof Islands (h = N).
Late arrivals compared with
NEIS solutions.

" 27 Ud iP 20 53 15.7
Alaska (h = 35 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Mar.	27	Um	iP		22 47 10.9	
		Mariana Islands (h = 70 km).				
"	28	Ud	iP		01 05 12.2	
		Luzon (h = 40 km).				
"	28	Up	iPKP		01 34 38.7	
			iSKPl		01 37 52.1	
					micr	sec
			SKPl	Z'	0.5	1.1
		Ki	iPKP		01 34 24.5	
		Sk	iPKP		01 34 36.1	
		Um	iPKP		01 34 31.2	
			iSKPl		01 37 39.2	
		Ud	iPKP		01 34 40.4	
			iSKPl		01 37 55.0	
		De	iPKP		01 34 46.9	
			iSKPl		01 38 06.1	
		New Hebrides Islands (h = 110 km).				
"	28	Up	iP		03 13 20.8	
		Ud	iP		03 13 35.3	
		De	iP		03 13 18.8	C
		Iran (h = 50 km).				
"	28	Up	iP		04 17 33.2	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		04 18 05.4	
		Sk	iP		04 18 06.3	
		Um	iP		04 17 44.3	
		Ud	iP		04 17 48.0	
		De	iP		04 17 33.9	
		Iran (h = 55 km).				
"	28	Up	iP		05 01 52.6	C
		Ki	iP		05 02 24.9	C
		Sk	iP		05 02 26.2	
		Um	iP		05 02 03.8	C
		Ud	iP		05 02 08.1	C
		De	iP		05 01 53.9	
		Iran (h = 50 km).				
"	28	Um	iP		05 26 09.8	
		Ud	iP		05 26 38.4	
		Japan (h = 50 km).				
"	28	Ud	iPKPl		08 23 10.1	C
		De	iPKPl		08 23 21.3	
		Tonga-Kermadec Islands (h = 530 km).				
"	28	Um	iP		08 25 49.4	

1977 Mar.	28	Up	iP		10 55 30.8	
					micr	sec
			Mx	E	0.4	11
			Mx	N	0.6	12
			Mx	Z	1.7	14
		Ki	iP		10 56 37.3	C
					micr	sec
			Mx	E	0.3	11
			Mx	N	0.3	10
		Sk	iP		10 56 12.0	
		Um	iP		10 56 05.8	
			iS		11 00 56	
		Ud	iP		10 55 40.4	C
		De	iP		10 55 10.3	C
		Dodecanese Islands (h = 25 km).				
		M = 4.4 (Up,Ki).				
"	28	Up	iP		16 33 51.3	
		Ud	iP		16 33 52.9	
			i		16 34 07.2	
"	29	Um	iP		01 22 37.8	
		Ud	iP		01 21 58.4	
		Italy (h = 10 km).				
"	29	Up	iP		04 03 52.3	C
			iPn		04 04 52.8	
					micr	sec
			P	Z'	0.1	0.5
		Ki	iP		04 03 36.6	C
					micr	sec
			P	Z'	0.3	0.9
		Sk	iP		04 04 08.4	
		Um	iP		04 03 37.8	C
			iPP		04 04 51.8	
		Ud	iP		04 04 10.0	C
		De	iP		04 04 16.2	
		Kazakh SSR.				
		m = 6.1 (Up,Ki).				
		Underground explosion.				
"	29	Um	i		04 30 55.3	
		Ud	iP		04 30 52.0	
		Kurile Islands (h = 110 km).				
"	29	Um	iP		09 24 53.2	
"	29	Ud	iP		09 25 42.0	
"	29	Um	iP		12 02 41.8	
"	28	Ud	iPKPl		15 44 11.6	
		Tonga-Kermadec Islands (h = 610 km).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 29 Um iPKP 18 01 39.8
Ud iPKP1 18 01 41.9
De iPKP1 18 01 52.4
Fiji Islands (h = 540 km).

" 29 Up iP 22 37 03.4
i 22 37 35.5
iPP 22 38 34.9
micr sec
P Z' 0.3 1.4
Ki iP 22 37 35.0
i 22 37 37.2
micr sec
i Z' 0.2 0.7
Sk iP 22 37 38.4
Um iP 22 37 13.8 C
i 22 37 17.9
Ud iP 22 37 17.9
De iP 22 37 03.0
Iran (h = 35 km).
m = 6.0 (Up,Ki).

" 29 Um iP 22 43 40.4
Ud iP 22 43 43.4
Probably Iran.

" 29 Um iP 23 33 09.3
Ud iP 23 33 13.0
De iP 23 32 58.9
Iran (h = 55 km).

" 29 Um iP 23 56 38.8
Ud iP 23 57 07.5
Japan (h = 80 km).

" 30 Ud iP 03 19 23.0

" 30 Um iP 06 39 51.4
Ud iP 06 39 54.0
De iP 06 39 42.5
Iran.
Origin time = 06 31 56.

" 30 Ud iP 08 37 15.8
De iP 08 37 01.7
Iran (h = 45 km).

" 30 Up iP 11 32 29.9
Ki iP 11 31 54.8
micr sec
P Z' 0.4 1.9
Um iP 11 32 08.9
Ud iP 11 32 35.9
De iP 11 32 49.8
Japan (h = 35 km).

1977
Mar. 30 Up iPKP1 11 52 36.1 C
Um iPKP1 11 52 24.9
Ud iPKP1 11 52 35.6
De iPKP1 11 52 47.7
Kermadec Islands (h = N).

" 30 Up i(P) 13 40 10.8

" 30 Up iP 17 52 22.6
micr sec
P Z' 0.1 1.0
Ki iP 17 51 28.9 C
micr sec
P Z' 0.1 0.9
Sk i 17 52 10.9
Um iP 17 51 55.0 C
Ud iP 17 52 24.8 C
De iP 17 52 46.3 C
Aleutian Islands (h = 30 km).
m = 5.9 (Up,Ki).

" 30 Ud eP 21 33 49 C
De iP 21 33 41.6
North Atlantic Ocean (h = N).

" 30 Ud iP 21 45 37.3
North Atlantic Ocean (h = N).

" 31 Um iP 00 18 31.1
Ud i 00 19 17.1
Japan (h = 50 km).

" 31 Um i(P) 01 02 21.2
Japan (h = 40 km).

" 31 Up iPKP2 01 59 51.0
Um iPKP 01 59 32.3
i 01 59 36.9
Ud iPKP1 01 59 45.3
i 01 59 52.4
De iPKP2 02 00 07.5
Kermadec Islands (h = 70 km).

" 31 Um iP 02 02 04.4

" 31 Up iP 02 03 53.2
Um iP 02 03 35.4 D
Ud iP 02 03 55.5 D

" 31 Up iPKP1 05 27 28.2 C
i 05 27 32.6
micr sec
PKP1 Z' 0.1 1.1
Sk iPKP1 05 27 21.2
Um iPKP1 05 27 15.9 C
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Mar. 31 (cont.)
Ud iPKPl 05 27 29.7
i 05 27 34.0
De iPKPl 05 27 38.9 C
Kermadec Islands (h = 45 km).

" 31 Um iP 07 51 40.5
Guatemala (h = 55 km).

" 31 Up iP 09 52 58.0
Ki iP 09 52 22.7
Um iP 09 52 39.4
Ud iP 09 53 05.0
De iP 09 53 18.4
Bonin Islands (h = 15 km).

" 31 Up iP 10 13 46.5
Ki iP 10 14 16.2
Um iP 10 13 57.4
Ud iP 10 14 01.5 C
De iP 10 13 46.5
Iran (h = 60 km).

" 31 Up iP 13 44 13.0 C
Ki iP 13 44 44.7 C
Sk iP 13 44 46.9
Um iP 13 44 24.4 C
Ud iP 13 44 28.7 C
De iP 13 44 14.2 C
Iran (h = 60 km).

" 31 Up iP 15 46 29.9
Um iP 15 46 14.6
Ud i 15 46 41.8
Luzon (h = 60 km).

" 31 Ud iP 16 52 27.7

" 31 Um iP 19 11 56.3
Ud iP 19 12 14.1
De iP 19 12 08.1
Hindu-Kush (h = 130 km).

" 31 Up iP 19 19 05.5
i 19 19 10.5
micr sec
P Z' 0.1 1.1
Ki iP 19 19 37.4
Um iP 19 19 17.4
Ud iP 19 19 20.9 C
i 19 19 25.6
De iP 19 19 06.5
Iran (h = 50 km).

1977
Mar. 31 Up iP 20 00 45.0
micr sec
P Z' 0.1 1.0
Ud iP 20 00 59.9 C
Iran (h = 35 km).

" 31 Up iP 21 43 30.0
Ud iP 21 43 43.9
Iran (h = 25 km).

" 31 Ud iP 21 55 58.3
Afghanistan-USSR (h = 130 km).

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December 5, 1978

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BOX 517
751 20 UPPSALA 1
SWEDEN

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BOX 517
S-751 20 UPPSALA
SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

A P R I L 1 - 30, 1977

1977						
Apr.	1	Ud	iP		10 49 52.3	
		De	iP		10 49 38.1	
"	1	Up	iP		13 44 10.9	
			iS		13 50 26.5	
					micr	sec
			P	Z'	1.3	1.0
			Mx	E	6.1	11
			Mx	N	6.8	10
			Mx	Z	9.8	10
		Ki	iP		13 44 43.9	
					micr	sec
			P	Z'	1.9	1.3
			Mx	E	18	12
			Mx	N	14	11
			Mx	Z	16	12
		Sk	iP		13 44 45.0	
		Um	iP		13 44 22.4	
			iS		13 50 48.2	
		Ud	iP		13 44 26.1 C	
			iS		13 50 56.0	
		De	iP		13 44 11.3	
			iS		13 50 28.8	
		Iran (h = 30 km).				
		m = 6.7, M = 6.1 (Up,Ki).				
"	1	Up	iPgl		14 23 42.9	
			iSgl		14 24 30.1	
		Um	iSgl		14 26 17.2	
		Ud	ePgl		14 24 09	
			iSgl		14 25 16.6	
		De	iPgl		14 23 46.5	
			iSgl		14 24 38.1	
		Coast of Latvia, near				
		56 3/4°N, 21°E.				
		Origin time = 14 22 38.				
		M_L = 2.8 (Up,Um,Ud,De).				
		Explosion?				

1977				
Apr.	1	Up	iP	15 34 50.9
		Ud	iP	15 35 01.9
		Ionian Sea (h = N).		
"	1	Up	iP	16 08 10.4
		Ki	iP	16 08 43.7
		Sk	eP	16 08 44
		Um	iP	16 08 21.5
		Ud	iP	16 08 25.9
		De	iP	16 08 10.9
		Iran (h = N).		
"	1	Um	iP	16 28 18.6
		Ud	iP	16 28 08.0
		Costa Rica (h = 50 km).		
"	1	Up	iP	20 51 12.4
		Ki	iP	20 51 45.5
		Ud	iP	20 51 26.2
		Iran (h = N).		
"	2	Up	iP	00 14 53.3
		Sk	iP	00 14 18.5
		Um	iP	00 13 51.5
		Ud	iP	00 14 09.5 C
		De	iP	00 14 06.3
		Afghanistan-USSR (h = 220 km).		
"	2	Ud	iP	06 44 09.7
"	2	Up	iP	07 01 19.2
		Ki	iP	07 01 52.1
		Sk	iP	07 01 53.0
		Um	iP	07 01 31.0
		Ud	iP	07 01 34.1
		De	eP	07 01 22
		Iran (h = N).		
"	2	Ki	iP	07 05 46.5
		Ud	iP	07 06 01.0

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Apr.	2	Up	iPdiff		07 31 55
			i(PKP)		07 34 29.4
			i(PKP)		07 34 34.9
			iPKP		07 34 40.6
			iPP		07 37 22.3
			i		07 37 30.9
			iSKPl		07 38 15.2
			iSKKP		07 46 19.2
			i		07 46 46.2
					micr sec
			(PKP)	Z'	0.1 1.1
			PKP	Z'	0.6 1.2
			i	Z'	2.8 1.9
			Mx	E	44 20
			Mx	N	90 20
			Mx	Z	111 20
		Ki	i(PKP)		07 34 17.6
			iPKP		07 34 26.8
			i		07 34 39.2
			iPP		07 36 37.2
					micr sec
			(PKP)	Z'	0.1 1.4
			PKP	Z'	1.0 1.3
			PP	Z'	13.4 3.5
			Mx	E	50 18
			Mx	N	60 18
			Mx	Z	60 18
		Sk	i(PKP)		07 34 25.9
			iPKP		07 34 37.4
			iPP		07 37 00.2
			i		07 37 11.5
		Um	i(PKP)		07 34 22.0
			i(PKP)		07 34 24.5
			iPKP		07 34 35.0
			iSKKP		07 46 47.9
		Ud	i(PKP)		07 34 29.1
			i(PKP)		07 34 31.5
			iPKP		07 34 40.8
			iPP		07 37 23.3
		De	iPKPl		07 34 41.3
			i		07 34 42.0

Samoa Islands (h = N).
m = 7.4, M = 7.5 (Up,Ki).
The body wave magnitude is computed from PP-waves.

"	2	Um	iP	09 23 14.6
"	2	Um	iP	10 36 45.7
		Ud	eP	10 36 50
"	2	Um	iP	16 11 31.8
		Ud	iP	16 10 48.8

North Atlantic Ocean
(h = N).

1977 Apr.	2	Up	iP	16 13 35.1
		Ud	iP	16 13 37.3
"	2	Ki	iPgl	17 24 51.3
			iSgl	17 25 32.0
		Um	iPn	17 25 10.5
			iSgl	17 26 47.3

Off Lofoten, Norway, near 67 1/2°N, 12°E.
Origin time = 17 23 57.
M_L = 2.6 (Ki).
Checked with Tromsoe reading.

"	2	Ud	iP	18 57 21.3

Crete (h = N).

"	2	Um	iP	19 18 16.1
"	2	Up	iP	20 51 17.5
			ipP	20 52 13.5
				micr sec
			pP	Z' 0.1 1.0
		Ki	iP	20 51 05.1 C
				micr sec
			P	Z' 0.3 1.3
		Sk	iP	20 50 58.8
		Um	iP	20 51 13.6
			ipP	20 52 10.1
		Ud	iP	20 51 08.0
		De	iP	20 51 15.3

Mexico.
h = 240 km (Up,Um).

"	2	Ud	eP	22 23 42

Iran (h = N).

"	3	Up	iS	03 24 01.4
			iLgl	03 25 48.7
		Um	iP	03 22 21.7
		Ud	eP	03 21 34
		De	iP	03 20 39.9

Austria (h = N).

"	3	Up	iPKPl	19 55 19.3
		Um	iPKPl	19 55 06.3

North Island, New Zealand
(h = 230 km).

"	3	Up	iP	20 12 32.6
"	4	Up	iP	02 19 19.3
		Um	iP	02 20 00.3

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 4 Up iPKP 02 48 27.2
i 02 48 33.8
Ki ePKP 02 48 45
i 02 48 46.9
Um iPKP 02 48 36.0
i 02 48 39.8
Ud iPKP 02 48 25.7
i 02 48 32.4
South Sandwich Islands
(h = N).

" 4 Um ePKP 04 49 22.1
New Hebrides Islands
(h = 15 km).

" 4 Ud iP 05 26 39.0

" 4 Um iP 06 43 16.7
Ud iP 06 43 39.5

" 4 Up iP 07 19 45.8
Ki eP 07 19 04
Um iP 07 19 24.3
i 07 19 30.3
Ud iP 07 19 53.1
Japan (h = 60 km).

" 4 Ud iPKP 07 47 26.3
Fiji Islands (h = 430 km).

" 4 Ud iPKP1 15 44 12.3
De iPKP1 15 44 23.5
Fiji Islands (h = 600 km).

" 4 Ud eP 15 57 10
Afghanistan-USSR (h = 200 km).

" 4 Up iP 18 03 00.6 C
i 18 03 16.2
iS 18 11 42.7
micr sec
P Z' 0.5 1.3
Mx E 5.8 18
Mx N 5.4 18
Mx Z 10 17
Ki iP 18 03 33.0 C
i 18 03 41.5
i 18 03 48.7
iS 18 12 46
micr sec
P Z' 0.3 1.1
Mx E 3.7 16
Mx N 3.6 16
Mx Z 3.3 20
(cont.)

1977
Apr. 4 (cont.)
Sk iP 18 03 00.8
Um iP 18 03 20.3 C
i 18 03 28.8
i 18 03 35.9
iS 18 12 23
Ud iP 18 02 50.3 C
De iP 18 02 38.3 C
Central Mid-Atlantic Ocean
(h = N).
m = 6.4, M = 5.9 (Up,Ki).

" 4 Ud iP 18 08 40.2
Mexico (h = 30 km).

" 4 Up iP 19 19 19.7
Ki iP 19 19 18.8
ipP 19 19 50.0
micr sec
P Z' 0.1 0.7
Um iP 19 19 16.5
ipP 19 19 47.5
Ud iP 19 19 29.3
ipP 19 19 59.5
De iP 19 19 28.9
Sumatra.
h = 120 km (Ki,Um,Ud).

" 5 Ki iP 04 42 39.9
Um iP 04 42 44.5
Ud iP 04 43 06.0
Mindanao (h = 70 km).

" 5 Ud iP 07 50 11.3
Kamchatka (h = 55 km).

" 5 Um iP 08 40 51.8
ipP 08 41 46.3
Ud ipP 08 42 06.4
Mariana Islands (h = 230 km).

" 5 Up iP 10 56 04.5
micr sec
Mx E 1.4 18
Mx N 2.3 21
Mx Z 2.2 26
Ki iP 10 55 38.0
micr sec
Mx N 1.9 17
Sk iP 10 56 03.4
Um iP 10 55 48.8
Ud iP 10 56 10.4
South of Mariana Islands
(h = 15 km).
M = 5.7 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 5 De iPKP 12 06 05.4
New Ireland (h = 60 km).

" 5 Ud iP 13 36 27.6

" 5 Up iP 15 11 48.8 C
micr sec
P Z' 0.2 1.1
Ki iP 15 11 13.6 C
i 15 11 33.3
micr sec
P Z' 0.1 1.0
Sk iP 15 11 22.6 C
Um iP 15 11 34.2 C
i 15 11 50.7
Ud iP 15 11 40.7 C
De iP 15 11 57.4
Nevada.
m = 6.0 (Up,Ki).
Underground explosion.

" 5 Ud iP 17 01 32.4

" 5 Up iP 17 19 46.6
Ud iP 17 19 59.9
Aegean Sea (h = 35 km).

" 5 Um iP 19 56 42.4
Ud eP 19 56 19
Crete (h = 55 km).

" 6 Um iP 00 50 18.9
Ud iP 00 50 37.8

" 6 Ki iSgl 10 43 10.3
Um iSgl 10 43 26.4

" 6 Up iP 13 43 30.4 D
iS 13 49 02.8
micr sec
P Z' 0.9 1.3
Mx E 24 20
Mx N 8.7 22
Mx Z 9.8 20
Ki iP 13 44 08.5
micr sec
P Z' 0.7 1.5
Mx E 8.4 16
Mx N 16 16
Mx Z 9.8 14
Sk iP 13 44 05.8
Um iP 13 43 44.1
iS 13 49 36.9
Ud iP 13 43 45.7 D
iS 13 49 34.3
(cont.)

1977
Apr. 6 (cont.)
De iP 13 43 29.1 D
Iran (h = 40 km).
m = 6.4, M = 6.0 (Up,Ki).

" 6 Ud i 14 22 33.4
iSgl 14 22 40.9
Coast of south Norway,
near 58 1/4°N, 6 1/2°E.
Origin time = 14 20 30.
M_L = 2.7 (Ud).
By combination with Bergen and Kongsberg readings.

" 6 Up iPn 19 33 39.3
i 19 33 47.7
iSn 19 35 01.8
i 19 35 15.1
iSgl 19 35 47.1
Ki iPn 19 34 06.3
i 19 34 15.0
iSn 19 35 50.5
i 19 36 07.0
i 19 36 13.8
Sk iPn 19 33 02.2
i 19 33 08.8
i 19 33 22.0
iSn 19 33 55.7
iSgl 19 34 23.8
Um iPn 19 33 49.2
i 19 33 58.1
iSn 19 35 18.5
i 19 35 51.4
Ud iPn 19 33 12.0
i 19 33 19.3
iSn 19 34 12.5
iSgl 19 34 41.0
De iPn 19 33 42.3
i 19 33 49.1
iSn 19 35 06.8
iSgl 19 36 01.4
Off coast of west Norway,
near 61 3/4°N, 2 1/2°E.
Origin time = 19 31 47.
M_L = 4.4 (Up,Sk,Ud,De).
Felt.

" 6 Ud iSgl 19 40 51.3
Aftershock to the preceding event.
Origin time = 19 37 47.
M_L = 3.1 (Ud).
By combination with Bergen and Kongsberg readings.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Apr.	7	Ki	ipP	03 43 04.9
		Sk	iP	03 42 58.2
		Um	iP	03 42 35.0
		Ud	iP	03 42 40.3
		De	iP	03 42 25.3
		Iran (h = N).		
"	7	Ud	iP	09 34 20.5
"	7	Ud	iPKP	09 52 23.1
		Fiji Islands (h = 620 km).		
"	7	Um	e(P)	11 37 12
"	7	Um	iP	17 40 17.8
		Ud	iP	17 40 07.3
		Costa Rica (h = N).		
"	7	Um	iP	20 41 07.1
		Ud	iP	20 41 00.3
		Guatemala (h = N).		
"	7	Ud	iP	22 29 19.1
		Banda Sea (h = 120 km).		
"	8	Ud	iP	00 50 41.8
"	8	Ud	iP	02 32 30.6
"	8	Ud	iP	02 52 52.4
"	8	Up	iP	04 53 23.1
		Ki	iP	04 53 31.3 C
		Sk	iP	04 53 48.4
		Um	iP	04 53 21.3 C
		Ud	iP	04 53 39.5 C
		De	iP	04 53 36.6
		Afghanistan-USSR (h = 240 km).		
"	8	Up	iP	16 57 31.2
		Ki	iP	16 58 03.9
		Um	iP	16 57 44.0
		Ud	iP	16 57 46.8
		De	eP	16 57 34
		Iran (h = 20 km).		
"	8	Ud	iP	17 55 12.4
"	9	Um	iP	00 50 51.9
"	9	Ud	iP	03 37 04.2
		Kirgiz SSR (h = 45 km).		
"	9	Up	iP	04 16 48.7
		(cont.)		

1977				
Apr.	9	(cont.)		
		Up	iSKS	04 26 30
			iPKKP	04 33 19.9
		Ki	iP	04 16 58.0
			iPKKP	04 33 14.6
		Sk	iP	04 16 41.1
			ipP	04 18 43.2
			iPKKP	04 33 25.4
		Um	iP	04 16 57.5
			iSKS	04 26 39
			iS	04 27 39
			iPKKP	04 33 11.5
			iP'P'	04 41 30.1
		Ud	iP	04 16 40.5
			ipP	04 18 45.0
			iPKKP	04 33 26.8
		De	iP	04 16 38.4
			iPKKP	04 33 27.7
			ipPKKP	04 35 36.7
		Peru-Brazil.		
		h = 560 km (Sk,Ud,De).		
"	9	Ki	eP	04 56 16
		Um	iP	04 55 56.6
		Ud	iP	04 55 28.4
		De	iP	04 55 07.3
		Ascension Island (h = N).		
"	9	Ud	iP	05 09 05.2
"	9	Ud	iP	06 24 38.8
"	9	Ud	iP	08 58 09.3
"	9	Up	iP	14 22 24.9
		Ud	iP	14 22 34.2
		Luzon (h = 70 km).		
"	9	Um	iP	15 24 43.5
"	9	Up	iP	17 41 48.9
		Ki	iP	17 42 27.0
		Sk	iP	17 42 24.4
		Um	iP	17 42 04.0
		Ud	iP	17 42 04.3
		De	iP	17 41 47.1
		Iran (h = 20 km).		
"	9	Ki	iPKP	21 35 17.8
		Um	iPKP	21 35 24.4
		Ud	iPKP	21 35 33.4
		New Hebrides Islands (h = 25 km).		
"	10	Ki	iP	04 34 20.4
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 10 (cont.)

Ki			micr sec
	P	Z'	0.1 1.0
Um	iP		04 34 26.9
Ud	iP		04 34 47.6

Philippine Islands (h = N).

" 10	Ki	iP	05 10 42.7
	Um	iP	05 10 21.5
	Ud	iP	05 10 25.3

Iran (h = N).

" 10	Um	iP	05 20 10.8
" 10	Up	iP	08 42 23.8 D
		i	08 42 34.9
		iPcP	08 42 50.6
			micr sec
	P	Z'	0.1 0.7
	Ki	iP	08 41 37.8
		i	08 41 49.9
		iPcP	08 42 20.1
			micr sec
	P	Z'	0.1 1.0
	Sk	iP	08 42 14.6
		iPcP	08 42 43.7
	Um	iP	08 41 58.6 D
		iPcP	08 42 34.2
	Ud	iP	08 42 29.9
		ipP	08 42 48.9
	De	iP	08 42 49.3

Kurile Islands.
h = 80 km (Ud).
m = 5.9 (Up,Ki).

" 10	Ud	iP	09 37 44.6

Tadzhik SSR (h = 10 km).

" 10	Ud	iPKPl	18 28 07.8
	De	iPKPl	18 28 19.5 D

Fiji Islands (h = 650 km).

" 10	Ud	iP	18 55 39.5

Kamchatka (h = 35 km).

" 10	Ud	iP	21 29 06.6

Iran (h = N).

" 11	Sk	iPKP	02 34 42.6
	Um	iPKP	02 34 38.6

South of Australia (h = N).

" 11	Ki	iP	03 18 25.1
	Sk	iP	03 18 26.3

(cont.)

1977
Apr. 11 (cont.)

Um	iP		03 18 03.1
Ud	iP		03 18 07.1

Iran (h = N).

" 11	Ki	iP	05 12 13.0
	Ud	iP	05 11 15.7

Crete (h = 70 km).

" 11	Ki	eP	10 14 01
	Um	iP	10 14 07.0

El Salvador (h = 10 km).

" 11	Um	iP	11 59 09.8
" 11	Ki	iP	13 04 52.6
	Um	iP	13 05 05.8
	Ud	iP	13 05 33.8
" 11	Up	iP	16 23 15.6
	Um	iP	16 23 37.7
		i	16 23 49.6
	Ud	iP	16 23 20.3
		i	16 23 31.7

Lake Tanganyika (h = N).

" 11	Up	iP	16 28 13.8
		i	16 28 26.7
		iScP	16 35 21.4
			micr sec
	P	Z'	0.1 1.0
	Ki	iP	16 29 15.3
		iScP	16 35 42.2
	Sk	eP	16 28 53
		iScP	16 35 34.1
	Um	iP	16 28 41.6
		iScP	16 35 29.9
	Ud	iP	16 28 24.2
	De	iP	16 27 57.1

Turkey (h = 90 km).
Clear ScP-phases at Up,Ki, Sk and Um!

" 11	Um	iP	17 19 12.6
	Ud	iP	17 19 34.8
" 11	Up	iP	17 27 36.5
	Ki	iP	17 27 06.7
	Um	iP	17 27 20.0
	Ud	iP	17 27 43.0

Volcano Islands (h = N).

" 11	Sk	iP	18 09 07.1
	Um	iP	18 09 39.4
	Ud	iP	18 09 19.9

North Atlantic Ocean (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Apr.					
	11	Um	iP		18 26 17.5
"	11	Up	iP		18 57 11.4
		Um	iP		18 56 45.5
		Ud	iP		18 57 15.7
		De	iP		18 57 36.2
		Kurile Islands (h = 35 km).			
"	11	Up	iP		19 34 07.4
		Ki	iP		19 33 14.5
		Um	iP		19 33 40.5
		Ud	iP		19 34 08.6
		De	iP		19 34 30.2
		Aleutian Islands (h = 60 km).			
"	11	Ud	iP		19 36 01.0
"	11	Um	iP		19 50 34.6
"	11	Up	iP		20 10 20.9
		Ki	iP		20 09 50.9
		Um	iP		20 10 03.5
		Ud	iP		20 10 27.9
		Volcano Islands (h = N).			
"	11	Um	iP		20 39 14.2
"	11	Ud	iP		20 49 18.7
		De	iP		20 49 04.1
"	11	Um	iP		21 11 12.5
"	11	Um	iP		22 19 36.1
		Ud	iP		22 19 17.4
		North Atlantic Ocean (h = N).			
"	11	Up	iP		22 31 36.6
		Ki	iP		22 31 35.4
					micr sec
			P	Z'	0.2 1.5
		Sk	iP		22 31 05.1
			i		22 31 09.1
		Um	iP		22 31 39.1
		Ud	iP		22 31 19.3
		De	iP		22 31 33.3
		North Atlantic Ocean (h = N).			
"	11	Up	eP		22 32 36
			i		22 32 40.9
					micr sec
			i	Z'	0.2 1.6
		Ki	eP		22 32 37
		(cont.)			

1977 Apr.					
	11	(cont.)			
		Ki			micr sec
			P	Z'	0.3 2.1
		Sk	iP		22 32 06.5
		Um	iP		22 32 39.6
		Ud	iP		22 32 20.2
		De	eP		22 32 34
		North Atlantic Ocean (h = N).			
		m = 5.5 (Up,Ki).			
"	11	Ki	iP		22 49 48.2
					micr sec
			P	Z'	0.2 1.5
		Sk	iP		22 49 19.6
		Um	iP		22 49 52.1
		Ud	iP		22 49 33.1
		North Atlantic Ocean (h = N).			
"	11	Sk	eP		23 07 36
		Um	iP		23 08 11.2
		Ud	iP		23 07 51.4
		North Atlantic Ocean (h = N).			
"	11	Up	iP		23 09 21.1
		Ki	iP		23 08 50.9
					micr sec
			P	Z'	0.1 1.0
		Sk	iP		23 09 18.5
		Um	iP		23 09 03.0
		Ud	iP		23 09 26.8
		De	eP		23 09 40
		Volcano Islands (h = N).			
"	11	Ki	iP		23 25 49.5
		Sk	iP		23 25 18.3
		Um	iP		23 25 52.4
		Ud	iP		23 25 32.9
		North Atlantic Ocean (h = N).			
"	12	Ki	iPKPl		00 42 11.2
		Um	iPKPl		00 42 20.0 C
"	12	Ud	iP		01 02 02.0
"	12	Up	iP2		04 05 05.2
		Ki	iP2		04 04 09.2
		Um	iP2		04 04 38.6
		Ud	iPl		04 05 03.2
			iP2		04 05 08.0
		De	iP2		04 05 30.3
		Komandorsky Islands (h = 40 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Apr.	12	Up	iP		10 50 19.7
			ipP		10 50 31.2
					micr sec
			P	Z'	0.1 1.2
			pP	Z'	0.1 1.2
		Ki	iP		10 49 46.4
			ipP		10 49 58.0
		Sk	eP		10 50 19
		Um	iP		10 50 00.3
			ipP		10 50 11.6
		Ud	iP		10 50 28.3
			ipP		10 50 39.8
		De	iP		10 50 41.9
		Japan.			
		h = 40 km (Up,Ki,Um,Ud).			
"	12	Ud	iP		16 33 33.7
			i		16 33 58.8
		De	i		16 34 44.9
"	12	Ki	iP		16 41 07.7
		Um	iP		16 41 05.2
		Ud	iP		16 41 18.8
		De	iP		16 41 17.6
"	12	Up	iP		23 18 59.3
		Ki	iP		23 19 38.3
		Um	iP		23 19 14.3
		Ud	iP		23 19 15.2
		De	iP		23 18 58.5
		Iran (h = N).			
"	13	Up	eP		04 46 52
		Ud	iP		04 47 07.1
		Iran (h = N).			
"	13	Up	iP		05 42 07.5
		Ki	iP		05 41 49.8
		Um	eP		05 41 56
		Ud	iP		05 42 15.3
		Mindanao (h = 60 km).			
"	13	Ud	iP		07 25 10.8
		India-Pakistan (h = 70 km).			
"	13	Up	iP		08 53 32.9
		Ud	iP		08 53 49.4
		De	eP		08 53 45
		Hindu Kush (h = 190 km).			
"	13	Ud	iP		09 35 58.7
		Ionian Sea (h = N).			
"	13	Um	iPKPl		10 48 22.1
		Ud	iPKPl		10 48 35.5
		Kermadec Islands (h = 100 km).			

1977					
Apr.	13	Up	iP		11 41 16.3 C
			ipP		11 42 01.9
			i		11 42 21.6
					micr sec
			P	Z'	1.3 1.4
		Ki	iP		11 41 25.4 C
					micr sec
			P	Z'	0.6 1.0
		Sk	iP		11 41 41.0 C
		Um	iP		11 41 14.8 C
		Ud	iP		11 41 33.0 C
			ipP		11 42 18.7
			i		11 42 39.0
		De	iP		11 41 29.4 C
			ipP		11 42 14.2
			i		11 42 37.0
		Hindu Kush.			
		h = 210 km (Up,Ud,De).			
		m = 6.2 (Up,Ki).			
"	13	Ud	iPKPl		12 22 05.7
		De	iPKPl		12 22 16.3
		Tonga-Kermadec Islands			
		(h = 130 km).			
"	13	Um	i(P)		12 28 59.5
"	13	Um	iPgl		12 41 27.9
			iSgl		12 41 29.6
		Västerbotten, Sweden,			
		63.9°N, 20.5°E.			
		Origin time = 12 41 26.			
"	13	Up	iP		12 59 07.8
		Ki	iP		12 58 49.8
					micr sec
			P	Z'	0.1 1.3
			Mx	N	1.1 20
		Um	iP		12 58 55.6
		Ud	iP		12 59 14.7
		Talaud Islands (h = 45 km).			
"	13	Um	iP		14 07 32.6
		Yugoslavia (h = 10 km).			
"	13	Ki	iP		17 19 58.6
		Sk	eP		17 20 20
		Um	iP		17 19 52.3
		Ud	iP		17 20 12.6
		De	iP		17 20 12.0
		Tadzhik-Sinkiang			
		(h = 150 km).			
"	13	Up	iP		18 31 37.7
			i		18 31 47.2
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 13 (cont.)

Ki	iP		18 30 44.8
Sk	eP		18 31 17
Um	iP		18 31 10.7
Ud	iP		18 31 38.5 C

Aleutian Islands (h = 45 km).

" 13	Ud	iPKPl		19 30 23.6
	De	iPKPl		19 30 35.2

Tonga-Kermadec Islands
(h = 560 km).

" 14	Up	i(PKP)		04 23 40.5
		i		04 23 44.6
	Ki	iPKP		04 23 36.5
				micr sec
		PKP	Z'	0.2 1.4
	Sk	i(PKP)		04 23 43.3
		iPKP		04 23 45.9
	Um	i(PKP)		04 23 39.0
		iPKP		04 23 43.2
	Ud	i(PKP)		04 23 40.9
		i		04 23 54.0
	De	i(PKP)		04 23 50.6
" 14	Ud	iPKPl		05 32 03.7
	De	iPKPl		05 32 14.4
" 14	Ud	iP		07 05 05.5
" 14	Up	iP		07 22 30.8
		i		07 22 40.7
				micr sec
		i	Z'	0.1 1.4
	Ki	iP		07 23 40.2
				micr sec
		P	Z'	0.1 1.3
	Sk	eP		07 22 56
	Um	iP		07 23 07.3
	Ud	iP		07 22 28.1
	De	iP		07 21 52.7

Algeria (h = 20 km).
m = 5.4 (Up,Ki).

" 14	Up	iP		09 43 00.5
	Ki	iP		09 42 07.3
	Um	iP		09 42 33.7
	Ud	iP		09 43 01.4

Aleutian Islands (h = 60 km).

" 14	Um	iP		10 13 00.1

Japan (h = 35 km).

" 14	De	iPKPl		12 14 03.4

Fiji Islands (h = 520 km).

1977
Apr. 14

Sk	iP		14 47 14.8
Um	iP		14 47 11.7
Ud	iP		14 46 50.6

Lake Tanganyika (h = N).

" 14	Ki	iP		15 02 14.4
	Ud	iP		15 02 35.0
" 14	Ud	iP		15 22 08.7

Hindu Kush (h = 90 km).

" 14	Ud	eP		18 35 45
		i		18 35 51.0

Kashmir-Tibet (h = N).

" 14	Ki	iP		20 41 09.7
	Ud	iP		20 41 27.2

Sinkiang, China (h = N).

" 15	Up	i		00 30 39.3
	Sk	iSgl		00 31 20.6
	Um	i		00 32 15.0
		iSgl		00 32 25.2
	Ud	iP		00 28 41.0
		iS		00 29 34.3
	De	iP		00 28 34.7
		iS		00 29 22.5

North Sea (h = N).

" 15	Ud	i(P)		17 01 56.2
" 15	De	iPKPl		23 23 03.3

Tonga Islands (h = N).

" 16	Up	iPKPl		01 24 53.0
	Ud	iPKPl		01 24 55.5
	De	iPKPl		01 25 05.4

Tonga-Kermadec Islands
(h = 550 km).

" 16	Up	iP		03 26 51.6
		ipP		03 27 35.3
	Ki	iP		03 26 26.8
	Um	iP		03 26 36.2
	Ud	iP		03 27 01.5
	De	eP		03 27 10

Formosa.
h = 180 km (Up).

" 16	Up	iP		04 13 18.1
				micr sec
		P	Z'	0.1 1.2
	Ki	iP		04 12 25.2
				micr sec
		P	Z'	0.1 1.1

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 16 (cont.)

Um	iP	04 12 51.2
Ud	iP	04 13 17.3
De	iP	04 13 38.9

Fox Islands (h = 15 km).
m = 5.8 (Up,Ki).

" 16

Ud	iP	04 15 27.3

Pakistan (h = N).

" 16

Up	iPKPl	06 49 27.2
	iSKPl	06 52 16.9
Ki	iSKPl	06 51 54.0
Um	i(PKP)	06 49 13.3
	iPKP	06 49 25.5
	iSKPl	06 52 06.2
Ud	iPKPl	06 49 28.8
	iSKPl	06 52 18.1
De	iPKPl	06 49 40.1

Fiji Islands (h = 600 km).

" 16

Ud	iP	09 56 59.9

" 16

Um	iP	11 32 40.3

Mexico-Guatemala (h = N).

" 16

Up	iP	11 34 47.6
Um	iP	11 34 45.8
Ud	iP	11 35 04.1

Afghanistan-USSR (h = 15 km).

" 16

Up	iP	14 27 06.3
Ud	iP	14 27 06.2

" 16

Up	ePKP	15 34 32
Um	ePKP	15 34 25
	ipPKP	15 34 28.8
Ud	ipPKP	15 34 38.0
	iSKPl	15 38 09.7
De	iSKPl	15 38 20.7

New Hebrides Islands
(h = 10 km).

" 16

Ud	iP	23 44 04.4

" 17

Up	iP	00 17 57.9
Um	iP	00 17 39.5
Ud	iP	00 18 05.0

Bonin Islands (h = 490 km).

" 17

Up	iP	03 55 16.2
Um	iP	03 55 27.7
Ud	iP	03 55 32.9

Iran (h = N).

1977
Apr. 17

Ki	iP	13 13 07.3
Um	iP	13 12 46.0
Ud	iP	13 12 49.6

Iran (h = N).

" 17

Ki	iP	13 56 23.4
Ud	iP	13 56 49.1

Mindanao (h = 90 km).

" 17

Um	iP	14 53 44.7

El Salvador (h = 210 km).

" 17

Ud	iP	15 26 25.8

" 17

Um	iP	17 22 44.4

Kurile Islands (h = 70 km).

" 17

Ki	iP	17 23 30.9
Sk	eP	17 23 32
Ud	iP	17 23 13.9
De	iP	17 22 59.1

Iran (h = 60 km).

" 18

Up	iP		00 20 27.6	C
	ipP		00 21 17.4	
	iPP		00 22 00.0	
			micr sec	
	P	Z'	1.1 1.2	
Ki	iP		00 20 36.4	C
	ipP		00 21 22.1	
	iPP		00 22 11.0	
			micr sec	
	P	Z'	1.0 1.2	
Sk	iP		00 20 53.0	C
	iPP		00 22 37.5	
Um	iP		00 20 25.8	C
	iPP		00 21 59.7	
Ud	iP		00 20 43.8	C
	iPP		00 22 21.2	
De	iP		00 20 39.9	C
	i		00 21 51.3	
	iPP		00 22 15.0	

Hindu Kush.
h = 230 km (Up,Ki).
m = 6.2 (Up,Ki).

" 18

Up	iPKPl	00 29 33.8
Um	iPKPl	00 29 19.4
Ud	iPKPl	00 29 35.8

" 18

Ud	iP	00 45 29.9

" 18

Ki	iSgl	08 21 38.2
Sk	iSgl	08 20 30.4

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 18 (cont.)

Um	iSgl		08 21 32.9

Coast of Nordland, Norway, 65.4°N, 12.0°E.
Origin time = 08 19 31.
M_L = 2.5 (Ki,Sk,Um).

" 18	Um	iP		11 07 24.4
	Ud	iP		11 07 33.5

Jan Mayen Island (h = 10 km).

" 18	Um	iP		13 15 45.8

Nicaragua (h = 200 km).

" 18	Ud	iPgl		15 12 21.6
		iSgl		15 12 30.1
		iRg		15 12 35.7

Origin time = 15 12 10.
Regional, near-surface event.

" 18	Up	iP		16 18 28.7
	Um	iP		16 18 39.0
	Ud	iP		16 18 38.9

Mid-Indian Rise (h = N).

				micr	sec
" 18	Up	iP			19 09 33.3
	Ki	iP			19 09 18.0
		P	Z'	0.1	1.0
	Sk	iP			19 09 15.8
	Um	iP			19 09 27.5
	Ud	iP			19 09 25.8
	De	iP			19 09 34.9

Mexico (h = 90 km).

" 18	Ud	iP		19 30 53.2
" 18	Um	i(P)		21 30 09.2
" 18	Um	iP		23 11 56.4

Bonin Islands (h = N).

" 18	Um	iP		23 44 47.9

Banda Sea (h = 120 km).

" 19	Um	iP		02 28 20.7
		i		02 28 28.1

Yugoslavia (h = N).

" 19	Up	iP		05 21 43.6
	Ud	iP		05 21 51.4

Philippine Islands (h = 45 km).

1977
Apr. 19

				micr	sec
Up	iP				06 26 23.9 C
	P		Z'	0.1	0.9
Ki	iP				06 25 45.0 C
	P		Z'	0.1	1.0
Sk	iP				06 26 18.3 C
Um	iP				06 26 02.0 C
Ud	iP				06 26 31.2 C
De	iP				06 26 45.7 C

Japan (h = 70 km).
m = 5.7 (Up,Ki).

" 19	Ud	iP		15 50 32.7
" 19	Ud	iP		17 54 59.5
" 19	Up	iPP		22 04 07.9
	Ki	iP		21 59 24.6
		iPKKP		22 15 36.3
	Um	i(PP)		22 03 37.7
		iPKKP		22 15 33.7
	Ud	iP		21 59 46.3
		i(PP)		22 03 32.6
		iPP		22 04 18.6
	De	iPP		22 04 22.7

Banda Sea (h = 530 km).

" 20	Up	iP		00 30 14.1
	Ki	iP		00 29 21.0
	Um	iP		00 29 46.6
	Ud	iP		00 30 14.1

Aleutian Islands (h = N).

				micr	sec
" 20	Up	iP			00 35 24.0
		i			00 35 26.0
		i			00 35 31.4
		i	Z'	0.1	1.2
		i	Z'	0.2	1.4
		Mx	E	0.9	12
		Mx	N	2.3	11
		Mx	Z	3.2	11
	Ki	iP			00 36 58.1
		Mx	E	1.0	10
		Mx	N	1.2	12
		Mx	Z	1.2	12
	Sk	iP			00 36 15.5
	Um	iP			00 36 14.2
		i			00 36 15.9
		i			00 36 26.7
	Ud	iP			00 35 30.2
		i			00 35 38.8

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 20 (cont.)

De	iP		00 34 42.1
	i		00 34 50.2

Yugoslavia (h = N).
M = 4.6 (Up,Ki).

" 20	Up	iPKPl		03 33 36.2
			micr	sec
		PKPl	Z' 0.1	1.0
	Ki	iPKP		03 33 18.4
	Sk	iPKPl		03 33 29.3
	Um	iPKPl		03 33 23.8 C
	Ud	iPKP		03 33 33.7
		iPKPl		03 33 37.7 C
	De	iPKPl		03 33 46.3 C

Kermadec Islands (h = 140 km).

" 20	Up	iP	04 30 01.5
		i	04 30 09.4
	Ki	iP	04 30 05.7
	Sk	iP	04 30 24.4
	Um	iP	04 29 58.7
	Ud	iP	04 30 17.6

Tibet-India (h = N).

" 20	Up	iP	04 30 11.9
	Ki	iP	04 30 45.7
	Um	iP	04 30 23.7
	Ud	iP	04 30 27.1
	De	iP	04 30 11.3
		i	04 30 19.2

Iran (h = N).

" 20	Um	iPgl	13 42 42.2
		iSgl	13 42 43.8

Västerbotten, Sweden,
63.9°N, 20.5°E.
Origin time = 13 42 40.

" 20	Um	iP	10 26 32.6
" 20	Ud	iPKP	15 40 07.3

New Britain (h = 180 km).

" 20	Up	iP		20 15 32.0 D
		iS		20 24 38.5
			micr	sec
		P	Z' 0.9	1.0
	Ki	iP		20 14 59.3 D
		iS		20 23 37.2
			micr	sec
		P	Z' 0.5	0.9
	Sk	iP		20 15 28.4 D
	Um	iP		20 15 13.1 D

(cont.)

1977
Apr. 20 (cont.)

Um	iS		20 24 02.5
Ud	iP		20 15 38.8 D
	iS		20 24 53.2
De	iP		20 15 51.5 D
	iS		20 25 17.8

Japan (h = 490 km).
m = 6.1 (Up,Ki).

" 20	Up	iP	21 20 12.9

Rumania (h = N).

" 20	Up	iSgl	22 23 13.6
	Um	iSgl	22 25 23.1
	Ud	i	22 23 07.6
		iSgl	22 23 11.4
	De	iPgl	22 21 07.2
		iSgl	22 21 18.0

Skåne, Sweden, 55.6°N, 14.1°E.
Origin time = 22 20 52.
M_L = 2.6 (Ud).
Explosion?

" 20	Up	iPKP		23 32 03.6
		i		23 32 14.5
		iPP		23 33 41.5
			micr	sec
		i	Z' 0.1	1.0
		PP	Z' 1.0	2.2
	Ki	iPKP		23 31 49.8
	Sk	iPKP		23 32 01.8
	Um	iPKP		23 31 56.2
		i		23 32 07.6
	Ud	iPKP		23 32 05.9
		i		23 32 17.6
	De	iPKP		23 32 11.8

Solomon Islands (h = N).

" 20	Ki	ePKP	23 37 25
	Um	iPKP	23 37 28.7
	Ud	iPKP	23 37 36.3
	De	ePKP	23 37 45

Solomon Islands (h = N).

" 21	Up	iPKP		00 01 45.3
		i		00 01 57.9
		i		00 02 06.7
		iPP		00 03 27.4
			micr	sec
		i	Z' 0.3	1.5
		PP	Z' 1.8	2.1
	Ki	iPKP		00 01 33.2
		i		00 01 44.8
			micr	sec
		i	Z' 0.2	1.5

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 21 (cont.)

Sk	iPKP		00 01	44.0
	i		00 01	56.3
Um	iPKP		00 01	38.3
	i		00 01	50.7
Ud	iPKP		00 01	47.2
	i		00 02	00.2
De	iPKP		00 01	54.2
	i		00 02	01.3

Solomon Islands (h = 20 km).

" 21

Up	iPKP		00 08	05.5
	ipPKP		00 08	11.5
	i		00 08	16.0
	iPP		00 09	43.4
			micr	sec
	i	Z'	0.3	1.3
	PP	Z'	0.9	2.0
	Mx	E	58	20
	Mx	N	90	22
	Mx	Z	137	20
Ki	iPKP		00 07	52.4
	i		00 08	03.3
			micr	sec
	PKP	Z'	0.1	1.0
	i	Z'	0.2	1.0
	Mx	E	72	19
	Mx	N	138	22
	Mx	Z	148	22
Sk	ipPKP		00 08	07.3
	i		00 08	14.7
Um	iPKP		00 07	58.4
	i		00 08	09.7
Ud	iPKP		00 08	07.7
	i		00 08	18.0
De	iPKP		00 08	14.2

Solomon Islands (h = 20 km).
M = 7.5 (Up,Ki).

" 21

Sk	iPKP		00 15	11.7
Ud	iPKP		00 15	15.5

Solomon Islands (h = N).

" 21

Um	iPKP		00 24	12.3

Solomon Islands (h = N).

" 21

Ki	iPKP		01 03	24.0
Um	ePKP		01 03	29
Ud	iPKP		01 03	40.7
De	iPKP		01 03	45.1

Solomon Islands (h = N).
Late arrivals by about 10 s when compared with NEIS solution.

1977
Apr. 21

Ud	iPKP		01 39	22.1
De	iPKP		01 39	27.7

Solomon Islands (h = 80 km).

" 21

Up	iP		01 58	10.5	C
	iPP		02 01	30.2	
	iS		02 08	24	
			micr	sec	
	P	Z'	0.6	1.1	
Ki	iP		01 57	37.7	C
	iPP		02 00	35.3	
			micr	sec	
	P	Z'	0.3	0.9	
Sk	iP		01 58	06.6	C
Um	iP		01 57	51.9	C
Ud	iP		01 58	17.1	C
De	iP		01 58	29.1	C

Bonin Islands (h = N).
m = 6.4 (Up,Ki).

" 21

Up	iP		04 03	52.3
Ki	iP		04 02	53.9
Sk	iP		04 02	57.5
Um	eP		04 03	29
Ud	iP		04 03	35.6 C
De	iP		04 04	15.9 C

Jan Mayen Island (h = 10 km).

" 21

Up	iPKP		04 43	03.6
	i		04 43	13.0
	iPP		04 44	44.3
			micr	sec
	PKP	Z'	0.1	0.8
	i	Z'	0.1	0.8
	PP	Z'	1.1	2.0
	Mx	E	40	22
	Mx	N	75	20
	Mx	Z	70	20
Ki	iPKP		04 42	50.5
	i		04 42	59.7
			micr	sec
	PKP	Z'	0.1	0.9
	i	Z'	0.2	0.9
	Mx	E	30	18
	Mx	N	59	19
	Mx	Z	67	20
Sk	iPKP		04 43	01.4
	i		04 43	10.6
Um	iPKP		04 42	54.2
	i		04 43	05.7
Ud	iPKP		04 43	03.4
	i		04 43	14.9
De	iPKP		04 43	11.0
	i		04 43	20.5

Solomon Islands (h = N).
M = 7.3 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Apr.	21	Up	iP		04 56 11.9
"	21	Up	iP		05 03 15.3
		Ki	iP		05 02 27.4
		Um	iP		05 02 50.4
		Ud	iP		05 03 18.0
"	21	Up	iPKP		05 25 21.4
		Ki	iPKP		05 25 08.8
		Sk	iP		05 25 19.6
		Um	iPKP		05 25 14.9
		Ud	iPKP		05 25 24.6
		De	iPKP		05 25 29.9
		Solomon Islands (h = N).			
"	21	Up	iPKP		05 33 45.7
		Um	iPKP		05 33 35.8
		Ud	iPKP		05 33 47.3
"	21	Up	iPKP		07 37 44.6
					micr sec
			Mx	E	1.2 21
			Mx	N	1.5 21
			Mx	Z	3.8 20
		Ki	ePKP		07 37 29
					micr sec
			Mx	N	2.9 19
			Mx	Z	3.8 21
		Um	iPKP		07 37 37.2
		Ud	iPKP		07 37 46.2
		De	iPKP		07 37 53.0
		Solomon Islands (h = N).			
		M = 5.8 (Up,Ki).			
"	21	Up	iP		10 01 43.5
		Ki	iP		10 01 10.4
		Um	iP		10 01 24.6
		Ud	iP		10 01 50.7
		Japan (h = 490 km).			
"	21	Up	Mx		11 00
					micr sec
			Mx	N	1.0 19
			Mx	Z	2.4 20
		Ki	Mx		10 57
					micr sec
			Mx	N	1.8 20
			Mx	Z	2.1 21
		Ud	iPKP		10 04 36.2
		Solomon Islands (h = N).			
		M = 5.6 (Up,Ki).			
"	21	Up	iP		10 11 12.3
			i		10 11 16.7
					micr sec
			i	Z'	0.1 1.5
		(cont.)			

1977					
Apr.	21	(cont.)			
		Ki	iP		10 11 17.0
			i		10 11 21.7
		Sk	iP		10 11 36.6
			i		10 11 41.6
		Um	iP		10 11 08.4
			i		10 11 12.4
		Ud	iP		10 11 29.4
			i		10 11 33.5
		De	iP		10 11 27.1
		Tadzhik SSR (h = 45 km).			
"	21	Sk	iP		12 04 30.7
"	21	Up	iP		13 02 13.4
		Ki	iP		13 01 56.5
		Sk	iP		13 02 17.9
		Um	iP		13 02 03.0
		Ud	iP		13 02 22.1
		De	iP		13 02 29.1
		Mindanao (h = N).			
"	21	Up	iP		13 45 34.4
		Ki	iP		13 45 48.5
		Sk	iP		13 46 03.5
		Um	iP		13 45 35.0
		Ud	iP		13 45 51.0
		De	iP		13 45 47.4
		Uzbek SSR (h = N).			
"	21	Um	iP		14 25 08.8
		Ud	iP		14 25 17.8
"	21	Ud	iP		15 21 17.8
		Guatemala (h = 110 km).			
"	21	Up	iP		17 33 05.8
			i		17 33 13.9
					micr sec
			P	Z'	0.1 1.0
			i	Z'	0.2 1.0
		Ki	iP		17 32 33.3
					micr sec
			P	Z'	0.1 1.0
		Sk	iP		17 33 02.2
			i		17 33 13.2
		Um	iP		17 32 47.8
			i		17 32 57.2
		Ud	iP		17 33 11.9
			i		17 33 21.0
		De	iP		17 33 24.9
			i		17 33 34.6
		Bonin Islands (h = 25 km).			
		m = 6.0 (Up,Ki).			
"	21	Ud	iP		18 02 00.7

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 21 Ud i(P) 19 14 12.9

22 Up iP 01 01 47.3 D
micr sec
P Z' 0.2 1.0
Ki iP 01 00 56.3 D
micr sec
P Z' 0.2 0.8
Sk iP 01 01 32.9
Um iP 01 01 19.9 D
Ud iP 01 01 51.8 D
De iP 01 02 12.2
Kurile Islands (h = 390 km).

" 22 Up i 03 29 58.2
micr sec
Mx E 2.0 21
Mx N 2.5 20
Mx Z 4.1 20
Ki Mx 04 22
micr sec
Mx E 2.1 18
Mx N 4.2 19
Mx Z 5.1 19
Um i 03 29 51.0
Ud iPKP 03 29 52.2
De iPKP 03 29 55.9
Solomon Islands (h = 50 km).
M = 6.1 (Up,Ki).

" 22 Ki iP 03 40 15.5
Sk iP 03 41 02.0
Um iP 03 41 00.2
i 03 41 08.2
Ud iP 03 41 38.9
North of Svalbard (h = N).

" 22 Up iP 06 34 00.0
micr sec
P Z' 0.1 1.0
Ki eP 06 33 20
i 06 33 23.6
Sk eP 06 33 36
Um iP 06 33 40.8
Ud iP 06 33 53.6
i 06 33 59.8
Oregon (h = 15 km).

" 22 Up iP 08 27 33.2
i 08 27 38.1
Ki eP 08 26 51
Um iP 08 27 14.6
Ud iP 08 27 27.3
i 08 27 32.4
Oregon (h = 15 km).

1977
Apr. 22 Up iP 08 37 21.3
Ud iP 08 37 16.5
Oregon (h = 15 km).

" 22 Ud iRg 09 18 04.8
Regional, near-surface event.

" 22 Up iP 09 36 53.4
micr sec
P Z' 0.1 1.0
Ki iP 09 36 27.5
Um iP 09 36 37.4
Ud iP 09 37 02.7
Ryukyu Islands (h = 70 km).

" 22 Up iP 14 05 15.2
Ki eP 14 05 49
Ud iP 14 05 38.4
De eP 14 05 26

" 22 Up iP 14 19 09.2
ipP 14 19 22.5
micr sec
Mx E 1.4 15
Mx N 2.2 20
Mx Z 2.1 16
Ki ipP 14 18 54.0
micr sec
Mx N 1.3 17
Um ipP 14 19 05.5
Ud ipP 14 19 32.5
China Sea (h = N).
M = 5.4 (Up,Ki).

" 22 Um iP 17 33 20.4

" 22 Ud iP 18 14 27.5

" 22 Up iRg 20 25 24.0
Ud iRg 20 25 45.1
Central Sweden.
Near-surface event.

" 22 Up iP 22 26 34.7
Ki iP 22 25 51.7
Um iP 22 26 10.1 C
Ud iP 22 26 41.6 C
Sea of Japan (h = 35 km).

" 22 Ki iPKP 23 29 53.7
Um iPKP 23 30 00.4
iSKPl 23 32 40.2
Ud iPKP 23 30 06.3
De iPKPl 23 30 10.6
Fiji Islands (h = 540 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Apr.	23	Up	iP	00 01 45.6
		Sk	iP	00 02 28.5
		Um	iP	00 02 25.3
		Ud	iP	00 01 52.8
		Greece (h = 70 km).		
"	23	Up	iP	01 44 26.0
		Um	i	01 44 14.3
		Ud	iP	01 44 34.8
		Ryukyu Islands (h = N).		
"	23	Um	iPKP	09 46 57.6
			iSKPl	09 49 31.5
		Ud	iPKPl	09 47 00.5
		De	iPKPl	09 47 11.1 D
		Fiji Islands (h = 560 km).		
"	23	Up	iP	11 48 49.0
		Ud	iP	11 49 00.3
		Chagos Archipelago (h = N).		
"	23	Ud	i(P)	14 31 10.7
"	23	Up	iP	14 56 33.1
		Sk	iP	14 56 12.7
		Um	iP	14 55 59.4
		Ud	iP	14 56 37.0
		Laptev Sea (h = 35 km).		
"	23	Ud	iP	18 06 13.9
		Oregon (h = 15 km).		
"	23	Up	iPKP	19 02 33.7
		Ki	iPKP	19 02 48.9
		Um	iPKP	19 02 41.8
		Ud	iPKP	19 02 32.4
		South Sandwich Islands (h = N).		
"	23	Ud	eP	21 59 01
		Hindu Kush (h = 270 km).		
"	24	Ud	iP	01 05 46.9
		Turkmen SSR (h = 35 km).		
"	24	Up	iP	01 06 00.4
		Ki	iP	01 06 42.9
		Um	iP	01 06 14.3
"	24	Up	iPKP2	02 09 56.0
		Ki	iPKPl	02 09 23.1
			ipPKPl	02 10 15.5
		Um	iPKPl	02 09 30.3
			ipPKPl	02 10 19.9
		(cont.)		

1977				
Apr.	24	(cont.)		
		Ud	iPKP2	02 10 02.8
			ipPKP2	02 10 49.7
		De	iPKP2	02 10 12.3
		Cook Strait, New Zealand. h = 200 km (Ki,Um,Ud).		
"	24	Ki	iP	03 39 13.4
		Um	iP	03 39 40.2
		Ud	iP	03 40 05.3
		Aleutian Islands (h = 60 km).		
"	24	Ud	iPKP	06 47 49.3
		Solomon Islands (h = 30 km).		
"	24	Ud	iP	07 34 44.0
"	24	De	iPKP	15 17 16.0
		New Britain (h = 70 km).		
"	24	Up	iP	16 23 13.4
		Ki	iP	16 23 13.0
		Sk	iP	16 23 26.9
		Um	iP	16 23 10.6
		Ud	iP	16 23 22.5
		De	eP	16 23 22
		Sumatra (h = N).		
"	24	Ki	iP	18 16 39.0
		Um	iP	18 16 50.2
		Ud	iP	18 17 12.4
		Mariana Islands (h = 60 km).		
"	24	Up	iP	20 53 54.9
			ipP	20 54 08.0
				micr sec
			pP Z'	0.1 1.0
		Ki	iP	20 53 13.7 C
			ipP	20 53 26.2
		Sk	eP	20 53 48
		Um	iP	20 53 32.2 C
			ipP	20 53 44.8
		Ud	iP	20 54 02.4 C
		De	iP	20 54 18.3
		Japan. h = 45 km (Up,Ki,Um).		
"	24	Ud	iPKPl	21 14 26.0
		De	iPKPl	21 14 37.0
"	25	Up	iP	04 13 52.9
		Ki	iP	04 13 37.1 C
				micr sec
			P Z'	0.1 0.6
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 25 (cont.)

Sk	iP		04 14 08.5	C
Um	iP		04 13 38.1	
Ud	iP		04 14 09.3	C
De	iP		04 14 18.4	

Kazakh SSR.
Underground explosion.

" 25	Up	iP	06 01 57.0	
	Ki	iP	06 01 38.8	
	Um	iP	06 01 43.3	
	Ud	iP	06 02 09.9	

Szechwan, China (h = N).

" 25	Ki	iP	10 55 16.9	
	Sk	eP	10 55 36	
	Um	iP	10 55 07.7	
	Ud	iP	10 55 28.1	
" 25	Ki	iP	11 51 45.0	
" 25	Ud	iP	14 57 46.8	

Philippine Islands
(h = 230 km).

" 25	Ud	iPKP1	15 22 33.4	
	De	iPKP1	15 22 45.2	

South of Tonga Islands
(h = N).

" 25	Ki	iP	21 39 07.3	
		i	21 39 23.6	
	Um	iP	21 39 13.4	
" 26	Ud	iP	12 40 12.4	
" 26	Ki	e(P)	12 47 41	
" 26	Um	iP	12 48 37.1	
	Ud	iP	12 48 39.4	
" 26	Ud	iP	13 37 33.4	

Turkey (h = 30 km).

" 26	Up	iP		16 32 10.7	C
		i		16 32 16.7	
				micr sec	
		P	Z'	0.3 1.0	
		Mx	E	1.9 13	
		Mx	N	1.7 14	
		Mx	Z	3.4 13	
	Ki	iP		16 32 51.3	C
				micr sec	
		P	Z'	0.3 1.3	

(cont.)

1977
Apr. 26 (cont.)

Ki				micr sec	
	Mx	E		2.6 13	
	Mx	N		2.2 13	
	Mx	Z		3.4 14	
Sk	iP			16 32 47.4	C
Um	iP			16 32 25.8	C
	i			16 32 30.7	
Ud	iP			16 32 25.9	C
	i			16 32 31.3	
De	iP			16 32 08.6	C
	i			16 32 13.6	

Iran (h = 45 km).
m = 6.0, M = 5.2 (Up,Ki).

" 26	Ud	iP	17 41 33.4	

Iran (h = 70 km).

" 26	Ud	iP	18 33 26.4	

Japan (h = 400 km).

" 26	Ud	iP	21 03 46.7	
" 26	Um	iP	21 13 45.1	
	Ud	iP	21 13 54.4	
" 26	Up	iP	23 17 45.0	
		i	23 17 56.5	
	Ki	iP	23 17 00.0	
	Sk	iP	23 17 36.5	
	Um	iP	23 17 20.5	
		i	23 17 31.8	
	Ud	iP	23 17 50.3	
		i	23 18 03.2	

Kurile Islands (h = 35 km).

" 27	Um	iPKP2	04 14 40.1	

South Pacific Ocean (h = N).

" 27	Ud	iP	04 56 40.7	
		i	04 56 52.0	
" 27	Ud	iP	09 46 18.6	
" 27	Up	iP	12 11 01.6	
			micr sec	
		P	Z' 0.1 1.0	
	Ki	iP	12 10 27.7	C
	Sk	iP	12 10 57.7	
	Um	iP	12 10 43.0	C
	Ud	iP	12 11 08.8	C
		i	12 11 29.1	

Japan (h = 25 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Apr. 27 Up iP 15 11 48.9
micr sec
P Z' 0.1 1.0
Ki iP 15 11 14.8 C
Sk iP 15 11 22.6
Um iP 15 11 34.0 C
Ud iP 15 11 40.6 C
De iP 15 11 57.7
Nevada.
Underground explosion.

" 28 Ki iP 04 16 10.4
Um iP 04 16 20.9
South of Mariana Islands
(h = 45 km).

" 28 Ud iP 04 46 34.4

" 28 Ud iP 06 53 13.8
Afghanistan-USSR (h = 140 km).

" 28 Up iP1 13 48 44.1
iP2 13 48 57.3
micr sec
P2 Z' 0.1 0.8
Ki iP2 13 48 04.3
Um iP1 13 48 16.5
iP2 13 48 30.5
Ud iP1 13 48 44.1
iP2 13 48 57.5
Aleutian Islands (h = 20 km).

" 28 Ud iP 14 41 28.0

" 28 Up iP 23 23 44.2
Um iP 23 23 18.0
Ud iP 23 23 49.9

" 29 Up iP 08 25 21.1
Ki iP 08 24 27.6
Sk iP 08 24 52.8
Um iP 08 24 55.4 D
Ud iP 08 25 18.2
De iP 08 25 41.3
Gulf of Alaska (h = 10 km).

" 29 Ki iP 13 13 36.7
Ud iP 13 14 05.6
De iP 13 14 13.0
Luzon (h = 70 km).

" 29 Ud iPKP1 19 26 33.9
De iPKP1 19 26 43.6
Fiji Islands (h = 630 km).

" 29 Um iP 21 17 23.6

1977
Apr. 29 Ud eP 21 59 47

" 29 Um iP 22 54 57.0

" 30 Up iP 06 20 34.4
Ki iP 06 21 15.1
Um eP 06 20 53
De iP 06 20 32.4
Iran (h = 50 km).

" 30 Ud iP 09 14 23.6

" 30 Ud iP 10 59 15.0
De iP 10 59 11.9
Kirgiz SSR (h = 70 km).

" 30 Ud iSgl 14 24 31.5
De eSgl 14 26 02

" 30 Up iP 14 43 23.6 C
i 14 43 27.2
micr sec
P Z' 0.2 0.9
Ki iP 14 43 56.0 C
i 14 43 58.7
micr sec
P Z' 0.2 0.9
Sk iP 14 43 56.8 C
Um iP 14 43 34.8 C
i 14 43 38.6
Ud iP 14 43 38.7 C
i 14 43 42.3
De iP 14 43 24.2 C
i 14 43 27.8
Iran (h = 40 km).
m = 5.9 (Up,Ki).

" 30 Up iP 15 34 28.8
Ki iP 15 33 45.7
Um iP 15 34 04.6
Ud iP 15 34 35.6
De iP 15 34 53.1
Japan (h = 120 km).

" 30 Up iP 16 21 43.0
Um iP 16 21 54.3
Ud iP 16 21 57.8
De iP 16 21 43.7
Iran (h = 70 km).

" 30 Ki iP 16 31 31.9
i 16 31 37.4
Um iP 16 31 26.1
De iP 16 30 51.7
North Atlantic Ocean
(h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Apr.	30	Up	iP	16 54 55.0
		Ud	iP	16 54 53.3
		De	iP	16 55 15.2
		Aleutian Islands (h = 40 km).		
"	30	Up	iP	18 53 20.2
			i	18 53 59.0
		Ki	iP	18 53 03.1
			i	18 53 29.2
		Um	iP	18 53 07.9
		Ud	iP	18 53 27.1
			i	18 53 31.8
		De	iP	18 53 32.9
			i	18 54 14.5
		Philippine Islands (h = 80 km).		
"	30	Up	iP	22 00 39.0
		Ki	iP	21 59 45.7
		Um	iP	22 00 12.5
		Ud	iP	22 00 39.2
		De	iP	22 01 01.2
		Aleutian Islands (h = 40 km).		
"	30	Up	iPn	23 34 49.4
			i	23 35 01.5
			iSn	23 36 23.5
			iSgl	23 37 09.7
		Ki	iPn	23 33 40.2
			i	23 33 41.7
			i	23 33 48.9
			i	23 33 54.6
			i	23 34 07.9
			iSgl	23 34 42.1
		Sk	iPn	23 33 52.1
			i	23 33 59.7
			iSn	23 34 44.5
		Um	iPn	23 34 09.7 D
			i	23 34 14.5
			i	23 35 10.7
			iSn	23 35 15.5
			iSgl	23 35 41.2
		Ud	iPn	23 34 40.0
			i	23 34 47.2
			i	23 34 48.9
			iSn	23 36 08.0
			iSgl	23 36 48.2
		De	e(Pn)	23 35 29
			iPn	23 35 33.2
			iSn	23 37 35.9
			iLgl	23 38 38.3
			iLg2	23 39 02.5
		Norwegian Sea, near 68 1/4°N, 9 1/2°E.		
		Origin time = 23 32 40.		
		M_L = 4.3 (Up,Ki,Um,Ud,De).		
		Felt.		

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BOX 517
S-751 20 UPPSALA
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BOX 517
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S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

M A Y 1 - 31, 1977

1977 May	1	Up	iP	00 22 28.0
		Um	iP	00 22 32.5
		Ud	iP	00 22 18.9
		Peru (h = 120 km).		
"	1	Up	iP	01 09 30.6
		Ki	iP	01 09 31.4
		Um	iP	01 09 27.5
		Ud	iP	01 09 41.0
		Sumatra (h = 70 km).		
"	1	Ud	iP	02 04 21.6
"	1	Up	iP	02 57 49.1
		Ki	iP	02 57 35.9
		Sk	eP	02 58 02
		Um	iP	02 57 38.9
		Ud	iP	02 58 01.6
		De	eP	02 58 09
		Szechwan, China (h = 55 km).		
"	1	Up	iP	03 38 44.6
		Ki	iP	03 38 45.6
		Sk	eP	03 37 59
		Um	iP	03 38 41.2
		Ud	iP	03 38 54.8
		Sumatra (h = 50 km).		
"	1	Ud	eP	08 54 39
"	1	Up	iP	12 53 45.5
		Um	iP	12 53 45.0
		Ud	iP	12 54 02.0
"	1	Um	iPKP	14 59 00.0
		Santa Cruz Islands (h = 70 km).		
"	1	Up	iP	16 34 24.2
		(cont.)		
1977 May	1	(cont.)		
		Ki	iP	16 33 48.7
		Ud	iP	16 34 32.8
		Japan (h = 5 km).		
"	1	Up	iPKP	18 58 08.4
		Sk	ePKP	18 58 08
		Um	iPKP	18 58 01.5
		Ud	iPKP	18 58 11.0
		De	iPKP	18 58 15.5
		Solomon Islands (h = 30 km).		
"	1	Um	iSgl	19 59 12.0
"	1	Um	iP	21 45 11.0
"	2	Up	iP	02 38 43.1
		Ki	iP	02 38 23.9
		Um	iP	02 38 31.0
		Ud	iP	02 38 52.5
		Philippine Islands (h = 25 km).		
"	2	Ud	iP	02 55 32.7
"	2	Um	iP	04 08 11.1
		Ud	iP	04 07 41.4
		South Atlantic Ocean (h = N).		
"	2	Ki	iP	05 16 47.9
		Um	iP	05 16 54.6
			i	05 17 16.6
"	2	Um	i(PKP)	07 43 04.4
		Ud	iPKPl	07 43 12.3
		Fiji Islands (h = 580 km).		
"	2	Up	iP	15 24 24.5 C
			i	15 24 43.2
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 2 (cont.)

Up	iPn		15 25 26.7	
			micr	sec
	Pn	Z'	0.1	0.9
Ki	iP		15 24 54.0	C
	iPn		15 26 10.1	
			micr	sec
	P	Z'	0.1	1.0
	Pn	Z'	0.1	1.3
Sk	iP		15 24 58.3	C
	iPn		15 26 13.5	
Um	iP		15 24 33.1	C
	iPn		15 25 37.7	
Ud	iP		15 24 41.3	C

Iran-USSR (h = 20 km).

" 2

Ki	eP		19 01 18
Ud	iP		19 00 51.4

Iran-USSR (h = 40 km).

" 2

Up	iPn		20 36 40.1
	i		20 36 46.8
	i		20 38 10.8
	iSgl		20 38 36.3
	i		20 38 39.5
Ki	i		20 39 30.8
	iSgl		20 40 10.3
	iSg2		20 40 22.6
Sk	e		20 36 17
	i		20 36 29.0
	iSn		20 37 03.0
	i		20 37 07.1
	iSgl		20 37 27.9
	i		20 37 31.6
Um	iPn		20 36 57.6
	iSn		20 38 25.7
	i		20 38 40.9
	iSgl		20 39 12.2
	i		20 39 15.0
Ud	iPn		20 36 12.0
	i		20 36 36.7
	iSn		20 37 06.9
	iSgl		20 37 33.5
	i		20 37 38.3

Off west coast of Norway, near 61°N, 3 1/2°E.
Origin time = 20 34 57.
M_L = 3.6 (Up,Ki,Sk,Um,Ud).

" 2

Up	iP		22 07 00.7	
	iS		22 18 00	
			micr	sec
	P	Z'	0.2	1.5
	Mx	E	1.7	18
	Mx	N	1.9	21

(cont.)

1977
May 2 (cont.)

Up			micr	sec
	Mx	Z	5.1	19
Ki	iP		22 06 45.6	
			micr	sec
	P	Z'	0.2	1.6
	Mx	E	1.9	17
	Mx	N	1.9	16
	Mx	Z	1.9	18
Sk	eP		22 07 07	
Um	iP		22 06 50.8	
	iS		22 17 37	
Ud	iP		22 07 10.0	

Mindanao (h = 25 km).
m = 6.2, M = 5.7 (Up,Ki).

" 3

Up	iP		03 26 48.8	D
			micr	sec
	P	Z'	0.1	0.6
Ki	iP		03 26 16.9	D
			micr	sec
	P	Z'	0.1	0.9
Sk	iP		03 26 45.5	D
Um	iP		03 26 30.7	D
Ud	iP		03 26 55.4	D

Bonin Islands (h = 310 km).
m = 5.8 (Up,Ki).

" 3

Up	iP		12 37 00.7
Ki	iP		12 36 46.9
Sk	iP		12 37 13.9
Um	iP		12 36 49.7
Ud	iP		12 37 14.0

Szechwan, China (h = N).

" 3

Um	iP		13 05 08.8

Japan (h = 70 km).

" 3

Um	iP		16 34 01.7

" 3

Ki	iP		20 49 52.3
Um	iP		20 49 57.8

Halmahera (h = 120 km).

" 3

Ki	iP		22 36 34.8
Um	iP		22 36 46.7
	ipP		22 36 55.7
Ud	ipP		22 37 22.6

Ryukyu Islands.
h = 30 km (Um).

" 3

Up	iP		02 08 20.0	C
			micr	sec
	P	Z'	0.1	0.8
Ki	iP		02 08 58.4	
Sk	iP		02 08 56.0	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 4 (cont.)

Um	iP		02 08 34.1
Ud	iP		02 08 35.4 C
	iS		02 14 26.6
De	iP		02 08 19.0 C

Iran (h = 45 km).

" 4	Up	iP		02 45 15.3
		isP		02 45 51.9
		i		02 46 40.4
		iPP		02 46 50.9
			micr	sec
		P	Z' 0.1	1.5
		sP	Z' 0.2	1.4
		PP	Z' 0.2	1.5
	Ki	iP		02 45 22.7
		iPP		02 47 01.6
			micr	sec
		P	Z' 0.1	1.0
		PP	Z' 0.1	1.2
	Sk	iP		02 45 40.3
		iPP		02 47 26.2
	Um	iP		02 45 12.8
		ipP		02 46 38.4
		iPP		02 46 48.4
	Ud	iP		02 45 31.8
		ipP		02 45 56.8
		isP		02 46 08.7
		iPP		02 47 14.5
	De	iP		02 45 29.2
		ipP		02 45 53.9
		isP		02 46 05.8

Afghanistan-USSR.
h = 110 km (Up,Um,Ud,De).
m = 5.4 (Up,Ki).

" 4	Ki	iP	06 15 04.7

Iran-USSR (h = N).

" 4	Ud	iPKPl	08 35 34.6
	De	iPKPl	08 35 45.3

Fiji Islands (h = 590 km).

" 4	Up	iP	12 01 10.1
	Ki	eP	12 00 38
	Um	iP	12 00 52.6
	Ud	iP	12 01 18.0
	De	iP	12 01 29.4

Bonin Islands (h = 450 km).

" 4	Up	iSgl	17 07 05.4
	Sk	iSgl	17 06 21.2
	Ud	e	17 05 57
		iSgl	17 06 03.0

Probably southern Norway.

1977
May 4 Sk i(P) 19 52 21.7

" 5	Up	iP	00 08 14.7
	Ki	iP	00 07 46.9

Mariana Islands (h = 280 km).

" 5	Up	i	14 18 42.1
		iSgl	14 18 45.5
	Sk	iSgl	14 18 44.9
	Ud	i	14 17 40.9
		iSgl	14 17 44.9

Coast of southwest Norway, 58.4°N, 6.3°E.
Origin time = 14 15 38.
M_L = 2.6 (Ud).
By combination with Kongsberg readings.

" 5	Um	iP	14 55 59.2
		i	14 56 15.3

Japan (h = 60 km).

" 5	Ki	iPgl	16 24 11.0
		iSgl	16 24 38.8
	Um	iSgl	16 26 29.9

Coast of north Norway, near 69°N, 15 1/2°E.
Origin time = 16 23 33.
M_L = 2.9 (Ki,Um).
By combination with Tromsoe readings.

" 5	Ki	iPgl	16 56 13.3
		iSgl	16 56 41.1
	Um	iSgl	16 58 32.5

Same location as the preceding event.
Origin time = 16 55 36.
M_L = 2.6 (Ki,Um).
By combination with Tromsoe reading.

" 5	Ki	iPgl	17 26 28.2
		iSgl	17 26 55.9
	Um	iSgl	17 28 47.1

Same location as the preceding events.
Origin time = 17 25 51.
M_L = 2.7 (Ki,Um).
By combination with Tromsoe readings.

" 5	Up	iP	22 25 32.2 C

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 5 (cont.)

Up	ipP		22 25 52.5	
			micr sec	
	P.	Z'	0.1 1.1	
Ki	iP		22 24 49.3	
	ipP		22 25 07.9	
			micr sec	
	P	Z'	0.1 1.0	
Sk	iP		22 25 24.6	
Um	iP		22 25 08.2	C
	ipP		22 25 28.4	
Ud	iP		22 25 39.1	C
	ipP		22 25 59.5	
De	iP		22 25 56.8	
	ipP		22 26 17.2	

Japan.
h = 80 km (Up,Ki,Ud,De).
m = 5.5 (Up,Ki).

" 5

Up	iP		23 18 38.3	
Ki	iP		23 19 43.9	
Sk	iP		23 19 14.4	
Um	eP		23 19 12	
Ud	eP		23 18 41	
	i		23 18 53.3	
De	iP		23 18 10.5	

Crete (h = 15 km).

" 5

Ud	iP		23 45 26.3	

" 6

Up	iP		04 04 28.2	C
			micr sec	
	P	Z'	0.2 1.0	
Ki	iP		04 03 40.1	
			micr sec	
	P	Z'	0.2 1.0	
Sk	iP		04 04 15.8	C
Um	iP		04 04 01.9	C
Ud	iP		04 04 33.2	C
De	iP		04 04 52.3	C

Kurile Islands (h = 30 km).
m = 6.2 (Up,Ki).

" 6

Um	iP		13 44 19.6	
Ud	iP		13 44 51.0	

" 6

Up	iP		21 48 33.5	
	i		21 49 15.9	
			micr sec	
	P	Z'	0.1 1.0	
Ki	iP		21 47 45.4	
	i		21 48 27.1	
Sk	iP		21 48 21.0	
	i		21 49 04.1	

(cont.)

1977
May 6 (cont.)

Um	iP		21 48 08.3	
	i		21 48 49.8	
Ud	iP		21 48 38.6	
	i		21 49 21.5	
De	iP		21 48 57.9	
	i		21 49 40.2	

Kurile Islands (h = 35 km).
The second phase may be P-onset of a new shock from the same focal area, about 42 s after the first shock.

" 6

Up	iP		22 21 12.5	
Ki	iP		22 20 24.5	
Um	iP		22 20 46.5	
Ud	iP		22 21 18.3	

Kurile Islands (h = 45 km).

" 6

Up	iP		22 55 10.6	
			micr sec	
	P	Z'	0.1 1.0	
Ki	iP		22 54 22.6	
Um	iP		22 54 44.7	
Ud	iP		22 55 16.7	
De	iP		22 55 37.4	

Kurile Islands (h = N).

" 7

Ud	iP		01 10 30.4	

South Atlantic Ocean (h = N).

" 7

Up	iP		02 16 47.7	
	iS		02 19 22.5	
			micr sec	
	P	Z'	0.9 1.5	
	Mx	E	3.0 16	
	Mx	N	4.8 18	
	Mx	Z	8.7 18	
Ki	iP		02 15 31.5	
	i		02 15 41.2	
			micr sec	
	P	Z'	0.5 1.0	
	i	Z'	1.0 1.1	
	Mx	E	6.6 12	
	Mx	N	10 15	
	Mx	Z	9.8 14	
Sk	iP		02 15 49.5	
	iS		02 17 30.9	
Um	iP		02 16 11.2	
Ud	iP		02 16 36.1	
De	iP		02 17 22.5	
	i		02 21 10.4	

Jan Mayen (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	7	Ud	iP	02 27 37.0	
"	7	Up	iP	04 58 35.2	
		Ki	iP	04 57 51.0	
		Um	iP	04 58 10.9	
		Ud	iP	04 58 42.1	
		De	iP	04 58 59.0	
		Japan (h = 220 km).			
"	7	Ud	iP	05 58 44.5	
"	7	Um	iSgl	06 49 53.2	
		Ud	iSn	06 49 54.0	
			i	06 50 19.4	
			iSgl	06 50 22.5	
		De	eSgl	06 50 45	
		Esthonia.			
		Explosion?			
"	7	Up	iSgl	07 59 29.7	
		Sk	eSn	07 57 40	
			eSgl	07 58 01	
		Ud	eSn	07 57 55	
			iSgl	07 58 23.4	
		De	iSn	07 58 49.8	
		Off west coast of Norway, approximate location 62°N, 3°E.			
		Origin time = 07 55 32.			
		M_L = 2.7 (Ud).			
		By combination with Bergen and Kongsberg readings.			
"	7	Up	i(P)	14 04 38.9	
"	7	Um	iP	15 22 25.0	
		Ud	iP	15 22 56.6	
"	7	Up	iP	16 06 11.5	C
				micr sec	
			P Z'	0.1 1.0	
		Ki	iP	16 05 24.0	
		Sk	iP	16 05 58.6	
		Um	iP	16 05 45.5	C
		Ud	iP	16 06 16.9	
			i	16 06 26.5	
		De	iP	16 06 36.8	
		Kurile Islands (h = N).			
"	7	Up	iP	16 45 22.9	C
				micr sec	
			P Z'	0.1 1.0	
		Ki	iP	16 44 35.1	
		Sk	iP	16 45 11.2	
		Um	iP	16 44 57.1	C
		Ud	iP	16 45 28.4	
		De	iP	16 45 47.7	
		Kurile Islands (h = 15 km).			

1977 May	7	Up	iPKPl	18 44 13.7	D
			i	18 46 23.4	
				micr sec	
			PKPl Z'	0.1 0.6	
		Ki	iPKP	18 44 02.7	
			iSKPl	18 46 50.8	
		Sk	ePKPl	18 44 08	
		Um	iPKPl	18 44 01.3	
			iSKPl	18 47 00.3	
		Ud	iPKPl	18 44 15.8	D
		De	iPKPl	18 44 25.7	D
			ipPKPl	18 46 18.6	
		Tonga-Kermadec Islands.			
		h = 480 km (De).			
"	7	Um	iP	21 39 55.8	
		Ud	iP	21 40 26.9	
"	7	Up	iP	22 29 42.0	
		Ki	iP	22 28 47.8	
		Sk	iP	22 29 19.5	
		Um	iP	22 29 14.6	D
		Ud	iP	22 29 41.0	D
		De	iP	22 30 03.3	
		Aleutian Islands (h = 35 km).			
"	8	Up	iP	05 10 59.4	
		Ud	iP	05 11 05.1	
"	8	Up	i(P)	07 56 05.7	
"	8	Up	iPP	11 34 40.3	
		Um	iP	11 34 25.6	
		Ud	iP	11 34 30.2	
		Caucasus (h = 35 km).			
"	8	Ki	eP	14 22 16	
		Sk	eP	14 22 31	
		Ud	eP	14 22 20	
		Uzbek SSR (h = N).			
"	8	Ki	iP	15 37 25.5	
		Ud	iP	15 36 50.2	
		North Atlantic Ocean (h = N).			
"	8	Um	iPKP	19 09 13.4	
			i	19 09 16.5	
		Ud	iPKP	19 09 26.0	
"	8	Up	eP	19 36 49	
		Ki	i	19 37 48.7	
		Um	iP	19 36 28.9	
			i	19 38 04.0	
			i	19 38 24.3	
		Ud	iP	19 36 56	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	8	Um	iP		20 53 16.9
			i		20 53 22.4
		Ud	eP		20 53 46
		Japan (h = 90 km).			
"	8	Up	iP		21 11 41.5
		Ki	iP		21 10 32.2
					micr sec
			Mx	E	1.0 16
			Mx	N	0.6 14
			Mx	Z	1.2 16
		Sk	eP		21 10 39
			i		21 10 53.3
		Um	iP		21 11 08.3
		Ud	eP		21 11 23
			i		21 11 30.9
		De	iP		21 12 07.9
		Jan Mayen (h = N).			
"	8	Um	iP		23 45 09.9
"	9	Ki	iP		01 56 21.7
		Ud	iP		01 56 03.7
"	9	Ud	i(P)		01 59 17.2
"	9	Ki	e(Sn)		05 24 08
			i(Sgl)		05 24 32.1
		Um	i(Sgl		05 25 39.1
"	9	Ki	iPKPl		10 45 43.7
					micr sec
			PKPl	Z'	0.3 2.5
		Um	iPKPl		10 45 45.5
		De	iPKPl		10 45 35.6
		Easter Island Cordillera (h = N).			
"	9	Up	iP		15 14 18.7
			ipP		15 14 58.4
					micr sec
			pP	Z'	0.1 1.0
		Ki	iP		15 13 50.1
			i		15 14 10.5
					micr sec
			P	Z'	0.1 1.5
		Sk	iP		15 14 19.9
		Um	iP		15 14 02.0
			ipP		15 14 41.1
		Ud	iP		15 14 27.9
			ipP		15 15 07.2
		De	iP		15 14 38.4
		East China Sea. h = 160 km (Up,Um,Ud).			

1977 May	10	Um	iPKP		02 20 38.9
		De	iPKPl		02 20 47.6
		Fiji Islands (h = 570 km).			
"	10	Ki	iP		12 28 35.6
"	10	Sk	e(P)		15 46 31
"	10	Ud	i(P)		16 26 57.3
"	10	Up	iSKPl		18 31 38.5
		Ud	iSKPl		18 31 41.0
		New Hebrides Islands (h = 630 km).			
"	10	Um	iP		20 16 51.6
		Ud	iP		20 17 05.5
"	10	Up	iP		22 16 55.5
		Ud	iP		22 16 45.8 C
"	10	Ki	iP		22 42 01.7
					micr sec
			P	Z'	0.1 1.0
		Um	iP		22 42 07.6
		Ud	iP		22 42 26.4
		Halmahera (h = 20 km).			
"	10	Ki	iP		22 45 41.7
		Um	iP		22 45 46.8
		Ud	iP		22 46 05.2
		Halmahera (h = 10 km).			
"	11	Um	iP		00 12 07.5
"	11	Ki	iPKPl		03 01 46.3
			iPKP2		03 01 53.3
					micr sec
			PKPl	Z'	0.1 1.3
		Um	iPKPl		03 01 53.5
		Ud	iPKP2		03 02 29.2
		South Island, New Zealand (h = N).			
"	11	Up	iP		03 35 51.6
			i(PP)		03 39 33.3
		Ki	iP		03 35 35.3
					micr sec
			P	Z'	0.1 0.9
		Um	iP		03 35 40.7
			iPP		03 39 31.5
		Ud	iP		03 36 00.2
			i		03 36 08.0
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 11 (cont.)

	Ud	i(PP)	03 39 52.1	
		iPP	03 40 04.5	

Molucca Passage (h = 80 km).

" 11	Um	iP	06 26 09.5	
	Ud	iP	06 26 41.4	
" 11	Um	iP	06 28 24.2	
	Ud	iP	06 28 55.1	
" 11	Up	i(P)	13 00 59.5	
" 11	Um	iPKP	14 18 26.0	
	Ud	iPKPl	14 18 29.4	
	De	iPKPl	14 18 40.2	

Tonga-Kermadec Islands
(h = 550 km).

" 11	Up	iSn	16 30 15.3	
		iSgl	16 30 27.6	
	Ki	iPn	16 31 30.8	
		iSgl	16 33 02.5	
	Sk	iSgl	16 32 20.9	
	Um	iSgl	16 31 02.0	
	Ud	iSn	16 31 04.2	
		iSgl	16 31 32.0	
		i	16 31 35.4	
	De	iSgl	16 32 08.6	

Esthonia.
Explosion?

" 11	Up	iP	18 23 44.6	
	Ki	iP	18 23 31.0	
	Sk	iP	18 23 50.8	
	Um	iP	18 23 35.0	
	Ud	iP	18 23 52.6	
	De	iP	18 23 58.2	

Celebes (h = 150 km).

" 11	Up	iP	23 52 51.3		
			micr	sec	
		P	Z' 0.1	1.2	
	Ki	iP	23 53 33.7		
	Um	iP	23 53 07.5		
	Ud	iP	23 53 07.2		C
	De	iP	23 52 48.7		
		i	23 52 53.4		

Iran (h = N).

" 12	Up	iPKPl	00 32 24.4	
		i	00 32 34.9	
	Um	iPKPl	00 32 14.5	
	Ud	iPKPl	00 32 26.1	

1977
May 12

Up	i(P)		08 12 07.7		
" 12 Up	iP		08 22 28.9		
	ipP		08 22 35.8		
	iS		08 33 00		
			micr	sec	
	pP	Z'	0.2	1.2	
	Mx	N	2.2	20	
	Mx	Z	1.9	20	
Ki	iP		08 22 12.3		
	ipP		08 22 18.4		
			micr	sec	
	P	Z'	0.1	1.1	
	pP	Z'	0.3	1.2	
	Mx	E	1.1	20	
	Mx	N	2.8	20	
Sk	eP		08 22 35		
	ipP		08 22 42.5		
Um	iP		08 22 18.0		
	ipP		08 22 24.0		
	iS		08 32 35		
Ud	iP		08 22 38.2		
	ipP		08 22 44.7		

Mindoro.
h = 20 km (Up,Ki,Sk,Um,Ud).
m = 6.3, M = 5.6 (Up,Ki).

" 12 Up	iP		11 28 09.1		D
	i		11 28 14.6		
	iS		11 36 30		
			micr	sec	
	P	Z'	0.3	1.0	
	i	Z'	0.5	1.5	
	Mx	E	3.1	12	
	Mx	N	7.4	15	
	Mx	Z	6.9	13	
Ki	iP		11 27 36.9		D
	i		11 27 43.7		
			micr	sec	
	P	Z'	0.2	1.0	
	Mx	E	6.3	14	
	Mx	N	8.3	12	
	Mx	Z	5.2	15	
Sk	iP		11 28 11.0		D
	i		11 28 18.1		
Um	iP		11 27 49.0		D
	iS		11 35 51		
Ud	iP		11 28 19.9		D
De	iP		11 28 32.3		D
	i		11 28 37.7		
	i		11 29 05.0		

China (h = 20 km).
m = 6.4, M = 6.1 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	12	Up	iP		11 45 52.7	
		Ud	iP		11 46 09.2	
"	12	Up	iP		12 30 31.7	D
			ipP		12 30 44.1	
			iS		12 39 02	
					micr	sec
			P	Z'	0.2	0.9
			pP	Z'	0.2	0.8
			Mx	E	6.1	21
			Mx	N	8.0	18
			Mx	Z	8.1	20
		Ki	iP		12 30 28.0	D
			ipP		12 30 41.1	
					micr	sec
			P	Z'	0.4	1.3
			pP	Z'	0.4	1.4
			Mx	E	4.7	15
			Mx	N	11	17
			Mx	Z	6.5	17
		Sk	iP		12 30 48.7	D
			ipP		12 31 00.9	
		Um	iP		12 30 25.7	D
			ipP		12 30 38.6	
			iS		12 38 51	
		Ud	iP		12 30 45.3	D
			ipP		12 30 57.6	
		De	iP		12 30 45.4	D
			ipP		12 30 58.8	

Burma.
h = 45 km (Up,Ki,Sk,Um,Ud,De).
m = 6.2, M = 6.1 (Up,Ki).

"	12	Up	iP		14 13 21.0	
			i		14 13 27.1	
			iS		14 23 46	
					micr	sec
			i	Z'	0.2	1.3
			Mx	E	3.5	25
			Mx	N	9.2	24
			Mx	Z	2.1	22
		Ki	iP		14 13 02.1	
			i		14 13 09.1	
					micr	sec
			P	Z'	0.1	0.9
			i	Z'	0.2	1.0
			Mx	E	1.8	20
			Mx	N	7.3	22
			Mx	Z	1.3	19
		Sk	iP		14 13 26.9	
			i		14 13 32.7	
		Um	iP		14 13 08.6	
			i		14 13 15.7	
			iS		14 23 15	

(cont.)

1977 May	12	(cont.)				
		Ud	iP		14 13 31.2	
			i		14 13 37.1	
		De	iP		14 13 38.3	
			i		14 13 43.2	
			i		14 14 01.0	

Luzon (h = 15 km).
m = 6.1, M = 6.1 (Up,Ki).

"	12	Ki	iPKP		15 43 42.6	
		Um	iPKP		15 43 49.7	
		Ud	iPKP		15 43 59.3	
		De	iPKP1		15 43 59.8	

Fiji Islands (h = 630 km).

"	12	Up	iPKP2		17 02 43.9	
		Ki	iPKP1		17 02 12.7	
		Ud	iPKP2		17 02 51.2	

South Island, New Zealand
(h = N).

"	12	Ki	iPgl		17 49 16.7	
			iSgl		17 49 44.7	
		Um	iSgl		17 51 38.8	

Coast of north Norway,
near 69 1/4°N, 15 1/2°E.
Origin time = 17 48 39.
M_L = 2.8 (Ki,Um).
By combination with Finnish
station readings.

"	12	Ud	iP		17 59 36.1	
			i		17 59 41.6	

Sicily (h = N).

"	12	Up	iP		21 47 59.5	
			iPcP		21 48 31.4	
					micr	sec
			PcP	Z'	0.1	0.9
		Ki	iP		21 47 08.5	
			i		21 47 42.0	
					micr	sec
			P	Z'	0.1	0.7
		Sk	i		21 47 46.2	
			iPcP		21 48 23.2	
		Um	iP		21 47 32.2	
			i		21 48 07.5	
		Ud	iP		21 48 04.3	
			iPcP		21 48 34.9	
		De	iP		21 48 24.7	
			iPcP		21 48 46.6	

Kurile Islands (h = 130 km).

"	13	Up	iP		01 38 02.4	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 13 (cont.)

Up	ipP		01 38 18.8		
Ki	iP		01 37 21.4		
	ipP		01 37 37.6		
Sk	iP		01 37 55.7		
Um	iP		01 37 39.4		
	ipP		01 37 55.6		
Ud	iP		01 38 09.1		
De	iP		01 38 24.9		

Japan.
h = 60 km (Up,Ki,Um).

" 13

Up	iP		02 28 32.0		
	i		02 28 35.9		
			micr	sec	
	i	Z'	0.1	1.1	
Ki	iP		02 28 13.9		C
			micr	sec	
	P	Z'	0.1	1.5	
Um	iP		02 28 20.0		
	i		02 28 24.8		
Ud	iP		02 28 39.0		
	i		02 28 47.6		

Mindoro (h = 40 km).
m = 5.9 (Up,Ki).

" 13

Sk	iP		03 14 27.8		
Um	iP		03 14 43.5		
Ud	iP		03 14 36.3		

Guatemala (h = 80 km).

" 13

Ud	iP		07 35 29.3		
	i		07 35 31.9		
De	iP		07 35 13.4		

Iran (h = N).

" 13

Ki	eP		10 38 29		
Um	iP		10 38 45.6		
Ud	iP		10 39 14.3		

Japan (h = 70 km).

" 13

Ud	iP		11 10 26.5		

" 13

Up	iP		11 24 54.2		D
	i		11 24 54.8		
	ipP		11 26 33.3		
	iPP		11 28 04.1		
	iS		11 34 19.4		
			micr	sec	
	i	Z'	0.6	0.5	
	pP	Z'	0.2	1.2	
	PP	Z'	1.9	1.9	
	Mx	E	3.0	16	
	Mx	N	2.7	14	
	Mx	Z	5.1	16	

(cont.)

1977
May 13 (cont.)

Ki	iP		11 24 22.0		D
	i		11 24 22.6		
	ipP		11 26 02.5		
	iPP		11 27 13.8		
	iS		11 33 19.1		
			micr	sec	
	i	Z'	0.7	0.7	
	PP	Z'	0.5	1.9	
	Mx	E	2.8	14	
	Mx	N	2.8	15	
	Mx	Z	2.1	16	
Sk	iP		11 24 50.7		D
	i		11 24 51.3		
	iPP		11 27 59.2		
	iS		11 34 16.1		
Um	iP		11 24 35.8		D
	i		11 24 36.5		
	ipP		11 26 13.5		
	i		11 27 56.0		
	iS		11 33 44.7		
Ud	iP		11 25 01.1		D
	i		11 25 01.6		
	ipP		11 26 40.6		
	iS		11 34 34.0		
De	iP		11 25 12.8		D
	i		11 25 13.5		
	ipP		11 26 57.4		
	iPP		11 28 35.9		
	iS		11 34 52.5		

Bonin Islands.
h = 460 km (Up,Ki,Um,Ud, De).
m = 6.4, M = 5.9 (Up,Ki).
M not corrected for focal depth.
Double P, 0.5 s apart.

" 13

Ud	iP		11 43 32.3		

" 13

De	iP		15 58 56.1		

" 13

Up	iP		16 19 17.5		
Sk	i		16 20 09.5		
Ud	iP		16 19 24.8		
	i		16 19 30.3		
De	iP		16 18 51.1		

Aegean Sea (h = N).

" 13

Up	iP		18 18 47.0		
Ki	iP		18 18 26.9		
Ud	iP		18 18 56.2		
De	iP		18 19 04.0		

Luzon (h = 15 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	13	Up	iP		18 22 30.0	
			i		18 22 33.2	
			i		18 22 53.7	
			iS		18 26 20	
					micr	sec
			P	Z'	0.1	0.9
			i	Z'	0.1	0.7
			Mx	E	3.0	16
			Mx	N	1.2	14
			Mx	Z	1.9	14
		Ki	iP		18 23 43.0	
			i		18 23 53.8	
					micr	sec
			Mx	E	1.7	13
			Mx	N	1.4	11
			Mx	Z	1.1	13
		Sk	iP		18 23 12.9 C	
		Um	iP		18 23 08.6	
			i		18 23 17.2	
		Ud	iP		18 22 38.5	
			i		18 22 42.1	
		De	iP		18 22 02.2	
			i		18 22 05.9	
		Aegean Sea (h = 10 km).				
		M = 4.9 (Up,Ki).				
"	13	Ud	iPKPl		20 00 23.3	
		De	iPKPl		20 00 34.6 C	
		Tonga-Kermadec Islands				
		(h = 630 km).				
"	14	Up	iP		01 02 51.7	
		Um	iP		01 02 32.1	
		Ud	iP		01 02 58.8	
		Japan (h = 380 km).				
"	14	Up	iP		03 43 16.7	
		Ki	iP		03 44 42.7	
		Sk	eP		03 43 58	
		Um	iP		03 44 01.5	
			i		03 44 05.1	
		Ud	iP		03 43 18.7	
			i		03 43 30.6	
		Yugoslavia (h = 45 km).				
"	14	Up	iP		06 17 59.6	
					micr	sec
			Mx	N	1.9	26
			Mx	Z	3.6	26
		Ki	i		06 18 03.7	
					micr	sec
			Mx	E	2.0	26
		(cont.)				

1977 May	14	(cont.)				
		Ki			micr	sec
			Mx	N	1.6	24
		Sk	iP		06 17 46.2	
		Um	iP		06 18 01.7	
			i		06 18 10.1	
		Ecuador (h = N).				
		M = 5.5 (Up,Ki).				
"	14	Up			micr	sec
			Mx	E	1.6	26
			Mx	Z	4.7	26
		Ki			micr	sec
			Mx	E	2.0	26
			Mx	N	2.1	24
		Um	iP		07 12 12.3	
		Ecuador (h = N).				
		M = 5.5 (Up,Ki).				
"	14	Ud	iP		09 14 07.3	
"	14	Up	iP		10 17 47.0	
		Sk	iP		10 18 30.9	
		Ud	eP		10 17 55	
		De	iP		10 17 17.1	
		Greece (h = 55 km).				
"	14	Um	iP		11 15 08.6	
			i		11 15 19.6	
		Ud	iP		11 15 24.9	
"	14	Um	iP		13 07 06.5	
"	14	Up	iP		16 35 08.2	
			ipP		16 35 24.6	
		Ki	iP		16 34 48.2	
			ipP		16 35 04.5	
		Um	iP		16 34 55.1	
		Ud	iP		16 35 17.9	
		Luzon.				
		h = 60 km (Up,Ki).				
"	14	Up	iP		21 39 43.4	
		Ki	iP		21 39 01.2	
			ipP		21 39 10.6	
		Um	iP		21 39 19.9	
			ipP		21 39 29.2	
		Ud	iP		21 39 50.5	
			ipP		21 40 00.0	
			i		21 40 04.4	
		Japan.				
		h = 30 km (Ki,Um,Ud).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	14	Up	eP	21 49 09	
			i	21 49 21.7	
		Ki	iP	21 49 59.6	
		Um	iP	21 49 29.6	
			i	21 49 34.0	
		Ud	iP	21 49 24.8	
		De	iP	21 49 00.0	
		Turkey (h = 10 km).			
"	14	Up	iRg	22 11 02.9	
		Um	iSgl	22 12 35.9	
		Ud	iRg	22 10 40.7	
		Bergslagen, Sweden.			
		Near-surface event.			
"	15	Up	iP	00 31 16.0	D
			iPcP	00 31 46.5	
			ipP	00 32 07.4	
				micr sec	
			P Z'	0.1 0.8	
			PcP Z'	0.1 0.7	
			pP Z'	0.1 1.4	
		Ki	iP	00 30 26.4	D
			iPcP	00 31 19.5	
			iPP	00 32 34.4	
		Sk	iP	00 31 02.5	
			iPcP	00 31 39.0	
			epP	00 31 56	
		Um	iP	00 30 49.2	D
			iPcP	00 31 30.7	
		Ud	iP	00 31 21.3	D
			iPcP	00 31 50.4	
		De	iP	00 31 40.5	D
			iPcP	00 32 03.2	
		Kurile Islands.			
		h = 240 km (Up,Sk).			
"	15	Up	iP	00 32 47.5	
		Ud	iP	00 32 52.3	
"	15	Sk	eP	04 26 40	
			i	04 26 46.1	
		Um	e	04 26 38	
		Ud	iP	04 26 18.2	
			i	04 26 26.6	
		Sudan (h = N).			
"	15	Ud	eP	06 56 39	
"	15	Ud	iP	12 35 10.7	
"	15	Ud	iP	13 46 05.6	
		Turkey (h = 15 km).			
"	15	Up	iP	16 01 42.9	C
				micr sec	
			P Z'	0.1 1.2	
		(cont.)			

1977 May	15	(cont.)			
		Up		micr sec	
			Mx N	1.0 18	
			Mx Z	1.0 18	
		Ki	iP	16 00 49.3	C
				micr sec	
			P Z'	0.1 1.2	
			Mx E	0.8 17	
			Mx N	0.7 15	
		Sk	iP	16 01 19.2	C
		Um	iP	16 01 16.2	C
		Ud	iP	16 01 41.8	C
			i	16 01 52.9	
		De	iP	16 02 04.7	C
		Aleutian Islands (h = N).			
		m = 5.9, M = 5.1 (Up,Ki).			
"	15	Up	iPKP	16 06 44.6	
		Sk	e(PKP)	16 06 35	
		Um	iPKP	16 06 28.2	
		Ud	iPKP	16 06 41.5	
		De	iPKP	16 06 49.0	
"	15	Up	iP	19 32 44.1	
			i	19 32 50.3	
		Ud	iP	19 32 52.2	
			i	19 32 59.1	
		Indian Ocean (h = N).			
"	15	Up	iPKP	21 30 40.9	
		Ki	e(PKP)	21 31 14	
			i(PKP)	21 31 19.7	
		Sk	ePKP	21 30 35	
		Um	e(PKP)	21 30 20	
			iPKP	21 30 34.7	
		Ud	e(PKP)	21 30 36	
			iPKP	21 30 42.9	
"	15	Um	iP	22 02 51.1	
			ipP	22 03 06.0	
		Ud	epP	22 03 34	
		Japan.			
		h = 55 km (Um).			
"	15	Ki	iP	22 05 32.3	
		Sk	iP	22 05 18.4	
		Um	iP	22 05 34.7	
		Ud	eP	22 05 22	
		De	iP	22 05 24.4	
		Colombia (h = 10 km).			
"	15	Up	i(PKP)	23 22 13.0	
		Sk	e(PKP)	23 22 01	
		Um	i(PKP)	23 21 56.6	
			i(PKP)	23 22 03.2	
		Ud	i(PKP)	23 22 10.2	
			iPKP	23 22 17.4	
		De	iPKP	23 22 25.7	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	15	Up	i(PKP)		23 31 09.8		
			i(PKP)		23 31 13.9		
			iPKP		23 31 19.5		
		Ki	i(PKP)		23 31 02.7		
			iPKP		23 31 05.7		
			iSKPl		23 31 44.3		
		Sk	iPKP		23 31 16.0		
			iSKPl		23 34 02.8		
		Um	i(PKP)		23 31 04.5		
			iPKP		23 31 12.8		
		Ud	i(PKP)		23 31 20.8		
			iSKPl		23 34 11.7		
		De	iPKPl		23 31 23.6		
		Fiji Islands (h = 500 km).					
"	16	Ud	iRg		03 20 44.6		
		Regional, near-surface event.					
"	16	Ud	iP		08 21 30.6		
		De	iP		08 20 57.8		
		Crete (h = 45 km).					
"	16	De	iP		10 42 47.4		
		Aegean Sea (h = N).					
"	16	Up	iPKP		11 33 43.4		
		Ki	iPKP		11 33 28.5		
		Sk	iPKP		11 33 40.8		
		Um	iPKP		11 33 35.8		
		Ud	iPKP		11 33 44.9		
		De	iPKP		11 33 51.1		
		New Hebrides Islands (h = 30 km).					
"	16	Ki	iP		13 01 18.0		
		Ud	iP		13 01 40.0		
		Sinkiang, China (h = 55 km).					
"	16	De	i(P)		14 44 28.3		
"	16	Sk	iSgl		14 44 28.7		
			iRg		14 44 31.3		
		Regional, near-surface event.					
"	16	Ud	iRg		15 40 20.0		
		Regional, near-surface event.					
"	16	Up			micr	sec	
			Mx	E	1.1	12	
			Mx	N	1.1	13	
			Mx	Z	1.6	13	
		Ki	iP		16 51 56.2		
					micr	sec	
			Mx	E	1.6	15	
			Mx	N	2.0	14	
		(cont.)					

1977 May	16	(cont.)					
		Ki			micr	sec	
			Mx	Z	1.6	15	
		Sk	eP		16 51 25		
			i		16 51 30.2		
		Um	iP		16 52 07.2		
			iS		16 55 40		
		Ud	iP		16 51 53.8		
		Iceland (h = 10 km).					
"	16	Ki	iP		17 02 22.0		
			i		17 02 35.7		
					micr	sec	
			P	Z'	0.1	1.5	
		Um	iP		17 02 32.7		
			i		17 02 42.3		
		Iceland (h = 10 km).					
"	16	Um	iP		21 37 31.3		
"	16	Ud	eP		22 28 40		
"	16	Um	iP		22 28 42.8		
		De	iP		22 28 57.1		
		Hindu Kush (h = 100 km).					
"	17	De	iPKP		02 38 50.4		
		New Hebrides Islands (h = 25 km).					
"	17	Ki	iP		09 23 54.0		
		Kurile Islands (h = 470 km).					
"	17	Up	iP		09 38 29.0		
		Ki	iP		09 38 37.8		
		Sk	iP		09 38 54.6		
		Um	iP		09 38 27.0		
		Ud	iP		09 38 45.9		
		De	iP		09 38 42.9		
		Afghanistan-USSR (h = 120 km).					
"	17	Um	i(P)		14 18 00.7		
"	17	Ki	iP		14 28 06.1		
			ipP		14 28 12.2		
					micr	sec	
			P	Z'	0.1	1.5	
			pP	Z'	0.1	1.0	
		Sk	iP		14 27 52.4		
			ipP		14 27 58.6		
		Um	iP		14 28 08.9	C	
			ipP		14 28 15.4		
		Ud	iP		14 27 57.5	C	
		De	i		14 28 03.0		
		Panama.					
		h = 20 km (Ki,Sk,Um).					

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	17	Ud	iP	17 32 32.0	
		Iran (h = 55 km).			
"	18	Up	iP	04 05 45.1	
		Ki	iP	04 05 25.1	
				micr sec	
			P Z'	0.1 0.8	
		Sk	iP	04 05 49.9	
		Um	iP	04 05 31.9	
		Ud	iP	04 05 53.9	
		De	iP	04 06 00.9	
		Luzon (h = N).			
"	18	Up	iP	04 07 11.3	C
			ipP	04 07 49.8	
				micr sec	
			P Z'	0.1 1.1	
		Ki	iP	04 06 16.1	C
			ipP	04 06 54.4	
				micr sec	
			P Z'	0.1 1.1	
		Sk	iP	04 06 53.6	
			ipP	04 07 32.2	
		Um	iP	04 06 42.3	
			iPcP	04 07 35.4	
		Ud	iP	04 07 14.6	C
			ipP	04 07 53.4	
		De	iP	04 07 36.6	C
			iPcP	04 08 07.7	
		Kamchatka.			
		h = 170 km (Up,Ki,Sk,Ud).			
		m = 5.4 (Up,Ki).			
"	18	Ki	iPKP	07 01 59.0	
		Sk	ePKP	07 02 10	
		Um	iPKP	07 02 05.5	
		New Hebrides Islands			
		(h = 220 km).			
"	18	Um	iP	08 54 55.7	
		Ud	iP	08 55 20.5	
"	18	Ud	iP	11 31 33.2	
		Kurile Islands			
"	18	Um	iP	12 24 25.0	
		Ud	iP	12 24 51.9	
		Japan (h = N).			
"	18	Ud	iP	17 29 30.7	
		Turkey (h = N).			
"	19	Up	iP	00 15 26.7	C
		Ki	iP	00 16 05.6	C
			iPP	00 17 39.6	
		Sk	iP	00 16 02.3	
		Um	iP	00 15 41.1	
		(cont.)			

1977 May	19	(cont.)			
		Um	i	00 17 50.1	
		Ud	iP	00 15 42.0	
			i	00 15 46.4	
		De	iP	00 15 25.2	
			i	00 15 31.0	
		Iran (h = 40 km).			
"	19	Ud	iPKPl	00 28 50.0	
		De	iPKPl	00 28 59.7	
		Fiji Islands (h = 560 km).			
"	19	Up	iPKP	17 21 49.3	
		Ki	iPKP	17 22 03.6	
		Sk	iPKP	17 21 53.2	
		Um	iPKP	17 21 56.3	
		Ud	iPKP	17 21 48.4	
			i	17 21 57.9	
		South Sandwich Islands			
		(h = N).			
"	19	Up	iPKP	17 54 12.4	
		Ki	iPKP	17 54 28.3	
			iSKPl	17 57 53.4	
		Sk	ePKP	17 54 18	
			i	17 54 22.4	
		Um	iPKP	17 54 20.1	
		Ud	iPKP	17 54 10.7	
			i	17 54 13.2	
		South Sandwich Islands			
		(h = N).			
"	19	Up	iPKPl	19 07 08.8	
		Ki	iPKP	19 07 00.9	
			iSKPl	19 09 33.0	
		Sk	eSKPl	19 09 53	
		Um	iPKP	19 07 07.4	
			iSKPl	19 09 45.6	
		Ud	iPKPl	19 07 08.8	
		De	iPKPl	19 07 18.5	
		Fiji Islands (h = 590 km).			
"	19	Um	iP	19 31 39.1	
		Ud	iP	19 32 07.9	
		De	iP	19 32 21.0	
		Japan (h = 55 km).			
"	19	Up	iP	23 06 17.4	
			iPP	23 08 54.3	
				micr sec	
			P Z'	0.2 1.1	
		Ki	iP	23 06 51.5	
			i	23 06 54.4	
			iPP	23 08 41.1	
				micr sec	
			P Z'	0.1 1.1	
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 19 (cont.)

Ki			micr	sec
	PP	Z'	0.3	1.7
Sk	iP		23 06 51.5	
Um	iP		23 06 29.4	
	iPP		23 08 09.2	
Ud	iP		23 06 32.3	
	iPP		23 08 14.2	
De	iP		23 06 16.9	

Iran (h = 30 km).
m = 5.7 (Up,Ki).

" 19	Up	iP	23 12 39.2	C
		iPP	23 14 14.9	
			micr	sec
		P Z'	0.1	0.6
	Ki	iP	23 13 13.4	C
		i	23 13 16.6	
			micr	sec
		P Z'	0.1	0.6
	Sk	iP	23 13 13.3	C
	Um	iP	23 12 51.5	C
		iPP	23 14 32.0	
	Ud	iP	23 12 54.4	C
		iPP	23 14 32.7	
	De	iP	23 12 38.7	C

Iran (h = 30 km).
m = 5.7 (Up,Ki).

" 20	Up	iP	02 23 35.4	
	Ud	iP	02 23 37.0	
		i	02 23 45.0	
" 20	Ud	iP	07 29 08.9	
" 20	Ki	iPn	11 33 17.7	
		iPgl	11 33 25.1	
		iSn	11 33 48.8	
		iSgl	11 34 01.8	
	Um	iSgl	11 36 04.4	

Off coast of north Norway,
near 70 1/2°N, 18°E.
Origin time = 11 32 36.
M_L = 2.9 (Ki).
Checked with Tromsoe reading.

" 20	Up	iP	12 33 06.2	
	Ki	iP	12 33 39.0	
	Ud	iP	12 33 20.0	
		i	12 33 22.0	

Iran (h = N).

" 20	Up	iPKPl	14 30 11.8	
	Ud	iPKPl	14 30 11.9	
		iSKPl	14 33 06.9	

(cont.)

1977
May 20 (cont.)

De	iPKPl	14 30 22.6	

Fiji Islands (h = 530 km).

" 20	Up	iP	15 22 26.8	
		ipP	15 22 39.1	
	Ki	iP	15 22 05.2	
		ipP	15 22 17.6	
	Um	iP	15 22 14.0	
		ipP	15 22 26.0	
	Ud	iP	15 22 35.2	
		ipP	15 22 47.3	

Luzon.
h = 40 km (Up,Ki,Um,Ud).

" 20	Up	iP	17 45 27.9	C
	Ki	iP	17 46 00.2	C
	Sk	iP	17 46 01.9	
	Um	iP	17 45 39.4	C
	Ud	iP	17 45 43.3	C
	De	iP	17 45 28.6	

Iran (h = N).

" 20	Up	iPKPl	21 24 21.8	
	Ki	iPKP	21 24 11.6	
		i	21 24 22.7	
	Sk	ePKPl	21 24 15	
	Um	iPKPl	21 24 15.1	
	Ud	iPKPl	21 24 22.8	
	De	iPKPl	21 24 34.6	C
		i	21 24 48.9	

Tonga-Kermadec Islands
(h = 50 km).

" 20	Up	iP	23 04 15.2	C
		i	23 04 16.2	
		iPP	23 07 53.3	
		iSKS	23 14 43	
		iS	23 15 08	
			micr	sec
		i Z'	0.1	1.2
		Mx E	1.2	20
		Mx N	1.8	20
		Mx Z	1.4	21
	Ki	iP	23 04 15.3	C
		i	23 04 16.3	
		i	23 04 28.5	
		iPP	23 07 54.9	
			micr	sec
		i Z'	0.1	0.7
		Mx E	1.0	19
		Mx N	1.3	19
		Mx Z	1.3	19
	Sk	iP	23 04 28.7	C
		i	23 04 29.7	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 20 (cont.)

Sk	i		23 04 38.9	
	iPP		23 08 18.5	
Um	iP		23 04 12.6	C
	i		23 04 13.6	
	i		23 04 24.4	
	iPP		23 07 49.7	
	iSKS		23 14 37	
	iS		23 15 05	
Ud	iP		23 04 24.6	C
	i		23 04 25.6	
	i(PP)		23 08 03.0	
	iPP		23 08 12.2	
De	eP		23 04 24	
	i		23 04 24.0	

Sumatra (h = 35 km).
m = 6.2, M = 5.5 (Up,Ki).
Double P, small and large,
average separation 1 s.

" 20

Up	ePKP		23 10 32	
Ki	ePKP		23 10 44	
	i		23 11 09.2	
Um	ePKP		23 10 41	
	i		23 10 59.8	
Ud	iPKP		23 10 31.7	

South Sandwich Islands
(h = N).

" 21

Up	iP		05 47 26.9		D
	i		05 47 28.7		
	ipP		05 48 12.7		
	iPP		05 50 38.0		
	iS		05 57 28.2		
			micr	sec	
	P	Z'	0.1	1.0	
	i	Z'	0.7	0.9	
Ki	iP		05 47 08.5		D
	i		05 47 10.1		
	ipP		05 47 53.3		
	iS		05 56 52.0		
			micr	sec	
	P	Z'	0.1	0.5	
	i	Z'	0.5	1.0	
	Mx	E	2.2	16	
	Mx	N	2.4	16	
	Mx	Z	1.7	14	
Sk	iP		05 47 32.2		D
	i		05 47 33.8		
	ipP		05 48 18.0		
	iPP		05 50 46.9		
	iS		05 57 41.2		
Um	iP		05 47 14.4		D
	i		05 47 16.0		

(cont.)

1977
May 21 (cont.)

Um	ipP		05 48 00.0	
	iPP		05 50 21.1	
	iS		05 57 06.5	
Ud	iP		05 47 36.1	D
	i		05 47 37.8	
	ipP		05 48 21.7	
	iPP		05 50 51.4	
	iS		05 57 45.2	
De	iP		05 47 41.8	
	i		05 47 43.5	
	ipP		05 48 29.6	
	iPP		05 51 03.2	

Luzon.
h = 190 km (Up,Ki,Sk,Um,Ud,De).
m = 6.3 (Up,Ki).
Double P, small and large,
average separation 1.6 s.

" 21

Ud	eP		07 51 34	

" 21

Up	iP		10 39 58.1	
Ki	iP		10 40 21.3	
Sk	iP		10 40 21.0	
Ud	iP		10 40 07.4	

Indian Ocean (h = N).

" 21

Up	iSKPl		12 58 35.2	
Ki	iPKP		12 54 53.4	
Sk	ePKP		12 55 04	
Um	iPKP		12 54 59.6	
Ud	ePKP		12 55 09	
	iSKPl		12 58 39.7	
De	iSKPl		12 58 51.6	

New Hebrides Islands
(h = 35 km).

" 21

Up	iP		13 52 31.8		D
	i		13 52 37.1		
	iPP		13 55 43.2		
	iS		14 02 07.8		
			micr	sec	
	P	Z'	0.2	0.8	
Ki	iP		13 52 00.0		D
	i		13 52 48.7		
	iPP		13 54 51.0		
			micr	sec	
	P	Z'	0.3	0.7	
Sk	iP		13 52 29.1		D
	iPP		13 55 34.7		
Um	iP		13 52 13.7		D
	i		13 52 20.9		
Ud	iP		13 52 38.8		D
	i		13 52 43.8		

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 21 (cont.)

Ud	iPP	13 55 51.9	
De	iP	13 52 50.1	D
	ePP	13 55 12	

Bonin Islands (h = 340 km).
m = 6.1 (Up,Ki).

" 21	Ud	iP	16 03 46.5	
" 21	Ud	eP	23 28 10	

Dodecanese Islands (h = 100 km).

" 22	Up	iP	02 17 37.9	
	Um	iP	02 17 19.8	
	Ud	iP	02 17 45.3	

Japan (h = 430 km).

" 22	Up	ePKPl	04 08 17	
	Sk	ePKPl	04 08 12	
	Um	iPKPl	04 08 07.0	
	Ud	iPKPl	04 08 19.2	
" 22	Ud	eP	05 58 07	
" 22	Ud	iP	07 03 01.3	
" 22	Ud	iP	09 23 40.3	
" 22	Up	iP	13 35 29.1	
	Ud	iP	13 35 38.1	
" 22	Up	iPKPl	23 45 36.4	
		iSKPl	23 48 48.5	
	Ki	iSKPl	23 48 22.9	
	Sk	eSKPl	23 48 44	
	Um	iPKP	23 45 39.0	
		iSKPl	23 48 36.9	
	Ud	iPKPl	23 45 40.3	
		iSKPl	23 48 52.7	
	De	iPKPl	23 45 50.4	

Fiji Islands (h = 350 km).

" 23	Up	iP	03 13 16.7	
" 23	De	iPKP	12 28 31.0	

New Hebrides Islands
(h = 10 km).

" 23	Up	iP	12 30 02.0	
		i	12 30 05.0	
	Ki	iP	12 29 41.6	
			micr sec	
		P	Z' 0.1 1.3	
	Ud	iP	12 30 10.5	
	De	eP	12 30 18	

Luzon (h = 50 km).

1977
May 23

Ud	iPKP	12 32 00.2		
	iSKPl	12 34 46.4		
De	iPKPl	12 31 59.2		

Fiji Islands (h = 570 km).

" 23	Up	iPKPl	20 04 08.6	
		i	20 04 13.0	
	Ki	iPKPl	20 03 45.9	
	Sk	iPKPl	20 04 02.2	
		i	20 04 06.2	
	Um	iPKPl	20 03 57.0	
		i	20 04 00.4	
	Ud	iPKPl	20 04 10.6	
		i	20 04 18.6	
	De	iPKPl	20 04 18.9	

Kermadec Islands (h = 140 km).
PKPl-onsets are about 18 s
late when related to the
NEIS solution.

" 23	Up	iP	20 42 19.4	
		i	20 42 24.4	
	Ki	iP	20 41 59.5	
		i	20 42 04.1	
	Um	iP	20 42 05.9	
	Ud	iP	20 42 27.6	

Luzon.

" 23	Up	iP	22 08 26.3	C
		ipP	22 08 36.2	
			micr sec	
		P	Z' 0.2 0.8	
	Ki	iP	22 08 26.7	C
		ipP	22 08 36.4	
			micr sec	
		P	Z' 0.3 0.8	
	Sk	iP	22 08 40.8	C
	Um	iP	22 08 23.6	C
	Ud	iP	22 08 36.7	C
		ipP	22 08 46.3	
		iPP	22 11 59.2	
	De	iP	22 08 34.6	C
		ipP	22 08 45.3	
		iPP	22 12 01.0	

Sumatra.
h = 35 km (Up,Ki,Ud,De).
m = 6.5 (Up,Ki).

" 23	Um	iPKPl	22 47 33.8	
	Ud	iPKPl	22 47 46.1	
" 24	Ud	iP	05 10 22.8	
		i	05 10 28.5	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	24	Up	iP		05 22 55.3	
			i		05 22 00.6	
		Ud	iP		05 23 04.4	
		Luzon.				
"	24	Up	iP		05 32 48.4	
			i		05 32 54.1	
					micr	sec
			i	Z'	0.1	1.0
		Ki	iP		05 32 28.3	
			i		05 32 33.9	
					micr	sec
			i	Z'	0.1	1.2
		Sk	iP		05 32 52.9	
			i		05 32 57.9	
		Um	iP		05 32 35.4	
			i		05 32 40.1	
		Ud	iP		05 32 57.7	
		De	iP		05 33 04.5	
			i		05 33 08.7	
		Luzon (h = N).				
		m = 5.6 (Up,Ki).				
"	24	Up	iP		05 36 39.0	
		Ud	iP		05 36 48.0	
		De	iP		05 36 54.8	
		Luzon.				
"	24	Up	iP		07 58 43.8	C
			iPP		08 01 55.0	
			iS		08 09 02.8	
					micr	sec
			P	Z'	0.1	0.9
		Ki	iP		07 58 11.8	C
					micr	sec
			P	Z'	0.1	1.1
		Sk	iP		07 58 40.0	C
			iPP		08 01 49.5	
		Um	iP		07 58 25.9	C
			i		07 59 05.1	
			iPP		08 01 32.6	
			iS		08 08 31.5	
		Ud	iP		07 58 50.3	C
			iPP		08 02 08.4	
		De	iP		07 59 02.1	C
			iPP		08 02 26.5	
		Volcano Islands (h = 10 km).				
		m = 6.0 (Up,Ki).				
"	24	Up	iP		08 49 55.9	
		Ki	iP		08 49 37.5	
		Um	iP		08 49 43.6	
		Ud	iP		08 50 05.3	
		De	iP		08 50 11.4	
		Luzon (h = 70 km).				

1977 May	24	Up	iP		10 36 02.9	C
			ipP		10 36 56.5	
			ipPP		10 40 34.6	
			iSKS		10 46 10	
					micr	sec
			P	Z'	0.1	0.8
			pP	Z'	0.1	0.8
			pPP	Z'	0.1	1.3
			Mx	E	1.5	16
			Mx	N	2.1	15
			Mx	Z	2.1	16
		Ki	iP		10 35 34.6	C
			ipP		10 36 28.0	
			ipPP		10 39 46.7	
			iSKS		10 45 35	
					micr	sec
			P	Z'	0.2	0.9
			pP	Z'	0.4	1.2
			Mx	E	1.7	16
			Mx	N	2.3	18
			Mx	Z	1.5	18
		Sk	iP		10 36 00.0	
			ipP		10 36 53.6	
			ipPP		10 40 31.4	
		Um	iP		10 35 46.9	C
			ipP		10 36 40.6	
			iSKS		10 45 50	
		Ud	iP		10 36 09.2	
			ipP		10 37 01.8	
			ipPP		10 40 39.1	
		De	iP		10 36 20.7	
			ipP		10 37 14.9	
		Mariana Islands.				
		h = 220 km (Up,Ki,Sk,Um,Ud,De).				
		m = 5.8, M = 5.8 (Up,Ki).				
		M not corrected for focal depth.				
"	24	Up	iP		10 53 27.1	
		Ud	iP		10 53 22.9	
"	24	Ki	i(P)		11 20 56.1	
"	24	Ud	iP		12 28 14.8	
"	24	Up	iP		12 51 13.9	
		Ki	iP		12 51 47.8	
		Sk	iP		12 51 48.4	
		Um	iP		12 51 28.7	
		Ud	iP		12 51 28.9	
		De	iP		12 51 15.4	
		Iran (h = 45 km).				
"	24	Up	iP		13 06 56.9	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 24 (cont.)

Ki	iP		13 07 31.5	
Sk	iP		13 07 31.5	
Um	iP		13 07 12.6	
Ud	iP		13 07 12.4	
De	iP		13 06 57.3	

Iran (h = 25 km).

" 24	Ud	iP		13 17 51.7
" 25	Ud	iP		00 22 35.0
		i		00 22 40.8
" 25	Ud	iP		01 46 24.0
" 25	Ki	iP		05 52 44.2
	Ud	iP		05 53 12.6

Luzon (h = 55 km).

" 25	Up	iP		11 08 24.5	C
		i		11 08 31.5	
		iPP		11 09 31.6	
		iS		11 13 44	
				micr sec	
		P	Z'	0.2 0.9	
	Ki	iP		11 08 59.5	C
				micr sec	
		P	Z'	0.1 1.0	
		Mx	E	0.8 12	
		Mx	N	0.7 12	
		Mx	Z	0.7 11	
	Sk	iP		11 09 00.0	C
	Um	iP		11 08 36.5	C
	Ud	iP		11 08 40.9	C
		i		11 08 46.0	
	De	iP		11 08 25.6	C
		i		11 08 31.1	

Iran (h = 25 km).
m = 5.8 (Up,Ki).

" 25	Um	iP		12 09 50.6	D
	Ud	iP		12 09 21.6	D
" 25	Up	iSKPl		12 30 57.1	
				micr sec	
		SKPl	Z'	0.1 1.0	
	Ki	iPKP		12 28 02.7	
		iSKPl		12 30 32.2	
				micr sec	
		SKPl	Z'	0.1 1.2	
	Sk	iPKP		12 28 13.2	
		iSKPl		12 30 49.9	
	Um	iPKP		12 28 05.5	
		iSKPl		12 30 45.2	
	Ud	iPKPl		12 28 10.4	

(cont.)

1977
May 25 (cont.)

Ud	iSKPl		12 30 59.3	
De	iPKPl		12 28 19.2	

Fiji Islands (h = 580 km).

" 25	Ud	i(P)		14 22 28.4
" 25	Ud	i(P)		14 29 49.6
" 25	Up	iP		15 07 51.4	C
		ipP		15 08 06.9
		iS		15 17 49.0
				micr sec
		P	Z'	0.5 1.1
		Mx	E	3.1 26
		Mx	N	8.9 28
		Mx	Z	9.1 29
	Ki	iP		15 07 52.5	C
		ipP		15 08 08.3
		iS		15 17 55.8
				micr sec
		P	Z'	0.4 0.8
		Mx	E	11 25
		Mx	N	11 25
		Mx	Z	12 23
	Sk	iP		15 08 06.7	C
		ipP		15 08 22.7
		iPP		15 11 23.3
		iS		15 17 21.7
	Um	iP		15 07 48.6	C
		ipP		15 08 04.4
		iS		15 17 45.5
	Ud	iP		15 08 02.3	C
		ipP		15 08 17.9
		iS		15 18 11.4
	De	iP		15 08 00.0	C
		ipP		15 08 14.8
		iPP		15 11 11.4

Sumatra.
h = 55 km (Up,Ki,Sk,Um,Ud,De).
m = 6.4, M = 6.1 (Up,Ki).
M not corrected for focal depth.

" 25	Up	iP		15 24 19.0
	Ki	iP		15 23 55.8
	Um	iP		15 24 03.6
	Ud	iP		15 24 28.9
	De	iP		15 24 39.3

Taiwan (h = 70 km).

" 25	Up	iPKP		16 56 13.4
	Um	iPKP		16 56 06.5
		i		16 56 16.0

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
May 25 (cont.)

Ud	ePKP		16 56 13		

North Island, New Zealand
(h = 330 km).
PKP-arrivals are about
12 s earlier than expected
according to the NEIS solution.

" 25	Up	iP		17 11 48.9	
				micr	sec
		P	Z'	0.1	1.3
	Ki	iP		17 11 14.5	C
				micr	sec
		P	Z'	0.1	1.3
	Sk	iP		17 11 22.6	
	Um	iP		17 11 34.2	
	Ud	iP		17 11 40.8	C

Nevada.
m = 5.9 (Up,Ki).
Underground explosion.

" 25	Up	iP		21 14 02.8	
	Ki	iP		21 14 38.7	
		iPP		21 16 19.3	
	Sk	iP		21 14 37.8	
	Um	iP		21 14 16.0	
	Ud	iP		21 14 17.9	
	De	iP		21 14 01.7	C

Iran (h = 20 km).

" 25	Up	iP		23 08 24.8	
	Um	iP		23 07 55.0	
	Ud	iP		23 08 19.3	

Queen Elisabeth Islands
(h = N).

" 25	Ki	eP		23 10 24	
" 26	Up	iP		00 37 03.7	
" 26	Up	iP		01 40 51.9	D
		i		01 41 09.5	
		iS		01 45 28	
		i		01 45 45	
				micr	sec
		P	Z'	0.2	1.5
		i	Z'	0.1	1.0
		Mx	E	8.2	18
		Mx	N	5.7	18
		Mx	Z	17	19
	Ki	iP		01 41 36.4	D
		i		01 41 42.0	
		i		01 42 25.6	
		iPP		01 42 42.3	

(cont.)

1977
May 26 (cont.)

Ki				micr	sec
		P	Z'	0.3	0.8
		i	Z'	0.2	1.0
		PP	Z'	0.3	1.7
		Mx	E	11	12
		Mx	N	15	13
		Mx	Z	13	13
Sk	iP			01 41 30.1	D
	iPP			01 42 29.3	
Um	iP			01 41 08.5	D
	i			01 41 37.5	
	iS			01 46 02	
Ud	iP			01 41 08.1	D
	i			01 41 14.4	
De	iP			01 40 49.9	D
	i			01 41 00.2	

Turkey-Iran (h = 35 km).
m = 5.8, M = 5.7 (Up,Ki).

" 26	Up	iPKP1		05 56 50.2	
	Sk	iPKP1		05 56 47.1	
	Ud	iPKP1		05 56 55.4	
	De	iPKP2		05 57 07.6	

New Zealand (h = N).

" 26	Ud	iP		09 19 26.6	
" 26	Up	i		09 56 19.0	
	Ki	iP		09 56 46.3	C
				micr	sec
		P	Z'	0.1	1.0
	Um	iP		09 56 18.8	C
	Ud	iP		09 56 18.1	C
	De	iP		09 56 00.1	C

Iran-USSR (h = 40 km).

" 26	Up	i(P)		13 33 07.1	
	Ud	i(P)		13 33 19.5	
" 26	Ki	iPKP		14 50 50.5	
	Ud	iPKP		14 50 32.3	

South Sandwich Islands (h = N).

" 26	Up	iP		14 55 27.4	
	Ki	iP		14 55 37.0	
	Um	iP		14 55 25.7	
	Ud	iP		14 55 43.7	
	De	iP		14 55 40.8	
		i		14 56 35.3	

Hindu Kush (h = 120 km).

" 26	Ud	i(P)		15 01 51.9	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
May	26	Up	iP	16 50 49.9	
		Ki	iP	16 51 29.5	
		Ud	iP	16 51 05.3	
		Iran (h = 30 km).			
"	26	Sk	iP	17 47 50.6	
"	26	Up	iSgl	20 48 49.8	
		Sk	iSgl	20 48 11.9	
		Um	iSgl	20 49 46.1	
		Ud	iSgl	20 47 52.5	
		Southwest Norway, near 60 1/2°N, 7 1/2°E.			
		Origin time = 20 46 15.			
		By combination with Bergen readings.			
"	26	Um	iP	21 15 43.6	
		Ud	iP	21 16 15.4	
"	26	Up	iP	22 47 15.3	
		Ki	iP	22 47 46.7	
		Sk	iP	22 47 47.7	
		Um	iP	22 47 26.6	
		Ud	iP	22 47 30.6	
		De	iP	22 47 16.5	
		Iran (h = 40 km).			
"	27	Ud	iP	00 33 30.6	
"	27	Ki	iPKP	00 57 55.0	
		Um	iPKP	00 58 01.4	
		New Hebrides Islands (h = 120 km).			
"	27	Up	iP	02 39 56.0	D
			iPP	02 41 32.7	
				micr sec	
			P	Z' 0.1 0.9	
			PP	Z' 0.1 1.3	
		Ki	iP	02 40 01.6	D
			ipP	02 40 32.6	
			iPP	02 41 41.6	
				micr sec	
			P	Z' 0.1 1.0	
			PP	Z' 0.2 2.0	
		Sk	iP	02 40 20.6	D
			i	02 40 34.4	
			iPP	02 42 03.3	
		Um	iP	02 39 52.7	D
			iPP	02 41 27.7	
		Ud	iP	02 40 12.7	D
			ipP	02 40 42.5	
			iPP	02 41 51.8	
		De	iP	02 40 10.0	D
		(cont.)			

1977					
May	27	(cont.)			
		De	ipP	02 40 40.3	
			iPP	02 41 53.2	
		Tadzhik, SSR.			
		h = 140 km (Ki,Ud,De).			
		m = 5.4 (Up,Ki).			
"	27	Up	iSKPl	05 22 52.1	
				micr sec	
			SKPl	Z' 0.1 1.3	
		Sk	iSKPl	05 22 46.2	
		Um	i(pPKP)	05 20 23.9	
			iSKPl	05 22 40.0	
		Ud	iSKPl	05 21 55.7	
		De	iSKPl	05 23 05.0	
		New Hebrides Islands (h = 180 km).			
"	27	Ud	iSKPl	11 33 12.4	
		New Hebrides Islands (h = 170 km).			
"	27	Up	iPKPl	12 37 11.6	C
			i	12 37 14.3	
				micr sec	
			i	Z' 0.1 0.8	
		Sk	iPKPl	12 37 04.5	C
		Um	iPKPl	12 36 59.1	
		Ud	iPKPl	12 37 13.4	C
			i	12 37 16.8	
		De	iPKPl	12 37 22.1	C
			i	12 37 25.9	
		Kermadec Islands (h = 50 km).			
"	27	De	e(P)	14 57 53	
			i	14 58 02.3	
"	27	Ki	eP	19 52 49	
			iS	19 54 56.7	
		Um	iS	19 56 19.3	
		Ud	eP	19 54 44	
		Svalbard region.			
		By combination with Tromsoe and Finnish station readings.			
"	27	Up	iP	22 37 09.4	
			i	22 37 37.7	
		Ki	iP	22 38 16.3	
				micr sec	
			P	Z' 0.1 0.7	
		Sk	iP	22 37 48.5	
		Um	iP	22 37 41.2	
		Ud	iP	22 37 17.5	
		De	iP	22 36 45.7	
		Crete (h = 70 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	27	Up	iPKP		23 17 04.3	
			i		23 17 09.6	
		Ki	iPKP		23 16 52.8	
		Sk	iPKP		23 17 01.0	
		Um	iPKP		23 16 57.7	
		Ud	iPKP		23 17 06.8	
		De	iPKP		23 17 12.7	
			i		23 17 17.3	
		Solomon Islands (h = N).				
"	28	Up	iP		02 52 32.5	
		Um	iP		02 52 19.3	
"	28	Ud	eP		02 54 48	
		Mindanao (h = 50 km).				
"	28	Ud	iP		03 04 14.4	
		Sulawesi (h = 140 km).				
"	28	Up	iP		03 21 17.5	
		Ki	eP		03 20 53.3	
		Um	iP		03 20 58.8	
		Ud	iP		03 21 23.9	
"	28	Up	i(PP)		06 09 11.0	D
			iPP		06 09 30.4	
					micr sec	
			(PP)	Z'	0.1 1.3	
			PP	Z'	0.6 2.3	
			Mx	E	2.2 19	
			Mx	N	2.5 20	
			Mx	Z	2.7 20	
		Ki	iP		06 05 06.2	D
			ipP		06 05 15.9	
			i(PP)		06 08 56.5	
			iPP		06 09 07.5	
					micr sec	
			P	Z'	0.2 1.9	
			pP	Z'	0.5 2.4	
			PP	Z'	0.4 2.1	
			Mx	E	3.7 19	
			Mx	N	4.8 19	
			Mx	Z	2.7 18	
		Sk	iP		06 05 25.5	D
			ipP		06 05 37.5	
			iPP		06 09 41.9	
		Um	iP		06 05 09.7	D
			ipP		06 05 19.6	
			iPP		06 09 14.9	
			iSKS		06 15 54	
		Ud	iP		06 05 27.0	D
			ipP		06 05 36.6	
			iPP		06 09 44.2	
		De	ipP		06 05 42.6	
			iPP		06 09 52.1	
		(cont.)				

1977 May	28	(cont.)				
		Sulawesi.				
		h = 35 km (Ki,Sk,Um,Ud).				
		m = 6.5, M = 6.0 (Up,Ki).				
"	28	Ki	iP		13 12 42.2	
		Ud	iP		13 13 12.0	
"	28	Up	iP		15 21 10.5	
		Ki	iP		15 20 53.5	
		Ud	iP		15 21 22.4	
"	28	Ki	iPKP2		15 30 28.9	
		Balleny Islands (h = N).				
"	28	Ki	iPKP2		15 31 30.9	
					micr sec	
			PKP2	Z'	0.1 1.0	
		Um	iPKP2		15 31 31.7	
		Ud	iPKP2		15 31 33.5	
		De	iPKP2		15 31 22.8	
		Balleny Islands (h = N).				
"	29	Up	iP		02 30 47.7	D
			ipP		02 30 54.2	
		Ki	iP		02 31 11.3	D
			ipP		02 31 17.6	
					micr sec	
			P	Z'	0.1 0.9	
		Sk	iP		02 31 17.0	D
		Um	iP		02 30 54.7	D
		Ud	iP		02 31 02.2	D
			ipP		02 31 08.8	
		De	iP		02 30 51.4	D
		Pakistan.				
		h = 20 km (Up,Ki,Ud).				
"	29	Up	iP		03 03 55.0	C
			iPn		03 04 59.8	
					micr sec	
			P	Z'	0.9 0.9	
		Ki	iP		03 03 38.5	C
			iPn		03 04 37.5	
					micr sec	
			P	Z'	1.0 0.7	
		Sk	iP		03 04 10.1	C
			iPn		03 05 27.6	
		Um	iP		03 03 39.9	C
		Ud	iP		03 04 11.3	C
			iPn		03 04 31.1	
		De	iP		03 04 18.6	C
			iPn		03 04 39.1	
		Kazakh SSR.				
		m = 6.7 (Up,Ki).				
		Underground explosion.				
"	29	Ki	iP		03 29 42.7	
			i		03 29 48.7	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977						
May	29	(cont.)				
		Sk	iP		03 29 48.6	
		Ud	iP		03 29 34.2	
			i		03 29 39.0	
		Pakistan (h = N).				
"	29	Up	iPKP1		03 40 21.5	
			iPKP2		03 40 30.5	
			i		03 40 41.2	
					micr	sec
			PKP2	Z'	0.1	1.1
			i	Z'	0.1	1.0
		Ki	iPKP1		03 40 01.4	
			i		03 40 16.2	
					micr	sec
			PKP1	Z'	0.3	1.7
		Sk	iPKP1		03 40 14.9	
			iPKP2		03 40 21.2	
			i		03 40 29.2	
		Um	iPKP1		03 40 10.6	
			i		03 40 23.1	
		Ud	iPKP1		03 40 22.4	
			iPKP2		03 40 32.0	
		De	iPKP2		03 40 46.6	
		South of Kermadec Islands (h = N).				
"	29	Up	iP		09 00 39.3	
		Ki	iP		09 01 00.0	
		Um	iP		09 00 46.0	
		Ud	i		09 00 59.5	
		Pakistan (h = N).				
"	29	Ud	iP		12 51 42.0	
		Bonin Islands (h = 70 km).				
"	29	Up	iP		16 44 12.1	
		Ki	iP		16 44 41.7	
		Um	iP		16 44 30.9	
		Ud	iP		16 43 57.3	
		Azores Islands (h = 10 km).				
"	29	Up	iP		17 36 48.9	C
		Ki	iP		17 36 14.8	C
		Sk	iP		17 36 45.1	
		Um	iP		17 36 29.4	C
		Ud	iP		17 36 55.9	C
		De	iP		17 37 08.8	
		Japan (h = 380 km).				
"	30	Ki	eP		00 34 16	
		Sk	eP		00 34 48	
		Um	iP		00 34 32.0	
		Ud	iP		00 35 02.2	
		Japan (h = 5 km).				

1977						
May	30	Ki	iP		03 49 16.3	
		Ud	iP		03 48 44.2	
		Iran-USSR (h = 55 km).				
"	30	Ki	iP		11 27 00.0	
		Turkey-Iran (h = 45 km).				
"	30	Ud	iP		12 24 14.5	
"	30	Ki	iP		13 08 48.5	
"	30	Up	iP		15 26 57.3	C
			iS		15 36 02	
			iP'P'		15 55 33.6	
					micr	sec
			P	Z'	0.2	1.1
			Mx	E	4.0	23
			Mx	N	5.7	24
			Mx	Z	8.0	24
		Ki	iP		15 26 04.1	C
			eP'P'		15 55 50	
					micr	sec
			P	Z'	0.3	1.3
			Mx	E	6.0	17
			Mx	N	5.5	19
			Mx	Z	4.3	19
		Sk	iP		15 26 34.4	C
			iPcP		15 27 07.1	
		Um	iP		15 26 30.8	C
			iS		15 35 12	
			iP'P'		15 55 40.5	
		Ud	iP		15 26 56.6	C
			iP'P'		15 55 30.5	
		De	iP		15 27 19.1	C
		Aleutian Islands (h = N).				
		m = 6.2, M = 5.9 (Up,Ki).				
"	30	Ud	iP		15 48 11.2	
"	30	Up	i		18 12 48.0	
		Ki	iP		18 13 16.8	
		Um	iP		18 12 49.9	
		Ud	iP		18 12 49.6	
			i		18 13 11.7	
		Turkey-Iran (h = 35 km).				
"	30	Ki	iP		19 21 19.5	
		Ud	iP		19 22 11.9	
"	30	De	iPKP1		19 29 59.5	
		Fiji Islands (h = 560 km).				
"	31	Up	iP		04 46 14.6	
		Um	iP		04 45 49.9	
		Ud	iP		04 46 20.9	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 May	31	Um	iP	04 50 49.6	
		Ud	iP	04 51 16.3	
		Japan (h = 470 km).			
"	31	Up	iP	07 45 49.6	C
		Ki	iP	07 46 00.1	
		Sk	iP	07 46 15.9	C
		Um	iP	07 45 48.9	C
		Ud	iP	07 46 06.3	C
			ipP	07 46 37.5	
		De	iP	07 46 01.7	C
		Hindu Kush.			
		h = 140 km (Ud).			
"	31	Up	iP	08 19 19.1	
		Ud	iP	08 19 21.8	C
		De	iP	08 19 31.8	C
"	31	Ki	iP	10 58 50.8	
		Um	iP	10 58 53.1	
		Ud	iP	10 58 37.1	
		Dominican Republic (h = 55 km).			
"	31	Um	iP	12 13 52.4	
		Ud	iP	12 14 16.9	
		De	iP	12 14 40.0	
		Aleutian Islands.			
"	31	Ud	iP	12 39 52.1	
"	31	Up	iPKP	15 06 46.9	
		Ki	iPKP	15 06 32.9	
		Sk	iPKP	15 06 43.7	
		Um	iPKP	15 06 39.0	
			ipPKP	15 07 15.6	
		Ud	iPKP	15 06 48.6	
		De	iPKP	15 06 54.2	
			ipPKP	15 07 31.5	
			iSKP1	15 10 08.6	
		Santa Cruz Islands.			
		h = 140 km (Um,De).			
"	31	Up	iPKP2	19 11 12.9	
		Ki	ePKP1	19 10 39	
		Sk	ePKP2	19 10 54	
		Um	iPKP1	19 10 43.5	
			i	19 10 47.4	
		Ud	iPKP2	19 11 15.1	
			i	19 11 34.3	
		De	iPKP2	19 11 28.1	
		North Island, New Zealand			
		(h = 130 km).			
"	31	Up	iRg	20 56 46.0	
		(cont.)			

1977 May	31	(cont.)		
		Ud	iRg	20 56 33.0
		Central Sweden.		
		Near-surface event.		

29 December, 1978

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BOX 517
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S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

J U N E 1 - 30, 1977

1977				
June	1	Up	iP	05 56 42.8
		Sk	eP	05 56 20
		Ud	iP	05 56 45.0
"	1	De	iPKPl	09 17 01.3
		Tonga Islands (h = N).		
"	1	Um	iPKP	09 21 06.2
		Ud	iPKP	09 21 19.6
"	1	Ud	iP	10 08 42.4
"	1	Um	iP	10 10 08.4
"	1	Up	iSgl	10 43 04.2
		Ki	iPgl	10 40 03.6
			iSgl	10 40 58.0
			i	10 41 05.7
		Sk	eSn	10 42 13
			iSgl	10 42 53.2
		Um	iSn	10 40 50.1
			iSgl	10 41 12.4
		Ud	iSgl	10 43 41.6
		De	eSgl	10 45 07

Finland-USSR, 66.0°N, 29.8°E.
Origin time = 10 38 50.
M_L = 3.2 (Ki,Sk,Um,Ud).
Felt.
Checked with Finnish station readings.

"	1	Ki	iSgl	12 18 47.5
			i	12 18 55.5
		Sk	iSgl	12 20 46.7
		Um	iSgl	12 19 04.1

(cont.)

1977 June 1 (cont.)

Same location as the event at 10 38.
Origin time = 12 16 43.
M_L = 2.4 (Um).
Felt.
Checked with Finnish station readings.

"	1	Up	iP	13 00 09.9	D
			ipP	13 00 25.3	
			i	13 00 35.0	
			eS	13 04 31	
			iScS	13 11 01.3	
				micr	sec
			P Z'	0.2	1.0
			pP Z'	1.7	1.4
			Mx E	7.7	22
			Mx N	6.0	17
			Mx Z	9.7	19
		Ki	iP	13 01 12.1	D
			ipP	13 01 27.5	
				micr	sec
			P Z'	0.3	1.0
			pP Z'	0.4	0.9
			Mx E	4.9	17
			Mx N	5.2	19
			Mx Z	3.8	17
		Sk	iP	13 00 49.5	D
			ipP	13 01 05.2	
		Um	iP	13 00 38.1	
			ipP	13 00 53.7	
			iS	13 05 19	
		Ud	iP	13 00 20.7	D
			i	13 00 38.2	
		De	iP	12 59 51.4	
			i	13 00 02.7	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 1 (cont.)
Turkey.
h = 70 km (Up,Ki,Sk,Um).
m = 5.9, M = 5.4 (Up,Ki).

"	1	Up	iP		22 36 10.6
					micr sec
			P	Z'	0.1 1.0
		Ki	iP		22 35 52.9
					micr sec
			P	Z'	0.1 1.0
		Sk	eP		22 36 16
		Um	iP		22 35 58.7
		Ud	iP		22 36 19.6
		De	iP		22 36 25.5

Luzon (h = 45 km).
m = 5.6 (Up,Ki).

"	1	Up	iP		22 39 29.0
		Ki	iP		22 39 11.1
					micr sec
			P	Z'	0.1 1.0
		Sk	eP		22 39 32
		Um	iP		22 39 16.9
		Ud	iP		22 39 37.8
		De	iP		22 39 43.9

Luzon (h = 55 km).

"	2	Ud	i(P)		02 19 16.4
"	2	Up	iP		04 04 24.4
		Ki	iP		04 05 00.4
		Sk	iP		04 04 59.4
		Um	iP		04 04 37.7
		Ud	iP		04 04 39.6
			i		04 04 43.8
		De	iP		04 04 24.1

Iran (h = 35 km).

"	2	Up	iRg		13 04 35.8
		Ud	iRg		13 04 26.2

Central Sweden.
Near-surface event.

"	2	Up	iS		13 35 42.7
			i		13 36 12.7
			iSg2		13 36 38.2
		Ki	eS		13 38 59
			iLg2		13 40 57.0
		Sk	iP		13 34 50.5
			iS		13 36 56.1
			iLg2		13 38 15.7
		Um	iS		13 37 20.8
			i		13 38 23.9

(cont.)

1977
June 2 (cont.)

		Um	iLg2		13 38 54.9
		Ud	iS		13 35 23.7
			iSg2		13 36 22.9
		De	iP		13 33 22.8
			i		13 33 30.3
			i		13 33 47.6
			iS		13 34 08.6
			iSg2		13 34 43.9

Germany (h = 0 km).

"	2	Ud	iP		14 24 15.3
"	2	De	iP		14 55 01.9
"	2	Up	iP		14 59 37.3
			i		14 59 40.8
			iS		15 03 04
					micr sec
			Mx	E	2.6 17
			Mx	N	7.1 15
			Mx	Z	4.1 14
		Ki	iP		14 59 28.6
			iS		15 02 41
					micr sec
			P	Z'	0.3 1.8
			Mx	E	4.0 14
			Mx	N	10.0 17
			Mx	Z	4.2 14
		Sk	iP		14 58 50.6
		Um	iP		14 59 33.2
			iS		15 02 46
		Ud	iP		14 59 19.7
		De	iP		14 59 39.6

Iceland (h = 10 km).

"	2	Up	i(P)		15 12 16.8
"	2	Ud	i(P)		15 15 45.0
"	2	Up	iP		17 25 44.4
			i		17 26 17.3
		Ki	iP		17 26 50.5
		Sk	iP		17 26 24.2
		Ud	iP		17 25 53.3
		De	iP		17 25 22.5

Dodecanese Islands (h = N).

"	2	Ud	iP		19 14 04.6
		De	iP		19 13 33.9
			i		19 13 36.0

Dodecanese Islands (h = N).

"	2	Up	iP		19 42 54.5
		Ud	iP		19 42 35.3

North Atlantic Ocean (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	2	Up	iP		19 54 23.6
		Um	iP		19 53 57.9
		Ud	iP		19 54 28.9
"	2	Ud	iSgl		21 21 01.6
		South Norway, 60.9°N, 7.6°E.			
		Origin time = 21 19 28.			
		M_L = 2.2 (Ud).			
		By combination with Bergen and Kongsberg readings.			
"	3	Up	iP		01 12 47.7
			i		01 12 51.7
			iPP		01 14 16.8
			iS		01 18 42
			iSn		01 21 02.1
			iLgl		01 26 03.0
					micr sec
			i	Z'	0.1 1.0
			PP	Z'	0.3 1.4
			Mx	E	3.4 13
			Mx	N	4.2 15
			Mx	Z	4.6 11
		Ki	iP		01 12 52.0
			i		01 12 56.2
			i		01 14 40.7
			i		01 24 53.0
			i		01 25 52.9
			iLgl		01 26 25.7
					micr sec
			P	Z'	0.1 0.8
			i	Z'	0.1 0.8
			Mx	E	5.2 8
			Mx	N	6.4 11
			Mx	Z	4.2 8
		Sk	iP		01 13 12.1
			iPP		01 14 47.1
			iLgl		01 27 15.9
		Um	iP		01 12 43.5
			i		01 12 51.9
			iS		01 18 33
			iSn		01 20 53.7
			iLgl		01 25 41.7
		Ud	iP		01 13 04.5
			iPP		01 14 38.8
		De	iP		01 13 02.7
			iSn		01 21 55.9
			iLgl		01 27 10.8
		Tadzhik SSR (h = 25 km).			
		m = 5.9 (Up,Ki).			
"	3	Up	iP		02 32 08.1
		Ki	iP		02 31 15.3
		Sk	iP		02 31 52.1
		Um	iP		02 31 40.2
		(cont.)			
1977 June	3	(cont.)			
		Ud	iP		02 32 11.9
		De	iP		02 32 33.2
		Kamchatka (h = N).			
"	3	Up	iP		02 38 27.9 C
			ipP		02 39 12.3
			iS		02 44 23
					micr sec
			P	Z'	3.5 1.7
			Mx	E	2.0 12
			Mx	N	3.1 12
			Mx	Z	4.4 11
		Ki	iP		02 38 37.4 C
			ipP		02 39 22.7
			iS		02 44 40
					micr sec
			P	Z'	2.1 1.4
			Mx	E	3.0 8
			Mx	N	4.2 8
			Mx	Z	2.1 7
		Sk	iP		02 38 53.6 C
			ipP		02 39 38.8
		Um	iP		02 38 26.7 C
			ipP		02 39 11.5
			iS		02 44 21
		Ud	iP		02 38 44.6 C
			ipP		02 39 29.8
		De	iP		02 38 40.6 C
			i		02 39 19.8
		Hindu Kush.			
		h = 220 km (Up,Ki,Sk,Um,Ud).			
		m = 6.5 (Up,Ki).			
"	3	Um	iP		03 44 56.4
		Ud	iP		03 45 21.8
		De	iP		03 45 43.8
"	3	Up	iP		04 17 55.0
			iPP		04 19 10.8
		Ki	iP		04 18 09.7
			iPP		04 19 31.0
		Um	iP		04 17 55.5
		Ud	iP		04 18 12.3
			iPP		04 19 34.9
		Uzbek SSR (h = N).			
"	3	Um	iPKPl		07 46 29.0
		Ud	iPKPl		07 46 42.4
"	3	Up	eP		11 53 49
		Um	iP		11 53 23.7
		Ud	iP		11 53 54.0
		Kurile Islands (h = 90 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	3	Up	iPKPl	14 51 19.4	
			iPKP	14 51 27.9	
		Ki	i(PKP)	14 51 09.2	
			iPKP	14 51 11.6	
		Sk	iPKP	14 51 22.1	
		Um	i(PKP)	14 51 10.4	
			iPKP	14 51 18.1	
			iSKPl	14 53 55.4	
		Ud	iPKPl	14 51 19.7	
			iSKPl	14 54 09.5	
		De	iPKPl	14 51 29.0	
		Fiji Islands (h = 570 km).			
"	3	Ki	iSgl	15 00 20.9	
		Um	iPgl	14 59 13.6	
			iSgl	14 59 43.6	
		Origin time = 14 58 33.			
		M_L = 2.1 (Um).			
"	3	Up	iPKP	15 36 29.9	
			iSKPl	15 39 52.7	
			i	15 40 01.5	
				micr sec	
			Mx N	0.7 19	
			Mx Z	1.4 20	
		Ki	iPKP	15 36 15.8	
			i	15 36 19.5	
				micr sec	
			PKP Z'	0.1 1.1	
		Sk	iPKP	15 36 26.4	
		Um	iPKP	15 36 21.4	
			i	15 36 26.1	
		Ud	iPKP	15 36 31.3	
			i	15 36 35.4	
			iSKPl	15 39 54.0	
			i	15 40 04.1	
		De	iPKP	15 36 37.8	
			iSKPl	15 40 05.2	
		New Hebrides Islands (h = 40 km).			
"	3	Ud	iRg	16 45 13.7	
		Regional, near-surface event.			
"	3	Up	iRg	16 51 53.7	
		Ud	iRg	16 51 37.9	
		Central Sweden. Near-surface event.			
"	3	Ki	ePKP	17 24 30	
		Sk	ePKP	17 24 42	
		Um	iPKP	17 24 37.4	
		Ud	iSKPl	17 28 07.1	
		New Hebrides Islands (h = N).			
1977 June	3	Ki	iPKP	17 25 17.3	
		Sk	ePKP	17 25 29	
		Um	iPKP	17 25 24.0	
			i	17 25 28.3	
		Ud	iSKPl	17 28 53.5	
		De	iPKP	17 25 39.5	
		New Hebrides Islands.			
"	3	Up	iP	23 01 17.3	
			ipP	23 01 27.5	
		Ki	iP	23 00 35.0	
			ipP	23 00 45.3	
		Sk	ipP	23 01 19.7	
		Um	iP	23 00 53.5	
			ipP	23 01 03.5	
		Ud	iP	23 01 24.0	
			ipP	23 01 34.1	
		De	ipP	23 01 50.3	
		Japan. h = 35 km (Up,Ki,Um,Ud).			
"	3	Up	iP	23 38 58.7	
		Ki	iP	23 38 20.9	C
		Sk	iP	23 38 54.4	
		Um	iP	23 38 37.3	C
		Ud	iP	23 39 06.0	
		De	iP	23 39 20.3	
		Japan (h = 70 km).			
"	4	Um	iP	09 48 43.3	
"	4	Ud	iPgl	13 21 38.1	
			iSgl	13 22 01.0	
		Origin time = 13 21 07.			
		M_L = 2.1 (Ud).			
"	4	Up	iP	15 08 53.6	C
			ipP	15 08 59.9	
				micr sec	
			pP Z'	0.1 0.9	
		Ki	iP	15 08 07.7	
			i	15 09 31.7	
			iPP	15 09 47.3	
		Sk	iP	15 08 50.3	C
		Um	iP	15 08 26.9	C
		Ud	iP	15 09 04.3	C
			ipP	15 09 10.5	
		De	iP	15 09 22.0	C
		Lake Baikal. h = 20 km (Up,Ud).			
"	4	Ud	iP	15 17 30.9	
"	4	Um	iPKPl	17 44 49.5	
		North Island, New Zealand (h = 35 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
June	4	Ki	i(pP)	19 05 55.1	
		Virgin Islands (h = 50 km).			
"	4	Ki	iP	20 31 14.3	
		Um	iP	20 31 04.3	
		Ud	iP	20 31 22.9	
			ipP	20 32 04.0	
		Afghanistan-USSR.			
		h = 190 km (Ud).			
"	5	Up	iP	00 12 50.9	
		Um	iP	00 12 39.1	
		Ud	iP	00 12 52.5	
"	5	Up	iRg	01 01 10.7	
		Ud	iRg	01 01 09.0	
		Central Sweden.			
		Near-surface event.			
"	5	Up	iRg	01 27 52.3	
		Ud	i	01 27 46.1	
			iRg	01 27 49.6	
		Central Sweden.			
		Near-surface event.			
"	5	Up	iRg	01 30 27.9	
		Ud	iRg	01 30 27.5	
		Central Sweden.			
		Near-surface event.			
"	5	Up	iPKPl	02 17 24.1	
			i	02 17 31.5	
		Sk	iPKPl	02 17 18.0	
		Um	iPKPl	02 17 10.0	
		Ud	iPKPl	02 17 25.7	
			i	02 17 33.1	
"	5	Up	iP	04 51 47.0	C
			i	04 51 49.3	
			iS	04 57 15.5	
				micr sec	
			i	Z' 0.2 1.0	
			Mx	E 16 23	
			Mx	N 42 30	
			Mx	Z 19 20	
		Ki	iP	04 52 28.2	C
			i	04 52 32.9	
			iS	04 58 32	
				micr sec	
			P	Z' 1.0 2.0	
			i	Z' 0.6 1.2	
			Mx	E 15 17	
			Mx	N 16 17	
		Sk	iP	04 52 24.3	C
			iS	04 58 23.5	
		(cont.)			

1977					
June	5	(cont.)			
		Um	iP	04 52 02.7	C
			i	04 52 05.1	
			iS	04 57 40	
		Ud	iP	04 52 01.6	C
			i	04 52 04.5	
			iS	04 57 43.5	
		De	iP	04 51 44.1	C
			i	04 51 46.3	
		Iran (h = 40 km).			
		m = 6.2, M = 6.1 (Up,Ki).			
"	5	Up	iP	05 05 52.4	
			i	05 05 55.2	
		Ki	iP	05 06 34.4	C
			i	05 06 37.8	
				micr sec	
			P	Z' 0.1 0.9	
			i	Z' 0.1 1.0	
		Sk	i	05 06 34.2	
		Um	iP	05 06 08.4	
			i	05 06 11.5	
		Ud	iP	05 06 07.7	
			i	05 06 10.7	
		De	iP	05 05 49.8	
		Iran-Iraq (h = 60 km).			
"	5	Up	iP	05 09 15.4	
		Ki	iP	05 09 55.9	
		Ud	iP	05 09 29.1	
		De	iP	05 09 10.2	
			i	05 09 14.4	
		Iran (h = N).			
"	5	Up	eP	05 24 17	
		Ud	iP	05 24 30.5	
		Iran.			
"	5	Up	i	05 28 50.0	
		Ki	i	05 29 28.6	
		Sk	i	05 29 27.9	
		Ud	iP	05 28 59.1	
		De	eP	05 28 42	
		Iran (h = N).			
"	5	Ud	iP	06 02 03.1	
"	5	Up	iP	06 05 33.3	
		Ki	iP	06 06 17.3	
		Ud	iP	06 05 48.4	
		De	iP	06 05 31.9	
		Iran (h = N).			
"	5	Up	iP	06 06 21.9	
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 5 (cont.)

Ki	iP		06 07 02.8	
De	iP		06 06 19.1	
Iran.				
" 5 Up	iP2		06 34 17.4	
Ki	iP2		06 34 59.5	
Um	iP2		06 34 33.6	
Ud	iP1		06 34 29.3	
	iP2		06 34 32.7	
De	iP2		06 34 14.9	
Iran (h = N).				
" 5 Up	iP		06 52 21.3	
Ki	iP		06 51 38.8	
Um	iP		06 51 57.0	C
	i		06 52 04.5	
Ud	iP		06 52 27.9	
De	iP		06 52 45.4	
Japan (h = 70 km).				
" 5 Up	iP		07 55 18.7	
	i		07 55 22.9	
	iPP		07 56 33.7	
Ki	iP		07 56 00.2	
	i		07 56 08.9	
Um	iP		07 55 35.6	
	i		07 55 45.7	
Ud	iP		07 55 34.0	
	i		07 55 38.4	
	iPP		07 57 01.0	
De	i		07 55 18.7	
Iran (h = N).				
" 5 Ud	iP		08 12 09.6	
" 5 Up	iP		08 51 49.3	
Ki	iP		08 52 32.2	
	i		08 52 35.3	
	i		08 52 42.7	
			micr	sec
	i	Z'	0.1	0.9
Um	iP		08 52 06.3	
Ud	iP		08 52 04.7	
De	iP		08 51 46.5	
	i		08 51 50.1	
Iran-Iraq (h = 55 km).				
" 5 Up	iP		08 32 11.6	C
	iPP		08 33 18.2	
			micr	sec
	PP	Z'	0.1	1.4
	Mx	E	0.8	20
	Mx	N	1.0	19
	Mx	Z	1.5	22

(cont.)

1977
June 5 (cont.)

Ki	iP		08 32 53.5	C
	i		08 32 57.6	
	iPP		08 34 18.4	
			micr	sec
	P	Z'	0.1	1.0
	i	Z'	0.1	0.8
	Mx	E	0.6	13
	Mx	N	0.4	15
Sk	iP		08 32 48.4	C
Um	iP		08 32 27.6	C
	i		08 32 31.6	
	iPP		08 33 46.5	
Ud	iP		08 32 27.0	C
	i		08 32 30.7	
	iPP		08 33 47.3	
De	iP		08 32 08.9	C
	i		08 32 12.7	
Iran (h = N).				
m = 5.5, M = 4.7 (Up,Ki).				
" 5 Up	iP		11 17 07.3	
Um	iP		11 16 45.2	
	ipP		11 16 56.4	
Ud	iP		11 17 15.3	
Japan.				
h = 40 km (Um).				
" 5 Up	iP		12 08 48.4	
	iS		12 11 31.0	
	iLg2		12 13 20.7	
Ki	iP		12 10 03.7	
	i		12 10 06.6	
	eS		12 14 09	
	iLg2		12 17 15.9	
Sk	iP		12 09 58.4	
Um	iP		12 09 31.4	
	iLg2		12 14 55.9	
Ud	iP		12 09 09.7	
	i		12 09 12.9	
	i		12 09 36.9	
	iS		12 12 02.1	
	iLg2		12 14 05.6	
De	iP		12 08 28.6	
	i		12 09 18.5	
	iLg2		12 12 37.2	
Romania.				
" 5 Up	iP		14 04 17.4	
	ipP		14 04 19.4	
	i		14 04 22.8	
	i		14 04 31.4	
	iS		14 08 21	
			micr	sec
	pP	Z'	0.1	0.9
	i	Z'	0.1	0.9

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	5	(cont.)			
		Ki	iP	14 05 33.6	
			i	14 05 43.0	
		Sk	iP	14 04 53.6	
		Um	iP	14 04 58.0	
		Ud	iP	14 04 18.5	
			ipP	14 04 20.8	
			i	14 04 33.5	
		De	i	14 03 43.5	
		Sicily.			
		h = 10 km (Up,Ud).			
"	5	Ki	iP	14 10 08.2	
		Ud	iP	14 09 39.6	
		De	iP	14 09 25.9	
		Iran.			
"	5	Ki	iP	14 56 41.5	
		Ud	iP	14 56 14.8	
		De	iP	14 55 56.7	
		Iran (h = 55 km).			
"	5	Ud	iP	15 24 22.3	
"	5	Ud	iPKP	15 37 41.0	
		De	iPKP	15 37 45.1	
		New Britain (h = 150 km).			
"	5	Ud	iP	16 54 58.7	
		De	iP	16 54 39.9	
"	5	Ud	iP	17 52 11.3	
		De	iP	17 52 21.8	
"	5	Up	iP	18 27 36.5	
			ipP	18 27 43.6	
			isP	18 27 47.3	
		Ki	iP	18 27 23.4	
			ipP	18 27 30.5	
			isP	18 27 33.8	
		Sk	iP	18 27 52.1	
			isP	18 28 02.6	
		Um	iP	18 27 23.9	C
			isP	18 27 34.4	
		Ud	iP	18 27 52.1	
			isP	18 28 02.1	
		De	iP	18 27 57.3	
		Sinkiang, China.			
		h = 25 km (Up,Ki,Sk,Um,Ud).			
"	5	Ud	iP	19 13 27.4	
		Volcano Islands (h = 120 km).			
"	5	Ki	e	19 28 54	
		Um	i	19 28 28.4	
		Ud	iP	19 28 20.8	
		Iran (h = N).			

1977 June	5	Up	iP	19 31 32.3	C
			ipP	19 31 39.3	
		Ki	iP	19 31 29.7	C
			ipP	19 31 36.1	
		Sk	iP	19 31 50.0	C
			ipP	19 31 57.2	
		Um	iP	19 31 25.9	C
			ipP	19 31 33.1	
		Ud	iP	19 31 46.1	C
			ipP	19 31 53.1	
		De	iP	19 31 47.0	C
		India-Bangladesh.			
		h = 25 km (Up,Ki,Sk,Um,Ud).			
"	5	Ki	iP	21 48 08.2	
		Ud	eP	21 49 08	
"	5	Ud	iP	22 34 09.5	
		North Atlantic Ocean			
		(h = N).			
"	5	Sk	i_1	23 25 17.8	
		Um	i_1	23 25 18.0	
		Ud	iP	23 24 33.4	
			i_1	23 24 43.5	
		Italy (h = N).			
"	5	Up	iPKP	23 45 15.9	
			i	23 45 23.5	
			iSKPl	23 48 35.4	
				micr	sec
			SKPl	Z' 0.2	1.5
		Ki	iPKP	23 45 28.4	
		Um	iPKP	23 45 24.0	
			i	23 45 33.1	
		Ud	iPKP	23 45 12.8	
			i	23 45 22.3	
			i	23 48 57.6	
		Scotia Sea (h = N).			
"	6	Ki	iPKP	01 33 27.4	
		Um	iPKP	01 33 21.7	
		South Sandwich Islands			
		(h = N).			
"	6	Ki	iPKP	01 49 02.2	
			i	01 49 04.9	
		Um	iPKP	01 48 55.4	
		South Sandwich Islands			
		(h = N).			
"	6	Up	iP	04 37 58.7	
			i	04 38 04.9	
		Sk	iP	04 38 36.5	
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 6 (cont.)

Ud	iP	04 38 04.1
De	iP	04 37 30.2

Greece (h = N).

" 6

Sk	i	06 49 58.6
Um	iP	06 50 14.0

Dominican Republic (h = 50 km).

" 6

Ud	iP	10 54 31.8

Spain (h = N).

" 6

Up	iSgl	12 52 20.9
	i	12 52 27.4
Ki	iSgl	12 54 39.2
Sk	iSgl	12 51 43.8
Um	iSgl	12 53 16.0
Ud	iPgl	12 50 35.5
	iSgl	12 51 18.1
De	iSgl	12 52 21.2

South Norway, 60.4°N, 7.4°E.
Origin time = 12 49 43.
M_L = 2.7 (Up,Um,Ud).
By combination with Bergen and Kongsberg readings.

" 6

Up	ePKPl	13 05 03
Ki	iPKP	13 04 52.2
Um	iPKP	13 04 59.7
Ud	iPKPl	13 05 02.1
De	iPKPl	13 05 10.4

Tonga Islands (h = 250 km).

" 6

Ud	i(P)	14 07 03.4

" 6

Up	iP	14 08 01.9
	i	14 08 13.0

" 6

Ud	iRg	15 36 24.2

Regional, near-surface event.

" 6

Up	iP	18 46 59.8
Ki	eP	18 47 39
Um	iP	18 47 15.9
Ud	iP	18 47 15.1
De	iP	18 46 58.5

Iran (h = 30 km).

" 6

Ki	iP	20 03 16.7
Ud	iP	20 03 03.4

" 7

Up	iP	04 02 41.6
Ki	iP	04 01 48.0
Ud	iP	04 02 40.9

Aleutian Islands (h = 55 km).

1977
June 7

Ud	iP	07 59 16.9

" 7

			micr	sec
Up	iPKPl		08 25 55.3	
	iPKP2		08 26 03.1	
	i		08 26 16.5	
	PKPl	Z'	0.1	1.0
	PKP2	Z'	0.1	0.9
	i	Z'	0.1	1.0
Ki	ePKPl		08 25 34	
Sk	iPKPl		08 25 49.4	
	iPKP2		08 25 53.7	
	i		08 26 02.9	
Um	iPKPl		08 25 45.2	
	i		08 25 59.0	
Ud	iPKPl		08 25 56.5	
	iPKP2		08 26 06.1	
De	iPKP2		08 26 20.2	

South of Kermadec Islands (h = N).

" 7

Up	iP	09 00 09.6
Ki	iP	08 59 56.2
Sk	iP	09 00 07.4
Um	iP	09 00 02.5 D
Ud	iP	09 00 12.3
De	iP	09 00 18.9 D

Santa Cruz Islands (h = 80 km).

" 7

Ki	i(P)	10 32 02.0
	i	10 32 05.4

" 7

Up	iPKPl	11 03 22.2
	iPKP2	11 03 25.4
	i	11 03 28.8
Sk	ePKPl	11 03 14
Um	iPKPl	11 03 09.7
	i	11 03 13.4
Ud	iPKPl	11 03 23.2
	iPKP2	11 03 28.1
	i	11 03 32.2

Kermadec Islands (h = 40 km).

" 7

Up	iSgl	12 36 31.7
Ud	iPgl	12 35 09.6
	iSgl	12 35 28.4
	iRg	12 35 42.6

Origin time = 12 34 44.
Explosion?

" 7

Up	iP	12 43 57.3
Ki	iP	12 43 29.1

Mariana Islands (h = 200 km).

" 7

Up	iSgl	14 24 35.6
Ud	iSgl	14 23 37.4

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
June	7	Um	i(P)	15 07 08.7	
"	7	Up	iSgl	19 08 06.0	
		Sk	eSgl	19 06 28	
		Ud	iSgl	19 07 09.4	

Coast of central Norway, 62.5°N, 6.2°E.
Origin time = 19 04 57.
M_L = 2.3 (Ud).
By combination with Bergen readings.

"	7	Ud	iRg	23 04 48.7	

Regional, near-surface event.

"	8	Ki	eP	00 24 46	
"	8	Ki	iP	00 45 28.1	
		Um	iP	00 45 18.2	
		Ud	iP	00 45 37.9	
"	8	Ud	iP	04 57 13.3	
		De	iP	04 56 40.8	
"	8	Ki	iP	06 43 12.3	
		Ud	iP	06 42 44.9	
			i	06 42 49.8	

Iran (h = 35 km).

"	8	Up	iPKPl	14 24 36.4	
		Ki	iPKP	14 24 28.3	
			iSKPl	14 27 36.9	
				micr	sec
			SKPl Z'	0.1	1.3
		Sk	iSKPl	14 27 52.7	
		Um	iPKP	14 24 36.1	D
			iSKPl	14 27 48.6	
		Ud	iPKPl	14 24 36.8	D
			iSKPl	14 28 00.7	
		De	iPKPl	14 24 48.1	D

Tonga-Kermadec Islands (h = 230 km).

"	8	Up	iP	14 36 59.9	C
			ipP	14 37 20.0	
			isP	14 37 25.9	
			iS	14 46 11	
				micr	sec
			P Z'	0.2	1.2
			sP Z'	0.2	1.1
			Mx E	0.8	20
			Mx N	0.7	20
		Ki	iP	14 36 19.8	C
			ipP	14 36 38.9	
			isP	14 36 46.2	

(cont.)

1977					
June	8	(cont.)			
		Ki		micr	sec
			P Z'	0.1	0.7
			sP Z'	0.2	0.8
			Mx E	0.9	18
			Mx N	1.1	15
			Mx Z	0.6	15
		Sk	iP	14 36 53.3	C
			ipP	14 37 13.4	
			isP	14 37 20.0	
		Um	iP	14 36 37.5	C
			ipP	14 36 57.1	
			isP	14 37 04.0	
			iS	14 45 29	
		Ud	iP	14 37 07.3	C
			ipP	14 37 27.3	
			isP	14 37 34.0	
		De	iP	14 37 22.0	C
			ipP	14 37 42.2	
			isP	14 37 49.1	

Japan.
h = 80 km (Up,Ki,Sk,Um,Ud,De).
m = 5.8, M = 5.2 (Up,Ki).

"	8	Up	iPKPl	15 47 21.3	
		Ud	iPKPl	15 47 23.3	
"	8	Up	iPKPl	18 48 20.9	
		Um	iPKPl	18 48 10.3	
		Ud	iPKPl	18 48 23.5	
"	8	Up	iP	19 52 08.9	
		Ud	iP	19 52 20.9	
"	8	Up	iP	21 30 32.6	
				micr	sec
			P Z'	0.1	1.5
		Ki	iP	21 30 25.9	
		Sk	iP	21 30 43.1	
		Um	iP	21 30 26.6	
		Ud	iP	21 30 41.6	
			iPP	21 34 49.3	
		De	iP	21 30 43.4	

Java Sea (h = 640 km).

"	8	Ud	iP	22 11 16.0	
			iPP	22 15 40.1	

Java Sea (h = 640 km).

"	9	Up	iP	00 36 38.9	
		Ud	iP	00 36 45.0	

Ryukyu Islands (h = 35 km).

"	9	Ki	iP	01 03 38.6	

Mariana Islands (h = 45 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	9	Up	iPKPl	02 32 29.4
		Um	iPKPl	02 32 18.8
		Ud	iPKPl	02 32 30.8
"	9	Ki	eP	03 48 23
		Banda Sea (h = 45 km).		
"	9	Up	iP	07 34 20.1
		Ud	iP	07 34 22.8
		Kamchatka (h = N).		
"	9	Up	iP	10 11 19.9
			ipP	10 11 33.0
		Ki	iP	10 11 20.5
			i	10 11 36.0
		Sk	epP	10 11 49
		Um	ipP	10 11 30.1
		Ud	iP	10 11 30.9
			i	10 11 42.0
			ipP	10 11 44.1
		De	iP	10 11 29.2
			i	10 11 37.4
			ipP	10 11 41.9
		Sumatra.		
		h = 45 km (Up,Ud,De).		
"	9	Up	iP	11 25 13.7
			i	11 25 16.2
			ipP	11 25 23.0
		Ki	iP	11 25 00.4
			i	11 25 02.8
				micr sec
			i Z'	0.1 1.0
		Um	iP	11 25 02.4
			i	11 25 04.8
		Ud	iP	11 25 25.8
			ipP	11 25 34.8
		De	eP	11 25 30
		Yunnan, China.		
		h = 30 km (Up,Ud).		
"	9	Ki	eP	11 56 34
		Ud	iP	11 56 12.7
		De	eP	11 56 02
"	9	Up	iSgl	12 02 54.5
		Sk	iSgl	12 03 09.8
		Ud	iPgl	12 01 33.0
			iSgl	12 01 55.0
		De	eSn	12 02 44
			iSgl	12 02 59.9
		Southeast Norway,		
		59.6°N, 10.5°E.		
		Origin time = 12 01 03.		
		M_L = 2.6 (Up,Ud,De).		

1977 June	9	Ud	iRg	13 05 00.2
		Regional, near-surface event.		
"	9	De	eP	13 13 34
"	9	Ki	iP	13 40 02.5
		Mariana Islands (h = 100 km).		
"	9	Ud	iRg	15 32 15.2
		Regional, near-surface event.		
"	9	Up	iP	16 52 40.9
		Ud	iP	16 52 36.6
			i	16 52 42.5
		South Atlantic Ocean (h = N).		
"	9	Ud	iRg	17 10 52.8
		Regional, near-surface event.		
"	9	Ud	iP	20 34 13.5
		Greece (h = N).		
"	9	Up	iP	20 37 50.8
		Ud	iP	20 37 58.5
			i	20 38 02.2
		Greece (h = N).		
"	9	Ki	iP	22 15 50.4
		Um	iP	22 16 03.2
		Ud	iP	22 16 26.4
		Volcano Islands (h = 280 km).		
"	10	Ud	iP	00 32 43.4
"	10	Up	iP	00 51 12.1
		Ki	iP	00 51 39.6
		Sk	iP	00 51 14.0
		Um	iP	00 50 51.9
		Ud	iP	00 51 22.7
		De	iP	00 51 35.1
		China (h = 45 km).		
"	10	Up	iP	02 48 09.5 C
			ipP	02 48 21.3
			i(PP)	02 51 32.4
			iPP	02 51 42.9
			iS	02 58 54
		Ki	iP	02 48 09.1 C
			iPP	02 51 43.1
				micr sec
			P Z'	0.2 0.9
		Sk	iP	02 48 23.1 C
		Um	iP	02 48 06.2 C
			ipP	02 48 19.0
			iPP	02 51 39.3
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 10 (cont.)

Um	iS	02 58 49	
Ud	iP	02 48 19.1	C
	ipP	02 48 30.9	
	iPP	02 52 01.6	
De	iP	02 48 17.5	C

Sumatra.
h = 40 km (Up,Um,Ud).

" 10

Up	i(PKP)	03 42 21.2	
Ki	iPKP	03 42 13.2	
Um	iPKP	03 42 20.3	
Ud	iPKP	03 42 31.2	
De	iPKPl	03 42 30.3	

Fiji Islands (h = 530 km).

" 10

Ud	eP	05 35 46	

" 10

Up	iP	05 49 46.4	D
Ki	iP	05 50 19.1	D
		micr sec	
	P Z'	0.1 1.0	
Sk	iP	05 50 16.9	D
Um	iP	05 49 59.2	D
Ud	iP	05 49 58.8	D
De	iP	05 49 43.1	

Arabian Sea (h = N).

" 10

Ki	eP	15 02 14	

Banda Sea (h = N).

" 10

Up	iP	16 51 05.4	
Ki	iP	16 50 48.0	

Mindoro (h = 120 km).

" 10

Ud	iP	17 36 45.5	

" 10

Up	iP	23 07 54.0	
Ki	iP	23 09 03.0	
Sk	iP	23 08 32.1	
Um	iP	23 08 27.8	
Ud	iP	23 08 00.1	
De	iP	23 07 26.0	

Mediterranean Sea (h = N).

" 10

Um	eP	23 57 22	

Ceram (h = 40 km).

" 11

Ud	iP	03 38 16.7	
De	iP	03 38 28.3	

" 11

Up	iP	03 52 02.0	
Ki	iP	03 52 08.5	
Um	iP	03 51 59.0	
Ud	iP	03 52 18.8	

Afghanistan-USSR (h = 120 km).

1977
June 11

Up	iP	07 54 27.5	
Um	iP	07 54 09.4	
Ud	iP	07 54 35.7	

" 11

Ud	iPKPl	10 23 39.4	
De	iPKPl	10 23 50.9	

Tonga-Kermadec Islands
(h = 210 km).

" 11

Ud	iP	12 44 00.2	

" 11

Up	iP	20 41 44.3	
		micr sec	
	P Z'	0.1 1.4	
Ud	iP	20 41 33.4	

North Atlantic Ocean (h = N).

" 11

Up	iP	22 30 37.7	
Ki	iP	22 30 00.0	
Um	iP	22 30 15.9	C
Ud	iP	22 30 44.1	C

Japan (h = 25 km).

" 12

Ud	iP	05 48 32.2	
De	eP	05 47 56	

" 12

Um	iP	07 39 19.8	
Ud	iP	07 39 36.5	

Molucca Sea (h = 80 km).

" 12

Up	iP	08 58 36.5	C
		micr sec	
	P Z'	0.1 1.0	
Ki	iP	08 57 53.5	C
		micr sec	
	P Z'	0.1 0.8	
Sk	iP	08 58 28.4	C
Um	iP	08 58 12.5	C
Ud	iP	08 58 43.6	C
De	iP	08 59 00.3	C

Japan (h = 110 km).
m = 5.6 (Up,Ki).

" 12

Up	iP	11 35 50.6	
Ud	iP	11 35 59.6	

" 12

Up	iPKP	12 35 56.8	
Ki	iPKP	12 35 42.7	
Sk	iPKP	12 35 54.3	
Um	iPKP	12 35 49.4	
Ud	iPKP	12 35 58.9	
De	iPKP	12 36 06.1	

New Hebrides Islands
(h = 110 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	12	Up	iPgl	16 02 54.2
			iSgl	16 03 25.7
			iRg	16 03 42.0
		Um	iSgl	16 05 04.3
		Ud	iSgl	16 04 24.4
		De	iSgl	16 04 26.7

Baltic Sea, 58.2°N, 21.1°E.
Origin time = 16 02 12.
M_L = 2.4 (Ud,De).
Explosion?

"	12	Up	ipP	17 01 30.1
		Ki	epP	17 01 11
		Um	epP	17 01 17
		Ud	iP	17 01 29.5
			ipP	17 01 38.6

Luzon.
h = 30 km (Ud).

"	12	Up	iP	18 19 25.6
		Sk	iP	18 19 38.0
"	12	Ud	iPKPl	19 33 04.4
		De	iPKPl	19 33 14.9
			i	19 33 32.7

Tonga-Kermadec Islands
(h = 120 km).

"	12	Ki	iP	21 18 11.0

Alaska (h = 35 km).

"	12	Ki	iP	23 47 30.7
		De	iP	23 48 56.8
"	13	Up	iP	00 24 57.8
		Ki	eP	00 25 16
		Um	iP	00 25 01.1
		Ud	iP	00 25 13.6
			i	00 25 19.0
		De	iP	00 25 05.3

Pakistan (h = N).

"	13	Up	iPKP	10 28 07.2
		Ki	iPKP	10 27 54.8
		Um	iPKP	10 28 01.1
		Ud	iPKPl	10 28 00.1
		De	iPKPl	10 28 09.8
			i	10 28 19.4

Tonga Islands (h = 40 km).

"	13	Ud	iP	11 27 13.7
"	13	De	i(P)	11 41 48.4
1977 June	13	Up	iPKPl	11 58 55.3
		Ud	iPKPl	11 58 56.4
		De	iPKPl	11 59 06.9
"	13	Up	iP	12 00 23.1 C
			ipP	12 00 34.3
			iSKS	12 10 43
			iS	12 10 55

			micr	sec
		P	Z' 0.2	1.2
		pP	Z' 0.2	1.2
		Mx	E 1.0	18
		Mx	N 2.2	18
		Mx	Z 2.2	20
	Ki	iP	12 00 04.2 C	
		ipP	12 00 15.5	
		iS	12 10 19	

			micr	sec
		P	Z' 0.2	1.0
		pP	Z' 0.2	1.1
		Mx	E 1.1	17
		Mx	N 2.8	20
	Sk	iP	12 00 28.4	
		ipP	12 00 40.3	
	Um	iP	12 00 11.3	
		ipP	12 00 21.9	
		iSKS	12 10 27	
	Ud	iP	12 00 33.2 C	
		ipP	12 00 43.5	
	De	ipP	12 00 48.9	
		iPP	12 04 08.8	

Luzon.
h = 35 km (Up,Ki,Sk,Um,Ud).
m = 6.2, M = 5.7 (Up,Ki).

"	13	Up	iPKPl	12 09 52.7
		Ud	iPKPl	12 09 55.0
"	13	Up	iP	13 48 24.7 C

			micr	sec
		P	Z' 0.2	1.1
	Ki	iP	13 48 33.1 C	
	Sk	iP	13 48 50.1 C	
	Um	iP	13 48 22.8 C	
	Ud	iP	13 48 41.4 C	

Afghanistan-USSR
(h = 120 km).

"	13	Sk	iP	14 32 58.1
		De	iP	14 33 15.6
"	13	De	i(P)	15 09 42.7

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	13	Sk	iP		15 22 45.4
		Ud	iP		15 23 09.4
		De	eP		15 23 34
		Alaska (h = 55 km).			
"	13	Um	iP		19 08 22.2
"	13	Ud	i		21 42 32.4
			iSgl		21 42 38.4
		South Norway.			
		Origin time = 21 40 59.			
		M_L = 2.2 (Ud).			
		By combination with Bergen readings.			
"	14	Up	iP		08 04 14.3 D
					micr sec
			Mx	Z	0.7 18
		Ki	iP		08 03 56.0
			ipP		08 04 07.7
					micr sec
			Mx	E	0.5 17
			Mx	N	0.4 15
		Um	iP		08 04 01.8 D
			iS		08 14 36
		Ud	iP		08 04 22.3 D
			ipP		08 04 34.1
		Philippine Islands.			
		h = 40 km (Ki,Ud).			
"	14	Up	iRg		08 43 59.4
		Ud	iRg		08 43 57.5
		Central Sweden.			
		Near-surface event.			
"	14	Um	iPKP		08 55 59.3
		Tonga Islands (h = 220 km).			
"	14	Up	iP		10 42 46.4
		Ki	eP		10 42 24
		Um	iP		10 42 33.1
		Ud	iP		10 42 56.4
		Formosa (h = 5 km).			
"	14	Up	iSgl		18 11 56.8
		Ud	iSgl		18 10 58.6
		De	iSgl		18 11 50.5
"	14	Up	iP		21 01 37.2
		Um	eP		21 02 10
		Ud	iP		21 01 45.7
		De	iP		21 01 13.8
		Eastern Mediterranean Sea (h = N).			

1977 June	14	Up	iP		21 51 31.6
			i		21 51 33.0
			i		21 51 38.3
			iPP		21 54 29.4
			iS		22 01 24
					micr sec
			i	Z'	0.8 1.8
			Mx	E	0.7 19
			Mx	N	0.7 20
			Mx	Z	2.0 21
		Ki	iP		21 52 10.7
			i		21 52 12.0
			i		21 52 17.8
			iPP		21 55 28.8
					micr sec
			i	Z'	0.5 1.9
			Mx	E	0.7 15
			Mx	N	1.2 16
		Sk	iP		21 51 43.4
			i		21 51 44.6
			i		21 51 50.5
			ePP		21 54 45
		Um	iP		21 51 53.4
			i		21 51 54.6
			i		21 52 00.4
			iPP		21 55 01.3
			iS		22 02 10
		Ud	iP		21 51 26.6
			i		21 51 28.0
			i		21 51 33.8
			iPP		21 54 21.3
		De	iP		21 51 09.2
			i		21 51 10.4
			i		21 51 15.8
			iPP		21 53 56.0
		South Atlantic Ocean (h = N).			
		m = 6.4, M = 5.3 (Up,Ki).			
		Multiple P phases, in average 1.3 s and 7.0 s after the first P.			
"	14	Ki	iP		22 42 59.8
		Ud	iP		22 42 26.0
		De	iP		22 42 19.7
		North Atlantic Ocean (h = N).			
"	15	Up	eP		00 03 26
					micr sec
			Mx	Z	0.6 16
		Ki	eP		00 03 45
			i		00 03 51.5
		Um	iP		00 03 38.4
			i		00 03 44.9
		Ud	iP		00 03 11.1
		North Atlantic Ocean (h = N).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	15	Up	iP		00 04 14.8
		Ki	iP		00 04 35.3
					micr sec
			P	Z'	0.2 1.8
		Um	iP		00 04 29.9
		Ud	iP		00 04 01.7
		De	iP		00 03 55.6
		North Atlantic Ocean (h = N).			
"	15	Um	iP		00 22 10.0
			i		00 22 16.5
		Ud	iP		00 21 43.6
		De	iP		00 21 25.4
		South Atlantic Ocean (h = N).			
"	15	Up	iP		03 30 52.9
		De	iP		03 30 54.5
		Iran (h = N).			
"	15	Up	iP		03 31 11.2
		Ki	iP		03 31 00.3
		Um	iP		03 31 00.0
		Ud	iP		03 31 26.8
		Sinkiang, China (h = 40 km).			
"	15	Ki	iP		09 28 02.1
		Um	iP		09 28 30.3
		Kodiak Island (h = N).			
"	15	Up	iRg		10 50 38.9
		Ud	iSgl		10 50 09.9
			iRg		10 50 14.3
		Central Sweden.			
		Near-surface event.			
"	15	Ud	iSgl		10 52 34.0
			iRg		10 52 38.4
		Central Sweden.			
		Near-surface event.			
"	15	Ud	iP		14 43 56.3
			i		14 44 17.3
"	15	Ud	iP		14 57 30.8
"	15	Um	i(Pgl)		20 44 22.5
			iRg		20 44 28.8
		Regional, near-surface event.			
"	15	Ud	iPKPl		21 38 26.7
		Kermadec Islands (h = 50 km).			
"	15	Ud	eSgl		21 42 00
		South Norway.			
		Origin time = 21 40 24.			
		By combination with Bergen readings.			

1977 June	16	Up	iP		02 29 34.8
			i		02 29 48.3
					micr sec
			i	Z'	0.1 0.9
		Ki	iP		02 31 02.6
			i		02 31 26.5
		Sk	iP		02 30 27.4
			iLgl		02 36 22.6
		Um	iP		02 30 15.0
			i		02 30 31.5
			iLgl		02 35 39.8
		Ud	iP		02 29 49.3
			i		02 29 51.0
			i		02 30 11.1
		Rumania (h = 150 km).			
"	16	Up	iP		14 09 51.0
		Sk	eP		14 10 11
		Ud	iP		14 10 03.5
		De	iP		14 10 08.2
"	16	Up	iPKPl		14 39 12.7
		Sk	iPKPl		14 39 07.8
		Um	iPKPl		14 39 01.5
		Ud	iPKPl		14 39 15.2
		De	iPKPl		14 39 23.2
"	16	Ki	iP		15 01 42.9
		Sk	eP		15 02 16
		Um	iP		15 01 59.3 D
		Ud	iP		15 02 28.5
		Japan (h = 60 km).			
"	16	Ud	i		16 35 08.6
			iRg		16 35 13.6
		Regional, near-surface event.			
"	17	Up	iPKPl		02 47 10.1
			iSKPl		02 49 52.7
			iSKP2		02 50 02.7
			iPP		02 50 14.0
			iSKKP		02 58 36.9
					micr sec
			SKPl	Z'	0.2 1.3
			PP	Z'	0.2 1.5
		Ki	i(PKP)		02 46 51.1
			iPKP		02 47 02.6
			i		02 47 04.9
			iSKPl		02 49 27.9
					micr sec
			i	Z'	0.1 0.6
			SKPl	Z'	0.6 1.8
		Sk	i(PKP)		02 47 03.3
			iPKP		02 47 14.5
			iSKPl		02 49 45.6
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 17 (cont.)

Um	i(PKP)	02 46 56.7	
	i(PKP)	02 46 58.0	
	i(PKP)	02 47 02.0	
	i(PKP)	02 47 04.4	
	iPKP	02 47 09.6	
	iSKPl	02 49 40.7	
	iSKKP	02 59 38.2	
Ud	i(PKP)	02 47 10.7	
	iPKPl	02 47 11.6	
	i	02 47 14.0	
	i	02 47 22.0	
	iSKPl	02 49 54.5	
	iSKKP	02 58 36.8	
De	iPKPl	02 47 23.1	
	iSKPl	02 50 04.0	

Fiji Islands (h = 690 km).
SKKP phases at Up and Ud belong to one branch, SKKP at Um to another branch.

" 17 Ki iP 08 35 21.9
Alaska (h = 70 km).

" 17 Ud i(P) 08 38 39.5

" 17

Up	i	08 51 50.8
	iSgl	08 51 59.1
Ki	iSgl	08 54 09.1
Sk	ePgl	08 50 31
	iSgl	08 51 19.4
Um	iSgl	08 52 53.5
Ud	i	08 50 35.4
	iSn	08 50 46.3
	iSgl	08 50 57.2
De	eSgl	08 51 59

South Norway, 60.5°N, 7.4°E.
Origin time = 08 49 21.
M_L = 2.9 (Up,Ki,Sk,Um,Ud,De).
By combination with Kongsberg readings.

" 17 Ud eSgl 14 21 22
De eSgl 14 21 37
Southwest Norway, near 58 1/2°N, 6°E.
Origin time = 14 19 13.
By combination with Kongsberg readings.

" 17

Up	iP	14 57 59.6 D		
	ipP	14 58 22.1		
		micr	sec	
	P	Z' 0.1	1.0	

(cont.)

1977
June 17 (cont.)

Ki	iP	14 57 31.6 D		
		micr	sec	
	P	Z' 0.3	1.1	
Sk	iP	14 57 56.7		
Um	iP	14 57 43.2		
	ipP	14 58 06.1		
Ud	iP	14 58 06.1		
De	iP	14 58 16.8		
	ipP	14 58 40.9		

Mariana Islands.
h = 90 km (Up,Um,De).
m = 6.1 (Up,Ki).

" 17

Up	iP	15 01 34.2
Sk	iP	15 01 32.0
Um	iP	15 01 08.9

" 17

Up	iP	15 46 31.3
Sk	iP	15 47 11.8
Um	eP	15 47 12
Ud	iP	15 46 37.3
De	iP	15 46 01.3

Greece (h = 60 km).

" 17

Ki	iPgl	18 20 21.0
	iSgl	18 20 47.9
Um	iSn	18 22 21.4
	iSgl	18 22 53.0

North Norway, 69.8°N, 19.1°E.
Origin time = 18 19 45.
M_L = 2.8 (Ki,Um).
By combination with Tromsoe and Finnish station readings.

" 17

Up	iPKPl	20 59 32.5
Ki	iPKP	20 59 24.5
Um	i(PKP)	20 59 26.1
	iPKP	20 59 30.9
Ud	iPKPl	20 59 33.2
De	iPKPl	20 59 45.0 D

Fiji Islands (h = 610 km).

" 17

Up	iPKPl	22 25 56.9
	iPKP2	22 25 59.9
Sk	iPKPl	22 25 50.0
Um	iPKPl	22 25 44.1
Ud	iPKPl	22 25 57.9
De	iPKPl	22 26 06.5
	iPKP2	22 26 16.3

Kermadec Islands (h = N).

" 17

Um	iP	23 07 14.5
Ud	iP	23 07 04.6

Costa Rica (h = 25 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	18	Up	iPKP	02 07 54.9
		Ki	iPKP	02 07 40.5
		Sk	iPKP	02 07 52.4
		Um	iPKP	02 07 46.9
		Ud	iPKP	02 07 56.9
			iSKPl	02 11 30.3
		De	iPKP	02 08 03.5
		New Hebrides Islands (h = 35 km).		
"	18	Um	iP	03 05 10.7
		Ud	iP	03 05 23.4
"	18	Up	iP	04 52 07.8
		Ki	eP	04 52 43
		Um	iP	04 52 31.1
		Ud	iP	04 52 02.5
		South Atlantic Ocean (h = N).		
"	18	Up	iP	06 28 44.3
		Um	iP	06 28 13.7
"	18	Up	iP	06 33 41.7
			i	06 33 50.9
		Ki	iP	06 33 10.6
		Sk	iP	06 33 24.0
			i	06 33 32.9
		Um	iP	06 33 19.3
			i	06 33 27.9
		Ud	eP	06 33 30
"	18	Ud	iP	09 02 47.4
		De	eP	09 02 55
"	18	Ud	iP	09 12 11.8
"	18	Up	i(PKP)	10 22 21.5
		Ki	iPKP	10 22 16.2
		Sk	e(PKP)	10 22 18
		Um	i(PKP)	10 22 16.3
			iPKP	10 22 22.3
		Ud	iPKPl	10 22 23.9
			iSKPl	10 25 16.8
		De	iPKPl	10 22 35.0
		Fiji Islands (h = 570 km).		
"	18	Up	iP	10 35 03.3
			i	10 35 23.0
		Ki	iP	10 34 17.2
		Sk	iP	10 34 53.5
		Um	iP	10 34 36.5
		Ud	iP	10 35 07.2
		De	iP	10 35 23.7
		Japan (h = 70 km).		

1977 June	18	Ud	iP	11 23 30.5
		Kurile Islands (h = 45 km).		
"	18	Up	iP	11 25 09.2
		Ud	iP	11 25 24.4 C
		De	iP	11 25 07.2
"	18	Up	iP	12 41 51.1
		Ki	iP	12 41 19.0
		Sk	iP	12 41 33.4
			i	12 41 42.5
		Um	iP	12 41 28.5
		Ud	iP	12 41 54.5
"	18	Up	iP	14 37 45.3
			i	14 37 51.5
				micr sec
			Mx Z	0.9 13
		Ki	iP	14 38 28.2
			i	14 38 34.2
				micr sec
			Mx E	0.4 13
			Mx N	0.4 13
		Um	iP	14 38 01.2
		Ud	iP	14 38 02.0
			i	14 38 04.1
			i	14 38 09.8
		De	iP	14 37 45.7
			i	14 37 51.7
		Caucasus (h = N).		
"	18	Ud	eP	15 58 20
		Japan (h = 80 km).		
"	18	Um	iP	16 19 27.6
		Ud	iP	16 19 00.5
"	18	Ud	iP	17 06 46.9
"	18	Up	iP	17 08 00.7
		Ud	iP	17 07 47.8
"	18	Up	iSKS	17 14 06
		Um	iSKS	17 14 15
		Chile-Bolivia (h = 130 km).		
"	18	Ud	iP	17 19 36.7
		De	iP	17 19 41.8
"	18	Ud	iP	17 35 34.9
"	18	Ud	iP	17 45 27.5
"	18	Ud	iP	18 45 35.6

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	18	Up	iP		18 52 13.8	
		Um	iP		18 52 36.5	
			ipP		18 52 41.7	
		Ud	iP		18 52 09.1	
			ipP		18 52 14.8	
		De	iP		18 51 51.0	
			ipP		18 51 57.1	
		South Atlantic Ocean.				
		h = 20 km (Um,Ud,De).				
"	18	Up	iP		19 49 32.8	
		Um	iP		19 49 55.3	
		Ud	iP		19 49 28.5	
		De	iP		19 49 11.0	
			i		19 49 17.0	
"	18	Up	iP		19 59 56.4	
		Um	iP		20 00 18.2	
		Ud	iP		19 59 51.0	
"	18	Ki	iP		20 18 29.7	
		Um	iP		20 18 34.6	
		Ud	iP		20 18 52.5	
		Banda Sea (h = 15 km).				
"	18	Up	iP		20 50 42.4	
					micr sec	
			P	Z'	0.1 1.4	
		Ki	iP		20 51 21.4	
		Sk	iP		20 50 52.0	
		Um	iP		20 51 04.2	
			ipP		20 51 11.6	
		Ud	iP		20 50 37.0	
			ipP		20 50 44.9	
		De	iP		20 50 19.8	
			ipP		20 50 27.3	
		South Atlantic Ocean.				
		h = 25 km (Um,Ud,De).				
"	18	Up	iP		20 53 38.9	
		Um	iP		20 53 58.7	
		Ud	iP		20 53 33.4	
"	18	Up	iP		20 59 32.0	
		Um	iP		20 59 48.0	
		Ud	iP		20 59 20.4	
"	18	Ud	iP		21 00 50.6	
"	18	Ud	iP		21 04 43.3	
"	18	Sk	iP		21 08 47.2	
		Um	iP		21 09 02.6	
		Ud	iP		21 08 56.0	
		Mexico (h = N).				

1977 June	18	Up	iPKP		22 29 46.0	
					micr sec	
			Mx	E	1.2 20	
			Mx	N	1.6 21	
			Mx	Z	1.3 19	
		Ki	iPKP		22 29 31.5	
					micr sec	
			Mx	E	2.0 21	
			Mx	N	2.0 21	
			Mx	Z	0.9 16	
		Sk	iPKP		22 29 43.2	
		Um	iPKP		22 29 37.6	
		Ud	iPKP		22 29 46.5	
		De	iPKP		22 29 52.6	
		Solomon Islands (h = 10 km).				
		M = 5.8 (Up,Ki).				
"	18	Up	iSn		22 49 06.3	
			i		22 49 24.0	
			i		22 49 50.0	
			iSgl		22 49 52.0	
		Ki	iPgl		22 46 38.7	
			iSn		22 47 03.3	
			iSgl		22 47 15.6	
		Sk	i		22 47 25.3	
			i		22 47 46.2	
			iSgl		22 47 52.0	
		Um	iPn		22 46 59.6 C	
			iSn		22 47 49.1	
			i		22 48 05.0	
			iSgl		22 48 10.6	
		Ud	iSgl		22 49 36.1	
		De	eLgl		22 51 32	
		Off coast of Nordland, Norway,				
		67.4°N, 13.1°E.				
		Origin time = 22 45 49.				
		M_L = 3.1 (Up,Ki,Sk,Um,Ud,De).				
"	18	Up	iPKPl		22 52 21.6	
			iSKPl		22 55 11.8	
		Ki	ePKP		22 52 10	
		Sk	iPKPl		22 52 15.9	
			iSKPl		22 55 06.1	
		Um	iPKPl		22 52 09.7	
			iSKPl		22 55 01.1	
		Ud	iPKPl		22 52 23.5 D	
			iSKPl		22 55 13.2	
		De	iPKPl		22 52 34.3 D	
			iSKPl		22 55 22.0	
		Tonga-Kermadec Islands				
		(h = 540 km).				
"	19	Up	iPKP		04 00 09.1 D	
					micr sec	
			PKP	Z'	0.1 0.7	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 19 (cont.)

Um	iPKPl		03 59 59.5	
Ud	iPKPl		04 00 11.2	D
De	iPKPl		04 00 21.0	D
" 19 Ud	iP		04 14 16.3	
" 19 Up	iP		07 45 03.6	
	iSKS		07 55 08	
			micr sec	
	Mx	Z	1.0 19	
Ki	iP		07 44 48.2	
			micr sec	
	P	Z'	0.1 1.1	
	Mx	E	0.5 15	
	Mx	N	0.4 15	
Sk	iP		07 45 09.0	C
	i		07 49 49.7	
Um	iP		07 44 53.1	C
	iSKS		07 54 55	
	iS		07 55 25	
Ud	iP		07 45 12.0	C
De	iP		07 45 17.5	C
	iPP		07 49 22.0	

Celebes Sea (h = 270 km).

" 19 Up	iP		08 37 51.9	
Ki	iP		08 38 02.0	
Sk	iP		08 37 40.9	
Ud	iP		08 37 40.9	C
De	iP		08 37 39.4	C

Windward Islands
(h = 110 km).

" 19 Up	iP		11 57 58.4	D
	i		11 58 15.2	
	iPcP		11 58 27.0	
	ipP		11 58 38.2	
	iS		12 06 38.3	
			micr sec	
	P	Z'	0.2 1.0	
	Mx	E	0.8 21	
	Mx	N	0.7 20	
	Mx	Z	0.9 21	
Ki	iP		11 57 11.1	D
	i		11 57 26.9	
	ipP		11 57 51.4	
	iS		12 05 06	
			micr sec	
	P	Z'	0.6 1.5	
	Mx	E	0.9 15	
	Mx	N	1.0 14	
	Mx	Z	0.8 15	
Sk	iP		11 57 46.9	D

(cont.)

1977
June 19 (cont.)

Um	iP		11 58 32.8	D
	i		11 58 49.5	
	ipP		11 59 10.6	
	iS		12 05 49	
Ud	iP		11 58 04.0	D
	i		11 58 20.0	
	iPcP		11 58 30.4	
	ipP		11 58 44.7	
De	iP		11 58 22.6	D
	iPcP		11 58 43.8	
	ipP		11 59 02.3	

Kuril Islands.
h = 160 km (Up,Ki,Um,Ud,De).
m = 6.1, M = 5.1 (Up,Ki).

" 19 Up	iP		18 28 09.8
Ki	iP		18 28 31.4
Ud	iP		18 27 57.8
De	iP		18 27 51.6
	i		18 27 58.7

North Atlantic Ocean (h = N).

" 19 Ud	iP		22 23 41.4

Tadzhik SSR (h = N).

" 20 Ud	iP		00 51 59.9

Unimak Island (h = N).

" 20 Up	iP		01 56 23.1
	i		01 56 51.5
Ki	iP		01 56 29.6
Sk	eP		01 56 46
Um	iP		01 56 21.6
Ud	iP		01 56 38.7
De	eP		01 56 35

Hindu Kush (h = 110 km).

" 20 Up	iP		02 08 31.2
Ki	iP		02 09 45.3
Um	iP		02 09 08.7 C
Ud	iP		02 08 32.4
De	iP		02 07 58.9

Italy (h = 270 km).

" 20 Ud	iP		03 15 25.8 C
De	iP		03 15 23.4

Afghanistan-USSR (h = 40 km).

" 20 Ud	iP		03 23 13.3

Mexico (h = N).

" 20 Sk	eP		06 24 20
Ud	iP		06 24 29.2

Japan (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
June	20	Ud	iP	10 27 57.4	
		De	iP	10 28 17.4	
"	20	Sk	iSgl	14 34 22.3	
"	20	Ki	iP	20 05 41.5	
		Ud	iP	20 06 09.2	
		Philippine Islands (h = 35 km).			
"	20	Up	iP	20 11 14.0	
"	20	Ud	iP	20 33 15.2	
"	21	Ud	iP	02 49 58.6	
		Japan (h = 90 km).			
"	21	Up	iPKP	07 37 43.2	
		Ki	iPKP	07 37 29.6	
		Sk	iPKP	07 37 41.5	
		Um	iPKP	07 37 36.3	
		Ud	iPKP	07 37 45.5	
		De	iPKP	07 37 52.4	
		New Hebrides Islands (h = 120 km).			
"	21	Ud	iPKP	09 17 04.1	
		De	iPKP	09 17 10.2	
		Tonga Islands (h = 310 km).			
"	21	Ki	iP	12 45 10.8	
			i	12 45 22.5	
		Ud	iP	12 45 27.9	
		De	i	12 45 38.6	
		Sinkiang, China (h = N).			
"	21	Up	iP	13 38 00.6	
		Ud	iP	13 38 41.3	
"	21	Ud	iP	17 11 17.7	
"	21	Um	iP	18 19 05.1	
"	21	Ud	eP	18 28 01	
			i	18 28 06.6	
		Tadzhik SSR (h = 10 km).			
"	21	Up	iP	19 18 51.6	
			ipP	19 19 00.0	
			i	19 19 22.8	
				micr sec	
			pP	Z' 0.1 1.0	
		Ki	iP	19 19 55.8	
				micr sec	
			P	Z' 0.1 0.7	
		(cont.)			

1977					
June	21	(cont.)			
		Sk	iP	19 19 31.6	
		Um	iP	19 19 21.5	
		Ud	iP	19 19 01.7	C
			ipP	19 19 10.2	
			i	19 19 20.9	
		De	iP	19 18 32.2	C
		Mediterranean Sea. h = 30 km (Up,Ud). m = 5.6 (Up,Ki).			
"	21	Up	iP	21 41 20.0	
		Ud	iP	21 41 35.9	
			i	21 41 41.5	
		Afghanistan-USSR (h = 140 km).			
"	21	Ud	iP	23 42 07.8	
		Chile-Argentina (h = 100 km).			
"	22	Ud	i(PKP)	00 19 50.0	
			iPKPl	00 19 55.0	
		De	iPKPl	00 20 06.2	
		Tonga Islands (h = N). Late arrivals when compared with NEIS solutions.			
"	22	Up	i(P)	00 56 29.3	
"	22	Up	iSgl	01 41 03.5	
		Um	iSgl	01 41 30.1	
		Ud	iSgl	01 42 06.7	
		De	i	01 42 31.6	
			iSgl	01 42 38.5	
		Esthonia. Explosion?			
"	22	Up	iP	07 23 00.3	
		Ki	iP	07 22 22.2	C
		Sk	iP	07 22 55.8	
		Um	iP	07 22 38.8	C
		Ud	iP	07 23 07.2	C
		De	iP	07 23 21.6	
		Japan (h = 35 km).			
"	22	Up	iP	07 29 15.0	
"	22	Up	iP	09 00 53.3	
		Ud	iP	09 00 54.5	
			i	09 00 59.2	
		De	iP	09 01 20.3	
		Kamchatka (h = N).			
"	22	Up	iPdiff	12 25 22	
			iPKPl	12 27 51.7	
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 22 (cont.)

Up	iPP		12 31 11		
	iSS		12 49 34		
			micr	sec	
	PKPl	Z'	1.3	1.1	
	PP	Z'	6.4	2.0	
	Mx	E	164	30	
	Mx	N	298	29	
	Mx	Z	509	29	
Ki	iPKP		12 27 33.7		
	i		12 27 43.8		
			micr	sec	
	PKP	Z'	0.3	1.4	
	i	Z'	5.6	2.3	
	Mx	E	217	29	
	Mx	N	230	28	
	Mx	Z	187	27	
Sk	iPKP		12 27 44.0		
	i		12 27 54.4		
Um	i(PKP)		12 27 37.3		
Ud	iPKPl		12 27 53.6		
De	iPKPl		12 28 04.6		

Tonga Islands (h = 70 km).
M = 7.9 (Up,Ki).

" 22	Up	iP		13 04 16.1	
		i		13 04 23.4	
				micr	sec
		i	Z'	0.1	1.1
	Ki	iP		13 03 49.2	
	Sk	iP		13 04 11.1	
	Um	iP		13 04 05.6	
	Ud	iP		13 04 26.1	
	De	iP		13 04 40.8	
" 22	Sk	iPgl		13 22 28.0	
		iSgl		13 22 33.0	
		iRg		13 22 33.8	

Regional, near-surface event.

" 22	Up	iP	16 01 50.5	C
	Ki	iP	16 01 55.7	C
	Sk	iP	16 02 14.5	C
	Um	iP	16 01 47.9	C
	Ud	iP	16 02 06.4	C
	De	iP	16 02 03.6	

Kashmir-India (h = 35 km).

" 22	Up	iP	18 39 46.7	
	Sk	iP	18 39 43.8	
	Um	iP	18 39 26.7	

Japan (h = 25 km).

" 22	Up	iP	21 49 09.0	
	Ud	iP	21 49 15.5	

1977
June 22

Up	iSKPl		02 16 06.1	
Ud	iSKPl		02 16 07.6	
De	iPKPl		02 13 35.5	
De	iSKPl		02 16 17.0	

Fiji Islands (h = 680 km).

" 23	Ud	iPKPl	09 53 16.2	
	De	iPKPl	09 53 29.3	C

Tonga Islands (h = 130 km).

" 23	Ud	iP	11 35 46.6	
" 23	De	iPKPl	14 00 09.3	

Tonga-Kermadec Islands
(h = 680 km).

" 23	Ud	iP	14 19 40.9	
" 23	Sk	eP	16 51 31	
	Um	iP	16 51 14.8	
	Ud	iP	16 51 41.6	

Japan (h = 30 km).

" 23	Ud	iPKPl	18 20 43.5	
	De	iPKPl	18 20 55.0	C
		i	18 21 03.6	

Tonga-Kermadec Islands
(h = 100 km).

" 23	Ki	iP	20 06 23.0	
	Sk	iP	20 06 29.5	
" 23	Up	iP	20 29 51.4	
	Ud	iP	20 29 53.0	
	De	iP	20 30 16.1	

Komandorsky Islands
(h = 30 km).

" 23	Up	iPKPl	00 49 43.9	
			micr	sec
		Mx Z	1.4	21
	Ki	i(PKP)	00 49 17.5	
	Sk	iPKPl	00 49 37.9	
	Um	iPKPl	00 49 37.0	
	Ud	iPKPl	00 49 45.2	
	De	iPKPl	00 49 55.5	C

Tonga Islands (h = N).

" 24	Ki	iP	00 43 17.1	
	Ud	i	00 43 35.4	

Sumatra (h = 55 km).

" 24	Ud	iP	02 50 16.0	

Crete (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	24	Ud	i		07 50 38.1
			iSgl		07 50 45.0
"	24	Ud	i(P)		11 40 46.0
"	24	Up	iP		13 08 24.5
		Ki	iP		13 08 29.2
		Sk	iP		13 08 49.9
		Um	i		13 08 24.9
		Ud	iP		13 08 42.2
			i		13 08 48.6
		De	eP		13 08 41
		Tadzhik-Sinkiang (h = 45 km).			
"	24	Up	iP		16 33 19.2
					micr sec
			P	Z'	0.1 1.3
		Ki	iP		16 33 18.8 C
					micr sec
			P	Z'	0.1 1.0
		Sk	iP		16 33 31.8
		Um	iP		16 33 16.2 C
		Ud	iP		16 33 28.5 C
		De	iP		16 33 27.4
			i		16 33 51.6
		Sumatra (h = 55 km). m = 6.0 (Up,Ki).			
"	24	Up	iP		16 52 56.8 C
		Ud	eP		16 53 04
		De	iP		16 53 14.7
		Mariana Islands (h = 150 km).			
"	24	De	iPKPl		17 38 26.1
		Tonga Islands (h = N).			
"	25	Up	iP		00 04 00.4
			i		00 04 03.9
		Ki	iP		00 04 39.1
		Um	iP		00 04 13.4
		Ud	iP		00 04 15.8 C
			i		00 04 19.3
		De	iP		00 03 59.3
		Iran (h = 55 km). Double P, small and large, average separation 3.5 s.			
"	25	Up	iP		00 05 23.4 C
		Ki	iP		00 05 32.9 C
					micr sec
			P	Z'	0.1 0.5
		Sk	iP		00 05 49.8 C
		Um	iP		00 05 21.8 C
		(cont.)			

1977 June	25	(cont.)		
		Ud	iP	00 05 40.1 C
			i	00 06 02.6
			i	00 06 22.7
		De	iP	00 05 35.7
		Hindu Kush (h = 210 km).		
"	25	Up	iP	00 44 13.9
		Ki	iP	00 44 55.2
		Ud	iP	00 44 27.7
		De	iP	00 44 10.5
		Iran (h = 60 km). Late arrivals when compared with NEIS solutions.		
"	25	Up	iP	06 52 19.9
			ipP	06 52 33.8
		Ki	iP	06 52 20.0
			ipP	06 52 33.4
			i	06 52 50.2
				micr sec
			P	Z' 0.1 1.0
		Sk	iP	06 52 33.9
			ipP	06 52 47.0
		Um	iP	06 52 17.2 C
			ipP	06 52 30.9
		Ud	iP	06 52 29.5
			ipP	06 52 43.5
		De	ipP	06 52 39.3
		Sumatra. h = 45 km (Up,Ki,Sk,Um,Ud).		
"	25	Ki	iP	14 13 13.2
		Ud	iP	14 14 03.6
		Japan (h = 90 km).		
"	25	Up	iPKPl	15 42 52.0
			iSKPl	15 45 36.7
		Ki	iSKPl	15 45 14.5
		Sk	eSKPl	15 45 30
		Um	i(PKP)	15 42 39.6
			iSKPl	15 45 26.4
		Ud	iPKPl	15 42 54.5 D
			iSKPl	15 45 38.7
		De	iPKPl	15 43 05.8 D
			iSKPl	15 45 48.4
		Fiji Islands (h = 630 km).		
"	25	Um	iP	16 50 17.4
"	25	Ud	iP	16 51 31.9
"	25	Um	iP	17 11 41.8
		Ud	iP	17 12 08.0

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	25	Up	iP	17 51 16.4
		Ki	iP	17 51 48.9
		Um	iP	17 51 27.5
		Ud	iP	17 51 31.8
		De	iP	17 51 17.1
		Iran (h = 25 km).		
"	25	Ud	iP	18 27 20.2
		California (h = 15 km).		
"	25	Um	iP	18 44 29.9
		Japan (h = N).		
"	25	Up	iP	18 50 10.7
			i	18 50 33.7
		Ki	e	18 49 39
		Sk	e	18 50 14
		Um	iP	18 49 47.3
			i	18 50 10.8
		Ud	iP	18 50 17.8
			i	18 50 41.3
		De	iP	18 50 30.5
		Japan (h = 35 km).		
"	25	Up	iP	22 10 37.1 C
			ipP	22 10 42.4
		Ki	iP	22 10 20.9 C
			ipP	22 10 26.2
		Sk	iP	22 10 50.5 C
			ipP	22 10 56.0
		Um	iP	22 10 22.9 C
			ipP	22 10 28.2
		Ud	iP	22 10 51.8 C
			ipP	22 10 57.3
		De	iP	22 10 57.9 C
			ipP	22 11 03.6
		Sinkiang, China.		
		h = 20 km (Up,Ki,Sk,Um,Ud,De).		
"	26	Up	iP	00 21 53.8
			i	00 22 19.9
		Ki	iP	00 21 07.2
		Sk	iP	00 21 49.5
		Um	iP	00 21 27.9
			i	00 21 41.0
		Ud	iP	00 21 59.1
		De	iP	00 22 19.8
		Kuril Islands (h = 45 km).		
"	26	Up	iP1	02 33 13.8
			iP2	02 33 16.3
		Ki	iP1	02 33 47.3
			iP2	02 33 49.3
		Sk	iP2	02 33 49.9
		Um	iP1	02 33 25.8
			iP2	02 33 27.9
		(cont.)		

1977 June	26	(cont.)		
		Ud	iP1	02 33 29.0
			iP2	02 33 31.4
		De	iP2	02 33 16.4
		Iran (h = 40 km).		
		Double P, small and large, average separation 2.2 s.		
"	26	Um	i	02 52 04.4
		Ud	iP	02 52 27.7
			i	02 52 33.0
		Japan (h = 50 km).		
"	26	De	iPKP1	04 27 26.9
		Tonga Islands (h = N).		
"	26	Up	iP	05 36 20.3
		Um	iP	05 36 00.1
		Japan (h = N).		
"	26	De	iPKP1	05 54 23.1
		Tonga Islands (h = N).		
"	26	Ki	ePKP	06 18 35
		Um	iPKP	06 18 39.1
		Ud	iPKP1	06 18 41.6
		De	iPKP1	06 18 53.1 C
		Tonga Islands (h = 50 km).		
"	26	Ud	iP	08 03 31.0
"	26	Sk	eP	10 26 43
		Um	iP	10 27 05.3
		Ud	iP	10 26 51.1
		Dominican Republic (h = 35 km).		
"	26	Ud	iP	10 37 24.8 C
		North Atlantic Ocean (h = N).		
"	26	Ud	iP	13 59 13.4
"	26	Ki	iP	14 06 24.0
		Ud	iP	14 05 57.0
		Iran (h = N).		
"	26	Ki	iPg1	22 14 10.5
			i	22 14 53.5
			iSg1	22 14 56.0
		Sk	iSg1	22 15 03.1
		Um	i	22 15 37.3
			iSg1	22 15 55.4
		Off Lofoten, Norway, near 67 1/2°N, 11°E.		
		Origin time = 22 13 09.		
		M_L = 2.9 (Ki,Um).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
June	27	Ud	iSKPl	01 44 04.7
		New Hebrides Islands (h = 35 km).		
"	27	Ki	ePKP	07 09 32
		Drake Passage (h = N).		
"	27	Up	iP	12 37 26.1
		Sk	iP	12 37 55.6
		Ud	iP	12 37 20.4
		Italy (h = N).		
"	27	Up	iPKP	14 31 15.3
		Um	iPKP	14 31 09.4
			i	14 31 14.9
		Ud	iPKPl	14 31 14.6
			i	14 31 18.9
		De	i	14 31 28.9
		Tonga-Kermadec Islands (h = N).		
"	27	Um	iP	16 13 41.9
		Ud	iP	16 14 12.9
"	27	Up	i	16 26 24.9
		Ki	iPKP	16 25 51.9
			i	16 26 08.6
		Um	iPKP	16 26 03.4
		Ud	iPKPl	16 26 04.7
		De	i	16 26 21.0
		Tonga-Kermadec Islands (h = 30 km).		
"	28	Ud	iP	22 40 42.0
		Tonga-Kermadec Islands (h = N).		
"	28	Up	iP	22 59 04.0
		Sk	iP	22 59 45.0
		Um	iP	22 59 36.0
		Ud	iP	22 59 13.3
		De	iP	22 58 42.5
		Dodecanese Islands (h = N).		
"	27	Ki	iP	23 40 07.2
		Sk	iP	23 39 36.8
		Ud	iP	23 39 28.3
		North Atlantic Ocean (h = N).		
"	28	Um	iP	00 25 03.0
		Ud	iP	00 25 26.3
		Japan (h = N).		
"	28	Ud	iPKPl	01 42 54.9
		De	iPKPl	01 43 05.1
		Tonga Islands (h = 70 km).		

1977				
June	28	Ki	iP	02 58 35.0
		Ud	iP	02 58 16.3
		Japan (h = 20 km).		
"	28	Up	iP	03 52 39.2
			i	03 52 41.4
		Ki	iP	03 53 11.9 C
			i	03 53 14.3
				micr sec
			i Z'	0.1 0.9
		Sk	iP	03 53 12.6
			i	03 53 15.0
		Um	iP	03 52 50.5
			i	03 52 52.9
		Ud	iP	03 52 54.4
			i	03 52 56.7
		De	iP	03 52 41.7
		Iran (h = 45 km).		
		Double P, small and large, average separation 2.3 s.		
"	28	Ki	iP	04 05 59.5
		Um	iP	04 06 03.8
		Ud	iP	04 06 21.7
		De	iP	04 06 27.5
		Celebes (h = 270 km).		
"	28	Ki	iP	05 55 03.9
		Sk	iP	05 55 18.2
		Um	iP	05 55 38.0
			iS	05 57 43.0
		Ud	iP	05 56 03.6
		Jan Mayen Island (h = N).		
"	28	De	iPKPl	06 02 49.4
		Tonga Islands (h = 45 km).		
"	28	Up	iP	07 17 14.8
			i	07 18 26
			iS	07 20 55
				micr sec
			P Z'	0.3 0.9
		Ki	iP	07 18 28.7 D
				micr sec
			P Z'	0.2 1.0
		Sk	iP	07 17 49.6 D
			i	07 18 46.0
		Um	iP	07 17 53.3
			i	07 18 03.1
		Ud	iP	07 17 15.8 D
		De	iP	07 16 39.8 D
		Sicily (h = 260 km).		
		m = 5.7 (Up,Ki).		
"	28	Ki	iSgl	07 56 03.6
		Sk	iSgl	07 56 06.0
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 28 (cont.)

Um	iSgl	07 56 30.1	
Ud	iSgl	07 58 03.1	

Nordland, Norway,
66.5°N, 13.9°E.
Origin time = 07 54 35.
M_L = 2.5 (Ki,Sk,Um,Ud).
Explosion?

" 28

De	iPKPl	08 50 09.7	

Tonga Island (h = N).

" 28

Ud	iP	14 30 28.9	

" 28

Up	iP	15 48 20.5	
	i	15 48 23.9	
	iS	15 56 20	
		micr	sec
	P	Z' 0.18	1.4
	Mx	E 1.6	17
	Mx	N 0.9	17
	Mx	Z 2.7	17
Ki	iP	15 48 41.9	
	i	15 48 45.2	
	iS	15 57 04	
		micr	sec
	i	Z' 0.1	1.4
	Mx	E 1.2	18
	Mx	N 0.9	18
	Mx	Z 1.3	19
Sk	iP	15 48 10.6	
	i	15 48 14.1	
Um	iP	15 48 35.9	
	i	15 48 38.3	
	iS	15 56 46	
Ud	iP	15 48 07.2	
	i	15 48 10.8	
De	iP	15 48 01.5	
	i	15 48 05.5	

North Atlantic Ocean (h = N).
m = 5.9, M = 5.2 (Up,Ki).
Double P, small and large,
average separation 3.3 s.
The second onset, when
interpreted as pP, gives a
focal depth of 10 km.

" 28

Up	iPgl	16 13 50.4	
	i	16 14 13.2	
	iSgl	16 14 14.8	
Ud	ePgl	16 13 46	
	iSgl	16 14 07.0	
De	iSgl	16 14 24.2	

(cont.)

1977
June 28 (cont.)
Lake Vetter, Sweden,
58.5°N, 14.9°E.
Origin time = 16 13 17.
M_L = 2.2 (Up,Ud,De).
Explosion?

" 28

Up	iP	16 27 57.9	
	iS	16 36 00	
		micr	sec
	P	Z' 0.23	1.5
	Mx	E 2.6	17
	Mx	N 1.5	17
	Mx	Z 4.4	18
Ki	iP	16 28 16.4	
	i	16 28 21.3	
	iS	16 36 40	
		micr	sec
	i	Z' 0.2	1.0
	Mx	E 2.0	19
	Mx	N 0.7	16
	Mx	Z 1.9	18
Sk	iP	16 27 48.8	
Um	iP	16 28 10.9	
	iS	16 36 23	
Ud	iP	16 27 44.5	
De	iP	16 27 39.5	

North Atlantic Ocean (h = N).
m = 6.1, M = 5.4 (Up,Ki).

" 28

Ud	iP	16 39 14.4	

" 28

Ud	iP	18 12 03.6	

" 28

Ki	iP	19 06 53.2	
Sk	eP	19 06 22	
Ud	iP	19 06 18.9	
De	iP	19 06 13.4	

North Atlantic Ocean (h = N).

" 28

Up	iP	19 28 19.1	
	iS	19 36 20	
		micr	sec
	P	Z' 1.84	2.3
	Mx	E 3.2	17
	Mx	N 2.1	17
	Mx	Z 5.9	17
Ki	iP	19 28 39.7	
	iS	19 37 01	
		micr	sec
	P	Z' 1.4	2.1
	Mx	E 3.9	18
	Mx	N 1.5	18
	Mx	Z 3.4	19

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
June 28 (cont.)

Sk	iP		19 28 09.7	
Um	iP		19 28 33.4	
	iS		19 36 45	
Ud	iP		19 28 05.2	
De	iP		19 27 59.9	

North Atlantic Ocean (h = N).
m = 6.8, M = 5.6 (Up,Ki).

" 28

Ki	iP		19 45 06.2	
Sk	iP		19 44 36.2	
Um	iP		19 44 58.4	
Ud	iP		19 44 32.8	
De	iP		19 44 27.4	

North Atlantic Ocean (h = N).

" 28

Up	iP		21 08 35.8	
Sk	iP		21 09 18.7	
Um	iP		21 09 12.2	
Ud	iP		21 08 41.7	

Greece (h = N).

" 28

Up	iP		21 21 37.8	
Ki	iP		21 21 00.0	
Sk	eP		21 21 33	
Um	iP		21 21 14.8	
Ud	iP		21 21 44.9	

Japan (h = N).

" 28

Ud	iP		21 35 57.5	

" 28

Up	iP		22 16 18.4	
Ki	iP		22 16 04.1	C
Sk	iP		22 16 24.4	
Um	iP		22 16 06.9	
Ud	iP		22 16 26.7	C
De	iP		22 16 31.8	C

Molucca Sea (h = N).

" 29

Um	iP		02 15 09.6	
Ud	iP		02 15 40.6	

" 29

De	iP		03 02 58.3	

" 29

Up	iP		03 13 55.3	C
	iPn		03 13 57.8	
	iPP		03 14 13.3	
			micr sec	
	P	Z'	0.3 0.8	
Ki	iP		03 13 38.5	C
			micr sec	
	P	Z'	0.2 1.0	
Sk	iP		03 14 10.2	C
	iPP		03 15 33.3	
Um	iP		03 13 40.0	C

(cont.)

1977
June 29 (cont.)

Ud	iP		03 14 11.7	C
De	iP		03 14 18.7	C

Kazakh SSR.
Origin time = 03 07 00.
m = 6.1 (Up,Ki).
Underground explosion.

" 29

Ud	iPKPl		03 31 05.1	
De	ePKPl		03 31 16	

Tonga Islands (h = 40 km).

" 29

Up	iP		07 38 33.2	
	iPP		07 43 00	
			micr sec	
	Mx	E	0.6 17	
	Mx	N	0.9 17	
	Mx	Z	1.1 17	
Ki	iP		07 38 20.4	
			micr sec	
	P	Z'	0.1 1.0	
	Mx	E	0.5 17	
	Mx	N	1.2 16	
	Mx	Z	0.9 16	
Sk	iP		07 38 38.5	
	iPP		07 43 13.1	
Um	iP		07 38 23.8	
Ud	iP		07 38 41.4	
De	iP		07 38 46.6	

Banda Sea (h = 60 km).
M = 5.5 (Up,Ki).

" 29

Sk	iP		07 42 47.4	

" 29

Ud	iRg		08 20 48.0	

Regional, near-surface event.

" 29

Up	iP		08 58 10.0	
	i		08 58 23.0	
Ki	eP		08 57 17	
Um	iP		08 58 45.1	
Ud	iP		08 58 09.8	
	i		08 58 11.7	
De	iP		08 58 33.5	

Aleutian Islands
(h = 60 km).

" 29

Um	iP		12 40 06.9	

" 29

Up	iP		13 09 56.3	
			micr sec	
	P	Z'	0.1 1.5	
Ki	iP		13 10 18.3	
Um	iP		13 10 05.7	
Ud	iP		13 10 04.1	

Mid-Indian Ocean (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 June	29	Ud	i(P)	14 05 11.6
"	29	De	eP	15 03 30
"	29	Up	iP	16 14 06.9
		Sk	iP	16 14 32.2
		Um	iP	16 14 05.0
		Ud	iP	16 14 23.4
		De	iP	16 14 19.8
"	29	Ud	iPKP	19 50 06.1
			i	19 50 13.7
		Tonga Islands (h = N).		
"	29	De	iPKPl	21 44 47.9 C
		Tonga Islands (h = N).		
"	30	Up	iP	00 25 18.8 C
		Ki	iP	00 24 56.2
		Sk	iP	00 25 22.6 C
		Um	iP	00 25 06.5
		Ud	iP	00 25 27.3 C
		Mindanao (h = N).		
"	30	Up	iP	03 02 18.9
			iS	03 11 42
		Ki	iP	03 01 47.5
		Sk	iP	03 02 16.5
		Um	iS	03 11 07
		Ud	iP	03 02 25.9
		De	iP	03 02 38.1
		Bonin Islands (h = 470 km).		
"	30	Up	iSKS	03 10 28
		Um	iSKS	03 10 37
		Chile (h = 110 km).		
"	30	De	iPKPl	03 03 59.9
		Tonga Islands (h = N).		
"	30	Up	iP	07 42 27.1
		Ud	iP	07 42 32.9
"	30	Ki	iP	10 23 59.8
		Ud	iP	10 24 28.8
"	30	Up	iP	14 59 15.1 C
		Ki	iP	14 59 04.3
		Sk	iP	14 59 28.8
		Ud	iP	14 59 28.7
		De	iP	14 59 32.0
		Burma (h = N).		
"	30	Up	iSgl	17 30 47.1
		(cont.)		

1977 June	30	(cont.)		
		Ki	iSgl	17 33 06.5
		Sk	ePgl	17 29 19
			iSgl	17 30 07.5
		Um	iSgl	17 31 42.4
		Ud	iPgl	17 29 04.7
			i	17 29 23.8
			iSgl	17 29 45.5
		De	i	17 30 38.2
			iSgl	17 30 51.3
		South Norway, 60.5°N, 7.4°E.		
		Origin time = 17 28 08.		
		M_L = 2.7 (Up,Um,Ud).		
		By combination with Bergen and Kongsberg readings.		
"	30	Ud	i(P)	18 09 01.2
"	30	Up	iP	19 33 26.4
			i	19 33 28.6
				micr sec
			i Z'	0.1 1.0
		Ki	iP	19 34 42.8
			i	19 34 46.0
		Sk	iP	19 34 01.3
			i	19 34 05.4
		Um	iP	19 34 08.4
		Ud	iP	19 33 28.4
		Sicily (h = N).		
"	30	Sk	iP	19 39 43.5
		Ud	iP	19 39 10.0
"	30	Ud	iP	21 16 46.4
		De	iP	21 16 59.5
"	30	Ud	iP	22 37 08.1
		Japan (h = 20 km).		

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January 12, 1979

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SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

J U L Y 1 - 31, 1977

1977 July	1	Up	iP		03 56 24.6		
		Sk	iP		03 56 52.2		
		Um	iP		03 56 23.9		
		Ud	iP		03 56 41.1		
		De	iP		03 56 37.4		
		Afghanistan (h = 45 km).					
"	1	Up	iP		09 59 50.9		
		Ki	iP		09 59 51.3		
					micr	sec	
			P	Z'	0.1	0.9	
		Sk	iP		10 00 05.8		
		Um	iP		09 59 48.2		
		Ud	iP		10 00 01.9		
		De	iP		09 59 59.3		
		Northern Sumatra (h = 70 km).					
"	1	Ki	iP		11 01 30.8		
		Ud	iP		11 01 29.8		
"	1	Ud	iP		11 28 12.7		
"	1	Ud	iP		12 45 10.0		
		Greece-Albania border region (h = N).					
"	1	Ud	iSgl		12 57 46.7		
		Southwest Norway. By combination with Bergen readings.					
"	1	Up	iP		14 51 30.7 C		
					micr	sec	
			P	Z'	0.1	1.0	
		Ki	iP		14 51 39.2		
					micr	sec	
			P	Z'	0.1	1.0	
		Sk	iP		14 51 56.3		
			ipP		14 52 50.8		
		(cont.)					

1977 July	1	(cont.)					
		Um	iP		14 51 29.1 C		
			ipP		14 52 22.9		
		Ud	iP		14 51 47.2 C		
			ipP		14 52 40.6		
		De	iP		14 51 43.6		
			ipP		14 52 37.0		
		Afghanistan-USSR border region. h = 260 km (Sk,Um,Ud,De). m = 5.2 (Up,Ki).					
"	1	Up	iP		15 43 38.8		
					micr	sec	
			P	Z'	0.1	0.9	
		Ki	iP		15 42 51.9		
					micr	sec	
			Mx	E	1.0	16	
			Mx	N	0.8	17	
		Sk	iP		15 43 27.2		
		Um	iP		15 43 13.8		
		Ud	iP		15 43 44.6		
		De	iP		15 44 03.2		
		Kuril Islands (h = 35 km).					
"	1	Ki	eP		18 34 45		
		Iceland (h = 5 km).					
"	1	Up	eP		21 54 31		
		Ki	iP		21 55 09.7		
		Um	iP		21 54 42.2		
		Ud	iP		21 54 46.4		
		Eastern Caucasus (h = 55 km).					
"	2	Up	iP		01 13 17.9		
"	2	Up				micr	sec
			Mx	E		1.2	20
			Mx	N		1.4	20
			Mx	Z		2.1	22
		Ki	ePKP		01 13 54		
		(cont.)					

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 2 (cont.)

Ki			micr	sec
	Mx	E	1.8	20
	Mx	N	1.6	19
	Mx	Z	1.2	18
Sk	ePKP		01 14 02	
	i		01 14 14.5	
Um	iPKP		01 13 58.1	
	i		01 14 09.1	
Ud	ePKP		01 14 09	
	iP		01 14 12.6	
De	iPKP		01 14 14.6	
	i		01 14 23.7	

Solomon Islands (h = 15 km).
M = 5.8 (Up,Ki).

" 2	Up	iP	15 11 02.3
	Ki	iP	15 11 40.7
	Um	iP	15 11 16.1
	Ud	iP	15 11 23.3
	De	iP	15 11 14.6

" 2	Up	iP	16 01 08.6
	Ud	iP	16 01 12.7

Near east coast of Kamchatka
(h = 55 km).

" 3	Ki	iP	06 47 28.5 C
	Sk	iP	06 47 32.3
	Um	iP	06 47 10.1
	Ud	iP	06 47 15.9

Southern Iran (h = N).

" 3	Ud	iP	09 03 01.6

" 3	Up	iP	09 30 30.1
	Ud	iP	09 30 47.9

" 3	Um	iP	12 18 06.6

France (h = N).

" 3	Up	iP	13 06 36.6	
			micr	sec
		P Z'	0.1	1.0
	Ki	iP	13 05 43.2 C	
			micr	sec
		P Z'	0.1	1.0
	Sk	iP	13 06 13.0	
	Um	iP	13 06 10.1 C	
	Ud	iP	13 06 35.5 C	
	De	iP	13 06 58.1 C	

Fox Islands, Aleutian Islands
(h = N).
m = 5.9 (Up,Ki).

1977
July 3

Up	iP		14 52 44.3
	i(PP)		14 55 46.6
	iSKS		15 03 18
	iS		15 04 03
			micr sec
	P	Z'	0.1 1.0
	Mx	E	4.3 24
	Mx	N	4.3 26
	Mx	Z	6.0 23
Ki	iP		14 52 29.6 C
	iSKS		15 03 02
			micr sec
	P	Z'	0.2 0.9
	Mx	E	3.0 18
	Mx	N	2.9 18
	Mx	Z	5.8 22
Sk	iP		14 52 51.0
Um	iP		14 52 35.3
	i(PP)		14 55 03.9
	iSKS		15 03 07
	iS		15 03 44
Ud	iP		14 52 53.7
	i(PP)		14 55 51.7
	iPKKP		15 09 15.3
De	iP		14 53 01.2

Molucca Passage (h = 50 km).
m = 6.4, M = 6.0 (Up,Ki).

" 3	Ki	iPKP	15 18 05.9
	Um	iPKP	15 18 15.6
	Ud	iPKP	15 18 26.6

" 3	Up	iP	17 40 44.3
	Ki	iP	17 39 51.0
	Um	iP	17 40 18.0
	Ud	iP	17 40 43.3
	De	iP	17 41 06.4

Fox Islands, Aleutian Islands
(h = N).

" 3	Ki	iP	18 32 38.7
	Ud	iP	18 33 04.5

Philippine Islands region
(h = 70 km).

" 3	Up	iP	21 17 20.8
	Ki	iP	21 16 35.2
	Um	iP	21 16 55.9
	Ud	iP	21 17 27.2

Sea of Okhotsk (h = 370 km).

" 3	Um	iP	23 09 05.3
	Ud	iP	23 09 30.0

Bonin Islands region
(h = 460 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
July	3	Ud	iP	23 27 56.5
"	4	Up	iP	02 13 11.4
		Ki	iP	02 13 10.7
		Sk	iP	02 12 43.0
		Ud	iP	02 12 53.6
		North Atlantic Ocean (h = N).		
"	4	Ud	iP	03 43 18.8
"	4	Sk	iPKP	05 11 04.1
		Ud	iPKP	05 11 12.9
"	4	Ud	iPKPl	05 59 35.7
		Fiji Islands region (h = 630 km).		
"	4	Sk	iSKPl	07 36 17.4
		Um	iSKPl	07 36 11.7
		Fiji Islands region (h = 460 km).		
"	4	Ud	iP	08 43 25.8
		De	iP	08 43 47.0
"	4	Ud	iP	11 36 21.8
		De	iP	11 36 18.9
		Hindu Kush region (h = 230 km).		
"	4	Sk	iPKPl	12 49 01.2
		Um	iPKPl	12 48 56.4 C
		Ud	iPKPl	12 49 09.4
		Kermadec Islands region (h = 110 km).		
"	4	Ud	iPKPl	13 44 10.4
		De	iPKPl	13 44 20.4
		South of Fiji Islands (h = 520 km).		
"	4	Ud	iP	14 24 05.0
			i	14 21 26.0
"	4	Ud	iP	14 55 02.1
"	4	Up	iP	16 43 31.1
		Ki	iP	16 42 44.3
		Um	iP	16 43 05.6
		Ud	iP	16 43 37.1
		De	iP	16 43 55.1
		Sea of Okhotsk (h = 460 km).		
"	4	Up	iP	19 59 12.1
		(cont.)		

1977				
July	4	(cont.)		
		Up	ipP	19 59 19.0
		Ki	iP	19 59 51.0
			ipP	19 59 57.6
		Um	iP	19 59 25.7
			ipP	19 59 35.1
		Ud	iP	19 59 23.7
			ipP	19 59 30.9
		Eastern Arabian Peninsula. h = 25 km (Up,Ki,Um,Ud).		
"	4	Up	iP	21 09 26.5
		Ki	iP	21 09 33.4
		Sk	eP	21 09 51
		Um	iP	21 09 23.1
			ipP	21 09 57.5
		Ud	iP	21 09 43.1
		Tadzhik SSR. h = 150 km (Um).		
"	4	Ud	iP	21 26 38.7
"	4	Ud	iP	22 03 46.0
			i	22 03 53.6
		Off coast of northern California (h = 15 km).		
"	4	Ud	i	22 17 34.1
		Off coast of northern California (h = 15 km).		
"	5	Up	iPKP	01 06 24.5
		Ud	iPKP	01 06 22.1
"	5	Up	iPKP	01 06 24.5
		Ud	iPKP	01 06 22.1
"	5	Ud	iP	06 03 05.9
"	5	Ud	iP	06 04 13.5
		Burma-India border region (h = N).		
"	5	Ud	iSgl	09 11 48.2
		Southwest Norway. By combination with Bergen readings.		
"	5	Up	iP	13 20 12.1
		Ki	iP	13 19 28.6
		Ud	iP	13 20 19.1
		Off coast of Hokkaido, Japan (h = 35 km).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 5 Up iP 14 55 33.1
Ki iP 14 55 23.9
Sk iP 14 55 46.5
Ud iP 14 55 46.6

" 5 Up iP 16 12 00.4
Ki iP 16 11 29.9
Sk iP 16 11 59.9
Um iP 16 11 42.3
Ud iP 16 12 09.2
i 16 12 19.6
De iP 16 12 19.1
Ryukyu Islands (h = 30 km).

" 6 Up iS 05 06 17
micr sec
Mx E 1.3 23
Mx N 1.1 20
Mx Z 3.5 25
Ki iP 04 55 20.8
micr sec
Mx E 1.4 22
Mx N 2.2 22
Sk iP 04 55 08.5
Um iP 04 55 24.8
iSKS 05 05 57
iS 05 06 21
Ud iP 04 55 14.5
De iP 04 55 19.8
South of Panama (h = N).
M = 5.5 (Up,Ki).

" 6 Up iP 08 59 25.5
micr sec
P Z' 0.2 1.5
Ki iP 09 00 12.4
micr sec
P Z' 0.1 1.0
Sk iP 08 59 52.4
Um iP 08 59 48.8
Ud iP 08 59 30.0
i 08 59 40.4
De iP 08 59 08.3
Lake Tanganyika region
(h = N).
m = 5.9 (Up,Ki).

" 6 Up iPKP1 11 46 43.6
iSKP1 11 49 33.0
micr sec
PKP1 Z' 0.1 0.6
Ki i(PKP) 11 46 23.3
iPKP 11 46 37.2
iSKP1 11 49 07.6
(cont.)

1977
July 6 (cont.)
Ki micr sec
PKP Z' 0.2 1.0
Sk i(PKP) 11 46 35.4
iPKP 11 46 46.4
iSKP1 11 49 26.0
Um i(PKP) 11 46 31.5
iPKP 11 46 38.8
iSKP1 11 49 21.7
Ud iPKP1 11 46 44.8
iSKP1 11 49 34.8
De iPKP1 11 46 56.6
iSKP1 11 49 43.5
Fiji Islands region
(h = 590 km).

" 6 Ud iP 13 24 24.7

" 6 Ud iP 21 10 10.6
Philippine Islands region
(h = 15 km).

" 6 Ud iP 23 07 06.0

" 7 Sk i(P) 05 55 53.6
Um i(P) 05 56 42.1

" 7 Ud iP 06 28 21.4
Hindu Kush region
(h = 240 km).

" 7 Um iP 09 07 48.1
Ud iP 09 07 35.2
Iceland (h = 10 km).

" 7 Ud iPKP 15 22 49.0
Easter Island Cordillera
(h = N).

" 7 Up iSg1 15 30 09.2
Ud iPg1 15 28 47.5
iSg1 15 29 07.7
iRg 15 29 17.6
Origin time = 15 28 20.
Regional, near-surface event.

" 7 Um iP 16 08 53.7
Ud iP 16 09 18.2
Fox Islands, Aleutian Islands
(h = 50 km).

" 7 Up iPKP1 19 01 28.2
iPKP2 19 01 31.7
Sk iPKP1 19 01 21.1
Um iPKP1 19 01 15.3
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 7 (cont.)

Ud	iPKP1		19 01 29.2
	iPKP2		19 01 33.8
De	iPKP1		19 01 38.1
	iPKP2		19 01 47.8

" 7 Ud iP 22 34 08.3

" 8 Ud iP 01 38 17.2

" 8 Up iP 05 32 50.6 C

			micr	sec
	P	Z'	0.3	1.0
Sk	iP		05 33 16.4 C	
Um	iP		05 32 48.9 C	
Ud	iP		05 33 07.3 C	
De	iP		05 33 03.3 C	

Afghanistan-USSR border region
(h = 210 km).

" 8 Sk iP 06 32 38.2
Um iP 06 32 27.6
Ud iP 06 32 13.9
Ethiopia (h = 40 km).

" 8 Um iP 11 55 57.3
Ud iP 11 56 23.0
Fox Islands, Aleutian Islands
(h = 45 km).

" 8 Um iP 16 19 50.9

" 8 Up iP 18 11 12.3 C

			micr	sec
	P	Z'	0.1	1.1
Ki	iP		18 10 47.2 C	
			micr	sec
	P	Z'	0.2	1.0
Sk	iP		18 11 15.0	
Um	iP		18 10 56.5 C	
Ud	iP		18 11 21.6 C	
De	iP		18 11 30.9	

Southwestern Ryukyu Islands
(h = 55 km).
m = 5.9 (Up,Ki).

" 8 Ud iP 19 05 24.2
Turkey (h = N).

" 8 Um iP 19 25 25.3
Ud iP 19 25 54.9

" 8 Ud iPKP1 19 56 19.0
De iPKP1 19 56 28.0

1977
July 8 Ud eP 20 09 30
De ipP 20 10 13.6
i 20 10 22.8
Southern Alaska (h = 70 km).

" 8 Ud iP 22 22 36.0

" 8 Up Mx 23 01

			micr	sec
	Mx	E	2.3	17
	Mx	N	1.6	13
	Mx	Z	3.8	15
Ki	Mx		22 58	
			micr	sec
	Mx	E	1.0	14
	Mx	N	1.1	13
Um	iP		22 24 35.2	

East China Sea (h = N).
M = 5.5 (Up,Ki).

" 9 Um iP 04 51 07.4
Bonin Islands region
(h = 460 km).

" 9 Um iP 08 54 07.2
Ud iP 08 54 36.0
Eastern Chile (h = N).

" 9 Up iP 10 29 43.8
Ki iP 10 30 53.7
Sk iP 10 30 22.1
Um iP 10 30 16.6
Ud iP 10 29 50.2
De iP 10 29 18.9
Crete (h = 70 km).

" 9 Um iP 11 41 58.3
Ud iP 11 42 24.1
Unimak Island region (h = N).

" 9 Ki iP 13 42 17.4
Um iP 13 42 22.1
Ud iP 13 42 41.8
Banda Sea (h = 170 km).

" 9 Up Mx 15 42

			micr	sec
	Mx	E	1.4	15
	Mx	N	0.9	13
	Mx	Z	2.2	14
Ki	iP		15 05 17.8	
			micr	sec
	P	Z'	0.1	1.2
	Mx	E	1.0	14
	Mx	N	0.7	12
Um	iP		15 05 27.9	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 9 (cont.)

Ud	iP		15 05 57.3	

East China Sea (h = 30 km).
M = 5.4 (Up,Ki).

" 9	Up	iPKPl	17 03 30.7	
	Ki	iPKP	17 03 22.2	
	Um	iPKP	17 03 30.1	
	Ud	iPKPl	17 03 32.1	

Tonga Islands region
(h = N).

" 9	Ki	iPKP	17 37 16.4	
	Um	iPKP	17 37 24.9	

" 9	Up	iP	17 43 04.4	
	Ki	iP	17 42 43.8	
	Sk	iP	17 43 08.0	
	Ud	iP	17 43 12.0	

Mindanao, Philippine Islands
(h = 60 km).

" 9	Up	Mx	21 02	
			micr	sec
		Mx E	0.8	15
		Mx N	0.6	12
		Mx Z	0.6	12
	Ki	iP	20 37 32.2	
			micr	sec
		Mx E	0.6	13
		Mx N	0.6	14
	Um	iP	20 37 46.3	

Northeastern China (h = N).

" 9	Ud	iP	21 43 05.4	

Honshu, Japan (h = 60 km).

" 10	Up	iP	02 00 16.1	
	Sk	eP	02 00 20	
	Um	iP	02 00 03.8	
		i	02 00 15.6	
	Ud	iP	02 00 25.0	

Luzon, Philippine Islands
(h = N).

" 10	Up	iPKP	02 01 13.3	C
		ipPKP	02 01 42.9	
			micr	sec
		Mx E	0.9	16
		Mx N	0.9	17
		Mx Z	1.0	19
	Ki	iPKP	02 01 26.8	C
		ipPKP	02 01 56.4	
			micr	sec
		PKP Z'	0.5	1.5

(cont.)

1977
July 10 (cont.)

Ki			micr	sec
	Mx	E	1.0	19
	Mx	N	1.3	19
Sk	iPKP		02 01 18.0	
	ipPKP		02 01 47.8	
Um	iPKP		02 01 21.3	C
	ipPKP		02 01 51.2	
Ud	iPKP		02 01 11.8	
	ipPKP		02 01 40.8	
	iPKKP		02 11 21.7	

South Sandwich Islands region.
h = 110 km (Up,Ki,Sk,Um,Ud).
M = 5.7 (Up,Ki).

" 10	Up	iSKPl	03 00 03.0	
			micr	sec
		Mx E	1.2	21
		Mx N	1.5	21
		Mx Z	1.7	21
	Ki	iPKP	02 56 17.1	
			micr	sec
		Mx E	1.0	19
		Mx N	1.3	19
	Sk	iPKP	02 56 29.4	
	Um	iPKP	02 56 26.1	
		iSKPl	02 59 49.5	
	Ud	iPKP	02 56 35.2	
		iSKPl	03 00 06.4	

New Hebrides Islands
(h = 10 km).
M = 5.8 (Up,Ki).

" 10	Ud	iP	04 12 32.2	

" 10	Up	iPKPl	04 38 41.6	
		iSKPl	04 41 29.3	
	Ki	iSKPl	04 41 05.1	
	Sk	iPKPl	04 38 35.7	
		iSKPl	04 41 22.7	
	Um	iPKPl	04 38 29.9	
		iSKPl	04 41 18.3	
	Ud	iPKPl	04 38 42.7	
		iSKPl	04 41 30.5	
		iSKKP	04 50 00.9	

Fiji Islands region
(h = 580 km).

" 10	Up	iPKPl	05 29 55.0	
		iSKPl	05 32 43.3	
	Ki	iPKP	05 29 45.8	
		iSKPl	05 32 18.8	
	Sk	iPKPl	05 29 48.4	
		iSKPl	05 32 37.1	
	Um	iPKPl	05 29 43.4	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 10 (cont.)

Um	iSKPl	05 32 31.8	
Ud	iPKPl	05 29 56.9	
	iSKPl	05 32 44.2	
	iSKKP	05 41 14.5	
De	iPKPl	05 30 08.0	D

Fiji Islands region
(h = 610 km).

" 10	Up	iSgl	06 12 05.8
	Sk	eSgl	06 13 04
	Um	iSn	06 11 22.3
		iSgl	06 11 26.2
	Ud	iSgl	06 12 57.3

South-central Finland,
62.0°N, 24.6°E.
Origin time = 06 10 04.
M_L = 2.2 (Um).
By combination with Finnish station readings.

" 10	Ud	iPKPl	09 17 34.8
	De	iPKPl	09 17 45.3

Fiji Islands region
(h = 580 km).

" 10	Ud	iP	09 58 39.3
" 10	Ud	iP	11 16 37.1
" 10	Ud	iP	12 27 19.5
" 10	Up	i(P)	14 45 16.4 C
" 10	Ud	eP	17 53 39

Oaxaca, Mexico (h = 180 km).

" 10	Ki	iP	20 03 44.5
	Um	iP	20 03 47.1
	Ud	iP	20 04 05.9

Tanimbar Islands region
(h = N).

" 11	Um	i	05 04 14.8
	De	iPKPl	05 04 26.7

Tonga Islands region
(h = 40 km).

" 11	Up	iP		09 49 30.0	C
				micr	sec
		P	Z'	0.1	1.0
		Mx	E	1.0	18
		Mx	N	0.9	17
		Mx	Z	1.1	17

(cont.)

1977
July 11 (cont.)

	Ki	iP		09 48 40.6	C
				micr	sec
		P	Z'	0.1	1.0
		Mx	E	1.1	17
	Sk	iP		09 49 10.2	
	Um	iP		09 49 02.9	C
	Ud	iP		09 49 31.3	C
	De	iP		09 49 53.2	

Rat Islands, Aleutian Islands
(h = 15 km).
m = 5.9, M = 5.2 (Up,Ki).

" 11	Up	iP		12 46 35.0	C
				micr	sec
		P	Z'	0.1	1.2
		Mx	N	1.4	18
		Mx	Z	1.2	18
	Ki	iP		12 45 46.2	
				micr	sec
		Mx	E	0.9	18
	Sk	iP		12 46 21.8	
	Um	iP		12 46 08.4	
	Ud	iP		12 46 39.2	
	De	iP		12 46 59.5	

Kuril Islands (h = N).
M = 5.1 (Up,Ki).

" 11	Up	iP	16 58 40.6
	Ki	iP	16 58 54.7
	Um	iP	16 58 38.9
	Ud	iP	16 58 57.3

Afghanistan-USSR border region (h = 120 km).

" 11	Ud	iP	22 17 39.5

" 11	Up	Mx		23 41
				micr sec
		Mx	E	1.5 20
		Mx	N	1.4 20
		Mx	Z	2.0 21
	Ki	Mx		23 41
				micr sec
		Mx	E	1.3 19
		Mx	N	1.1 20

West Irian region (h = N).
M = 5.6 (Up,Ki).

" 12	Ud	iP	01 53 57.8
" 12	Ud	iP	11 15 38.6
	De	iP	11 15 35.3

Afghanistan-USSR border region (h = 210 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 12 Ud iP 13 38 06.4
De iP 13 37 34.7
Dodecanese Islands
(h = 160 km).

" 12 Up iSn 14 58 42.5
iSgl 14 58 58.6
Ud iSgl 14 59 42.4
De iPgl 14 58 00.8
iSgl 14 58 52.6
Coast of Latvia-Lithuania,
near 56°N, 21°E.
Origin time = 14 56 51.
M_L = 2.6 (Ud).
Explosion?

" 12 Ud iP 15 37 19.1

" 12 Um iP 19 42 02.9

" 12 Ud iP 23 14 32.2

" 13 Ud iP 01 18 29.5

" 13 Up iP 08 17 29.1
iS 08 24 08
micr sec
P Z' 0.2 1.4
Mx E 2.7 20
Mx N 7.2 17
Mx Z 4.3 16
Ki iP 08 17 47.9
micr sec
P Z' 0.1 1.3
Mx E 2.7 12
Mx N 3.4 13
Sk iP 08 17 57.3
Um iP 08 17 32.7
iS 08 24 11
Ud iP 08 17 44.7
De iP 08 17 38.2
Pakistan (h = 10 km).
m = 5.7, M = 5.6 (Up,Ki).

" 13 Up iP 09 05 29.5
Sk iP 09 05 24.7
Um iP 09 05 09.3
Ud iP 09 05 36.1
South of Honshu, Japan
(h = N).

" 13 Ud iPKPl 14 25 21.7
De iPKPl 14 25 32.7
Tonga Islands region
(h = 60 km).

1977
July 13 Ud iPKPl 19 04 15.0
Kermadec Islands region
(h = N).

" 13 Ki iP 19 51 47.5
Um iP 19 51 38.7
Ud iP 19 52 12.2

" 13 Ud iP 23 21 12.7
Mindanao, Philippine Islands
(h = 45 km).

" 14 Ud iP 00 44 27.7
Dodecanese Islands (h = N).

" 14 Up iP 05 55 54.3 C
iPP 05 57 02.9
micr sec
P Z' 0.4 1.4
Mx E 1.9 10
Mx N 8.9 18
Mx Z 5.2 11
Ki iP 05 56 11.2 C
micr sec
P Z' 0.2 1.1
Mx E 4.0 12
Mx N 3.1 12
Sk iP 05 56 22.8
Um iP 05 55 54.6 C
iS 06 01 20
Ud iP 05 56 12.0 C
De iP 05 56 06.7
Uzbek SSR (h = N).
m = 6.1, M = 5.6 (Up,Ki).

" 14 Ki iP 07 19 14.7
Um iP 07 19 25.5
Ud iP 07 19 10.9
Iceland (h = N).

" 14 Up iSgl 13 44 13.3
Ud iSgl 13 43 13.7
Near southwest coast of
Norway, near
58 1/2°N, 6 1/2°E.
Origin time = 13 41 08.
M_L = 2.6 (Ud).
By combination with Bergen
and Kongsberg readings.

" 14 Ki iP 14 01 38.4
Molucca Passage (h = 45 km).

" 14 Ki iP 15 32 13.5
Ud iP 15 31 53.8 C
De iP 15 31 37.4
Southern Iran (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977

July	14	Up	iP		16 40 51.3	
		Ki	iP		16 41 27.5	
		Ud	iP		16 41 07.9	
		Eastern Caucasus (h = N).				
"	14	Up	Mx		21 10	
					micr	sec
			Mx	E	1.2	20
			Mx	N	1.4	20
		Ki	Mx		21 07	
					micr	sec
			Mx	E	0.8	17
			Mx	N	0.9	13
		Northeastern China (h = N).				
		M = 5.2 (Up,Ki).				
"	15	Up	iP		02 24 41.5	
			iS		02 34 22	
					micr	sec
			P	Z'	0.1	1.0
			Mx	E	5.5	17
			Mx	N	4.5	17
			Mx	Z	12	17
		Ki	iP		02 24 18.1	
					micr	sec
			P	Z'	0.4	2.0
			Mx	E	1.6	14
			Mx	N	3.5	18
		Sk	iP		02 24 45.9	
		Um	iP		02 24 26.6	
		Ud	iP		02 24 51.3	
		De	iP		02 25 00.2	
		Taiwan region (h = 35 km).				
		m = 6.0, M = 5.9 (Up,Ki).				
"	15	Ud	iP		09 03 31.0	
		Near east coast of Kamchatka (h = N).				
"	15	Sk	eSgl		13 08 39	
		Ud	iSgl		13 08 17.2	
		Southwest Norway. By combination with Bergen readings.				
"	16	Up	iP		07 49 41.3	
		Ki	iP		07 48 52.8	
		Sk	iP		07 49 32.1	
		Um	iP		07 49 16.5	
		Ud	iP		07 49 47.7	
		Hokkaido, Japan region (h = 100 km).				
"	16	Up	iLgl		13 20 18.5	
		(cont.)				

1977

July	16	(cont.)				
		Up			micr	sec
			Mx	E	0.4	3
			Mx	N	0.7	6
			Mx	Z	1.0	6
		Ki	iP		13 18 23.2	
					micr	sec
			P	Z'	0.1	1.3
			Mx	E	0.4	6
			Mx	N	0.4	6
		Um	iP		13 17 38.1	
		Ud	eP		13 16 48	
			iLg2		13 20 57.4	
		De	iSn		13 17 44.2	
		Yugoslavia (h = 5 km).				
"	16	Up	iP		15 50 21.0	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		15 50 00.5	
		Sk	iP		15 50 26.6	
		Um	iP		15 50 08.7	
		Ud	iP		15 50 30.0	
		Luzon, Philippine Islands (h = 70 km).				
"	16	Up	iPKPl		23 57 57.1	C
					micr	sec
			PKPl	Z'	0.2	1.0
		Ki	ePKPl		23 57 37	
		Sk	iPKPl		23 57 49.3	
		Um	iPKPl		23 57 46.6	
		Ud	iPKPl		23 57 58.8	C
		De	iPKPl		23 58 08.5	C
		Kermadec Islands region (h = N).				
"	17	Up	iP		09 26 34.2	
		Ki	iP		09 24 48.7	
		Sk	iP		09 25 48.9	
		Um	iP		09 25 43.2	
		Ud	iP		09 26 33.0	
		De	iP		09 27 13.3	
		Svalbard region (h = 10 km).				
"	17	Up	iP		17 37 52.2	
		Ki	i		17 39 22.5	
		Um	iP		17 38 34.6	
		Ud	iP		17 38 10.3	
		Rumania (h = 110 km).				
"	17	Ud	iP		23 59 04.9	
			i		23 59 17.1	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 July	18	Ki	iP	05 10 47.4
		Um	iP	05 11 03.8
		Near s. coast of Honshu, Japan (h = 45 km).		
"	18	Up	iP	10 13 27.7
		Sk	iP	10 14 12.3
		Um	iP	10 14 08.2
		Ud	iP	10 13 34.2
		De	i	10 12 57.3
		Albania (h = 40 km).		
"	18	Up	iP	14 30 30.9
			il	14 30 34.7
				micr sec
			l Z'	0.1 0.6
		Ki	il	14 30 45.0
		Sk	eP	14 30 58
			il	14 31 01.1
		Um	iP	14 30 30.1
			il	14 30 34.1
		Ud	iP	14 30 47.7
			il	14 30 51.3
		De	iP	14 30 44.1
			il	14 30 47.7
		Hindu Kush region (h = 70 km).		
"	18	Up	iP	18 25 13.3
		Ki	iP	18 25 10.0
		Ud	iP	18 25 22.1
		Java (h = 70 km).		
"	18	Ud	iSgl	20 33 31.8
		Southwest Norway. By combination with Bergen readings.		
"	18	Up	iPKPl	21 44 26.0
		Ud	iPKPl	21 44 28.1
			iSKPl	21 47 18.0
		De	iPKPl	21 44 39.6
		South of Fiji Islands (h = 570 km).		
"	18	Ki	eP	21 54 42
		Ud	iP	21 55 21.0
		Kyushu, Japan (h = 50 km).		
"	19	Ki	iP	10 27 43.6
		Ud	i(pP)	10 28 14.0
		Molucca Passage (h = N).		
"	20	Ud	iP	00 28 29.7
		Southern Sinkiang prov., China (h = 160 km).		
1977 July	20	Up	iP	10 47 02.8
		Ki	iP	10 46 07.5
		Ud	iP	10 47 03.7
		Andreanof Islands, Aleutian Is. (h = N).		
"	20	Up	iP	13 35 06.8
		Ki	iP	13 34 12.2
				micr sec
			P Z'	0.1 1.0
		Sk	iP	13 34 41.1
		Um	iP	13 34 39.5
		Ud	iP	13 35 05.0
		De	iP	13 35 28.3
		Alaska Peninsula (h = 55 km).		
"	21	Ki	iP	02 29 34.2
		Ud	iP	02 30 27.6
		Alaska Peninsula (h = 90 km).		
"	21	Up	iP	02 48 12.8
		Ki	iP	02 48 11.3
		Sk	iP	02 48 28.8
		Um	iP	02 48 10.2
		Ud	iP	02 48 23.8
		De	iP	02 48 21.6
		Northern Sumatra (h = 70 km).		
"	21	Up	iSgl	04 02 29.3
		Ud	i	04 01 26.1
			iSgl	04 01 33.2
		Southwest Norway. By combination with Bergen readings.		
"	21	Up	iPn	09 00 43.7
			i	09 01 31.8
			iSgl	09 01 43.1
		Sk	eSgl	09 04 05
		Um	iSgl	09 03 33.1
		Ud	eSgl	09 02 27
		De	iPn	09 00 41.4
			iPgl	09 00 50.3
			iSgl	09 01 45.0
			i	09 01 55.9
		Coast of Latvia-Lithuania, near 56 1/4°N, 21°E. Origin time = 08 59 42. M_L = 2.3 (Up,Ud). Explosion?		
"	21	Up	iP	09 43 35.0
			il	09 43 43.8
		Ki	iP	09 43 34.6
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 21 (cont.)

Ki	il		09 43 42.2
Sk	il		09 42 56.5
Um	iP		09 43 33.2
Ud	il		09 43 53.0
De	iP		09 43 44.7

Nicobar Islands region
(h = N).

" 21

Up	iPKP		12 13 16.5	
	iPKP2		12 13 51.5	
	iPP		12 17 30.3	
			micr	sec
	PKP	Z'	1.7	2.5
	PKP2	Z'	3.0	2.0
	Mx	E	8.5	20
	Mx	N	11	20
	Mx	Z	19	20
Ki	iPKP		12 13 11.2	
	iPKP2		12 13 42.9	
	iPP		12 17 14.4	
			micr	sec
	PKP	Z'	1.2	2.5
	PKP2	Z'	2.4	1.8
	Mx	E	8.4	17
	Mx	N	8.2	18
	Mx	Z	7.2	17
Sk	iPKP		12 13 18.3	
	iPKP2		12 14 00.5	
	iPP		12 17 39.2	
Um	iPKP		12 13 12.3	
	iPKP2		12 13 46.7	
	iPP		12 17 22.2	
Ud	iPKP		12 13 18.1	
	iPKP2		12 13 57.8	
	iPP		12 17 39.8	
De	iPKP		12 13 18.7	
	iPKP2		12 14 00.4	
	iPP		12 17 37.9	

Macquarie Islands region
(h = N).
M = 6.8 (Up,Ki).

" 21

Um	iPKP2		12 54 50.7
	i		12 54 57.2
Ud	iPKP2		12 55 06.1
	i		12 55 12.4

Macquarie Islands region
(h = N).

" 21

Up	iP		13 58 15.4	C
	iS		14 08 32.8	
			micr	sec
	P	Z'	1.7	1.0

(cont.)

1977
July 21 (cont.)

Up			micr	sec
	Mx	E	57	24
	Mx	N	188	24
	Mx	Z	80	22
Ki	iP		13 57 56.3	C
	iS		14 07 52	
			micr	sec
	P	Z'	1.2	1.4
	Mx	E	46	19
	Mx	N	136	23
	Mx	Z	31	20
Sk	iP		13 58 19.8	C
Um	iP		13 58 01.7	C
Ud	iP		13 58 24.6	C
	iS		14 08 51.5	
De	iP		13 58 31.0	C

Luzon, Philippine Islands
(h = N).
m = 6.9, M = 7.3 (Up,Ki).

" 21

Up	iP		14 05 48.4	
			micr	sec
	P	Z'	0.1	1.0
Ud	iP		14 05 57.9	

Luzon, Philippine Islands.

" 21

Up	iP	15 35 54.7
Ki	iP	15 35 33.7
Um	iP	15 35 41.7
Ud	iP	15 36 03.9

Luzon, Philippine Islands
(h = N).

" 21

Up	eP	17 05 55
Ki	iP	17 05 29.4
Ud	eP	17 06 01

Luzon, Philippine Islands
(h = N).

" 21

Up	iP		19 07 53.4
	i		19 08 06.6
			micr sec
	i	Z'	0.1 0.9
Ki	iP		19 07 31.0
	i		19 07 40.6
Sk	iP		19 07 57.5
	i		19 08 07.7
Um	iP		19 07 39.7
	i		19 07 48.9
Ud	iP		19 08 02.4
	ipP		19 08 14.3

Luzon, Philippine Islands
(h = 45 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 July	21	Ki	iP		19 35 28.6	
		Ud	iP		19 35 56.1	
		Mindanao, Philippine Islands (h = 80 km).				
"	21	Ud	iP		22 12 48.7	
"	21	Up	iP		22 21 04.2	
		Ki	eP		22 20 43	
		Um	iP		22 20 50.5	
		Ud	iP		22 21 16.1	
		Luzon, Philippine Islands (h = N).				
"	21	Up	iP		23 42 03.3	
					micr	sec
			P	Z'	0.1	1.3
		Ki	iP		23 41 52.3	
		Sk	iP		23 42 18.3	
		Um	iP		23 41 52.3	
		Ud	iP		23 42 15.0	
		Tibet (h = N).				
"	22	Up	iPKP1		00 39 09.8	
			iPKP2		00 39 15.6	
					micr	sec
			PKP1	Z'	0.1	0.8
		Ki	iPKP1		00 38 45.8	
		Sk	iPKP1		00 39 04.7	
		Um	iPKP1		00 38 58.8	
		Ud	iPKP1		00 39 12.0	
			iPKP2		00 39 17.5	
		De	iPKP1		00 39 20.0	
		Kermadec Islands region (h = 560 km).				
"	22	Up	iP		00 57 17.5	
		Ki	eP		00 56 56	
		Um	iP		00 57 04.1	
		Ud	iP		00 57 26.6	
		Luzon, Philippine Islands (h = 90 km).				
"	22	Up	iP		01 48 22.2	
		Ki	iP		01 49 28.7	
		Sk	iP		01 49 01.0	
		Ud	iP		01 48 30.9	
		De	iP		01 47 57.7	
		Southern Greece (h = 110 km).				
"	22	Up	iP		05 25 57.4	
		Ki	eP		05 25 38	
		Um	iP		05 25 45.1	
		Ud	iP		05 26 07.2	
		Luzon, Philippine Islands (h = 45 km).				
1977 July	22	Up	iP		06 12 53.4	
		Ki	eP		06 12 58	
		Um	eP		06 12 54	
		Ud	eP		06 13 04	
		De	iP		06 13 07.4	
		Nicobar Islands region (h = N).				
"	22	Ki	eP		06 52 10	
		Ud	iP		06 52 19.6	
		Nicobar Islands region (h = 45 km).				
"	22	Up	iP		11 38 04.8	
		Ud	iP		11 38 14.6	
"	22	Up	iPKP		17 36 23.7	C
			iPKP1		17 36 30.1	
			iPKP2		17 36 40.8	
					micr	sec
			PKP	Z'	0.3	1.6
			PKP1	Z'	0.4	1.1
			PKP2	Z'	0.6	1.2
			Mx	E	1.4	24
			Mx	N	4.3	26
			Mx	Z	5.5	26
		Ki	iPKP1		17 36 11.9	
					micr	sec
			PKP1	Z'	1.3	2.3
			Mx	E	1.5	23
			Mx	N	1.7	22
			Mx	Z	2.6	23
		Sk	iPKP		17 36 20.9	C
			iPKP1		17 36 25.1	
		Um	iPKP		17 36 17.8	C
			iPKP1		17 36 20.6	
		Ud	iPKP		17 36 25.1	C
			iPKP1		17 36 31.9	
			iPKP2		17 36 43.3	
		De	iPKP		17 36 30.1	C
			iPKP1		17 36 39.2	
			iPKP2		17 36 56.0	
		South of Kermadec Islands (h = 30 km).				
		M = 6.0 (Up,Ki).				
"	22	Ki	iP		18 34 10.4	
		Sk	iP		18 34 33.2	
		Um	iP		18 34 08.3	
		Ud	eP		18 34 31	
		Tibet (h = N).				
"	22	Ki	eP		18 54 37	
		Ud	iP		18 54 50.0	
		Tadzhik SSR (h = N).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 22 Up iP 21 49 48.2
Ki iP 21 49 27.1
Sk eP 21 49 52
Um iP 21 49 33.7
Ud iP 21 49 56.8
Luzon, Philippine Islands
(h = 50 km).

" 23 Ki iPKP 03 53 43.2
New Hebrides Islands
(h = 130 km).

" 23 Up iP 07 05 01.0 C
micr sec
P Z' 0.1 1.1
Mx E 4.9 11
Mx N 1.9 10
Mx Z 8.5 10
Ki iP 07 04 53.8
micr sec
Mx E 4.7 15
Mx N 2.2 16
Mx Z 5.2 16
Sk iP 07 05 17.8
Um iP 07 04 48.8
iS 07 11 06
Ud iP 07 05 17.1
De iP 07 05 21.8
Northern Sinkiang prov.,
China (h = N).
M = 5.6 (Up,Ki).

" 23 Up iP 07 14 56.6
Ki iP 07 14 49.5
Ud iP 07 15 12.0
Southern Sinkiang prov.,
China (h = N).

" 23 Um ePKP 09 33 08
Ud ePKPl 09 33 08
Fiji Islands region
(h = 290 km).

" 23 Up iP 13 55 39.8 C
micr sec
P Z' 0.1 0.9
Ki iP 13 54 49.2
micr sec
P Z' 0.1 0.9
Sk iP 13 55 15.2
Um iP 13 55 13.3 C
Ud iP 13 55 38.4 C
De iP 13 56 01.2 C
Alaska Peninsula (h = 25 km).
m = 5.9 (Up,Ki).

1977
July 23 Ud iP 15 40 21.4

" 23 Up iP 18 51 48.9
Ud iP 18 51 56.8

" 23 Um iP 19 42 34.3
Ud iP 19 42 58.8

" 23 Ud iP 19 49 16.6

" 24 Up eP 05 56 47
Sk iP 05 56 35.1
Um iP 05 56 55.5
Ud iP 05 56 38.6
Near coast of Venezuela
(h = 15 km).

" 24 Up Mx 07 37
micr sec
Mx E 1.8 19
Mx N 3.4 21
Mx Z 4.9 21
Ki Mx 07 37
micr sec
Mx E 4.0 19
Mx N 3.9 19
Mx Z 4.7 20
Um iPKP 06 42 00.9
Ud iPKP 06 42 10.3
Tonga Islands (h = N).
M = 6.2 (Up,Ki).

" 24 Um iP 10 00 34.0
Ud eP 09 59 45
Southern Italy (h = N).

" 24 Up iP 20 07 50.1
micr sec
P Z' 0.3 1.0
Ki iP 20 07 22.2
iS 20 17 06.4
micr sec
P Z' 0.4 1.0
Sk iP 20 07 47.4
Um iP 20 07 34.4
iS 20 17 33.4
Ud iP 20 07 56.7
De iP 20 08 08.0
Mariana Islands (h = 410 km).
m = 6.1 (Up,Ki).

" 24 Ud iP 20 17 48.0

" 25 Up iPgl 04 15 33.5
iSgl 04 15 57.1
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 25 (cont.)

Sk	eSgl	04 17 32
Um	iSgl	04 16 34.4
Ud	eSgl	04 16 49

Gulf of Bothnia,
60.8°N, 20.6°E.
Origin time = 04 15 01.
M_L = 2.1 (Up,Um).
Explosion?

"	25	Ud	iSgl	04 49 36.2
"	25	Ki	iP	05 03 37.7
		Sk	iP	05 03 25.5

Caribbean Sea (h = N).

"	25	Sk	iP	10 40 10.2
"	25	Ki	i(P)	10 44 25.2
"	25	Ud	iP	10 59 07.8

Kuril Islands (h = 35 km).

"	25	Um	iP	12 36 55.4
		Ud	iP	12 37 14.0
"	25	Up	iPKPl	13 18 00.1
		Um	iPKPl	13 17 48.9
		Ud	iPKPl	13 18 02.3
		De	iPKPl	13 18 11.8

South of Fiji Islands
(h = 510 km).

"	25	Sk	iPKPl	15 16 12.8
		Um	iPKPl	15 16 07.4
			i	15 16 14.6
		Ud	iPKPl	15 16 20.4
			i	15 16 28.0
"	25	Um	iPgl	17 15 45.8
			iSgl	17 15 59.3
			iRg	17 16 06.4

Origin time = 17 16 27.
Regional, near-surface event.

"	25	Ki	iP	19 43 50.1
		Ud	iP	19 44 20.3

Philippine Islands region
(h = N).

"	25	Ud	iP	22 01 51.2
"	25	Up	eP	22 34 17
		Ki	iP	22 35 23.8

(cont.)

1977
July 25 (cont.)

Sk	iP	22 34 53.9
Um	iP	22 34 47.9
Ud	iP	22 34 22.1
De	iP	22 33 49.1

Crete (h = 45 km).

"	26	Up	iP	01 25 46.6
		Ki	iP	01 26 18.5
		Sk	i	01 26 25.4
		Um	iP	01 25 56.8
		Ud	iP	01 26 01.3
		De	iP	01 25 46.4

Southern Iran (h = 40 km).

"	26	Up	iP	02 19 25.3
		Ud	iP	02 19 41.8
		De	eP	02 19 39

Afghanistan-USSR border
region (h = 110 km).

"	26	Up	eSn	03 51 44
			i	03 52 01.0
			i	03 52 44.3
		Ki	iPn	03 50 49.4
			eSn	03 52 26
			i	03 52 45.8
		Sk	iPn	03 49 38.6
			iSn	03 50 29.9
			i	03 50 38.1
		Um	iPn	03 50 26.7
			iSn	03 51 55.0
		Ud	iPn	03 49 52.7
			iSn	03 50 57.4
			i	03 51 15.0
			i	03 51 34.3
		De	eSn	03 51 51
			i	03 52 32.7
			i	03 52 55.6

Off west coast of Norway,
near 62°N, 2 1/2°E.
Origin time = 03 48 27.
By combination with Bergen
and Kongsberg raedings.

"	26	Ki	eP	04 10 40
		Ud	iP	04 10 57.8
"	26	Ki	i	04 35 47.0
		Um	iP	04 35 57.0
		Ud	iP	04 36 27.6

Honshu, Japan (h = 100 km).

"	26	Up	iSgl	14 30 58.1
		Sk	eSgl	14 31 03

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 26 (cont.)

Ud	i	14 29 14.5
	iSgl	14 30 02.0

Coast of southwest Norway, near 58°N, 6°E.
Origin time = 14 27 47.
M_L = 2.5 (Ud).
By combination with Bergen readings.

" 26	Ud	eP	15 04 12
		i	15 04 55.4

" 26	Up	iP	17 06 14.6
		i	17 06 46.3
	Ki	iP	17 05 12.1 C
		i	17 05 19.6
			micr sec
		P Z'	0.1 0.9
		i Z'	0.2 0.9
	Sk	iP	17 06 04.9
		i	17 06 33.5
	Um	iP	17 05 43.1 C
	Ud	iP	17 06 25.0
		i	17 06 57.7

Central Siberia.
Underground explosion.

" 26	Ki	iSgl	18 05 07.4
	Sk	iSgl	18 05 27.0

" 26	Um	iP	18 06 22.6
	Ud	iP	18 06 13.4

" 27	Ud	ePKP	03 14 27
	De	ePKPl	03 14 26

Tonga Islands (h = 45 km).

" 27	Up	iPKPl	07 39 44.1
	Um	iPKPl	07 39 34.0
	Ud	iPKPl	07 39 46.1

" 27	Up	iPKP	08 29 16.3
	Ki	ePKP	08 30 02
		iSKPl	08 31 34.0
	Um	iPKP	08 29 09.5
		iSKPl	08 31 51.1
	Ud	iPKP	08 29 16.9
		iSKPl	08 32 03.8
	De	iPKP	08 29 27.7

Fiji Islands region (h = 570 km).

" 27	Ud	i(P)	09 54 20.9

1977
July 27

Ud	iP	10 54 23.5
De	iP	10 54 30.8

" 27	Up	iSgl	11 23 11.8
	Ki	eSgl	11 24 15
	Sk	iSn	11 21 26.5
		i	11 21 38.1
		iSgl	11 21 43.8
	Um	iSgl	11 23 30.2
	Ud	iPgl	11 21 13.9
		iSgl	11 22 13.0
	De	iSgl	11 23 33.3

West coast of Norway, near 62 1/2°N, 5 1/2°E.
Origin time = 11 19 53.
M_L = 2.8 (Up,Sk,Um,Ud,De).
By combination with Bergen and Kongsberg readings.

" 27	Up	iP	15 38 04.1
	Ki	iP	15 38 05.1
	Um	iP	15 38 00.6
	Ud	iP	15 38 16.5

Andaman Islands region (h = 40 km).

" 27	Up	iP	17 29 17.8
	Ki	iP	17 28 49.4 C
			micr sec
		P Z'	0.1 0.9
	Um	iP	17 29 01.5 C
	Ud	iP	17 29 24.6 C
	De	iP	17 29 35.9

Mariana Islands region (h = 300 km).

" 27	Up	iP	17 37 36.2
			micr sec
		P Z'	0.2 1.0
	Ki	iP	17 37 16.4 C
			micr sec
		P Z'	0.1 1.4
	Um	iP	17 37 22.5 C
	Ud	iP	17 37 45.2 C
	De	iP	17 37 51.9 C

Luzon, Philippine Islands (h = 40 km).
m = 5.9 (Up,Ki).

" 27	Ud	iP	23 55 11.4

Crete (h = N).

" 28	Ud	iPKPl	00 16 08.5
	De	iPKPl	00 16 19.7

Fiji Islands region (h = 390 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 July	28	Ud	iP		00 46 03.3	
"	28	Ki	iP		01 26 29.1	
			i		01 26 49.7	
		Um	iP		01 26 14.0	
			i		01 26 20.0	
			i		01 26 35.5	
		Ud	iP		01 25 45.3	
			i		01 25 51.6	
			i		01 26 06.4	
"	28	Up	iP		01 58 15.9	
			i		01 58 27.0	
			iS		02 07 04	
					micr	sec
			P	Z'	0.1	1.3
			Mx	E	1.7	15
			Mx	N	1.7	16
			Mx	Z	3.6	22
		Ki	iP		01 58 55.3	
			i		01 59 07.8	
			iS		02 08 30	
					micr	sec
			P	Z'	0.1	1.3
			Mx	E	2.7	15
			Mx	N	1.5	15
			Mx	Z	1.5	16
		Um	iP		01 58 40.0	
			i		01 58 52.0	
			iS		02 07 48	
		Ud	iP		01 58 07.9	
			i		01 58 21.3	
		De	iP		01 57 49.9	
		North of Ascension Island (h = N).				
		m = 5.7, M = 5.6 (Up,Ki).				
"	28	Ud	i		04 04 42.3	
			iSgl		04 04 57.7	
"	28	Up	eP		06 28 16	
		Ud	iP		06 28 32.8	
		De	iP		06 27 51.5	
		Rumania (h = 140 km).				
"	28	Up	iP		15 33 48.4 C	
			iS		15 43 15	
					micr	sec
			P	Z'	0.1	1.4
			Mx	E	0.9	16
			Mx	N	1.2	17
			Mx	Z	1.6	15
		Ki	iP		15 33 05.2	
			iS		15 42 01	
		(cont.)				

1977 July	28	(cont.)				
		Ki			micr	sec
			Mx	E	0.9	15
			Mx	N	1.0	16
			Mx	Z	1.0	14
		Um	iP		15 33 27.0	
			iS		15 42 38	
		Ud	iP		15 33 39.7	
		Off coast of Oregon (h = 15 km).				
		M = 5.3 (Up,Ki).				
"	28	Ud	eP		16 30 00	
		De	iP		16 30 07.2	
			i		16 30 12.3	
			i		16 30 19.3	
"	28	Up	iP		23 23 58.6	
		Ki	iP		23 23 12.3	
		Um	iP		23 23 33.5	
		Ud	iP		23 24 04.8	
		De	iP		23 24 22.6	
		Kuril Islands (h = 160 km).				
"	29	Up	iP		00 12 08.0	
			i		00 12 17.5	
		Ki	iP		00 11 37.7	
		Um	iP		00 11 50.6	
			i		00 11 59.5	
		Ud	iP		00 12 16.4 C	
			i		00 12 25.4	
		Ryukyu Islands (h = 30 km).				
"	29	Um	i(P)		08 47 18.1	
"	29	Up	iP		09 21 49.0 C	
					micr	sec
			P	Z'	0.4	1.4
		Ki	iP		09 21 49.9 C	
			ipP		09 22 20.0	
					micr	sec
			P	Z'	0.2	0.7
		Um	iP		09 21 44.1 C	
			ipP		09 22 14.0	
		Ud	iP		09 22 05.6 C	
			ipP		09 22 35.1	
		De	iP		09 22 04.1 C	
			ipP		09 22 34.1	
		Southern Sinkiang prov., China.				
		h = 140 km (Ki,Um,Ud,De).				
		m = 6.0 (Up,Ki).				
"	29	Up	iPKP		11 34 32.9	
			iPP		11 35 49.7	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
July 29 (cont.)

Up	iPKKP		11 44 44.9		
			micr	sec	
	PKP	Z'	0.1	1.0	
	Mx	E	24	18	
	Mx	N	62	21	
	Mx	Z	73	22	
Ki	iPKP		11 34 21.0		
	iPP		11 35 05.7		
			micr	sec	
	PKP	Z'	0.1	1.0	
	Mx	E	83	20	
	Mx	N	78	18	
	Mx	Z	99	22	
Um	iPKP		11 34 27.2		
	iPP		11 35 23.0		
	iPKKP		11 45 01.0		
Ud	iPKP		11 34 36.1		
	iPP		11 36 02.3		
	iPKKP		11 44 40.8		
De	iPKP		11 34 39.9		
	iPP		11 36 25.0		

Solomon Islands (h = N).
M = 7.4 (Up,Ki).

" 29

Ki	ePgl		13 33 05		
	iSgl		13 33 40.3		
Um	iSn		13 34 57.0		
	iSgl		13 35 32.3		

Off coast of north Norway, near 70 1/2°N, 16°E.
Origin time = 13 32 08.
M_L = 2.9 (Ki,Um).
By combination with Tromsoe and Finnish station readings.

" 29

Um	iPKP		17 10 04.5		
Ud	iPKP		17 10 08.3		
De	iPKP		17 10 19.4		

Tonga Islands (h = 130 km).

" 29

Up	iPKPl		20 45 34.9		
	iSKPl		20 48 25.2		
Ki	ePKP		20 45 26		
Um	iPKP		20 45 33.6		
	iSKPl		20 48 14.1		
Ud	iPKPl		20 45 37.1		
	iSKPl		20 48 27.0		
De	iPKPl		20 45 48.2		
	iSKPl		20 48 35.4		

South of Fiji Islands (h = 550 km).

" 29

Up	iP		21 18 48.7		

(cont.)

1977
July 29 (cont.)

Ki	iP		21 18 48.8		C
Um	iP		21 18 46.0		C
Ud	iP		21 18 58.2		
De	iP		21 18 56.3		C

Southern Sumatra (h = N).

" 29

Up	iP		21 58 28.8		
Um	iP		21 59 13.5		
Ud	iP		21 58 31.2		
De	eP		21 57 46		

Yugoslavia (h = 10 km).

" 29

Up	iP		22 35 50.7		C
Ki	iP		22 35 27.7		C
Um	iP		22 35 36.5		
Ud	iP		22 35 59.3		C
De	iP		22 36 06.6		

Luzon, Philippine Islands (h = 40 km).

" 30

Up	iP		02 03 52.5		C
Ki	iP		02 03 34.2		C
			micr	sec	
	P	Z'	0.1	0.5	
Um	iP		02 03 38.0		
Ud	iP		02 04 09.3		C
De	iP		02 04 16.5		

Eastern Kazakh SSR.
Underground explosion.

" 30

Up	iP		07 41 58.0		
Um	iP		07 42 23.0		
Ud	iP		07 41 52.8		
De	iP		07 41 33.1		

North of Ascension Island (h = N).

" 30

Um	iP		08 09 12.0		
Ud	iP		08 09 02.3		
De	eP		08 09 09		

El Salvador (h = 80 km).

" 30

De	i(P)		15 06 29.1		

" 30

Up	iP		15 40 17.7		
Ki	iP		15 40 56.0		
Um	iP		15 40 32.6		
Ud	iP		15 40 40.2		

" 30

Up	iP		16 13 01.8		
	iS		16 15 49.8		
Ki	iP		16 11 42.3		

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977

July	30	(cont.)				
		Ki			micr	sec
			P	Z'	0.2	1.0
		Um	iP		16 12 25.1	
		Ud	iP		16 12 49.2	
		De	iP		16 13 35.7	
		Jan Mayen Island region (h = N).				
"	30	Up	iP		19 56 39.7 C	
					micr	sec
			P	Z'	0.1	0.9
		Ki	iP		19 57 49.8	
		Um	iP		19 57 16.0	
		Ud	iP		19 56 46.1 C	
		De	iP		19 56 10.2	
		Southern Greece (h = 50 km).				
"	31	Ki	iP		01 18 55.0	
		Ud	iP		01 18 26.5	
		North Atlantic Ocean (h = N).				
"	31	Ud	ePKPl		03 26 04	
		De	iPKPl		03 26 11.0	
		Tonga Islands region (h = 120 km).				
"	31	Up	iP		23 13 52.9	
		Ki	eP		23 14 06	
		Ud	iP		23 14 10.8	
		De	iP		23 14 05.6	
		Uzbek SSR (h = N).				

Ota Kulhánek
Klaus Meyer
Rutger Wahlström

April 25, 1979

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BOX 517
751 20 UPPSALA 1
SWEDEN

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BOX 517
S-751 20 UPPSALA
SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

A U G U S T 1 - 31, 1977

1977
Aug. 1 Up iP 00 10 02.8
ipP 00 10 13.8
Um iP 00 09 56.5
ipP 00 10 07.3
Ud iP 00 10 16.0
ipP 00 10 26.3
De iP 00 10 16.6
Burma.
h = 35 km (Up,Ki,Um,Ud).

" 1 Up i 01 14 49.3
Um iP 01 14 36.5
i 01 14 41.6
Ud iP 01 14 52.0
i 01 14 57.8
Talaud Islands (h = 60 km).

" 1 Up iP 01 31 33.3
Um iP 01 31 22.7
i 01 31 35.9
Ud iP 01 31 41.6
i 01 31 46.6
Samar, Philippine Islands
(h = 55 km).

" 1 Ud iP 06 09 27.0
Mindanao, Philippine Islands
(h = 35 km).

" 1 Ud i 10 40 29.3
De iPKPl 10 40 26.8
Loyalty Islands region
(h = 25 km).

" 1 Up iPKP 13 51 57.2
iSKPl 13 55 17.1
micr sec
SKPl Z' 0.1 1.0
Um iPKP 13 51 49.6
iSKPl 13 55 04.0
(cont.)

1977
Aug. 1 (cont.)
Ud iPKPl 13 51 48.4
iSKPl 13 55 19.9
De iPKPl 13 51 55.4
iSKPl 13 55 29.1
New Hebrides Islands
(h = 110 km).

" 1 De iP 15 06 44.1

" 1 Up iRg 16 44 15.3
Ud iRg 16 44 15.0
Central Sweden.
Near-surface event.

" 1 Up iRg 17 05 24.6
Ud iRg 17 05 25.0
Central Sweden.
Near-surface event.

" 1 Up i 17 37 26.1
iRg 17 37 29.3
Ud iSgl 17 38 20.6
East-central Sweden.
Near-surface event.

" 1 Up iPKPl 19 30 06.0
Um i(PKP) 19 29 58.9
i 19 30 00.2
iPKP 19 30 07.2
iSKPl 19 32 43.2
Ud iPKPl 19 30 07.4
iSKPl 19 32 56.5
De iPKPl 19 30 19.5
iSKPl 19 33 06.3
Fiji Islands region
(h = 600 km).

" 1 Up iSgl 20 47 49.4
Ud iSn 20 46 38.9
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 1 (cont.)

Ud	iSgl	20 46 46.3
De	eSgl	20 47 53

Southern Norway,
60.6°N, 7.2°E.
Origin time = 20 45 09.
M_L = 2.2 (Ud).
By combination with Bergen and Kongsberg readings.

" 2

De	iPKPl	00 34 25.3

Fiji Islands region
(h = 550 km).

" 2

Up	iP	01 23 34.0
Um	eP	01 23 17
	i	01 23 34.0
Ud	iP	01 23 37.6

" 2

Up	iP	02 22 27.7
	ipP	02 22 36.3
Um	iP	02 22 13.1
	ipP	02 22 21.9
Ud	iP	02 22 37.4
	ipP	02 22 44.8

Luzon, Philippine Islands.
h = 30 km (Up,Um,Ud).

" 2

Up	iP	02 33 05.8
Um	iP	02 32 38.7
	iPcP	02 33 13.6
Ud	iP	02 33 05.3
De	iP	02 33 27.3

Andreanof Islands,
Aleutian Is. (h = 20 km).

" 2

Ud	iP	06 11 45.9
De	i	06 11 14.4

Aegean Sea (h = N).

" 2

Ud	iP	10 55 22.9

" 2

Up	iRg	11 29 32.5
Ud	iSgl	11 29 51.8

East-central Sweden.
Near-surface event.

" 2

Up	iSgl	14 33 36.5
Ud	i	14 32 14.4
	iPgl	14 32 15.6
	iSgl	14 32 36.5
De	eSgl	14 33 41

(cont.)

1977
Aug. 2 (cont.)
Southeast Norway, near
59 3/4°N, 10 1/2°E.
Origin time = 14 31 47.
M_L = 2.0 (Up,Ud).

" 2

Up	iP	17 57 54.3
Ud	iP	17 57 44.7

Brazil (h = N).

" 2

Up	iP		20 06 17.9
	i		20 06 25.1
			micr sec
	i	Z'	0.1 1.0
Ki	iP		20 05 43.7
	i		20 05 49.8
Sk	iP		20 06 14.1
	i		20 06 19.6
Um	iP		20 05 59.3
	i		20 06 05.0
Ud	iP		20 06 24.9
	i		20 06 31.1
De	iP		20 06 36.7
	i		20 06 43.7

Bonin Islands region (h = N).

" 2

Ki	iP	21 20 38.5
Um	eP	21 20 45

Talaud Islands (h = 190 km).

" 2

Up	iP	21 48 27.3
Ud	iP	21 48 28.2

" 3

Ki	iP	00 05 03.9
Um	iP	00 05 08.7
Ud	iP	00 05 26.6

Banda Sea (h = 330 km).

" 3

Up	iP		01 22 57.7
			micr sec
	P	Z'	0.1 1.3
Ki	iP		01 22 46.6
Sk	iP		01 23 12.1
Um	iP		01 22 47.2
Ud	iP		01 23 11.5

Tibet (h = 35 km).

" 3

Up	iP	02 37 39.7
Ki	iP	02 37 39.4
Sk	iP	02 37 26.8
Um	iP	02 37 44.2
Ud	iP	02 37 30.6
De	iP	02 37 33.6

Panama-Colombia border region
(h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	3	Up	iRg	09 27 06.8	
		Ud	iSgl	09 27 13.6	
			iRg	09 27 22.0	
		Central Sweden.			
		Near-surface event.			
"	3	Up	iP	10 19 12.0	
		Ki	eP	10 18 56	
			i	10 19 00.5	
		Um	iP	10 19 02.2	
		Ud	iP	10 19 21.9	
			i	10 19 26.0	
		Panay, Philippine Islands			
		(h = 110 km).			
"	3	Ud	iPKPl	11 19 40.4	D
		De	iPKPl	11 19 51.9	D
			i	11 19 55.6	
		South of Fiji Islands			
		(h = 120 km).			
"	3	Up	iP	12 16 04.3	
		Ki	iP	12 15 13.6	
		Um	iP	12 15 37.4	
		Ud	iP	12 16 09.1	
		Kuril Islands (h = 160 km).			
"	3	Ud	iP	15 22 05.8	
"	3	Up	iP	15 28 08.3	
				micr	sec
			P Z'	0.1	1.4
		Ki	iP	15 27 58.2	
		Sk	iP	15 28 23.3	
		Um	iP	15 27 58.3	
		Ud	iP	15 28 22.1	
		Tibet (h = N).			
"	3	Up	i	17 59 42.2	
		Ki	iP	17 59 37.6	
		Sk	eP	17 59 23	
			i	17 59 30.8	
		Um	i	17 59 48.1	
		Ud	eP	17 59 30	
		De	iP	17 59 30.5	
		Near west coast of Colombia			
		(h = 20 km).			
"	3	De	i(P)	18 17 32.4	
"	3	Ki	iP	20 07 22.0	
		Java (h = 100 km).			
"	3	Ud	iSn	21 16 10.2	
			iSgl	21 16 17.0	
		(cont.)			

1977 Aug.	3	(cont.)			
		Southern Norway.			
		By combination with Bergen			
		readings.			
"	3	Ud	iP	21 19 36.3	
"	4	Up	iPKP	01 29 49.1	
			ipPKP	01 30 16.0	
			iSKP	01 33 13.2	
			iPKKP	01 39 52.4	
				micr	sec
			PKP Z'	0.1	0.8
		Ki	iPKP	01 30 04.1	
			ipPKP	01 30 31.7	
			iSKPl	01 33 11.8	
				micr	sec
			PKP Z'	0.3	1.0
			SKPl Z'	0.3	1.7
		Sk	iPKP	01 29 53.7	
			iSKP	01 33 16.6	
			iPKKP	01 39 44.1	
		Um	iPKP	01 29 57.4	
			i	01 30 02.6	
			ipPKP	01 30 25.3	
			iSKP	01 33 19.1	
		Ud	iPKP	01 29 47.2	
			ipPKP	01 30 15.3	
			i	01 31 46.1	
			iSKP	01 33 08.4	
			iPKKP	01 39 54.7	
		De	iPKP	01 29 42.3	
			iPKKP	01 40 07.5	
		South Sandwich Islands region.			
		h = 100 km (Up,Ki,Um,Ud).			
"	4	Up	iP	13 33 32.9	
			ipP	13 33 50.6	
		Ki	iP	13 33 26.9	
			ipP	13 33 43.9	
				micr	sec
			pP Z'	0.1	1.4
		Sk	iP	13 33 17.1	
			ipP	13 33 34.3	
		Um	iP	13 33 33.4	
			ipP	13 33 49.9	
		Ud	iP	13 33 22.5	
			ipP	13 33 41.3	
		De	iP	13 33 28.4	
			ipP	13 33 47.1	
		Near coast of Nicaragua.			
		h = 70 km (Up,Ki,Sk,Um,Ud,De).			
"	4	Up	iSgl	14 51 33.8	
		Ud	iPgl	14 50 37.2	
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 4 (cont.)

Ud	iSgl	14 50 46.5	
	iRg	14 50 51.4	

Origin time = 14 50 25.
Regional, near-surface event.

" 4 Ud i(P) 15 04 59.2

" 4

Up	iP	16 51 48.8	C
		micr sec	
	P Z'	0.1 1.2	
Ki	iP	16 51 14.7	
Sk	iP	16 51 22.7	
Um	iP	16 51 34.2	C
Ud	iP	16 51 40.9	C
De	iP	16 51 58.1	

Southern Nevada.
Underground explosion.

" 4

Up	iP	17 13 25.7	
		micr sec	
	P Z'	0.1 1.2	
Ki	iP	17 13 15.4	
Sk	iP	17 13 40.3	
Um	iP	17 13 15.7	
Ud	iP	17 13 40.3	

Tibet (h = 40 km).

" 4 Um iP 18 33 01.0
Turkey (h = N).

" 4

Up	iP	22 35 29.1	
	i	22 35 30.9	
	i	22 35 43.8	
Ki	iP	22 36 51.3	
	i	22 36 57.2	
Sk	iP	22 36 24.2	
Um	iP	22 36 09.1	
	i	22 36 25.4	
Ud	eP	22 35 46	
De	iP	22 35 04.8	
	i	22 35 20.2	

Rumania (h = 150 km).

" 5

Um	iP	07 56 55.3	D
Ud	iP	07 57 25.9	

Near east coast of Honshu, Japan (h = 70 km).

" 5

Sk	iPKPl	12 35 48.1
Um	iPKPl	12 35 45.8
Ud	iPKPl	12 35 58.0

" 5

Up	iSgl	12 51 15.4
Ud	iSn	12 50 05.4

(cont.)

1977
Aug. 5 (cont.)

Ud	iSgl	12 50 12.0

Southern Norway, 60.6°N, 7.2°E.
Origin time = 12 48 32.
M_L = 2.4 (Ud).
By combination with Bergen and Kongsberg readings.

" 5

Up	iP	13 25 27.0	
		micr sec	
	P Z'	0.1 1.1	
Ki	iP	13 26 34.1	
		micr sec	
	P Z'	0.1 1.1	
Sk	iP	13 26 05.9	
Um	iP	13 25 59.2	
Ud	iP	13 25 35.4	
De	iP	13 25 02.7	

Crete (h = 25 km).
m = 5.3 (Up,Ki).

" 5

Up	iSgl	14 27 43.0
Sk	iSgl	14 27 42.9
Ud	iSgl	14 26 43.5
	i	14 26 51.8

Near coast of south Norway, near 58 1/2°N, 6 1/2°E.
Origin time = 14 24 39.
M_L = 2.7 (Sk,Ud).
By combination with Bergen and Kongsberg readings.

" 5 Ud iP 19 13 02.5

" 5

Ud	iPKP	21 40 03.2
De	iPKP	21 40 09.0

Solomon Islands (h = 45 km).

" 6

Ud	iPKPl	05 46 09.4
De	iPKPl	05 46 18.1

South of Fiji Islands (h = 120 km).

" 6

Ki	iP	07 47 12.4
Ud	i	07 46 24.2
De	iP	07 45 36.9

Dodecanese Islands (h = 25 km).

" 6 Ud iP 07 51 18.9
Bonin Islands region (h = 440 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 6 Ud iP 08 41 19.5
Near east coast of Honshu, Japan (h = 55 km).

" 6 Ud iP 10 20 30.6
Afghanistan-USSR border region (h = 60 km).

" 6 Up iPKP 11 44 50.3
Ki iPKP 11 44 39.3
Sk iPKP 11 44 49.7
Um iPKP 11 44 43.9
Ud iPKP 11 44 53.6
De iPKP 11 44 59.0
Solomon Islands (h = 80 km).

" 6 Up iPKP1 16 07 42.4
Sk ePKP1 16 07 36
Um iPKP1 16 07 30.6
Ud iPKP1 16 07 42.1

" 6 Up iSg1 20 02 28.5
Ud iSg1 20 01 30.9
Coast of Norway, near Bergen.
Origin time = 19 59 15.
M_L = 2.5 (Ud).
By combination with Bergen readings.

" 6 Up iP 21 01 45.5
Tibet (h = N).

" 6 Um iP 21 51 37.5
Ud eP 21 51 45
De iP 21 51 30.8
Southern Iran (h = N).

" 6 Up iP 23 55 11.1
Ki iP 23 55 33.3
Sk iP 23 55 05.8
Ud iP 23 55 18.9
De iP 23 55 33.2
Near east coast of Honshu, Japan (h = 50 km).

" 7 Up micr sec
Mx E 1.2 21
Mx N 1.6 22
Mx Z 2.6 21
Ki ePKP 02 04 01
micr sec
Mx N 1.2 18
Sk i 02 04 18.8
Ud iPKP 02 04 11.6
i 02 04 22.1
(cont.)

1977
Aug. 7 (cont.)
De i 02 04 22.5
Santa Cruz Islands (h = 35 km).
M = 5.7 (Up,Ki).

" 7 Up iP 02 46 10.8
Ki iP 02 45 26.6
Ud iP 02 46 18.1
De iP 02 46 34.8
Hokkaido, Japan region (h = 160 km),

" 7 Up iP 07 20 53.6
iS 07 31 32
micr sec
Mx E 2.2 19
Mx N 1.7 19
Mx Z 4.9 21
Ki iP 07 20 48.9
micr sec
P Z' 0.5 2.4
Mx E 5.4 17
Mx N 14 25
Mx Z 1.9 20
Sk iP 07 20 37.9
Ud iP 07 20 42.5
i 07 20 58.2
i 07 21 07.8
De iP 07 20 48.0
i 07 20 54.5
Panama-Costa Rica border region (h = N).
M = 6.0 (Up,Ki).

" 7 Up iPKP1 08 00 32.4
iPKP2 08 00 37.8
i 08 00 46.8
Sk iPKP1 08 00 23.9
Ud iPKP1 08 00 34.0
iPKP2 08 00 40.1
i 08 00 47.6
De iPKP1 08 00 43.1
i 08 00 57.4
Kermadec Islands (h = 220 km).

" 7 Ki iP 08 29 31.9
Ud iP 08 29 03.8
De iP 08 28 45.6

" 7 Up iP 09 28 47.4
Ud iP 09 28 58.8

" 7 Up iPg1 09 55 00.9
iSg1 09 56 31.3
iRg 09 56 49.3
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Dealry

1977
Aug. 7 (cont.)
Ud iSgl 09 57 31.1
Baltic Sea, near
58 1/4°N, 21°E.
Origin time = 09 55 20.
Near-surface event,
probably explosion.

" 7 Up iP 11 13 44.1
Ki iP 11 14 16.0
Ud iP 11 13 55.6

" 7 Ud eP 11 23 36

" 7 Up iP 11 45 27.7 C
micr sec
P Z' 0.1 1.2
Ki iP 11 45 55.5 C
micr sec
P Z' 0.2 1.8
Sk iP 11 45 54.8
Ud iP 11 45 39.2 C
De iP 11 45 25.1
Carlsberg Ridge (h = N).
m = 5.8 (Up,Ki).

" 7 Ud iP 13 46 12.9

" 7 Up i 15 02 21.6
Ki iP 15 01 54.3
Ud iP 15 02 19.1
Talaud Islands (h = 70 km).

" 7 De ePKP1 17 06 02
Tonga Islands region
(h = N).

" 7 Ud eP 18 37 29
Near south coast of Honshu,
Japan (h = 340 km).

" 7 Up iP 23 15 19.5
Um iP 23 14 58.4
Ud iP 23 15 26.3

" 7 Um iP 23 35 33.5

" 7 Up iP 23 37 38.3
ipP 23 38 08.1
il 23 38 14.2
Ki il 23 37 19.8
Um iP 23 37 11.5
ipP 23 37 40.1
il 23 37 46.7
Ud iP 23 37 38.7
ipP 23 38 07.2
(cont.)

1977
Aug. 7 (cont.)
Ud il 23 38 14.9
De ipP 23 38 30.9
il 23 38 37.0
Andreanof Islands, Aleutian Is.
h = 120 km (Up,Um,Ud).

" 8 Up iP 01 56 18.6
Ki iP 01 56 14.6
Ud iP 01 56 27.0
Java (h = 110 km).

" 8 Up iP 07 12 48.1 C
ipP 07 12 54.1
micr sec
P Z' 0.1 1.0
pP Z' 0.1 1.0
Ki iP 07 12 48.4 C
ipP 07 12 54.3
micr sec
P Z' 0.1 1.0
Sk iP 07 12 34.4 C
ipP 07 12 40.4
Um iP 07 12 51.4 C
ipP 07 12 57.4
Ud iP 07 12 38.0 C
ipP 07 12 44.1
De iP 07 12 40.8 C
ipP 07 12 46.9
Near west coast of Colombia.
h = 20 km (Up,Ki,Sk,Um,Ud,De).
m = 5.9 (Up,Ki).

" 8 Up iP 08 31 28.9
Ud iP 08 31 38.3

" 8 Ud iRg 10 59 25.3
Regional, near-surface event.

" 8 Up iPKP 13 17 38.6
Um iPKP 13 17 33.4
Ud iPKP 13 17 42.6
i 13 18 08.5
Solomon Islands (h = 30 km).

" 8 Ud i(P) 14 14 20.4

" 8 Ki iPKP2 14 29 00.8
Um iPKP2 14 29 00.3
i 14 29 08.4
Ud iPKP2 14 29 10.3
West of Macquarie Island
(h = N).

" 8 Up iPKP1 15 23 53.1
Um iPKP 15 23 56.9
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Aug.	8	(cont.)		
		Ud	ePKPl	15 23 55
		De	iPKPl	15 24 05.4
		Fiji Islands region (h = 560 km).		
"	8	Ud	iP	17 49 29.8
"	8	Ki	eP	18 18 09
		Um	iP	18 18 37.5
		Ud	eP	18 19 02
		De	iP	18 19 26.1
		Kodiak Island region (h = 35 km).		
"	8	Ud	iP	19 52 58.7
"	8	Ud	iP	20 59 24.5
"	8	Um	iPKPl	22 14 29.3
		Ud	iPKPl	22 14 42.8
"	8	Ki	i(P)	22 24 45.7
"	8	Up	iPKPl	22 39 27.3
		Ki	iPKP	22 39 17.4
		Um	iPKPl	22 39 15.9
			ePKP	22 39 25
			iSKPl	22 42 16.8
		Ud	iPKPl	22 39 29.9
			i	22 39 30.4
		De	iPKPl	22 39 40.6
			i	22 39 42.2
			ipPKPl	22 41 28.5
		South of Fiji Islands. h = 440 km (De).		
"	8	Up	iP	23 37 26.8
		Ki	iP	23 37 26.9
				micr sec
			P Z'	0.1 1.0
		Sk	iP	23 37 42.0
		Um	iP	23 37 23.7
		Ud	iP	23 37 37.7
		De	iP	23 37 36.3
		Northern Sumatra (h = 110 km).		
"	8	Up	iP	23 55 20.3
				micr sec
			P Z'	0.1 1.5
		Sk	iP	23 55 34.9
		Um	iP	23 55 10.5
		Ud	iP	23 55 34.4
		Tibet (h = N).		
"	9	Um	iP	00 11 44.4

1977				
Aug.	9	Ki	iP	01 47 22.0
		Um	iP	01 47 13.9
		Ud	iP	01 46 42.6
		North Atlantic Ridge (h = N).		
"	9	Um	iP	03 27 05.7
		Ud	iP	03 27 27.9
		Mariana Islands region (h = 25 km).		
"	9	Up	iPKPl	05 25 21.2
		Ud	iPKPl	05 25 21.1
			i	05 26 07.3
		De	iPKPl	05 25 30.5
		Kermadec Islands region (h = 90 km).		
"	9	Um	eP	07 58 19
		Ud	eP	07 58 41
"	9	Up	iP	21 49 56.6
			iPP	21 51 28.3
		Ki	iP	21 50 18.7
			iPn	21 51 37.0
		Sk	eP	21 50 28
			i	21 50 38.4
			iPP	21 52 15.6
		Um	i	21 50 37.9
		Ud	iP	21 50 13.5
		De	iP	21 50 04.9
			iPn	21 51 19.3
		Iran-USSR border region (h = 20 km).		
"	10	Ki	eP	01 17 20
		Ud	iP	01 17 31.6
			i	01 17 44.3
"	10	Up	eP	03 12 24
		Ud	iP	03 12 12.9
"	10	Up	iP	04 26 35.0
		Ki	iP	04 26 34.7
		Sk	eP	04 26 50
		Um	iP	04 26 31.8
		Ud	iP	04 26 45.2
		De	iP	04 26 43.7
"	10	Up	iP	07 20 54.7
			i	07 20 57.6
			iPP	07 24 51.9
				micr sec
			i Z'	0.1 1.1
			PP Z'	0.1 1.1
		Ki	iP	07 21 51.8
			i	07 21 54.3
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 10 (cont.)

Ki	i(PP)		07 24 41.5
	i		07 25 00.3
			micr sec
	P	Z'	0.1 1.2
Sk	iP		07 21 06.3
	i		07 21 09.4
	iPP		07 25 12.4
Um	iP		07 20 50.6
	i		07 20 53.4
	iPP		07 24 48.9
Ud	iP		07 21 03.4
	i		07 21 06.4
	i(PP)		07 23 58.4
	iPP		07 25 05.4
De	eP		07 21 02
	iPP		07 25 03.1

Java (h = 50 km).
m = 6.1 (Up,Ki).
Double P-phases, about 3 s apart, at Up,Ki,Sk,Um and Ud.

" 10

Up	iP		09 46 28.1 D
	i		09 46 34.6
	i		09 46 41.8
			micr sec
	P	Z'	0.1 0.9
Ki	iP		09 45 33.6 D
	i		09 45 40.0
	i		09 45 46.9
			micr sec
	P	Z'	0.2 1.3
Sk	iP		09 46 00.4 D
	i		09 46 07.9
Um	iP		09 46 01.9 D
	i		09 46 07.0
Ud	iP		09 46 24.9 D
	i		09 46 31.4
De	iP		09 46 48.4 D
	i		09 46 55.1

Kodiak Island region (h = N).
m = 5.9 (Up,Ki).

" 10

Ud	i(P)		15 17 30.1
De	e(P)		15 17 27

" 10

Up	iPKPl		18 45 24.4
	iSKPl		18 48 13.7
			micr sec
	PKPl	Z'	0.1 0.9
Ki	iPKP		18 45 15.7
	iSKPl		18 47 49.6
			micr sec
	PKP	Z'	0.1 1.0
Sk	i(PKP)		18 45 16.5

(cont.)

1977
Aug. 10 (cont.)

Sk	iPKP		18 45 25.8
	i		18 48 06.0
Um	i(PKP)		18 45 16.9
	iPKP		18 45 24.5
	iSKPl		18 48 01.7
Ud	iPKPl		18 45 23.9
	iSKPl		18 48 14.9
	iSKKP		18 56 46.3
De	iPKPl		18 45 35.5 D
	i		18 47 58.1
	iSKPl		18 48 24.3

Fiji Islands region (h = 590 km).

" 10

Ki	iP		20 18 46.7
Sk	iP		20 19 13.2
Ud	iP		20 19 37.4
De	eP		20 20 01

Kodiak Island region (h = 70 km).

" 10

Up	iSgl		21 32 35.5
Sk	eSn		21 31 42
Ud	iSn		21 31 27.5
	iSgl		21 31 34.0
De	iSgl		21 32 39.7

Southern Norway, 60.6°N, 7.2°E.
Origin time = 21 29 57.
M_L = 2.4 (Ud).
By combination with Bergen and Kongsberg readings.

" 10

Up	iP		22 08 51.3
Ki	iP		22 08 12.1
Sk	iP		22 08 51.1
Um	iP		22 08 28.0
Ud	iP		22 09 02.2
De	iP		22 09 17.7

Lake Baikal region (h = 0 km).

" 10

Up	iPKP		22 10 12.3
Ki	i		22 10 50.1
Ud	iPKP		22 10 18.4
De	iPKP		22 10 26.3

" 11

Ud	i(P)		01 54 13.9

" 11

Up	i(PKP)		02 01 52.2
	iPKP		02 02 03.3
	iPP		02 04 46.4
	i		02 05 16.5
	iSKPl		02 05 30.4
	iSKKP		02 14 18.2

cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 11 (cont.)

Up			micr	sec
	PKP	Z'	0.1	1.3
	PP	Z'	0.2	1.7
	SKPl	Z'	0.4	1.8
	Mx	E	2.7	20
	Mx	N	3.6	22
	Mx	Z	4.5	22
Ki	i(PKP)		02 01 41.0	
	iPKP		02 01 48.7	
	i		02 02 21.7	
	i		02 04 20.2	
	iSKPl		02 05 02.4	
	iSKKP		02 14 48.0	
			micr	sec
	PKP	Z'	0.3	1.7
	SKPl	Z'	0.5	2.5
	Mx	E	2.6	20
	Mx	N	3.6	20
	Mx	Z	3.8	20
Sk	e(PKP)		02 01 47	
	iPKP		02 01 59.7	
	i		02 02 31.3	
	iSKPl		02 05 21.0	
Um	i(PKP)		02 01 44.5	
	iPKP		02 01 55.6	
	i		02 02 30.1	
	iSKPl		02 05 17.2	
	i		02 06 15.6	
	iSKKP		02 14 29.2	
Ud	iPKPl		02 01 54.1	
	iPKP		02 02 03.2	
	iPP		02 04 54.3	
	i		02 05 23.2	
	iSKPl		02 05 30.6	
	i		02 14 00.6	
De	iPKPl		02 02 03.7	
	iPKP		02 02 09.5	
	i		02 02 39.7	
	iSKPl		02 05 37.6	
	iSKKP		02 13 54.9	

Tonga Islands (h = 55 km).
M = 6.1 (Up,Ki).

"	11	Up	iP	02 38 04.8
		Ud	iP	02 38 03.3
"	11	Up	iP	09 02 16.0
		Ud	iP	09 02 16.9
		De	iP	09 02 32.5
"	11	Up	iRg	09 44 04.4
		Ud	iSgl	09 44 22.6

East-central Sweden.
Near-surface event.

1977
Aug. 11

		Up	iRg	10 02 52.0
		Ud	iSgl	10 03 35.2

East-central Sweden.
Near-surface event.

"	11	Sk	iP	13 05 44.1
		Ud	iP	13 05 34.6
"	11	Ki	iSgl	18 29 02.4
"	12	Ki	iP	00 20 30.7
		Ud	i	00 20 23.5

Southern Iran (h = 55 km).

"	12	Up	iPKP	00 26 31.9
			i	00 26 34.4
			iPKKP	00 36 54.4
		Ki	iPKP	00 26 20.5
			i	00 26 23.5
			iPKKP	00 37 14.9
		Sk	iPKP	00 26 31.1
			i	00 26 34.2
			ePKKP	00 36 57
		Um	iPKP	00 26 25.8
			i	00 26 28.8
			iPKKP	00 37 05.1
		Ud	iPKP	00 26 34.6
			i	00 26 37.7
			iPKKP	00 36 48.7
		De	iPKP	00 26 40.3 C
			i	00 26 43.1
			iPKKP	00 36 38.0

Solomon Islands (h = 60 km).
Double PKP-phases, about 3 s apart.

"	12	Sk	eSgl	03 29 24
		Ud	iSgl	03 29 08.3

Southern Norway, near 60°N, 7°E.
Origin time = 03 27 22.
M_L = 2.2 (Ud).
By combination with Bergen and Kongsberg readings.

"	12	Ud	iPKPl	03 40 07.1
		De	iPKPl	03 40 16.2

South of Fiji Islands (h = 170 km).

"	12	Ud	iP	11 11 36.7
"	12	Up	iSgl	16 44 10.3
		Sk	eSn	16 43 15

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 12 (cont.)

Ud	iSgl	16 43 06.8

Southern Norway,
60.6°N, 7.2°E.
Origin time = 16 41 30.
M_L = 2.4 (Ud).
By combination with Bergen readings.

"	12	Ud	iSKPl 20 25 06.7
		De	iPKPl 20 25 17.9

Tonga Islands region
(h = N).

"	12	Up	iSgl 20 32 33.6
		Sk	eSgl 20 31 06
		Um	eSgl 20 32 58
		Ud	iSgl 20 31 37.2

West coast of Norway,
near 62°N, 5°E.
Origin time = 20 29 12.
M_L = 2.4 (Ud).
By combination with Bergen and Kongsberg readings.

"	12	Ki	iPKP 22 04 10.5
		Sk	iPKP 22 04 20.5
		Ud	iPKP 22 04 26.9
		De	iPKP 22 04 28.5

East Papua New Guinea
region (h = N).

"	12	Ud	iP 23 55 32.5
		De	iP 23 55 42.9

"	13	Up	iP 03 24 28.4
		Ki	iP 03 23 42.2
		Ud	iP 03 24 34.7
			i 03 24 46.3

Kuril Islands (h = 70 km).

"	13	Ud	i(P) 09 41 39.7

"	13	Ud	iPKP 10 18 45.8

New Hebrides Islands
(h = 150 km).

"	13	Up	iP		13 04 33.6
			i		13 04 35.3
					micr sec
			i	Z'	0.1 1.2
		Ki	iP		13 04 22.8
			i		13 04 24.3
		Sk	iP		13 04 48.1

(cont.)

1977
Aug. 13 (cont.)

Sk	i	13 04 49.5
Um	iP	13 04 23.2
	i	13 04 24.9
Ud	iP	13 04 47.4
	i	13 04 48.9

Tibet (h = N).
Double P, in average 1.6 s apart.

"	13	Ud	iP 14 37 44.4
		De	iP 14 37 14.1

Aegean Sea (h = N).

"	13	Up	iPn 17 44 28.2
		Ki	iP 17 44 07.0
			iPn 17 45 08.8
		Sk	iP 17 44 12.5
			iPn 17 45 18.9
		Um	i 17 44 26.1
			iPn 17 44 41.4
		Ud	iP 17 43 56.1
		De	iPP 17 44 52.9

Turkmen SSR (h = N).

"	13	Up	iP		19 44 07.7 C
					micr sec
			P	Z'	0.1 0.9
		Ki	iP		19 43 23.4
		Sk	iP		19 43 58.2
		Um	iP		19 43 43.1 C
		Ud	iP		19 44 14.0 C
		De	iP		19 44 30.9

Hokkaido, Japan region
(h = 60 km).

"	13	Ud	iP 20 43 25.5

"	13	Um	iP 22 43 10.3
		Ud	iP 22 43 35.0

"	14	Up	iP 00 13 33.9
		Ki	iP 00 13 22.0
		Sk	iP 00 13 46.8
		Um	iP 00 13 23.3
		Ud	iP 00 13 46.9

Burma-China border region
(h = N).

"	14	Ki	iP 00 20 52.5

"	14	Ud	iP 02 22 22.2

"	14	Up	iP2 04 34 24.1
			ipP 04 34 50.5

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 14 (cont.)

Up			micr	sec
	P2	Z'	0.1	0.9
Ki	iP1		04 34	32.7
	iP2		04 34	33.7
	ipP		04 34	59.7
			micr	sec
	P2	Z'	0.1	1.0
Sk	iP2		04 34	12.4
	ipP		04 34	39.9
Um	iP2		04 34	32.1
	ipP		04 34	58.0
Ud	iP1		04 34	12.3
	iP2		04 34	13.3
	ipP		04 34	39.5
De	iP2		04 34	11.6
	ipP		04 34	38.0

Windward Islands.
h = 110 km (Up,Ki,Sk,Um, Ud,De).
m = 5.4 (Up,Ki).
Double P at Ki and Ud, the second, larger (P2) 1.0 s delayed. pP are delated to P2 for focal depth determination.

" 14	Up	iPKP1		12 15 20.1	C
				micr sec	
		PKP1	Z'	0.1 0.7	
	Ud	iPKP1		12 15 22.0	C
	De	iPKP1		12 15 31.3	

South of Fiji Islands (h = 390 km).

" 14	Ki	eP		16 03 19
	Ud	iP		16 03 53.1

Taiwan (h = N).

" 14	Um	iP		19 16 42.7
	Ud	iP		19 16 17.4

South Atlantic Ridge (h = N).

" 14	Ki	eP		19 17 33
				micr sec
		P	Z'	0.1 2.0
	Sk	iP		19 17 10.4
	Um	iP		19 17 18.7
	Ud	iP		19 16 54.3
	De	iP		19 16 37.6

South Atlantic Ridge (h = N).

" 14	Ud	iP		21 02 39.7
" 14	Ud	iP		21 10 45.3

1977
Aug. 14

Up	iP		21 52 19.0	C
	i		21 52 34.0	
	i(PP)		21 55 15.3	
	iPP		21 56 17.6	
	iSKS		22 02 49	
			micr sec	
	P	Z'	0.2 1.4	
	Mx	E	2.2 23	
	Mx	N	2.8 22	
	Mx	Z	3.3 24	
Ki	iP		21 52 16.6	C
	i		21 52 18.9	
	i		21 52 33.6	
			micr sec	
	i	Z'	0.4 1.3	
	Mx	E	2.2 16	
	Mx	N	2.9 17	
	Mx	Z	2.5 15	
Sk	iP		21 52 31.7	C
	i		21 52 49.9	
Um	iP		21 52 15.3	
	i		21 52 17.1	
	iS		22 03 33	
Ud	iP		21 52 28.6	C
	i		21 52 45.6	
	i(PP)		21 55 29.4	
	i		21 55 48.5	
De	iP		21 52 27.4	C

Java (h = N).
m = 6.6, M = 5.9 (Up,Ki).

" 14	Up	iPKP1	23 50 28.3
	Sk	ePKP1	23 50 20
	Um	iPKP1	23 50 16.1
	Ud	iPKP1	23 50 28.3
		i	23 50 37.1
" 14	Ki	eP	23 58 40
	Ud	iP	23 59 15.6

Taiwan region (h = N).

" 14	Up	iP		24 00 09.5
		ipP		24 00 17.1
				micr sec
		pP	Z'	0.1 1.5
		Mx	E	0.6 11
		Mx	N	0.8 12
		Mx	Z	1.4 13
	Ki	iP		23 59 26.9
		ipP		23 59 35.1
				micr sec
		P	Z'	0.1 1.4
		pP	Z'	0.1 1.3
		Mx	E	0.7 13
		Mx	N	1.3 13
		Mx	Z	0.6 12

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 14 (cont.)

Sk	eP		24 00 02
	ipP		24 00 11.4
Um	iP		23 59 44.9
	ipP		23 59 54.0
Ud	iP		24 00 15.9
	ipP		24 00 26.0

Eastern Sea of Japan.
h = 30 km (Up,Ki,Sk,Um,Ud).
m = 5.9, M = 5.4 (Up,Ki).

" 15

Ud	iP		00 35 30.3

Andreanof Islands,
Aleutian Is. (h = 60 km).

" 15

Ud	iP		01 24 55.1
De	iP		01 24 43.4

" 15

Up	iPKPl		06 00 36.2
Sk	e		06 00 39
Um	iPKP		06 00 30.9
	i		06 00 34.3
Ud	iPKPl		06 00 36.4
	i		06 00 40.1
De	iPKPl		06 00 47.9

Tonga Islands region
(h = N).

" 15

Um	iP		15 12 10.9
	i		15 12 16.1
Ud	iP		15 12 33.4

Volcano Islands region
(h = N).

" 15

Ki	iP		16 53 53.4
	i		16 54 09.8
Sk	iP		16 54 07.3
Um	iP		16 53 50.8
Ud	iP		16 54 03.2

Southern Sumatra
(h = 90 km).

" 15

Ud	i		19 15 39.1

Philippine Islands region
(h = N).

" 15

Up	iP		20 36 58.3	
	ipP		20 37 05.4	
			micr	sec
	pP	Z'	0.1	1.3
Ki	ipP		20 37 02.9	
Sk	iP		20 36 44.8	
Um	iP		20 36 59.5	
	ipP		20 37 07.0	

Off coast of central America.
h = 25 km (Up,Um).

1977
Aug. 15

Up	iP		21 15 13.5		C
	iS		21 19 03.7		
			micr	sec	
	P	Z'	0.4	1.4	
	Mx	E	0.6	11	
	Mx	N	0.6	9	
	Mx	Z	0.7	8	
Ki	iP		21 16 29.6		C
			micr	sec	
	P	Z'	0.2	1.2	
	Mx	E	0.4	10	
	Mx	N	0.4	8	
Sk	iP		21 15 51.6		C
Um	iP		21 15 53.5		C
Ud	iP		21 15 16.8		
De	iP		21 14 36.8		

Southern Italy (h = 55 km).
m = 5.6 (Up,Ki).

" 15

Up	iPKPl		23 24 37.5
Ud	iPKPl		23 24 39.3
De	iPKPl		23 24 50.9

South of Fiji Islands
(h = 540 km).

" 16

Up	eP		05 03 49	
			micr	sec
	Mx	E	0.7	12
	Mx	N	1.9	12
	Mx	Z	1.0	12
Ki			micr	sec
	Mx	E	2.0	14
	Mx	N	2.6	11
	Mx	Z	1.4	12
Sk	eP		05 04 16	
Ud	iP		05 04 06.1	
	iPn		05 05 20.4	

Iran (h = N).
M = 5.2 (Up,Ki).

" 16

Up	iP		05 05 27.2
Sk	eP		05 05 57
Um	iP		05 05 31.6
Ud	iP		05 05 41.8

" 16

Up	iPKP		06 34 35.6
Sk	iPKP		06 34 33.2
Um	iPKP		06 34 28.0
Ud	iPKP		06 34 36.3
De	iPKP		06 34 42.3

New Hebrides Islands region
(h = 10 km).

" 16

Ud	iPKP		07 22 15.6

New Hebrides Islands region
(h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	16	Up	iSgl	10 09 10.9	
			iRg	10 09 27.8	
		Um	iSgl	10 10 49.9	
		Ud	iSgl	10 10 09.3	
		De	iSgl	10 10 11.2	
		Baltic Sea, near 58 1/4°N, 21°E. Origin time = 10 08 02. Near-surface event, probably underwater explosion.			
"	16	Ud	iRg	12 06 21.2	
		Regional, near-surface event.			
"	16	Up	eP	14 23 57	
				micr sec	
			P Z'	0.1 1.2	
		Ki	eP	14 23 47	
		Sk	iP	14 24 11.5	
		Um	iP	14 23 46.8	
		Ud	iP	14 24 10.4	
		Tibet (h = N).			
"	16	Up	iP	20 37 06.3	
		Ud	iP	20 37 09.8	
"	16	Up	iP	23 31 07.7	
			i	23 31 18.9	
		Ki	iP	23 31 46.1	
		Sk	iP	23 31 39.8	
		Um	iP	23 31 23.1	
		Ud	iP	23 31 19.7	
		De	iP	23 31 02.1	
		Eastern Gulf of Aden (h = N).			
"	17	Up	iP	04 33 53.4	
			iPP	04 35 11.4	
		Ki	iP	04 33 37.3	C
				micr sec	
			P Z'	0.1 0.5	
		Sk	iP	04 34 08.0	
			iPP	04 35 29.8	
		Um	iP	04 34 37.9	
		Ud	iP	04 34 09.0	C
			iPP	04 35 33.1	
		De	eP	04 34 17	
		Eastern Kazakh SSR. Underground explosion.			
"	17	Up	iPKP1	07 46 10.2	
		Ud	iPKP1	07 46 12.4	
		De	iPKP1	07 46 21.4	
			iPKP2	07 46 27.2	
		Kermadec Islands region (h = 55 km).			
1977 Aug.	17	Up	iSgl	09 13 58.0	
		Sk	iPgl	09 13 30.0	
			iSgl	09 14 18.6	
		Um	iSgl	09 15 49.8	
		Ud	i	09 13 35.7	
			iSgl	09 13 56.6	
		De	eSgl	09 14 58	
		Southern Norway, 60.5°N, 7.7°E. Origin time = 09 12 21. M_L = 2.8 (Sk,Um,Ud,De). By combination with Bergen and Kongsberg readings.			
"	17	Up	iSgl	12 32 09.1	
			iRg	12 32 25.7	
		Um	iSgl	12 33 47.3	
		Ud	iSgl	12 33 06.0	
		Baltic Sea, near 58 1/4°N, 21°E. Origin time = 12 31 00. Near-surface event, probably underwater explosion.			
"	17	Up	iP	13 19 29.8	D
		Ki	iP	13 18 58.0	D
				micr sec	
			P Z'	0.1 0.7	
		Sk	iP	13 19 26.5	D
		Um	iP	13 19 11.5	D
		Ud	iP	13 19 36.6	D
		De	iP	13 19 48.4	D
		Bonin Islands region (h = 420 km).			
"	17	De	i(P)	14 25 24.0	
"	17	De	i(P)	15 11 48.7	
"	17	Up	iP	15 46 59.8	
		Um	iP	15 46 35.3	
		Ud	iP	15 47 06.7	
		Kuril Islands (h = 110 km).			
"	17	Up	iP	16 35 38.4	
			iPP	16 36 53.5	
		Ki	iP	16 36 03.8	
			iPP	16 37 33.1	
		Sk	iP	16 36 11.1	
		Um	iP	16 35 44.8	
		Ud	iP	16 35 55.8	
			iPP	16 37 21.9	
		Iran-USSR border region (h = 10 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	17	Up	iP		16 59 25.8	C
			ipP		16 59 38.9	
					micr sec	
			P	Z'	0.1 0.9	
		Ki	iP		16 58 32.7	C
			ipP		16 58 46.6	
			iPcP		16 59 17.8	
					micr sec	
			P	Z'	0.1 0.8	
			pP	Z'	0.1 1.1	
		Sk	iP		16 59 04.2	
		Um	iP		16 58 58.7	C
			ipP		16 59 12.6	
			iPcP		16 59 34.6	
		Ud	iP		16 59 26.0	C
			ipP		16 59 38.7	
			iPcP		16 59 52.4	
		De	iP		16 59 48.3	
			ipP		17 00 00.4	

Andreanof Islands,
Aleutian Is.
h = 50 km (Up,Ki,Um,Ud,De).
m = 5.8 (Up,Ki).

"	17	Up	iP		17 27 37.3	
"	17	Up	iSgl		19 55 44.8	
		Sk	eSn		19 54 50	
		Ud	iSn		19 54 36.5	
			iSgl		19 54 40.2	
		De	eSgl		19 55 55	

Southern Norway,
60.6°N, 7.2°E.
Origin time = 19 53 04.
M_L = 2.2 (Ud).
By combination with Bergen readings.

"	17	Ud	iP		22 37 21.7	
"	17	Up	iP		23 30 51.2	
		Ki	iP		23 30 33.5	
		Sk	iP		23 30 55.2	
		Um	iP		23 30 39.5	
		Ud	iP		23 30 59.7	

Philippine Islands region
(h = N).

"	18	Up	eP		00 46 49	
		Ki	iP		00 46 23.9	
		Um	iP		00 46 29.7	
		Ud	eP		00 46 58	
			i		00 47 05.4	

Taiwan region (h = 20 km).

1977 Aug.	18	Up	iP		05 37 57.2	
		Ki	iP		05 37 40.6	
		Um	iP		05 37 44.6	
		Ud	iP		05 38 06.2	
"	18	Up	iP		06 43 17.7	
			iPP		06 43 45.9	
		Ki			micr sec	
			Mx	E	0.8 14	
		Sk	iP		06 44 06.7	
			i		06 44 08.9	
		Ud	iP		06 43 31.8	

Aegean Sea (h = 5 km).

"	18	Up	iP		07 45 53.1	
					micr sec	
			P	Z'	0.1 1.2	
		Ki	eP		07 45 43	
		Sk	eP		07 46 06	
		Um	iP		07 45 41.8	
		Ud	iP		07 46 04.5	

Tibet (h = N).

"	18	Up	iP		09 32 59.3	C
			i		09 33 00.9	
			iS		09 37 23.1	
					micr sec	
			i	Z'	0.9 1.4	
			Mx	E	0.7 9	
			Mx	N	1.9 11	
			Mx	Z	1.0 12	
		Ki	iP		09 34 08.7	C
			i		09 34 10.2	
			iS		09 39 20	
					micr sec	
			i	Z'	0.5 1.3	
			Mx	E	3.6 10	
			Mx	N	5.8 12	
			Mx	Z	7.4 14	
		Sk	iP		09 33 38.0	C
			i		09 33 39.5	
			iS		09 38 27.0	
		Um	iP		09 33 32.9	C
			i		09 33 34.3	
			iS		09 38 17	
		Ud	iP		09 33 06.2	C
			i		09 33 07.5	
			i		09 33 20.3	
			iS		09 37 30.3	
		De	iP		09 32 32.4	C
			i		09 32 34.0	
			i		09 32 48.8	
			iS		09 36 34.6	

Crete (h = 40 km).
m = 6.2, M = 5.5 (Up,Ki).
Double P, in average 1.5 s apart.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	18	Up	iP		10 10 04.9	
		Ki	iP		10 11 14.1	
		Sk	iP		10 10 42.6	
		Ud	iP		10 10 10.8	
			i		10 10 12.4	
			i		10 10 22.2	
		De	iP		10 09 37.8	
		Crete (h = N).				
"	18	Up	iP		12 10 36.9	C
			i		12 10 41.5	
			ipP		12 10 46.9	
			iS		12 19 32.6	
					micr sec	
			P	Z'	1.7 1.3	
			Mx	E	1.3 14	
			Mx	N	2.0 14	
			Mx	Z	3.0 15	
		Ki	iP		12 09 48.0	C
			i		12 09 51.9	
					micr sec	
			P	Z'	0.5 1.3	
			Mx	E	2.0 14	
			Mx	N	2.0 14	
			Mx	Z	4.1 15	
		Sk	iP		12 10 23.9	C
			i		12 10 30.0	
			ipP		12 10 34.4	
		Um	iP		12 10 10.8	C
			i		12 10 15.2	
			ipP		12 10 20.2	
			iS		12 18 43	
		Ud	iP		12 10 42.2	C
			i		12 10 47.8	
			ipP		12 10 52.0	
		De	iP		12 11 00.7	C
			i		12 11 06.8	
			ipP		12 11 11.0	
		Kuril Islands.				
		h = 35 km (Up,Sk,Um,Ud,De).				
		m = 6.7, M = 5.6 (Up,Ki).				
"	18	Up	iP		13 01 02.1	
		Ki	iP		13 00 17.8	
		Um	iP		13 00 37.8	
		Ud	iP		13 01 08.8	
		De	iP		13 01 26.7	
		Hokkaido, Japan region				
		(h = 130 km).				
"	18	Up	iP		13 07 48.2	D
			ipP		13 07 58.1	
					micr sec	
			P	Z'	0.1 0.9	
		Ki	iP		13 06 55.2	D
		(cont.)				

1977 Aug.	18	(cont.)				
		Ki	i		13 07 10.9	
					micr sec	
			P	Z'	0.1 1.0	
		Sk	iP		13 07 28.8	D
			i		13 07 35.2	
		Um	iP		13 07 20.9	D
			ipP		13 07 30.7	
		Ud	iP		13 07 49.7	D
			ipP		13 07 59.7	
		De	iP		13 08 11.2	D
			i		13 08 19.5	
		Aleutian Islands region.				
		h = 35 km (Up,Um,Ud).				
		m = 6.0 (Up,Ki).				
"	18	Ud	iP		14 24 19.4	
"	18	Sk	iPKPl		14 55 08.7	
		Um	iPKPl		14 55 02.2	
		Ud	iPKPl		14 55 14.3	
		De	iPKPl		14 55 22.8	
"	18	De	iP		16 40 06.2	
"	18	Up	iP		17 36 42.8	
			i		17 36 47.9	
		Sk	iP		17 37 18.9	
		Ud	iP		17 36 58.0	
			i		17 37 03.4	
		De	iP		17 36 40.7	
			i		17 36 46.6	
"	18	Up	iP		17 59 19.9	
		Ki	iP		17 59 00.5	
		Ud	iP		17 59 29.5	
		De	iP		17 59 36.1	
			i		17 59 49.1	
		Luzon, Philippine Islands				
		(h = N).				
"	18	Ud	iP		19 13 45.0	
		Andreanof Islands,				
		Aleutian Is. (h = N).				
"	18	Up	i(P)		20 30 28.9	
"	18	Sk	iP		21 31 11.0	
		Tibet (h = N).				
"	19	Up	iP		00 31 54.5	
		Sk	iP		00 31 59.7	
		Um	iP		00 31 41.6	
		Ud	iP		00 32 06.2	
		Philippine Islands region				
		(h = 35 km).				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 19 Up iPKPl 03 58 08.0
Um iPKPl 03 57 53.3
Ud iPKPl 03 58 07.1
i 03 58 08.9

" 19 Up iRg 04 01 43.1
Ud iSgl 04 02 41.0
East-central Sweden.
Near-surface event.

19 Sk iP 04 21 54.7
Central Italy (h = N).

" 19 Sk iP 05 21 54.7

" 19 Up iPP 05 27 09.5
i 05 27 27.7
micr sec
PP Z' 0.3 2.0
Sk i(PP) 05 27 06.2
iPP 05 27 37.6
Um iPP 05 27 02.8
Ud iP 05 22 54.4
i 05 23 11.8
i(PP) 05 27 21.0
iPP 05 27 38.0
De iPP 05 27 36.1
South of Sumbawa Island
(h = N).
m = 6.6 (Up,Ki).

" 19 Up iP 06 23 00.6 D
i 06 23 17.2
i(PP) 06 26 25.9
iPP 06 27 36.1
iSKS 06 33 59
iPS 06 36 39.3
i 06 36 57
micr sec
P Z' 0.5 1.6
i Z' 2.8 1.8
Mx E 620 18
Mx N 1360 26
Sk iP 06 23 09.7 D
i 06 23 23.7
i(PP) 06 27 34.7
iPP 06 27 40.5
Um iP 06 22 53.6 D
i 06 23 08.1
i(PP) 06 26 09.6
iPP 06 27 09.1
Ud i(PP) 06 26 30.0
i 06 27 06.8
iPP 06 27 53.6
iPS 06 37 09.3
(cont.)

1977
Aug. 19 (cont.)
Ud i 06 37 20.3
De iP 06 23 11.3 D
i 06 23 26.5
i(PP) 06 26 40.4
i 06 27 20.3
iPP 06 27 41.9
i 06 27 58.7
South of Sumbawa Islands
(h = N).
m = 7.8 (Up,Ki).
M = 8.5 (Up) from Wiechert records.
Double shock, small and large, about 15.6 s apart. Short- and long-period records reveal extremly clear PP-precursors (Meyer, K. 1979. Travel times, amplitudes and periods of precursors to PP at epicentral distances 97°-116°. Seismol. Inst., Uppsala, Rep. 3-79, 22 pp.)

" 19 Up iPP 07 02 11.7
Ud i(PP) 07 02 13.4
De iPP 07 02 41.6
South of Sumbawa Island
(h = N).

" 19 Ud iP 08 46 50.2

" 19 Ki iP 09 11 06.8
i 09 11 18.2
Sumba Island region (h = N).

" 19 Ki iP 10 08 35.1

" 19 Ki iP 10 41 45.5 C
Sumba Island region (h = N).

" 19 Ki iP 11 04 32.7 C
Sumba Island region (h = N).

" 19 Ki iP 11 47 25.2
i 11 47 35.4
South of Sumbawa Island
(h = N).

" 19 Ud iP 12 43 56.6

" 19 Up iP 13 37 43.9
iPP 13 42 07
micr sec
P Z' 0.1 1.5
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 19 (cont.)

Up			micr	sec
	Mx	E	2.2	23
	Mx	N	2.7	19
	Mx	Z	4.3	24
Ki	iP		13 37 33.6	
	i		13 37 34.7	
	ipP		13 37 45.4	
	i(PP)		13 41 37.8	
	iPP		13 41 51.7	
			micr	sec
	i	Z'	0.2	1.3
	Mx	E	2.0	16
	Mx	N	2.3	18
	Mx	Z	3.1	18
Sk	iP		13 37 52.2	
	ipP		13 38 03.1	
	i(PP)		13 41 58.6	
Um	iP		13 37 36.1	
	ipP		13 37 48.5	
	iPP		13 41 50.8	
Ud	iP		13 37 52.3	
	ipP		13 38 03.2	
	i(PP)		13 41 08.9	
	i		13 42 12.4	
	iPP		13 42 28.6	

Sumba Island region.
h = 40 km (Ki,Sk,Um,Ud).
m = 6.6, M = 5.9 (Up,Ki).

" 19 Ki iP 13 46 10.9
ipP 13 46 21.6
Ud ipP 13 46 39.1
Sumba Island region.
h = 35 km (Ki).

" 19 Ki iP 14 36 37.2
ipP 14 36 47.5
micr sec
pP Z' 0.1 1.0
Ud ipP 14 37 04.4
Sumba Island region.
h = 35 km (Ki).

" 19 Ud iP 14 53 53.6

" 19 Ki iP 15 07 58.7
Sumba Island region
(h = N).

" 19 Ki eP 15 26 11
South of Sumba Island
(h = N).

" 19 Ki iP 15 42 02.1
South of Sumbawa Island
(h = N).

1977
Aug. 19 Ki iP 16 05 22.1
ipP 16 05 33.3
Sumba Island region.
h = 35 km (Ki).

" 19 Ki iP 16 18 42.3
ipP 16 18 52.4
Sumba Island region.
h = 35 km (Ki).

" 19 Ki iP 16 36 28.9
ipP 16 36 40.2
Sumba Island region.
h = 40 km (Ki).

" 19 Ki iP 17 54 42.8
Ud iPP 17 59 36.0
South of Sumbawa Island
(h = N).

" 19 Up iP 18 06 48.8 C
i 18 07 06.9
micr sec
P Z' 0.2 1.1
Ki iP 18 06 14.5 C
i 18 06 32.8
micr sec
P Z' 0.1 1.0
Sk iP 18 06 22.5 C
Um iP 18 06 33.8 C
Ud iP 18 06 40.6 C
De iP 18 06 56.5 C
Southern Nevada.
m = 6.1 (Up,Ki).
Underground explosion.

" 19 Up iP 19 53 05
iPP 19 57 29
micr sec
Mx E 1.2 20
Mx N 2.0 22
Mx Z 1.8 22
Ki iP 19 52 56.7
micr sec
P Z' 0.1 1.0
Mx E 1.2 16
Mx N 1.2 16
Mx Z 1.2 16
Sk iPP 19 57 40.1
Um iPP 19 57 09.4
Ud iP 19 53 16.1
i(PP) 19 57 35.1
iPP 19 57 50.4
Sumba Island region (h = N).
M = 5.7 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977						
Aug.	19	Up	ipP		20 34	35.8
			i(PP)		20 38	38.3
					micr	sec
			pP	Z'	0.1	1.2
			Mx	E	1.2	21
			Mx	N	1.6	22
			Mx	Z	1.4	21
		Ki	iP		20 34	16.0
			ipP		20 34	28.1
					micr	sec
			P	Z'	0.1	1.2
			Mx	E	0.7	16
			Mx	N	0.7	16
			Mx	Z	1.2	16
		Sk	ipP		20 34	45.7
		Um	iP		20 34	18.2
		Ud	iP		20 34	34.1
			ipP		20 34	45.0
			i(PP)		20 37	59.3
			i		20 39	03.9
			iPP		20 39	19.4
		Sumba Island region.				
		h = 40 km (Ki,Ud).				
		m = 6.3, M = 5.5 (Up,Ki).				
"	19	Ki	iP		21 05	15.2
		Ud	iP		21 05	33.4
		South of Sumbawa Island				
		(h = N).				
"	19	Up			micr	sec
			Mx	E	1.0	18
			Mx	N	1.4	20
			Mx	Z	1.3	19
		Ki	iP		21 49	00.2
			i		21 49	01.9
					micr	sec
			i	Z'	0.1	1.2
			Mx	E	0.7	16
			Mx	N	0.8	17
			Mx	Z	1.2	16
		Sk	i		21 49	23.9
			ePP		21 53	47
		Um	iP		21 49	01.6
			i(PP)		21 53	11.3
			iPP		21 53	24.8
		Ud	iP		21 49	16.9
			i		21 49	19.5
			i		21 49	30.0
			i(PP)		21 52	34.4
		Sumba Island region (h = N).				
"	19	Ki	iP		22 18	44.1
		Sk	iP		22 19	18.7
		Um	iP		22 19	09.9
		Ud	iP		22 19	39.9

1977						
Aug.	20	Ud	iP		01 51	27.1
"	20	Up	iP		02 58	35.1
			ipP		02 58	39.3
			iPP		03 01	48.8
			iS		03 08	49
					micr	sec
			pP	Z'	0.2	1.1
			PP	Z'	0.3	2.0
			Mx	E	1.9	20
			Mx	N	1.6	22
			Mx	Z	4.9	21
		Ki	eP		02 58	26
			ipP		02 58	30.4
			i		02 58	41.4
			iPP		03 01	33.5
			iS		03 08	36
					micr	sec
			pP	Z'	0.4	1.9
			PP	Z'	0.3	2.0
			Mx	E	2.1	18
			Mx	N	2.5	20
		Sk	iP		02 58	16.4
			ipP		02 58	20.4
			i		02 58	29.5
		Um	iP		02 58	34.3
			ipP		02 58	38.3
			i		02 58	47.6
			iS		03 08	53
		Ud	iP		02 58	25.0
			ipP		02 58	29.0
			i		02 58	37.8
		De	iP		02 58	31.2
			ipP		02 58	35.2
		Caribbean Sea.				
		h = 15 km (Up,Ki,Sk,Um,Ud,De).				
		m = 6.4, M = 5.6 (Up,Ki).				
"	20	Up	iP		04 04	15.7
			ipP		04 04	26.0
			iPP		04 07	29.1
			iS		04 14	31
					micr	sec
			P	Z'	0.2	1.1
			pP	Z'	0.6	1.2
			PP	Z'	0.4	1.8
			Mx	E	3.0	25
			Mx	N	2.9	23
			Mx	Z	5.9	25
		Ki	iP		04 04	08.2
			i		04 04	12.7
			ipP		04 04	17.6
			iPP		04 07	14.6
			iS		04 14	14
					micr	sec
			P	Z'	0.1	1.5

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 20 (cont.)

Ki			micr	sec
	i	Z'	0.1	1.1
	pP	Z'	0.5	1.4
	PP	Z'	0.4	2.2
	Mx	E	3.7	20
	Mx	N	2.4	17
Sk	iP		04 03 57.2	
	i		04 04 01.1	
	ipP		04 04 07.4	
Um	iP		04 04 14.6	
	ipP		04 04 25.5	
	iPP		04 07 32.8	
	iS		04 14 30	
Ud	iP		04 04 05.2	
	ipP		04 04 15.7	
De	iP		04 04 11.8	
	i		04 04 14.0	
	ipP		04 04 21.9	

Caribbean Sea.
h = 35 km (Up,Ki,Sk,Um,Ud,De).
m = 6.5, M = 5.8 (Up,Ki).

" 20

Ki	iP		04 12 39.3	
	ipP		04 12 49.7	
			micr	sec
	P	Z'	0.1	1.3
Sk	iP		04 12 56.8	
Ud	iP		04 12 56.1	
	ipP		04 13 07.9	
	i(PP)		04 16 36.7	
	i		04 17 10.6	
	iPP		04 17 28.6	

Sumba Island region.
h = 35 km (Ki,Ud).

" 20

Ki	iP		04 34 27.4
	ePP		04 38 38
Sk	iP		04 34 45.2
	iPP		04 39 20.9
Um	iPP		04 38 48.1
Ud	eP		04 34 45
	iPP		04 39 14.8

South of Sumbawa Island
(h = N).

" 20 Ki eP 05 17 52
South of Sumba Island
(h = N).

" 20 Ki iP 07 26 01.5
South of Sumba Island
(h = N).

" 20 Up iP 07 38 49.8
(cont.)

1977
Aug. 20 (cont.)

Ki	iP		07 38 10.7
Sk	eP		07 38 45
Um	iP		07 38 27.3
Ud	iP		07 38 58.1

Sea of Japan (h = 430 km).

" 20

Up	el		09 36 04	
	iPP		09 40 29.5	
			micr	sec
	el	Z'	0.1	1.2
	PP	Z'	0.1	1.3
	Mx	E	3.1	23
	Mx	N	3.8	23
	Mx	Z	5.7	24
Ki	iP		09 35 48.5	
	il		09 35 53.9	
	i		09 35 55.8	
	iPP		09 40 14.5	
			micr	sec
	il	Z'	0.1	1.0
	i	Z'	0.2	1.2
	PP	Z'	0.1	1.5
	Mx	E	1.7	19
	Mx	N	2.0	18
Sk	il		09 36 11.1	
	i(PP)		09 39 16.5	
	i		09 40 34.1	
	iPP		09 40 51.6	
Um	il		09 35 56.9	
	i(PP)		09 38 37.9	
	i		09 40 05.8	
	iPP		09 40 18.2	
Ud	il		09 36 10.3	
	i		09 36 13.8	
	i(PP)		09 39 24.9	
	i		09 40 30.2	

South of Sumba Island
(h = N).
m = 6.5, M = 5.9 (Up,Ki).
PP-arrivals are some s late,
and are better related to
il (el) phases than to P.

" 20 Ud iP 11 19 12.8

" 20 Ki iP 11 31 23.3
South of Sumba Island (h = N).

" 20

Up	ipP	12 33 33.1
Sk	eP	12 33 05
Um	iP	12 33 22.9
	ipP	12 33 32.1
Ud	iP	12 33 12.9

Caribbean Sea.
h = 30 km (Um).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977

Aug.	20	Up	iPKP	12 40 47.0	
		Ki	iPKP	12 40 33.4	C
		Sk	iPKP	12 40 44.3	
		Um	iPKP	12 40 39.4	C
		Ud	iPKP	12 40 49.7	C
		De	iPKP	12 40 55.9	
		Santa Cruz Islands (h = 240 km).			
"	20	Ki	iP	12 50 04.5	
		South of Sumba Island (h = N).			
"	20	Up	iP	15 37 24.4	
		Um	iP	15 37 02.7	
		Near east coast of Honshu, Japan (h = 80 km).			
"	20	Ki	iP	19 07 23.0	
		Um	iP	19 07 22.2	
		Ud	iP	19 07 08.3	
		De	iP	19 07 05.7	
		Peru-Brazil border region (h = 160 km).			
"	20	Up	iP	19 30 40.0	
			ipP	19 30 54.1	
			i(PP)	19 33 52.1	
			iPP	19 35 05.9	
				micr	sec
			pP	Z' 0.1	1.4
			PP	Z' 0.1	1.5
			Mx	E 8.4	25
			Mx	N 14	20
			Mx	Z 18	23
		Ki	iP	19 30 30.9	
			ipP	19 30 46.2	
			e(PP)	19 33 25	
			iPP	19 34 42.0	
				micr	sec
			P	Z' 0.2	1.4
			pP	Z' 0.1	1.0
			PP	Z' 0.1	1.4
			Mx	E 6.5	17
			Mx	N 7.2	16
			Mx	Z 11	16
		Sk	i(PP)	19 34 05.9	
			iPP	19 35 14.4	
		Um	iP	19 30 32.6	
			i(PP)	19 33 34.2	
			iPP	19 34 47.2	
		Ud	iP	19 30 48.8	
			ipP	19 31 02.8	
			i(PP)	19 34 00.4	
			i	19 34 26.0	
			iPP	19 35 16.1	
		(cont.)			

1977

Aug.	20	(cont.)		
		De	ipP	19 31 04.2
			i(PP)	19 34 29.0
			iPP	19 35 23.6
		South of Sumba Island. h = 50 km (Up,Ki,Ud). m = 6.5, M = 6.5 (Up,Ki).		
"	20	Ki	iP	19 57 57.3
		Sumba Island region (h = N).		
"	20	Ki	iP	21 45 32.9
		South of Sumbawa Island (h = N).		
"	20	Ki	iP	21 46 24.2
			i	21 46 35.3
"	20	Ki	iP	21 47 06.9
"	20	Up	iP	22 07 03.9
			iPn	22 08 11.9
		Ki	iP	22 06 12.4
			iPn	22 06 46.7
			i	22 06 59.7
		Sk	iP	22 06 59.0
		Um	iP	22 06 33.7
			iPP	22 07 34.3
		Ud	iP	22 07 14.3
			iPn	22 08 28.0
			iPP	22 08 37.1
		De	iP	22 07 35.4
			iPn	22 08 59.5
		Central Siberia. Underground explosion.		
"	21	Ud	iPKPl	00 29 04.1
		De	iPKPl	00 29 15.1
"	21	De	iPKPl	00 34 47.5
		Tonga Islands region (h = N).		
"	21	Ki	iP	02 03 43.8
			ipP	02 03 56.1
		South of Sumba Island. h = 40 km (Ki).		
"	21	Up	iRg	02 15 46.4
		Ud	iRg	02 15 45.7
		Central Sweden. Near-surface event.		
"	21	Up	ePP	02 30 55
		Ki	iP	02 26 23.8
			ipP	02 26 35.1
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 21 (cont.)

Ki			micr	sec	
	P	Z'	0.1	1.0	
Sk	e		02 26	48	
	iPP		02 31	06.2	
Ud	iP		02 26	41.5	
	ipP		02 26	53.7	
	i(PP)		02 29	56.0	
	iPP		02 31	15.4	

South of Sumba Island.
h = 40 km (Ki,Ud).

" 21

Ki	iP		02 35	31.9	
	ipP		02 35	43.2	

Sumba Island region.
h = 40 km (Ki).

" 21

Up	iP		03 07	12.8	
			micr	sec	
	P	Z'	0.1	1.2	
Ki	iP		03 07	02.8	
Sk	eP		03 07	27	
Um	iP		03 07	02.5	
Ud	iP		03 07	26.5	

Tibet (h = N).

" 21

Ud	iP		03 46	40.2	

" 21

Up	iP		03 51	37.4	
Ki	iP		03 51	03.0	
Sk	eP		03 51	32	
Um	iP		03 51	17.2	
Ud	iP		03 51	43.5	

South of Honshu, Japan
(h = N).

" 21

Up	iP		04 25	24.1	
Um	iP		04 25	06.9	
Ud	iP		04 25	31.1	

" 21

Ud	iP		05 03	48.4	

Samoa Islands region (h = N).

" 21

Up	iP		05 31	08.4	C
	i		05 31	25.7	
	iPP		05 33	53.2	
	iS		05 40	39	
			micr	sec	
	P	Z'	0.4	1.6	
	PP	Z'	0.1	1.5	
	Mx	E	1.0	17	
	Mx	N	0.9	16	
	Mx	Z	1.9	16	
Ki	iP		05 30	30.3	C
	iPP		05 32	55.6	

(cont.)

1977
Aug. 21 (cont.)

Ki			micr	sec	
	P	Z'	0.1	1.3	
	PP	Z'	0.1	1.5	
	Mx	E	2.2	17	
	Mx	N	2.4	16	
	Mx	Z	3.1	18	
Sk	iP		05 31	02.7	C
	iPP		05 33	40.2	
	i		05 33	46.3	
Um	iP		05 30	47.2	C
	iPP		05 33	19.9	
Ud	iP		05 31	15.8	C
	i		05 31	32.4	
	iPP		05 33	59.8	
De	iP		05 31	30.3	C
	iPP		05 34	17.3	

Near east coast of Honshu,
Japan (h = 40 km).
m = 6.0, M = 5.5 (Up,Ki).

" 21

Up	eP		07 04	39	
Ki	iP		07 04	30.1	
			micr	sec	
	P	Z'	0.1	1.0	
Sk	eP		07 04	47	
Um	iP		07 04	31.2	
Ud	iP		07 04	47.3	
	ePP		07 09	18	

South of Sumbawa Island
(h = N).

" 21

Ki	iP		08 05	36.6	

South of Sumba Island (h = N).

" 21

Up	iP		08 22	50.5	
Ud	iP		08 23	07.2	
De	iP		08 23	10.5	

" 21

Ki	eP		09 43	38	
Ud	iP		09 43	56.1	
	iPP		09 48	24.7	

South of Sumba Island (h = N).

" 21

Ud	iP		09 57	56.6	

" 21

Ki	iP		10 53	54.7	
	ipP		10 54	05.9	
			micr	sec	
	pP	Z'	0.1	1.0	
Ud	ipP		10 54	22.3	

South of Sumba Island.
h = 35 km (Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	21	Up	i		11 47 10.1
		Sk	i		11 46 31.5
		Ud	iP		11 46 16.7
		Near coast of Guatemala (h = 80 km).			
"	21	Um	iPKPl		11 47 20.2
		Ud	iPKPl		11 47 32.5
"	21	Up	iP		15 50 57.1
		Ki	iP		15 50 48.0
					micr sec
			P	Z'	0.1 1.0
		Sk	eP		15 51 05
			ePP		15 55 35
		Um	eP		15 50 48
			i		15 50 58.7
		Ud	iP		15 51 05.0
			i(PP)		15 54 12.8
			iPP		15 55 36.8
		South of Sumba Island (h = N).			
"	21	Up	iP		16 04 36.7
		Um	iP		16 04 25.8
		Ud	iP		16 04 49.1
		Tibet (h = N).			
"	21	Um	iP		16 17 28.3
		Ud	iP		16 17 59.6
		Near east coast of Honshu, Japan (h = N).			
"	21	Up	ePKPl		16 59 23
			i		16 59 34.8
		Sk	iPKPl		16 59 21.3
			i		16 59 27.6
		Um	iPKPl		16 59 10.8
			i		16 59 22.2
		Ud	iPKPl		16 59 24.4
			i		16 59 36.5
"	21	Up	iSn		17 27 45.1
			iSgl		17 27 56.4
		Sk	iSn		17 26 59.1
		Ud	iPgl		17 26 07.8
			iSn		17 26 44.0
			iSgl		17 26 50.3
		De	iSgl		17 27 58.5
		Southern Norway, 60.6°N, 7.2°E.			
		Origin time = 17 25 14.			
		M_L = 2.5 (Ud).			
		By combination with Bergen and Kongsberg readings.			

1977 Aug.	21	Ud	iP		19 50 42.2
"	21	Up	iPKP		19 54 40.8
			iPKPl		19 54 44.5
			iPKP2		19 54 47.7
			ipPKPl		19 55 00.8
					micr sec
			PKPl	Z'	0.2 0.9
		Ki	iPKPl		19 54 22.9
		Sk	iPKPl		19 54 37.8 C
			ipPKPl		19 54 54.5
		Um	iPKPl		19 54 32.4 C
			ipPKPl		19 54 49.0
		Ud	iPKP		19 54 42.1
			iPKPl		19 54 46.1
			iPKP2		19 54 49.5
			ipPKPl		19 55 02.2
		De	iPKP		19 54 46.7
			iPKPl		19 54 54.7
			i		19 55 07.2
		Kermadec Islands. h = 55 km (Up,Sk,Um,Ud).			
"	21	Up			micr sec
			Mx	N	1.4 20
			Mx	Z	1.0 23
		Ki	iP		20 43 39.7
					micr sec
			Mx	E	0.7 16
			Mx	N	1.0 16
		Ud	iP		20 43 56.8
			iPP		20 48 27.2
		Sumba Island region (h = N). M = 5.5 (Up,Ki).			
"	21	Ki	iP		20 51 43.4
					micr sec
			P	Z'	0.1 1.0
		Um	iPP		20 55 58.2
		Ud	iP		20 52 01.2
		Sumba Island region (h = N).			
"	21	Ud	iP		21 06 18.8
		Andreanof Islands, Aleutian Is. (h = N).			
"	21	Up	iPKPl		23 28 32.1
		Ud	iPKPl		23 28 33.8
"	21	Ud	iP		23 36 56.6
"	22	Up	iPKPl		03 34 47.6
		Ud	iPKPl		03 34 48.7
		South of Fiji Islands (h = 160 km).			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	22	Ud	eP	04 42 13
"	22	Up	iP	05 35 51.7
		Ud	iP	05 35 56.0
		Kuril Islands (h = 45 km).		
"	22	Ki	iP	07 24 51.7
		South of Sumba Island (h = N).		
"	22	Up	iP	09 15 10.6
		Ki	eP	09 14 40
		Sk	iP	09 15 10.7
		Um	iP	09 14 52.4
		Ud	iP	09 15 19.3
		De	eP	09 15 30
		Ryukyu Islands (h = 90 km).		
"	22	Up	iP	14 22 16.0
		Ud	iP	14 22 34.4
"	22	Ud	iP	17 58 00.7
"	22	Up	iP	18 06 22.4
			il	18 06 25.9
			ipP	18 06 42.8
			isP	18 06 53.7
			iPP	18 08 01.7
		Ki	iP	18 06 29.3
			iPP	18 08 08.5
		Sk	iP	18 06 47.3
			ipP	18 07 08.8
			iPP	18 08 32.1
		Um	iP	18 06 20.2
			ipP	18 06 40.8
			iPP	18 07 57.9
		Ud	iP	18 06 38.2
			il	18 06 42.1
			ipP	18 06 59.6
			isP	18 07 10.2
			iPP	18 08 19.8
		De	il	18 06 38.4
			ipP	18 06 56.2
		Afghanistan-USSR border region. h = 90 km (Up,Sk,Um,Ud).		
"	22	Um	iP	18 34 43.9
		Ud	iP	18 35 16.2
"	22	Up	iPKP	22 09 37.8
		Ki	iPKP	22 09 52.8
		Um	iPKP	22 09 45.7
		Ud	iPKP	22 09 35.7
		South Sandwich Islands region (h = 120 km).		

1977 Aug.	23	Ki	iP	00 17 43.3
		Ud	iP	00 18 08.7
		Philippine Islands region (h = 80 km).		
"	23	Ki	eP	03 28 41
"	23	Up	iP	06 17 08.0
		Ki	eP	06 16 48
		Sk	iP	06 17 10.5
		Um	iP	06 16 56.4
		Mindanao, Philippine Islands (h = 80 km).		
"	23	Up	iPKPl	08 26 41.8
				micr sec
			PKPl Z'	0.1 1.0
		Ki	ePKP	08 26 29
		Um	iPKPl	08 26 31.0
		Ud	iPKPl	08 26 43.4
		De	iPKPl	08 26 54.2
		South of Fiji Islands (h = 50 km).		
"	23	Ud	iP	08 45 59.1
		Mariana Islands (h = 150 km).		
"	23	Up	iPP	10 42 36.9
		Ki	eP	10 38 08
		Sk	iPP	10 42 58.3
		Um	ePP	10 42 27
		Ud	iPP	10 42 55.6
		De	iPP	10 43 00.2
		South of Sumbawa Island (h = N).		
"	23	Ud	iP	10 58 36.5
"	23	Up	iPgl	12 37 21.9
			iSgl	12 37 27.3
			iRg	12 37 29.3
		Ud	iSgl	12 38 23.4
		De	e(Sgl)	12 39 14
		East-central Sweden. Near-surface event.		
"	23	Up	iP	12 48 11.3
			iPcP	12 48 31.1
		Ki	iP	12 47 28.4
			iPP	12 49 47.8
		Ud	iP	12 48 17.5
		De	iP	12 48 33.9
		Off east coast of Honshu, Japan (h = 15 km).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeåa, Ud = Uddeholm, De = Delary

1977 Aug.	23	Up	iSgl	13 15 47.3
			iRg	13 16 02.9
		Ud	iSgl	13 16 46.4
		Northern Baltic Sea. Near-surface event, probably underwater explosion.		
"	23	Ud	iP	14 22 57.0
"	23	Up	iP	14 47 17.8
				micr sec
			P Z'	0.1 1.2
		Ki	eP	14 47 08
		Sk	eP	14 47 32
		Ud	iP	14 47 31.4
		De	eP	14 47 34
		Tibet (h = 35 km).		
"	23	Ud	i(Sgl)	14 58 53.9
			iRg	14 59 56.5
		Regional, near-surface event.		
"	23	Ud	i(P)	15 02 14.7
"	23	Ki	iP	15 56 59.2
		South of Sumba Island (h = N).		
"	23	Up	iP	17 10 53.9
		Ki	eP	17 10 36
		Um	iP	17 10 41.5
		Ud	iP	17 11 02.9
			i	17 11 32.6
"	23	Up	iP	19 29 28.0
		Ki	iP	19 29 09.6
		Sk	eP	19 29 38
		Um	iP	19 29 15.8
		Ud	iP	19 29 36.4
"	23	Ki	iP	23 20 11.1
		South of Sumbawa Island (h = N).		
"	24	Up	iP	01 38 52.3
		Ki	eP	01 38 42
		Sk	iP	01 39 07.4
		Um	iP	01 38 41.9
		Ud	iP	01 39 04.9
		Tibet (h = N).		
"	24	Ki	iP	02 22 10.9
		Ud	i	02 22 40.7
		South of Sumbawa Island (h = N).		

1977 Aug.	24	Ki	iP	02 35 39.8
		South of Sumba Island (h = N).		
"	24	Up	iP	03 56 40.1 C
				micr sec
			P Z'	0.1 1.3
		Ki	iP	03 56 10.7
		Um	iP	03 56 21.6
		Ud	iP	03 56 48.4 C
		De	iP	03 56 59.6
		Ryukyu Islands (h = N).		
"	24	Ud	iPP	10 00 48.2
		South of Sumbawa Island (h = N).		
"	24	Ud	iP	10 21 45.4
		De	iP	10 21 38.5
"	24	Up	iP	10 22 49.2
			i	10 23 05.5
		Ki	eP	10 22 07
		Sk	iP	10 22 47.5
			i	10 24 52.5
		Um	iP	10 22 26.7
		Ud	iP	10 23 00.0
			i	10 23 12.7
		De	iP	10 23 16.9
		Lake Baikal region (h = 30 km).		
"	24	Sk	iSgl	14 21 13.8
		Ud	iSgl	14 20 13.5
"	24	Up	iSgl	14 27 17.5
		Sk	iSgl	14 26 37.0
		Ud	iSgl	14 26 18.4
		Coast of Norway, near Bergen, near 60°N, 5°E. Origin time = 14 24 00. M_L = 2.2 (Ud). By combination with Bergen and Kongsberg readings.		
"	24	Ki	iP	18 37 53.9
		Sk	iP	18 38 14.4
"	24	Ki	iP	19 14 07.4
			ipP	19 14 17.3
		Ud	ipP	19 14 34.5
		South of Sumbawa Island. h = 35 km (Ki).		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Aug.	24	Ud	iSn	19 54 02.6
			iSgl	19 54 10.2
		Southern Norway. By combination with Bergen readings.		
"	24	Ud	iP	20 12 11.0
"	25	Ki	iPKP	01 41 21.8
		Sk	iPKP	01 41 32.5
		Ud	iPKP	01 41 36.9
		New Hebrides Islands (h = 250 km).		
"	25	Ud	iP	01 57 31.8
		Turkey (h = 10 km).		
"	25	Ki	i	03 09 56.7
		Ud	iP	03 08 48.4
			i	03 08 53.5
		De	iP	03 08 19.7
		Eastern Mediterranean Sea (h = 10 km).		
"	25	Ki	iPKP	07 54 35.4
		Um	iPKP	07 54 39.5
		Ud	iPKP	07 54 49.7
		De	iPKP	07 54 57.7
		Fiji Islands region (h = N).		
"	25	Up	iP	08 45 47.8
		Um	iP	08 45 45.7
		Ud	iP	08 46 03.3
		De	iP	08 46 00.7
		Afghanistan-USSR border region (h = 240 km).		
"	25	Up	iP	10 01 32.0
		Ud	iP	10 01 43.1
			i	10 01 44.8
"	25	Ud	iSn	11 18 16.3
			iSgl	11 18 20.9
		Southern Norway. By combination with Bergen readings.		
"	25	Ud	iRg	11 30 34.5
		Regional, near-surface event.		
"	25	Up	iPKPl	17 58 09.5
		Ud	iPKPl	17 58 12.0
"	25	Up	iP	18 19 17.2
			iPP	18 23 37.2
		(cont.)		

1977					
Aug.	25	(cont.)			
		Up	iPS		18 32 47
					micr sec
			PP	Z'	0.2 1.5
			Mx	E	3.8 22
			Mx	N	7.9 22
			Mx	Z	9.5 23
		Ki	iP		18 19 07.2
			i		18 19 22.9
					micr sec
			P	Z'	0.1 0.8
			i	Z'	0.2 1.0
			Mx	E	5.9 16
			Mx	N	4.2 17
			Mx	Z	5.8 16
		Sk	iP		18 19 27.0
			i		18 19 38.7
			i(PP)		18 23 42.3
			iPP		18 23 55.2
		Um	iP		18 19 09.9
			i		18 19 17.0
			iPP		18 23 32.5
		Ud	iP		18 19 24.8
			i		18 19 35.4
			i(PP)		18 22 35.1
			i		18 23 36.0
			iPP		18 23 57.6
		De	eP		18 19 29
			i(PP)		18 23 38.3
			iPP		18 23 58.9
		Sumba Island region (h = N). m = 6.7, M = 6.3 (Up,Ki).			
"	25	Ki	iP		18 23 06.5
			i		18 23 23.2
					micr sec
			P	Z'	0.1 1.2
			i	Z'	0.1 1.6
		Um	i(PP)		18 27 15.2
			iPP		18 27 28.9
		Ud	iPP		18 27 48.4
		Sumba Island region (h = N).			
"	25	Ki	eP		19 38 58
		Sk	iP		19 38 12.7
		Um	iP		19 38 19.9
			i		19 38 26.2
		Ud	i		19 37 40.5
		Central Italy (h = 10 km).			
"	25	Sk	iP		20 47 52.4
		Um	iP		20 47 58.9
		Central Italy (h = 10 km).			
"	25	Sk	iP		22 39 03.9
			i		22 40 52.4
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 25 (cont.)

Sk	iS		22 40 55.7
Um	iP		22 39 33.6
	iS		22 41 42.0
	i		22 42 11.8
Ud	iP		22 39 49.0
	i		22 42 55.6

Norwegian Sea, approximate location 73°N, 1°W.
Origin time = 22 36 40.
By combination with Tromsoe readings.

" 25	Up	iP		23 00 07.5
			micr	sec
		P	Z' 0.1	1.3
	Ki	iP		22 59 56.9
	Sk	eP		23 00 21
	Um	iP		22 59 57.9
	Ud	iP		23 00 22.0

Tibet (h = N).

" 25	Ud	iP	23 02 23.4

Kyusku, Japan (h = 140 km).

" 25	Ud	iPKP1	23 20 36.4
	De	iPKP1	23 20 46.8
" 25	Up	iSKP	24 02 33.7
	Ki	iPKP	23 58 52.3
	Sk	iPKP	23 59 04.6
	Um	iPKP	23 58 58.5
	Ud	iSKP1	24 02 31.0

New Hebrides Islands (h = 35 km).

" 26	Up	iPKP1	00 09 30.0
		i	00 09 33.9
		iPKP2	00 09 37.2
	Ki	iPKP1	00 09 09.5
	Sk	iPKP1	00 09 23.4
		iPKP2	00 09 27.1
	Um	iPKP1	00 09 17.9
	Ud	iPKP1	00 09 31.0
		iPKP2	00 09 40.4
	De	iPKP1	00 09 40.3
		iPKP2	00 09 53.7

Kermadec Islands (h = 60 km).

" 26	Um	iP	03 06 04.9
" 26	Up	iP	04 58 45.1
		ipP	04 59 27.0
	Ki	iP	04 58 53.5
		ipP	04 59 35.7
	Um	iP	04 58 43.2

(cont.)

1977
Aug. 26 (cont.)

Ud	iP		04 59 01.3
	ipP		04 59 43.1
De	iP		04 58 59.1

Afghanistan-USSR border region.
h = 200 km (Up,Ki,Ud).

" 26	Ki	iP	05 50 51.8
		i	05 51 04.4
	Sk	iP	05 51 35.6
		i	05 51 38.2
	Um	iP	05 51 40.5
		i	05 51 47.4
	Ud	iP	05 52 19.3
		i	05 52 25.0
	De	iP	05 53 01.4
" 26	Up	iP	07 26 42.2
	Ki	iP	07 25 48.6
	Um	i	07 26 14.5
	Ud	iP	07 26 43.3

Rat Islands, Aleutian Islands (h = 35 km).

" 26	Up	iPP		08 45 07.5
			micr	sec
		Mx	E 1.9	20
		Mx	N 3.8	21
		Mx	Z 2.8	19
	Ki	iP		08 40 33.3
		i		08 40 39.2
			micr	sec
		P	Z' 0.1	1.0
		i	Z' 0.2	1.7
		Mx	E 1.2	16
		Mx	N 1.9	17
		Mx	Z 1.2	18
	Ud	iP		08 40 49.8
		i		08 40 52.0
		i		08 45 37.3

Sumba Island region (h = N).
M = 5.9 (Up,Ki).

" 26	Up	iP	09 52 01.8
	Ud	iP	09 52 05.9
" 26	Up	iPKP	20 08 53.1
		i	20 08 57.7
		i	20 09 14.9
		iPP	20 10 30.5
		i	20 12 32.4
		iPKKP	20 19 01.2
			micr sec
		i	Z' 0.2 0.9
		PP	Z' 3.0 3.0

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 26 (cont.)

Up			micr	sec
	Mx	E	15	20
	Mx	N	21	20
	Mx	Z	36	21
Ki	iPKP		20 09 07.5	
	i		20 09 13.7	
	i		20 09 34.4	
	iPP		20 11 23.6	
			micr	sec
	i	Z'	0.6	1.6
	PP	Z'	1.0	2.5
	Mx	E	24	19
	Mx	N	43	18
	Mx	Z	38	18
Sk	ePKP		20 09 00	
	i		20 09 01.5	
	i		20 09 20.3	
	iPP		20 10 57.5	
Um	iPKP		20 09 00.4	
	i		20 09 04.3	
	i		20 09 21.0	
	iPP		20 11 03.4	
Ud	iPKP		20 08 53.5	
	i		20 08 56.3	
	i		20 09 05.5	
	iPP		20 10 29.0	
	i		20 10 39.5	
	i		20 18 53.1	
	iPKKP		20 19 02.2	
De	iPKP		20 08 47.4	
	i		20 08 50.6	
	i		20 09 11.9	
	iPP		20 10 02.1	
	i		20 10 18.6	

Southwestern Atlantic Ocean
(h = N).
m = 7.4, M = 7.1 (Up,Ki).

" 26	Ki	iP	20 47 59.9	
	Ud	iP	20 48 56.9	
" 26	Up	iP	23 08 01.9	
	Ki	iP	23 07 48.3	
			micr	sec
		P Z'	0.1	1.0
	Sk	iP	23 08 08.6	
	Um	iP	23 07 52.7	
	Ud	iP	23 08 09.7	
	De	iP	23 08 15.2	

Northern Sulawesi
(h = 140 km).

" 27	Ud	iP	00 23 11.0
" 27	Ud	iP	01 17 52.7

1977
Aug. 27

Up	iPl		07 26 33	
	i		07 26 47.8	
	i(PP)		07 29 50.1	
	iPP		07 30 56.7	
			micr	sec
	(PP)	Z'	0.2	1.7
	PP	Z'	0.5	1.5
	Mx	E	17	24
	Mx	N	42	22
	Mx	Z	34	24
Ki	iPl		07 26 18.5	
	iP2		07 26 24.4	
	i(PP)		07 29 38.4	
	iPP		07 30 44.5	
	iPKKP		07 42 20.6	
			micr	sec
	P2	Z'	0.3	1.5
	(PP)	Z'	0.8	2.5
	PP	Z'	1.0	2.4
	Mx	E	28	18
	Mx	N	18	18
	Mx	Z	28	17
Sk	iP2		07 26 43.8	
	e(PP)		07 30 23	
	iPP		07 31 14.5	
	iPKKP		07 42 10.0	
	i		07 42 23.9	
Um	iPl		07 26 23.8	
	iP2		07 26 27.8	
	i		07 26 38.6	
	i(PP)		07 29 50.0	
	iPP		07 30 40.7	
	ePKKP		07 42 19	
Ud	ePl		07 26 41	
	iP2		07 26 45.0	
	i(PP)		07 30 09.1	
	iPP		07 31 06.1	
	i		07 42 26.0	
De	iP2		07 26 49.4	
	i		07 27 00.5	
	i(PP)		07 30 18.9	
	iPP		07 31 15.6	
	i		07 42 19.4	
	i		07 43 55.7	

Timor (h = 25 km).
m = 6.9, M = 6.9 (Up,Ki).

" 27	Up	iSgl	16 16 19.5	
	Sk	iSgl	16 17 13.8	
	Ud	ePgl	16 15 15	
		i	16 15 18.3	
		iSgl	16 15 31.3	
	De	iSgl	16 16 14.3	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 27 (cont.)
Dalsland, Sweden,
59.0°N, 12.3°E.
Origin time = 16 14 54.
M_L = 2.3 (Ud,De).
Felt.
By combination with
Kongsberg reading.

" 27 Ki iP 17 41 06.3
South of Sumbawa Island
(h = N).

" 27 Up iP 19 09 11.2
Ki iP 19 08 36.7
Sk eP 19 09 07
Um iP 19 08 49.5
Ud iP 19 09 16.9
South of Honshu, Japan
(h = N).

" 28 Sk iP 01 51 03.4
Tibet (h = N).

" 28 Up iP 03 47 40.8
Ud iP 03 47 50.3

" 28 Ki iP 04 11 16.7
South of Sumba Island
(h = N).

" 28 Ud iPKP 05 37 38.4
De iPKP 05 37 51.0

" 28 Up iP 09 50 14.2
i 09 50 24.0
i 09 51 20.4
iS 09 54 18.5
micr sec
P Z' 0.4 1.4
Mx E 5.1 15
Mx N 4.2 14
Mx Z 6.0 13
Ki iP 09 51 27.7
i 09 52 39.5
micr sec
P Z' 0.1 1.5
Mx E 4.0 14
Mx N 4.1 16
Mx Z 4.2 13
Sk eP 09 50 42
i 09 50 44.0
i 09 50 55.5
iPP 09 51 20.1
Um iP 09 50 52.9
(cont.)

1977
Aug. 28 (cont.)
Um iS 09 55 27
Ud iP 09 50 10.7
De iP 09 49 34.7
i 09 49 44.3
Western Mediterranean Sea
(h = 10 km).
m = 5.7, M = 5.3 (Up,Ki).

" 28 Ud iP 11 14 30.4

" 28 Ud iP 12 12 28.6

" 28 Ki iP 13 39 03.8
Um iP 13 39 18.5
Ud iP 13 39 45.9

" 28 Up iPKPl 14 31 09.0
micr sec
PKPl Z' 0.1 0.8
Ki ePKP 14 30 50
Sk iPKPl 14 31 01.1
i 14 31 09.2
Um iPKPl 14 30 55.9
Ud iPKPl 14 31 10.3
De iPKPl 14 31 19.6
i 14 31 27.8
Kermadec Islands (h = 45 km).

" 28 Ud eP 14 46 01

" 28 Up iPKPl 15 23 10.7
i 15 23 49.8
Sk iPKPl 15 23 02.2
i 15 23 42.0
Um iPKPl 15 22 57.9
Ud iPKPl 15 23 12.2
i 15 23 51.3
De iPKPl 15 23 22.0
i 15 24 13.0
Kermadec Islands (h = 45 km).

" 28 Up iPKPl 16 59 06.2
Sk iPKPl 16 58 58.5
Um iPKPl 16 58 53.5
Ud iPKPl 16 59 08.0
De iPKPl 16 59 16.9
Kermadec Islands (h = 45 km).

" 28 Up iP 23 58 09.1
i 23 58 12.6
i 23 58 24.8
micr sec
i Z' 0.1 1.5
Ki iP 23 58 43.5
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 28 (cont.)

Ki	i		23 58 47.5	
Sk	eP		23 58 43	
	i		23 58 47.2	
Um	iP		23 58 21.3	
	i		23 58 25.3	
Ud	iP		23 58 24.5	
	i		23 58 28.6	
	iPP		23 59 58.1	
De	iP		23 58 08.4	

Southern Iran (h = 45 km).
Double P onsets, approximately 4 s apart, at Up,Ki,Sk,Um and Ud.

" 29

Ki	eP		06 53 55	

South of Sumba Island (h = N).

" 29

Ud	iP		09 05 44.6	
De	iP		09 06 04.4	

" 29

Um	iPKP		12 51 48.0	
Ud	iPKP		12 51 33.9	

Southwestern Atlantic Ocean (h = N).

" 29

Up	iP		14 35 55.8		C
	i		14 35 57.7		
	iS		14 46 04		
			micr	sec	
	P	Z'	0.2	0.8	
	i	Z'	1.0	1.1	
	Mx	E	7.1	17	
	Mx	N	28	16	
	Mx	Z	33	24	
Ki	iP		14 35 36.3		C
	i		14 35 38.2		
	iPP		14 38 32.7		
	iS		14 45 25		
			micr	sec	
	P	Z'	0.2	1.1	
	i	Z'	0.6	1.1	
	Mx	E	17	15	
	Mx	N	37	17	
	Mx	Z	12	13	
Sk	iP		14 36 01.0		C
	i		14 36 02.5		
Um	iP		14 35 42.8		C
	i		14 35 44.7		
	iS		14 45 36		
Ud	iP		14 36 05.1		C
	i		14 36 06.8		
De	iP		14 36 11.6		C
	i		14 36 13.5		

(cont.)

1977
Aug. 29 (cont.)

De	iPP	14 39 21.2

Philippine Islands region (h = 10 km).
m = 6.7, M = 6.8 (Up,Ki).
Double P, in average 1.8 s apart. The second, larger onset interpreted as pP would yield h = 5 km.

" 29

Up	iP	17 53 14.2
Ud	iP	17 53 30.6

Tadzhik SSR (h = N).

" 29

Up	iP		21 11 00.0	
	ipP		21 11 13.5	
			micr	sec
	P	Z'	0.2	0.9
	Mx	N	1.2	22
	Mx	Z	2.6	19
Ki	iP		21 10 06.7	
	ipP		21 10 21.3	
	iPcP		21 10 51.8	
			micr	sec
	P	Z'	0.1	0.8
	pP	Z'	0.2	1.4
	Mx	N	1.8	18
Sk	iP		21 10 37.5	
	iPcP		21 11 11.5	
	i		21 11 22.0	
Um	iP		21 10 33.1	
	ipP		21 10 46.2	
	iPcP		21 11 08.1	
Ud	iP		21 11 00.3	
	ipP		21 11 13.6	
De	iP		21 11 22.1	
	ipP		21 11 34.8	

Andreanof Islands, Aleutian Is.
h = 50 km (Up,Ki,Um,Ud,De).
m = 6.1, M = 5.2 (Up,Ki).

" 29

Up	eP	22 14 37
Ud	iP	22 14 36.0
	i	22 14 50.2
De	iP	22 14 58.8

Andreanof Islands, Aleutian Is. (h = 35 km).

" 29

Up	iP	22 19 53.7
Ud	iP	22 19 53.2
	i	22 20 06.3
De	iP	22 20 15.1

Andreanof Islands, Aleutian Is. (h = 30 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Aug. 30 Up iP 02 14 11.7
Ud iP 02 14 19.0
South of Honshu, Japan
(h = 430 km).

" 30 Ud iP 02 18 56.6
i 02 19 11.2
De iP 02 19 18.6
Andreanof Islands, Aleutian
Is. (h = 40 km).

" 30 Ud iP 05 58 28.9
Hokkaido, Japan region
(h = 60 km).

" 30 Up iP 07 00 12.7 C
micr sec
P Z' 0.1 1.1
Ki iP 06 59 14.3 C
micr sec
P Z' 0.1 0.9
Sk iP 06 59 42.8
i 07 00 14.7
Um iP 06 59 44.2
i 07 00 20.5
Ud iP 07 00 08.1
i 07 00 43.5
De iP 07 00 33.2
i 07 01 06.9
Central Alaska (h = 130 km).
m = 5.5 (Up,Ki).

" 30 Up iPKPl 14 27 38.7
Ud iPKPl 14 27 41.5
De iPKPl 14 27 51.8

" 30 Up iSgl 14 36 41.5
Ud iRg 14 36 03.2
De eSgl 14 37 32
Regional, near-surface event.

" 30 Up iP 14 50 09.2
micr sec
P Z' 0.1 1.0
Sk iP 14 50 48.3
Um i 14 50 44.8
Ud iP 14 50 16.5
De iP 14 49 40.1
Southern Greece (h = 35 km).

" 30 Up iPKPl 15 00 02.4
i 15 00 06.5
i 15 00 10.6
Sk iPKPl 14 59 56.0
(cont.)

1977
Aug. 30 (cont.)
Sk i 15 00 01.0
Um iPKPl 14 59 50.4
i 14 59 55.0
Ud iPKPl 15 00 04.1
i 15 00 09.0
De iPKPl 15 00 12.4
i 15 00 17.9
Kermadec Islands (h = N).

" 30 Up iP 15 23 28.0
micr sec
P Z' 0.3 1.0
Ki iP 15 22 34.5
micr sec
P Z' 0.3 1.5
Um iP 15 23 01.0
Ud iP 15 23 27.5
De iP 15 23 49.7 C
Andreanof Islands, Aleutian
Is. (h = 35 km).
m = 6.2 (Up,Ki).

" 30 Ud iSgl 17 13 32.9
Southern Norway.
By combination with Bergen
readings.

" 30 Ud eP 19 00 02

" 30 Ki iP 20 54 38.4
Sk iP 20 55 05.6
Um eP 20 55 05
Ud i 20 55 39.5
Kodiak Island region
(h = 20 km).

" 30 Up iP 20 56 58.7
Sk i 20 57 44.6
Um iP 20 57 34.1
Ud iP 20 57 06.0
i 20 57 15.2
De iP 20 56 30.1
Southern Greece (h = N).

" 30 Up iP 21 07 06.2
Ud iP 21 07 14.1
i 21 07 23.7
De iP 21 06 37.6
Southern Greece (h = N).

" 30 Ki iP 21 24 51.9
i 21 25 03.3
micr sec
P Z' 0.1 1.1
South of Sumba Island.
h = 40 km (Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	31	Up	iP		00 54 41.9	
			ipP		00 54 51.6	
			iS		01 05 03	
					micr	sec
			P	Z'	0.1	1.4
			pP	Z'	0.3	1.4
			Mx	E	6.9	19
			Mx	N	4.7	19
			Mx	Z	17	21
		Ki	iP		00 54 42.8	
			ipP		00 54 52.9	
			iS		01 05 09	
					micr	sec
			P	Z'	0.5	1.7
			pP	Z'	1.0	1.7
			Mx	E	10	20
			Mx	N	9.8	21
			Mx	Z	11	18
		Sk	iP		00 54 27.9	
			ipP		00 54 38.2	
		Um	iP		00 54 45.0	
			ipP		00 54 55.4	
			iS		01 05 10	
		Ud	eP		00 54 31	
			ipP		00 54 41.6	
		De	eP		00 54 34	
			ipP		00 54 44.1	
		Northern Colombia.				
		h = 35 km (Up,Ki,Sk,Um,Ud,De).				
		m = 6.6, M = 6.3 (Up,Ki).				
"	31	Sk	eP		01 30 54	
		Um	iP		01 31 13.2	
		Ud	eP		01 31 02	
		De	eP		01 31 02	
		Northern Colombia				
		(h = 100 km).				
"	31	Ki	iP		01 46 40.5	
		Sk	eP		01 46 27	
		Um	iP		01 46 45.7	
		De	iP		01 46 34.4	
		Northern Colombia				
		(h = 55 km).				
"	31	Up	iP		03 32 26.8	
		Ki	iP		03 32 35.9	
		Um	iP		03 32 25.4	
		Ud	iP		03 32 43.3	
		De	iP		03 32 39.8	
		Hindu Kush region (h = 55 km).				
"	31	Up	iPKPl		05 49 31.0	
		Sk	ePKPl		05 49 25	
		Um	ePKPl		05 49 21	
		(cont.)				

1977 Aug.	31	(cont.)		
		Ud	iPKPl	05 49 33.5
		De	iPKPl	05 49 41.6
		Kermadec Islands region		
		(h = 120 km).		
"	31	Up	iP	08 22 08.5
		Ki	iP	08 21 17.7
		Sk	eP	08 21 55
		Um	iP	08 21 41.4
		Ud	iP	08 22 13.3
		De	iP	08 22 33.3
		Northwest of Kuril Islands		
		(h = 410 km).		
"	31	Up	iP	08 27 04.8
		Ki	iP	08 28 19.8
		Sk	iP	08 27 44.0
		Um	i	08 27 46.2
		Ud	iP	08 27 11.7
			i	08 27 13.6
			i	08 27 27.4
		De	iP	08 26 36.4
			i	08 26 39.4
			i	08 26 59.1
		Southern Greece (h = 70 km).		
"	31	Up	iP	09 09 26.6
			i	09 09 39.7
				micr sec
			P Z'	0.1 1.0
		Ki	iP	09 08 33.7
		Ud	iP	09 09 25.9
			i	09 09 46.9
		De	iP	09 09 48.7
			i	09 09 59.6
		Andreanof Islands, Aleutian		
		Is. (h = 45 km).		
"	31	Up	iP	10 10 56.8
		Ki	iP	10 10 24.2
		Sk	iP	10 10 56.0
		Um	iP	10 10 37.2
		Ud	iP	10 11 05.1
			i	10 11 09.8
			i	10 11 15.6
		Kyushu, Japan (h = 45 km).		
"	31	Ud	i(P)	11 39 32.6
"	31	Ki	i	14 35 22.6
		Um	i	14 35 18.2
		Ud	i	14 35 28.4
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Aug.	31	(cont.) Nicobar Islands region (h = 25 km). Phases at Ki and Um are 19 s delayed, at Ud 14 s delayed, when related to expected P arrivals according to the NEIS solution.			
"	31	Ud	i(P)	15 03 40.0	
"	31	Up	iP	18 27 37.4	
		Sk	iP	18 28 04.0	
		Um	iP	18 27 37.2	
		Ud	iP	18 27 54.0	
		Hindu Kush region (h = 45 km).			
"	31	Up	iPKPl	23 23 15.8	D
			i	23 23 19.3	
			i	23 23 29.5	
		Sk	iPKPl	23 23 08.3	D
		Um	i	23 23 16.1	
		Ud	iPKPl	23 23 17.5	D
			i	23 23 23.3	
			i	23 23 31.1	
		De	ePKPl	23 23 27	
			i	23 23 32.0	
		Kermadec Islands region (h = 70 km).			

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June 6, 1979

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BOX 517
751 20 UPPSALA 1
SWEDEN

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BOX 517
S-751 20 UPPSALA
SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å,

U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

Remark. In September 2 - September 9, 15 explosions were fired in the North Sea, Nordland, Norway and Gulf of Bothnia (Project "Blue Norma 77").
Most of these were recorded at several of our stations. The readings are not included in this bulletin, following the line of excluding, to the greatest possible extent, artificially generated events.

S E P T E M B E R 1 - 30, 1977

1977
Sep. 1 Up iP 03 04 24.7
iSn 03 07 49.3
iS 03 08 06.2
micr sec
P Z' 0.6 0.6
Mx N 1.2 7
Mx Z 1.4 8
Ki iP 03 02 54.1 C
iSn 03 05 04.6
micr sec
P Z' 1.5 1.0
Mx E 1.2 6
Mx N 1.3 7
Mx Z 1.2 5
Sk iP 03 04 03.1 C
iSn 03 07 16.6
iS 03 07 32.9
Um iP 03 03 31.6 C
iSn 03 06 14.1
Ud iP 03 04 34.3 C
iSn 03 08 07.6
iS 03 08 20,7
De iP 03 05 07.3 C
iS 03 09 20.3
Novaya Zemlya.
m = 6.0 (Up).
Underground explosion.

" 1 Up iP 08 10 50.9
Ki iP 08 10 31.8
Ud iP 08 11 00.5
De iP 08 11 07.0

1977
Sep. 1 Up ePKPl 09 18 05
Sk iPKPl 09 17 56.0
Ud iPKP 09 18 02.0
iPKPl 09 18 07.7
De ePKPl 09 18 19
Kermadec Islands (h = 100 km).

" 1 Ud iP 11 36 14.2

" 1 Ud iP 14 20 09.7
De iP 14 20 06.8

" 1 Up iP 14 34 52.0
micr sec
P Z' 0.1 0.9
Ki iP 14 34 24.0
ipP 14 35 11.4
micr sec
P Z' 0.1 1.0
Sk iP 14 34 49.3
Um iP 14 34 36.1
ipP 14 35 25.2
Ud iP 14 34 58.1
De iP 14 35 10.1
Mariana Islands.
h = 200 km (Ki,Um).
m = 5.7 (Up,Ki).

" 1 De i(P) 15 00 41.4
i 15 03 42.9

" 1 Up iP 16 43 07.1
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 1 (cont.)

Ud	iP	16 43 16.6	
De	iP	16 43 23.1	
" 1 Up	ePKPl	17 11 20	
Ud	iPKPl	17 11 22.2	
De	iPKPl	17 11 33.3	
" 1 Up	iP	17 49 45.4	
Ki	eP	17 49 45	
	il	17 49 48.2	
Sk	iP	17 49 30.3	
	il	17 49 33.4	
Ud	il	17 49 37.0	
De	iP	17 49 36.2	
	il	17 49 39.3	

Northern Colombia (h = 30 km).

" 1 Up	iPKPl	18 57 06.6	
Sk	iPKPl	18 57 02.5	
Ud	iPKPl	18 57 09.2	
" 1 Up	iPKPl	21 05 52.9	
	iPKP2	21 06 00.4	
Sk	iPKPl	21 06 47.9	
Um	iPKPl	21 06 42.5	
Ud	iPKPl	21 05 54.9	
De	iPKPl	21 06 02.9	

South of Kermadec Islands
(h = 40 km).

" 1 Um	iPKPl	23 27 58.6	
Ud	iPKPl	23 28 10.6	

South of Kermadec Islands
(h = 55 km).

" 2 Up	iPKPl	00 20 28.8	
Ki	iPKP	00 20 19.7	
Um	e(PKP)	00 20 16	
	iPKP	00 20 26.2	
Ud	iPKPl	00 20 31.3	
De	iPKPl	00 20 41.9	

South of Fiji Islands
(h = 590 km).

" 2 Up	iP	05 53 23.2	D
	ipP	05 53 43.3	
	i	05 54 16.5	
		micr sec	
	P Z'	0.2 1.0	
Ki	iP	05 52 56.5	

(cont.)

1977
Sep. 2 (cont.)

Ki		micr sec	
	P Z'	0.1 1.0	
Sk	iP	05 53 25.6	
Um	iP	05 53 07.0	
Ud	iP	05 53 32.6	D
	ipP	05 53 52.2	
De	iP	05 53 43.5	D
	ipP	05 54 01.4	

Ryukyu Islands.
h = 80 km (Up,Ud,De).
m = 5.8 (Up,Ki).

" 2 De	i(P)	08 23 45.3	
" 2 Up	iP	09 25 35.8	
Ki	iP	09 25 05.5	
Sk	iP	09 25 35.8	
Um	iP	09 25 17.9	
Ud	iP	09 25 44.4	
De	iP	09 25 54.8	

Ryukyu Islands (h = N).

" 2 Up	iP	10 50 35.1	
		micr sec	
	P Z'	0.3 1.9	
	Mx E	3.0 22	
	Mx N	3.4 19	
	Mx Z	6.0 20	
Ki	iP	10 50 25.8	C
	i	10 50 27.3	
	i	10 50 37.7	
		micr sec	
	i Z'	0.2 1.0	
	Mx E	3.4 14	
	Mx N	3.3 15	
	Mx Z	3.8 15	
Sk	iP	10 50 44.8	
Um	iP	10 50 26.7	
	iSKS	11 01 07	
Ud	iP	10 50 43.0	
De	iP	10 50 44.8	

South of Sumba Island (h = N).
m = 6.8, M = 6.1 (Up,Ki).

" 2 Ud	iP	10 53 49.5	
" 2 Up	iSgl	11 01 25.9	
Ud	iSgl	11 00 52.5	
De	e	11 00 20	
	iRg	11 00 29.5	

Regional, near-surface event.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Sep.	2	Up	iP	17 27 03.8
		Ki	iP	17 26 11.0
		Sk	iP	17 26 47.2
		Um	iP	17 26 35.9
		Ud	iP	17 27 07.5
		De	iP	17 27 29.0
		Near east coast of Kamchatka (h = N).		
"	2	Um	iP	19 22 48.1
		Ud	iP	19 23 05.6
"	3	Ud	eP	02 24 58
		Tadzhik SSR (h = 30 km).		
"	3	Ud	iP	10 33 30.0
"	3	Up	iSgl	12 22 41.6
		Sk	iSgl	12 22 14.0
		Um	iSgl	12 23 45.0
		Ud	iSgl	12 21 40.7
		De	iSgl	12 22 18.4
		Southwest Norway, 59.6°N, 5.9°E.		
		Origin time = 12 19 37.		
		M_L = 2.8 (Up,Um,Ud).		
		Felt.		
		By combination with Bergen and Kongsberg readings.		
"	3	Ud	iP	12 26 22.9
			i	12 26 26.8
		De	iP	12 26 12.9
"	3	Up	iP	15 37 02.4
		Ki	eP	15 37 13
			i	15 37 15.5
		Sk	iP	15 36 51.4
		Um	iP	15 37 08.8
		Ud	iP	15 36 51.2
		De	iP	15 36 49.0
		Near coast of Venezuela (h = N).		
"	3	Um	iP	15 45 17.9
		Ud	iP	15 45 02.6
		Dominican Republic Region (h = 50 km).		
"	3	Ud	iP	18 00 15.3
"	3	Ud	iP	22 11 59.1
		Iran (h = N).		

1977 Sep.	3	Up	iP	22 38 51.6
		Ki	iP	22 38 09.9
		Um	iP	22 38 28.8
		Ud	iP	22 38 58.3
		Off coast of Honshu, Japan (h = 30 km).		
"	3	Up	iP	22 45 43.3
		Ki	iP	22 45 34.4
		Sk	iP	22 45 25.1
		Um	iP	22 45 41.9
			i	22 45 58.3
		Ud	iP	22 45 32.4
		De	iP	22 45 38.2
		Near coast of Nicaragua (h = 80 km).		
"	3	Ud	iPKPl	22 52 33.9
		De	iPKPl	22 52 44.7
"	3	Up	iP	23 26 40.4
		Sk	iP	23 27 22.5
		Um	iP	23 27 20.4
		Ud	iP	23 26 47.1
"	4	Ud	iP	00 48 25.3
"	4	Up	iPKPl	03 37 10.9
		Ud	iPKPl	03 37 13.2
		De	iPKPl	03 37 23.6
		South of Fiji Islands (h = 510 km).		
"	4	Up	iP	04 56 52.2 C
		Um	iP	04 56 35.3
		Ud	iP	04 57 00.8 C
		Ryukyu Island (h = 45 km).		
"	4	Ki	iP	08 25 11.6
		Sk	iP	08 24 27.9
		Um	iP	08 24 37.7
		Ud	iP	08 23 58.6
		De	iP	08 23 26.6
		Tunisia (h = N).		
"	4	Up	iPKP	09 07 41.9
			iSKPl	09 11 03.4
				micr sec
			PKP Z'	0.3 1.5
			Mx E	6.9 21
			Mx N	15 21
			Mx Z	27 22
		Ki	iPKP	09 07 28.7 C
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 4 (cont.)

Ki			micr	sec
	PKP	Z'	0.2	1.1
	Mx	E	5.9	20
	Mx	N	9.4	21
	Mx	Z	13	21
Sk	iPKP		09 07 39.2	
	iSKPl		09 10 57.9	
Um	iPKP		09 07 34.8	
Ud	iPKP		09 07 44.9	
	iSKPl		09 11 05.0	
De	iPKP		09 07 50.7	
	iSKPl		09 11 15.8	

New Hebrides Islands (h = N).
M = 6.6 (Up,Ki).

" 4

Up	iP		15 51 55.3	
	iS		16 00 55	
	iP'P'		16 20 06.5	
			micr	sec
	P	Z'	0.5	1.0
	Mx	E	13	20
	Mx	N	20	19
	Mx	Z	24	20
Ki	iP		15 51 02.2 C	
	iS		15 59 13	
			micr	sec
	P	Z'	0.2	0.9
	Mx	E	27	18
	Mx	N	36	17
	Mx	Z	22	17
Sk	iP		15 51 35.0 C	
Um	iP		15 51 28.3	
	iS		16 00 03	
	iP'P'		16 20 19.0	
Ud	iP		15 51 55.9	
De	iP		15 52 17.8	

Rat Islands, Aleutian Islands (h = 35 km).
m = 6.4, M = 6.6 (Up,Ki).

" 4

Up	iP		15 57 51.1
Ki	iP		15 56 59.5
Um	iP		15 57 23.8
Ud	iP		15 57 51.7

Aleutian Islands.

" 4

Up	iP		16 03 37.8
Ud	iP		16 03 37.9

" 4

Up	iP		16 04 39.2
			micr sec
	P	Z'	0.1 1.0
Ki	iP		16 03 46.2

(cont.)

1977
Sep. 4 (cont.)

Sk	eP	16 04 20
Um	iP	16 04 12.1
Ud	iP	16 04 41.0
De	iP	16 05 02.0

Rat Islands, Aleutian Islands (h = N).

" 4

Up	iP	16 10 01.4
Ki	iP	16 09 09.2
Ud	iP	16 10 03.3
De	iP	16 10 24.9

Rat Islands, Aleutian Islands (h = N).

" 4

Ud	iP	16 20 46.7

Rat Islands, Aleutian Islands (h = N).

" 4

Up	iP	16 35 32.2
Ud	iP	16 35 32.1

" 4

Up	iP	16 43 38.6
	i	16 43 42.6
Ki	iP	16 42 45.1
	i	16 42 48.7
Um	iP	16 43 15.3
Ud	iP	16 43 39.1

Rat Islands, Aleutian Islands (h = N).

" 4

Up	iP		16 51 34.8
	i		16 51 35.8
			micr sec
	P	Z'	0.1 1.0
Ki	iP		16 50 58.8
			micr sec
	P	Z'	0.1 1.0
Sk	iP		16 51 30.9
Um	iP		16 51 13.8
Ud	iP		16 51 41.8
	i		16 51 42.9
De	iP		16 51 56.3
	i		16 51 58.1

South of Honshu, Japan (h = 15 km).
m = 5.9 (Up,Ki).

" 4

Up	iP		16 55 24.9
			micr sec
	P	Z'	0.1 1.0
Ki	iP		16 54 33.2
Um	iP		16 54 58.6
Ud	iP		16 55 26.3

Rat Islands, Aleutian Islands (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Sep.	4	Up	iP		16 59 42.2	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		16 58 50.4	
		Sk	iP		16 59 23.3	
		Um	iP		16 59 15.8	
		Ud	iP		16 59 43.9	
		De	iP		17 00 06.9	
		Rat Islands, Aleutian Islands (h = 35 km).				
"	4	Up	iP		17 21 28.6	
			i		17 21 29.6	
			iS		17 30 25	
					micr	sec
			P	Z'	0.5	0.9
		Ki	iP		17 20 35.9	
			iS		17 28 42	
					micr	sec
			P	Z'	0.3	0.9
		Sk	iP		17 21 08.9	
			i		17 21 10.0	
		Um	iP		17 21 03.6	
		Ud	iP		17 21 29.8	
			i		17 21 30.8	
		De	iP		17 21 51.7	
			i		17 21 52.6	
		Rat Islands, Aleutian Islands (h = 30 km). m = 6.5 (Up,Ki).				
"	4	Up	iP		17 27 12.5	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		17 26 20.2	
		Sk	iP		17 26 51.8	
		Um	iP		17 26 44.4	
		Ud	iP		17 27 14.6	
		De	iP		17 27 36.7	
		Rat Islands, Aleutian Islands (h = N).				
"	4	Up	iP		17 34 30.7	
		Ud	iP		17 34 31.3	
		Aleutian Islands.				
"	4	Up	iP		17 35 43.0	
			i		17 35 45.4	
			iS		17 44 41	
			iP'P'		18 04 06.0	
					micr	sec
			P	Z'	0.1	1.0
		(cont.)				

1977 Sep.	4	(cont.)				
		Up			micr	sec
			i	Z'	1.2	0.9
			Mx	E	33	19
			Mx	N	37	16
			Mx	Z	50	18
		Ki	iP		17 34 51.5	C
			i		17 34 54.1	
			iP'P'		18 04 21.4	
					micr	sec
			P	Z'	0.2	1.1
			i	Z'	0.6	1.1
			Mx	E	49	17
			Mx	N	61	18
			Mx	Z	62	15
		Sk	iP		17 35 23.7	
			i		17 35 26.7	
			eP'P'		18 04 10	
		Um	iP		17 35 17.2	C
			i		17 35 21.6	
			iP'P'		18 04 13.3	
		Ud	iP		17 35 44.1	
			i		17 35 49.9	
			iP'P'		18 04 05.2	
		De	iP		17 36 06.8	C
			i		17 36 11.7	
		Rat Islands, Aleutian Islands (h = 10 km). m = 6.8, M = 6.9 (Up,Ki).				
"	4	Up	iP		17 49 19.7	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		17 48 26.6	
					micr	sec
			P	Z'	0.1	1.0
		Sk	iP		17 49 00.3	
		Um	iP		17 48 52.9	
		Ud	iP		17 49 21.1	
		De	iP		17 49 42.4	
		Rat Islands, Aleutian Islands (h = 45 km). m = 5.9 (Up,Ki).				
"	4	Up	iP		17 52 12.1	
		Ki	iP		17 51 18.7	
		Ud	iP		17 52 12.8	
		Aleutian Islands.				
"	4	Up	iP		18 11 08.6	
			i		18 11 21.4	
					micr	sec
			P	Z'	0.1	0.9
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 4 (cont.)

Ki	iP		18	10	15.9
Um	iP		18	10	42.3
Ud	iP		18	11	08.9
De	iP		18	11	30.6

Rat Islands, Aleutian Islands (h = 50 km).

" 4	Up	iP		18	36 45.5
		i		18	36 46.7
				micr	sec
		i	Z'	0.3	0.9
	Ki	iP		18	35 52.7
				micr	sec
		P	Z'	0.2	0.9
	Sk	iP		18	36 26.7
	Um	iP		18	36 18.7
	Ud	iP		18	36 46.9
	De	iP		18	37 09.4

Rat Islands, Aleutian Islands (h = 40 km).
m = 6.3 (Up,Ki).

" 4	Up	iP		18	49 20.5
				micr	sec
		P	Z'	0.1	1.0
	Ki	iP		18	48 28.6
				micr	sec
		P	Z'	0.1	1.0
	Sk	iP		18	49 01.5
	Um	iP		18	48 54.4
	Ud	iP		18	49 22.4
	De	iP		18	49 44.2

Rat Islands, Aleutian Islands (h = 35 km).
m = 5.9 (Up,Ki).

" 4	Up	iP		19	33 57.0
		i		19	33 58.3
				micr	sec
		i	Z'	0.2	1.0
	Ki	iP		19	33 04.5
		i		19	33 05.4
				micr	sec
		i	Z'	0.1	1.0
	Sk	iP		19	33 37.0
		i		19	33 38.5
	Um	iP		19	33 29.9
		i		19	33 31.7
	Ud	iP		19	33 58.1
		i		19	34 00.6
	De	iP		19	34 20.1
		i		19	34 21.6

(cont.)

1977
Sep. 4 (cont.)
Rat Islands, Aleutian Islands (h = 35 km).
m = 6.0 (Up,Ki).

" 4	Up	iP		19	39 08.4
" 4	Up	iP		19	40 56.3
	Ud	iP		19	40 56.5

Aleutian Islands.

" 4	Ud	iP		21	04 41.5
" 4	Up	eP		21	14 31
" 4	Ud	iP		21	14 31.9

Aleutian Islands.

" 4	Ki	iP		21	36 50.5
	Um	iP		21	37 18.2
	Ud	eP		21	37 42

South of Alaska (h = 20 km).

" 4	Up	iP		21	41 53.5
	Ud	iP		21	41 54.1

Aleutian Islands.

" 4	Ud	iP		23	18 56.1
" 4	Up	iP		23	31 41.3
		i		23	31 42.6
		iS		23	40 41
				micr	sec
		i	Z'	0.2	0.8
		Mx	N	3.6	20
		Mx	Z	5.1	19
	Ki	iP		23	30 48.5
		i		23	30 49.6
				micr	sec
		i	Z'	0.2	0.9
		Mx	E	2.5	15
		Mx	N	2.2	16
		Mx	Z	2.2	15
	Sk	iP		23	31 22.3
	Um	iP		23	31 14.4
		i		23	31 15.4
	Ud	iP		23	31 42.5
		i		23	31 43.5
	De	iP		23	32 05.2

Rat Islands, Aleutian Islands (h = 40 km).
m = 6.2, M = 5.6 (Up,Ki).

" 4	Up	iP		23	51 59.4

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 4 (cont.)
Ud iP 23 52 00.7
Rat Islands, Aleutian Islands (h = N).

" 5 Up iP 00 05 21.7
Ki eP 00 04 28
Ud iP 00 05 21.9
Rat Islands, Aleutian Islands (h = 55 km).

" 5 Up iP 01 09 09.6
i 01 09 19.7
Ki iP 01 08 16.6
Um iP 01 08 43.0
Ud iP 01 09 11.3
De iP 01 09 32.5
Rat Islands, Aleutian Islands (h = 25 km).

" 5 Up iP 03 09 54.7 C
iPP 03 11 07.8
micr sec
P Z' 1.4 1.0
Ki iP 03 09 38.4 C
micr sec
P Z' 0.9 0.7
Sk iP 03 10 09.8 C
iPP 03 11 32.6
Um iP 03 09 39.3 C
Ud iP 03 10 11.1 C
De iP 03 10 18.2 C
iPP 03 11 40.6
Eastern Kazakh SSR.
m = 6.8 (Up,Ki).
Underground explosion.

" 5 Ud iP 09 24 05.0

" 5 Ki iP 11 30 56.2
South of Sumbawa Island (h = N).

" 5 Up iP 15 25 53.4
Ki iP 15 25 51.8
Sk iP 15 26 06.4
Um iP 15 25 50.1
Ud iP 15 26 02.9
Southern Sumatra (h = 160 km).

" 5 Up iP 16 29 55.2
Ki iP 16 30 02.2
Ud iP 16 30 11.6 C
Afghanistan-USSR border region (h = 60 km).

1977
Sep. 5 Up iP 22 42 00.4
Ud iP 22 42 00.1
Rat Islands, Aleutian Islands (h = N).

" 5 Up iSgl 23 42 13.8
Ki iSgl 23 46 08.9
Sk iSgl 23 43 42.9
Um iSn 23 43 41.2
i 23 44 13.3
iSgl 23 44 16.8
Ud iPgl 23 41 14.3
iSn 23 41 43.8
iSgl 23 41 54.0
De iPgl 23 40 34.8 D
iSgl 23 40 44.7
Halland-Västergötland, Sweden, 57.0°N, 13.0°E.
Origin time = 23 40 21.
M_L = 3.4 (Up,Ki,Sk,Um,Ud).
Felt.

" 6 Up iP 02 19 05.5
Ud iP 02 19 21.7
Afghanistan (h = 45 km).

" 6 Ud iPKP 04 52 21.8
Solomon Islands (h = 60 km).

" 6 Ki iP 05 13 55.0
Ud iP 05 14 20.4
Molucca Passage (h = 60 km).

" 6 Up Mx 10 00
micr sec
Mx E 1.2 20
Mx Z 6.2 20
Papua New Guinea (h = N).

" 6 Up iP 14 31 32.1
Ki iP 14 30 39.2
Ud iP 14 31 32.9
Rat Islands, Aleutian Islands (h = 45 km).

" 6 Up iPKPl 17 55 35.2
Ud iPKPl 17 55 36.4
De iPKPl 17 55 48.3
South of Fiji Islands (h = 580 km).

" 6 Ud iSgl 18 23 44.7
Southern Norway.
By combination with Bergen readings.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Sep.	6	Ki	ePKP	23 19 32
		Ud	iPKPl	23 19 40.5
		De	iPKPl	23 19 52.1
		Fiji Islands (h = 590 km).		
"	8	Ki	i(P)	01 01 21.3
			i	01 01 23.5
"	8	Ud	iPKPl	03 18 38.1
		De	iPKPl	03 18 49.3
		Fiji Islands region (h = 510 km).		
"	8	Ud	iP	08 51 23.8
"	8	Ud	i(P)	09 42 06.2
		De	i(P)	09 42 29.9
"	8	Ud	iP	14 12 59.8
			i	14 13 15.6
"	9	Up	iP	02 44 43.6
		Ki	iP	02 44 05.0 D
		Sk	iP	02 44 39.7
		Um	iP	02 44 21.6 D
		Ud	iP	02 44 52.2 D
		De	iP	02 45 07.4
		E. USSR - N.E. China border region (h = 500 km).		
"	9	Up	iRg	04 11 19.4
		Ud	iSgl	04 12 17.0
		East-central Sweden. Near-surface event.		
"	9	Ud	iP	08 42 19.5
"	9	Ud	iP	09 11 35.0
		De	iP	09 11 55.3
"	9	Ki	i(P)	13 34 02.3
"	9	Ud	i(P)	15 03 20.0
		De	i(P)	15 02 48.2
"	9	Up	iP	15 05 05.1
		Ki	iP	15 06 12.6
		Um	iP	15 05 37.9
		Ud	iP	15 05 12.9
		De	iP	15 04 41.7
		Crete (h = 70 km).		
"	9	Up	i(P)	15 47 31.7

1977				
Sep.	9	Up	iPKPl	17 56 32.7
		Ud	iPKPl	17 56 32.8
		De	iPKPl	17 56 43.5
		Fiji Islands region (h = 560 km).		
"	9	Up	iP	21 12 48.8
		Ki	iP	21 12 56.8
		Ud	iP	21 13 05.4
		Afghanistan-USSR border region (h = 100 km).		
"	9	Up	iP	21 28 57.1
		Ud	iP	21 28 57.2
"	10	Up	iP	01 01 36.0
		Ki	iP	01 02 43.8
		Sk	iP	01 02 15.7
		Um	iP	01 02 08.4
		Ud	iP	01 01 44.4
		De	iP	01 01 12.7
		Crete (h = 60 km).		
"	10	Up	iPKPl	01 38 24.1
		Ki	iPKP	01 38 16.8
		Um	iPKP	01 38 18.6
		Ud	iPKPl	01 38 26.0
		De	iPKPl	01 38 37.9
		South of Fiji Islands (h = 590 km).		
"	10	Up	iP	06 37 05.6
			i	06 37 31.1
				micr sec
			i Z'	0.3 1.3
			Mx E	0.9 12
			Mx N	2.0 13
			Mx Z	4.1 14
		Ki	iP	06 38 14.8
				micr sec
			Mx E	1.3 12
			Mx N	1.6 14
			Mx Z	1.7 14
		Sk	iP	06 37 44.0
		Um	iP	06 37 39.4
		Ud	iP	06 37 12.0
			i	06 37 37.9
		De	iP	06 36 38.6
			i	06 37 05.3
		Crete (h = N). M = 5.0 (Up,Ki).		
"	10	Up	iP	10 33 51.4
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 10 (cont.)

Ki	iP		10 33 41.2	C
			micr	sec
	P	Z'	0.1	1.4
Sk	iP		10 33 34.2	
Um	iP		10 33 49.1	C
Ud	iP		10 33 43.1	C
De	iP		10 33 49.2	

Near coast of Guatemala
(h = 80 km).

" 10	Ki	iP	13 52 11.5	
	Um	iP	13 52 10.7	
	Ud	iP	13 52 23.0	

Java (h = 110 km).

" 10	Up	iP	16 08 00.4	
	Ki	iP	16 07 15.9	
	Sk	iP	16 07 58.3	
	Um	iP	16 07 34.1	
	Ud	iP	16 08 11.2	
	De	iP	16 08 30.1	

Lake Baikal region (h = N).

" 11	Up	iPKPl	01 45 13.3	
	Ud	iPKPl	01 45 15.7	
" 11	Um	iPKP	14 27 13.0	
	Ud	iPKP	14 27 21.3	

Tonga Islands (h = N).

" 11	Up	i(P)	19 53 01.9	
" 11	Up	iP	23 24 45.1	
		i	23 24 48.2	
		iS	23 29 05	
			micr	sec
		P	Z' 1.0	1.2
		i	Z' 2.5	1.5
		Mx	E 13	13
		Mx	N 37	14
		Mx	Z 49	14
	Ki	iP	23 25 55.4	
		iS	23 31 11	
			micr	sec
		P	Z' 0.7	0.8
		Mx	E 25	13
		Mx	N 33	14
		Mx	Z 32	14
	Sk	iP	23 25 24.0	
		i	23 25 25.9	
	Um	iP	23 25 19.5	
		i	23 25 21.2	

(cont.)

1977
Sep. 11 (cont.)

Um	iS	23 30 03	
Ud	iP	23 24 51.6	
	i	23 24 54.1	
De	iP	23 24 18.6	
	i	23 24 20.6	
	iS	23 28 25.7	

Crete (h = N).
m = 6.5, M = 6.2 (Up,Ki).

" 11	Up	iP	23 36 02.0	
	Ud	iP	23 36 09.3	

Crete.
From the same hypocentral area as the preceding event.

" 11	Up	iP	23 37 09.9	
	Sk	iP	23 37 46.7	
	Ud	iP	23 37 15.3	
	De	iP	23 36 42.1	

Crete (h = N).

" 11	Ud	iP	23 39 23.3	
" 11	Ud	iP	23 44 05.6	
" 12	Up	iP	00 09 04.5	
	Ki	iP	00 10 12.0	
	Sk	eP	00 09 42	
	Ud	iP	00 09 10.4	
	De	eP	00 08 39	

Mediterranean Sea (h = 35 km).

" 12	Ud	iP	00 11 51.6	
" 12	Ud	iP	00 28 31.6	
" 12	Ud	iP	00 37 33.5	
" 12	Ud	iP	01 00 00.2	
" 12	Up	iP	02 36 05.6	
	Ki	iP	02 37 15.1	
	Sk	eP	02 36 43	
	Ud	iP	02 36 11.3	
		i	02 36 12.9	
	De	iP	02 35 38.4	

Crete (h = 55 km).

" 12	Up	iP	03 03 17.3	
		i	03 03 23.7	
			micr	sec
		P	Z' 0.1	1.0
		i	Z' 0.1	1.1

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 12 (cont.)

Ki	iP		03 04 26.7	C
			micr sec	
	P	Z'	0.1 0.6	
Sk	iP		03 03 55.7	
Um	iP		03 03 51.0	
Ud	iP		03 03 23.8	C
De	iP		03 02 50.3	C

Crete (h = 35 km).

" 12 Ud iP 03 21 48.7

" 12 Ud iP 04 01 52.4

" 12 Ud iP 05 21 06.2
i 05 21 22.9
Mediterranean Sea (h = N).

" 12 Up iP 07 09 54.2
Ki iP 07 11 01.8
Sk iP 07 10 31.7
Um iP 07 10 28.0
Ud iP 07 10 01.1
De iP 07 09 28.5
Crete (h = N).

" 12 Ud iP 07 43 35.7

" 12 Up iP 09 40 51.2
Sk iP 09 41 19.3
Um iP 09 40 51.6
Ud iP 09 41 08.1
ipP 09 41 17.3
Afghanistan-USSR border region.
h = 30 km (Ud).

" 12 Up iP 10 57 51.7
Ki iP 10 59 01.3
Sk iP 10 58 30.2
Um iP 10 58 26.1
Ud iP 10 57 58.5
i 10 58 00.2
Crete (h = 60 km).

" 12 Ki ipP 14 30 44.9
micr sec
pP Z' 0.1 1.5
Sk ipP 14 30 17.1
Um iP 14 30 21.9
ipP 14 30 27.6
Ud ipP 14 30 01.1
South Atlantic Ridge.
h = 20 km (Um).

1977
Sep. 12 Ki eP 17 20 09
Greenland Sea, near 75 1/4°N, 9°E.
Origin time = 17 18 12.
Solution from Helsinki regional bulletin.

" 12 Ud iSn 19 01 36.7
iSgl 19 01 41.6
Southern Norway.
By combination with Bergen readings.

" 12 Up iPKP 22 58 51.7
Ki iPKP 22 59 06.2
Ud iPKP 22 58 50.0
South Sandwich Islands region (h = N).

" 12 Ki iP 23 16 49.3
Ud iP 23 15 46.4
De iP 23 15 16.9
Crete (h = 170 km).

" 12 Up iP 23 27 45.1
micr sec
P Z' 0.3 1.4
Ki iP 23 27 03.2
micr sec
P Z' 0.1 1.0
Sk iP 23 27 38.3
Um iP 23 27 21.5 C
Ud iP 23 27 52.6 C
De iP 23 28 09.7
Eastern Sea of Japan (h = 30 km).
m = 6.1 (Up,Ki).

" 12 Ki iP 23 57 13.9
Sk iP 23 57 35.2
Um iP 23 57 19.1
Ud iP 23 57 37.9
Mindanao, Philippine Islands (h = 590 km).

" 13 Ki iP 00 24 23.5
Sk iP 00 24 25.3
Um iP 00 24 02.3
Ud iP 00 24 06.6
De iP 00 23 52.6
Southern Iran (h = 55 km).

" 13 Up ePKP 00 41 09
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 13 (cont.)

Up			micr	sec
	Mx	E	1.2	20
	Mx	N	1.5	21
Ki	iPKP		00 40	53.7
			micr	sec
	Mx	E	1.5	18
	Mx	N	1.1	20
	Mx	Z	1.3	19
Um	iPKP		00 41	04.5
Ud	ePKP		00 41	09

Tonga Islands (h = N).
M = 5.8 (Up,Ki).

" 13

Ki	iP	05 05 46.7
Ud	iP	05 06 37.0

Hokkaido, Japan region (h = 50 km).

" 13

Up	iSgl	11 43 46.1
Ud	i	11 42 58.5
	iRg	11 43 01.9

Regional, near-surface event.

" 13

Ki	iP	11 57 13.8
Ud	iP	11 57 00.6
De	iP	11 56 48.8

Southern Iran (h = N).

" 13

Up	iP	13 09 34.3
Ki	iP	13 10 42.2
Sk	iP	13 10 11.0
Um	iP	13 10 06.0
Ud	iP	13 09 39.4
De	iP	13 09 06.0

Crete (h = N).

" 13

Up	iP		14 49	34.7
			micr	sec
	P	Z'	0.1	1.2
Ki	iP		14 48	41.5
			micr	sec
	P	Z'	0.1	1.0
Sk	iP		14 49	14.0
Ud	iP		14 49	36.2

Rat Islands, Aleutian Islands (h = 35 km).
m = 5.8 (Up,Ki).

" 13

Ud	iP	15 23 03.0

Off east coast of Honshu, Japan (h = N).

" 13

Sk	eSgl	18 01 48
Um	iSgl	18 03 23.0

(cont.)

1977
Sep. 13 (cont.)

Ud	i	18 01 26.2

Southern Norway, near 60 1/2°N, 7°E.
Origin time = 17 59 45.
M_L = 2.4 (Ud).
By combination with Bergen readings.

" 13

Ki	iP	18 49 52.9
Sk	iP	18 49 30.5
Ud	iP	18 49 30.7

Leeward Islands (h = N).

" 13

Ud	iP	21 07 34.3

Eastern Kashmir (h = 210 km).

" 14

Up	i	02 31 08.7
	iSgl	02 31 13.3
Sk	iSgl	02 33 10.5
Um	iSgl	02 32 07.8
Ud	eSgl	02 32 15
De	eSgl	02 32 41

West coast of Esthonia, near 59 1/4°N, 23 1/2°E.
Origin time = 02 29 41.
M_L = 2.5 (Up,Um,Ud).

" 14

Ud	iP	05 40 06.0
De	iP	05 39 33.7

Crete (h = 50 km).

" 14

Up	ipP		06 03	41.5
			micr	sec
	pP	Z'	0.1	1.0
Ki	iP		06 03	34.7
	ipP		06 03	39.3
			micr	sec
	pP	Z'	0.1	1.0
Sk	ipP		06 04	05.0
Um	ipP		06 03	34.6
Ud	ipP		06 03	57.3 C
De	ipP		06 03	59.3

Southern Sinkiang province, China.
h = 15 km (Ki).
m = 5.5 (Up,Ki).

" 14

Ki	iPKP		15 10	06.4
			micr	sec
	PKP	Z'	0.2	1.6
Um	iPKP		15 10	00.3

South Sandwich Islands region (h = 40 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Sep.	14	Up	iP		18 54 30.6
			i		18 54 45.4
			iPP		18 55 03.6
		Ki	iP		18 55 39.2
					micr sec
			P	Z'	0.1 0.8
		Sk	eP		18 55 08
		Um	iP		18 55 03.2
		Ud	iP		18 54 36.4
		De	iP		18 54 04.0 C
		Crete (h = N).			
"	14	Up	iP		21 02 45.6
					micr sec
			P	Z'	0.1 1.1
		Ki	iP		21 02 54.7
		Sk	iP		21 02 33.6
		Ud	iP		21 02 34.0
		Near coast of Venezuela (h = 90 km).			
"	15	Up	eSgl		14 23 33
		Sk	eSgl		14 23 44
		Ud	iSgl		14 22 34.0
		Southwest coast of Norway, near 58 1/4°N, 6 1/2°E. Origin time = 14 20 25. M_L = 2.8 (Ud). By combination with Bergen and Kongsberg readings.			
"	15	Up	iP		15 59 02.0
		Ki	iP		16 00 11.6
		Sk	iP		15 59 40.2
		Um	iP		15 59 35.6
		Ud	iP		15 59 09.7
		De	iP		15 58 34.8
		Crete (h = N).			
"	15	Ud	iP		16 12 50.6
		Southern Iran (h = N).			
"	15	Up	iP		17 04 23.6
		Ud	iP		17 04 29.5
		Southwestern Ryukyu Islands (h = 70 km).			
"	15	Ud	iP		23 06 01.5
"	16	Up	iPKP1		03 29 23.1
			iPKP2		03 29 26.5
					micr sec
			PKP1	Z'	0.1 0.9
		(cont.)			

1977					
Sep.	16	(cont.)			
		Sk	iPKP1		03 29 16.7
		Um	iPKP1		03 29 11.1
		Ud	iPKP1		03 29 25.0
			iPKP2		03 29 29.4
		De	iPKP1		03 29 32.7
		Kermadec Islands (h = 210 km).			
"	16	Ud	iP		07 12 33.4
		Iran (h = N).			
"	16	Up	iP		12 56 03.9
					micr sec
			P	Z'	0.1 1.0
		Ud	iP		12 55 54.6
"	16	Up	iP		16 10 16.4
					micr sec
			P	Z'	0.1 1.0
		Ki	iP		16 10 25.1 C
					micr sec
			P	Z'	0.1 0.8
		Sk	iP		16 10 41.6
		Um	iP		16 10 14.4 C
		Ud	iP		16 10 32.5 C
		De	iP		16 10 29.6
		Hindu Kush region (h = 200 km). m = 5.3 (Up,Ki).			
"	16	Ki	i(P)		17 02 29.3
			i		17 02 33.4
"	16	Ki	iPKP		21 54 09.4
		South Sandwich Islands region (h = N).			
"	16	Up	iP		23 51 23.9 C
			i		23 51 33.2
					micr sec
			P	Z'	0.1 1.0
			i	Z'	0.2 0.8
			Mx	E	5.9 10
			Mx	N	17 10
			Mx	Z	26 10
		Ki	iP		23 53 01.6 C
			i		23 53 08.0
					micr sec
			P	Z'	0.3 1.0
			i	Z'	0.5 1.1
			Mx	E	6.8 11
			Mx	N	13 10
			Mx	Z	13 9
		Sk	iP		23 52 08.9
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 16 (cont.)

Um	iP		23 52 16.2
	i		23 52 24.0
	iS		23 55 40
Ud	iP		23 51 24.4 C
De	iP		23 50 33.8 C

Austria (h = 25 km).
m = 5.3, M = 5.6 (Up,Ki).

" 17

Up	iP			05 36 56.0
	iSKS			05 47 30
			micr	sec
	Mx	E	3.6	16
	Mx	N	5.6	16
	Mx	Z	7.0	15
Ki	iP			05 36 29.9
	iPP			05 40 02.2
	iSKS			05 47 02
			micr	sec
	P	Z'	0.3	1.4
	Mx	E	4.1	17
	Mx	N	3.7	17
	Mx	Z	7.6	18
Sk	iP			05 36 55.1
Um	iP			05 36 41.0
	iSKS			05 47 10
Ud	iP			05 37 02.6
	iPP			05 41 04.6
De	iP			05 37 15.7

South of Mariana Islands
(h = N).
M = 6.1 (Up,Ki).

" 17

Up	iP	10 59 00.8
Ki	iP	10 58 25.4
Um	iP	10 58 40.0
Ud	iP	10 59 07.0

South of Honshu, Japan
(h = 170 km).

" 17 Ud iP 11 53 05.1

" 17

Ki	iP	16 39 09.0
Sk	iP	16 39 39.6
Um	iP	16 39 34.5
Ud	iP	16 40 00.8

Andreanof Islands, Aleutian
Islands (h = N).

" 17

Ki	iP	18 35 19.4
Sk	iP	18 35 46.9
Um	iP	18 35 48.3
Ud	iP	18 36 12.6
De	iP	18 36 36.8

Southern Alaska (h = 150 km).

1977
Sep. 17 Ud iP 19 43 14.2

" 17 Ud eP 23 24 10

" 18 Ud iP 01 03 26.8

" 18 Ud iP 05 56 33.6
Near coast of Guatemala
(h = 110 km).

" 18

Up	iP	06 02 44.5
Ki	iP	06 03 51.8
Sk	eP	06 03 22
Ud	iP	06 02 49.0
	i	06 02 50.4
De	iP	06 02 17.7

Crete (h = N).

" 18

Up	iP	08 42 39.8
Ki	iP	08 42 19.4
Um	iP	08 42 28.0
Ud	iP	08 42 46.3
De	iP	08 42 51.6

Mindanao, Philippine Islands
(h = 45 km).

" 18

Up	iPKP	10 05 09.0
Ki	iPKP	10 04 55.0
Sk	iPKP	10 05 06.1
Um	iPKP	10 05 01.3
Ud	iPKP	10 05 11.6
	iSKPl	10 08 33.5
De	iPKP	10 05 17.6
	iSKPl	10 08 44.7

New Hebrides Islands
(h = 70 km).

" 18

Ki	iP	13 13 14.4
Um	iP	13 13 40.6
Ud	iP	13 13 51.0
	i	13 14 59.5
De	e	13 15 31

" 18 Up i(P) 23 22 25.4

" 19

Up	iP	00 30 19.1
	iPP	00 31 36.8
Ki	iP	00 30 57.8
Ud	iP	00 30 34.4 C
De	iP	00 30 17.3 C

Southern Iran (h = 35 km).

" 19

Ud	iPKPl	03 59 35.8
De	iPKPl	03 59 45.4

South of Fiji Islands
(h = 400 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Sep.	19	Up	iP		05 26 55.8
			iPP		05 31 13.1
			iSKS		05 37 31
		Ki	iP		05 26 40.9
			iSKS		05 37 24
			iPKKP		05 43 19.7
					micr sec
			P	Z'	0.1 1.0
			Mx	E	2.2 15
			Mx	N	2.9 19
			Mx	Z	2.4 17
		Sk	iP		05 27 03.6
		Um	iP		05 26 45.7
			iPP		05 30 52.1
			iSKS		05 37 24
		Ud	iP		05 27 03.0
		De	iP		05 27 10.7
			iPP		05 31 27.4
		Ceram Sea (h = N).			
"	19	Up	iP		05 44 38.1
		Ud	iP		05 44 45.3
		Kuril Islands (h = 55 km).			
"	19	De	i(P)		13 06 48.4
"	19	Up	iPKPl		14 37 09.0 D
			ipPKPl		14 38 03.8
					micr sec
			PKPl	Z'	0.1 0.8
		Ki	iPKP		14 36 51.8
		Sk	iPKPl		14 37 01.5
		Um	iPKPl		14 36 58.2
			i		14 37 03.4
		Ud	iPKPl		14 37 11.1 D
			ipPKPl		14 37 03.6
		De	iPKPl		14 37 20.3 D
			iPKP2		14 37 26.5
			ipPKPl		14 38 13.1
		Kermadec Islands region.			
		h = 210 km (Up,Ud,De).			
"	19	Up	iP		14 48 53.5
		Ud	iP		14 48 59.4
			i		14 49 04.5
		Kuril Islands (h = N).			
"	19	Up	i(P)		20 22 16.7
"	19	Ud	iP		22 28 17.2
		De	iP		22 28 41.1
		Southern Alaska (h = 100 km).			
"	19	Ud	iP		22 53 12.1

1977					
Sep.	20	Up	iP		02 10 58.1
			ipP		02 11 11.3
		Ki	iP		02 10 12.7
		Um	iP		02 10 33.2
		Ud	iP		02 11 03.5
			ipP		02 11 16.2
		De	iP		02 11 21.3
			ipP		02 11 34.0
		Kuril Islands.			
		h = 50 km (Up,Ud,De).			
"	20	Ud	iP		03 06 26.7
"	20	Ud	iP		04 04 20.8
"	20	Up	iPKPl		04 32 24.9 C
					micr sec
			PKPl	Z'	0.1 1.0
		Sk	iPKPl		04 32 19.7
		Um	iPKPl		04 32 14.9 C
		Ud	iPKPl		04 32 27.2 C
		De	iPKPl		04 32 33.5
			iPKP2		04 32 51.8
		South of Kermadec Islands			
		(h = 40 km).			
"	20	Ki	iP		06 00 44.7
		Ud	iP		06 00 56.9
		Nepal (h = 25 km).			
"	20	Ud	i(P)		10 08 17.5
"	20	Up	iP		11 31 34.2
		Ki	iP		11 30 41.2
		Um	iP		11 31 07.2
		Ud	iP		11 31 34.8
		De	iP		11 31 56.8
		Rat Islands, Aleutian			
		Islands (h = 30 km).			
"	20	Up	iP		13 45 59.9
		Ki	iP		13 45 24.4
		Um	iP		13 45 40.4
		Ud	iP		13 46 07.0
		South of Honshu, Japan			
		(h = N).			
"	20	Up	iPKPl		13 56 51.9
		Um	iPKPl		13 56 41.1
		Ud	iPKPl		13 56 51.6
		South of Kermadec Islands			
		(h = N).			
"	20	Ud	iP		14 20 51.9

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Sep.	20	Up	iSgl	18 50 36.6	
		Ud	iSn	18 49 29.3	
			iSgl	18 49 37.1	
		De	iSgl	18 50 44.7	
		Southern Norway, 60.6°N, 7.2°E.			
		Origin time = 18 47 59.			
		M_L = 2.2 (Ud).			
		By combination with Bergen readings.			
"	21	Up	iP	03 23 15.6	
		Sk	iP	03 23 06.6	
		Um	iP	03 22 52.1	
		Ud	iP	03 23 23.0	
		Sakhalin Island (h = 60 km).			
"	21	Up	iPKP	09 47 32.9	
		Ki	i	09 47 27.3	
		Um	iPKP	09 47 26.2	
		Ud	iPKPl	09 47 31.9	
		De	iPKPl	09 47 40.2	
		Tonga Islands region (h = 15 km).			
"	21	Up	iP	10 46 23.8	
		Ki	iP	10 45 32.0	
		Sk	eP	10 46 04	
		Ud	iP	10 46 25.3	
			i	10 46 27.3	
		De	iP	10 46 48.0	
		Andreanof Islands, Aleutian Islands (h = 30 km).			
"	21	Ud	i(P)	12 18 12.1	
"	21	Ki	iP	13 28 29.1	
				micr sec	
			P Z'	0.3 1.5	
		Sk	iP	13 28 30.1	
		Um	iP	13 28 43.4	
		Ud	eP	13 28 42	
		Revilla Gegedo Islands region (h = N).			
"	21	Up	iP	15 00 24.8	
		Ki	iP	14 59 30.0	
		Sk	iP	14 59 57.4	
		Um	iP	14 59 58.5	
		Ud	iP	15 00 21.6	
		De	iP	15 00 45.1	
		Kodiak Island region (h = 20 km).			
"	21	Up	iP	16 16 59.2	C
		Ki	iP	16 17 08.1	
		(cont.)			

1977 Sep.	21	(cont.)			
		Sk	iP	16 16 47.4	C
		Ud	iP	16 16 48.3	C
		De	iP	16 16 46.1	
		Near coast of Venezuela (h = N).			
"	21	Up	iP	17 49 50.8	
			i	17 50 01.2	
				micr sec	
			i Z'	0.2 1.0	
		Ki	iP	17 48 55.6	
		Sk	eP	17 49 35	
		Um	iP	17 49 22.0	
			i	17 49 30.7	
		Ud	iP	17 49 53.8	
		De	iP	17 50 15.7	
		Near east coast of Kamchatka (h = 50 km).			
"	21	Ud	iP	18 59 36.4	
"	21	Up	i(P)	20 34 41.8	
"	21	Up	iP	21 11 50.4	D
			iPcP	21 12 24.0	
			ipP	21 12 46.8	
			iS	21 20 03	
				micr sec	
			P Z'	1.2 1.5	
			Mx E	1.0 13	
			Mx N	1.7 14	
			Mx Z	1.7 14	
		Ki	iP	21 10 59.0	D
			ipP	21 11 53.9	
				micr sec	
			P Z'	1.1 1.0	
			Mx E	2.5 10	
			Mx N	2.0 12	
			Mx Z	1.2 11	
		Sk	iP	21 11 35.6	D
			iPcP	21 12 15.4	
			ipP	21 12 32.0	
		Um	iP	21 11 23.1	D
			iPcP	21 12 07.5	
			iS	21 19 16	
		Ud	iP	21 11 54.9	D
			iPcP	21 12 27.1	
			ipP	21 12 51.7	
		De	iP	21 12 15.2	D
			iPcP	21 12 40.5	
			ipP	21 13 13.1	
		Northwest of Kuril Islands. h = 250 km (Up,Ki,Sk,Um, Ud,De). m = 6.5, M = 5.6 (Up,Ki). M not corrected for focal depth.			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 21 Up iP 21 40 27.9
Ud iP 21 40 41.6
De iP 21 41 07.9

" 21 De iPKP1 22 39 38.5
Tonga Islands region (h = N).

" 21 Up iSgl 22 43 30.2
i 22 43 46.8
iRg 22 44 05.9
Sk eSgl 22 45 21
Um iSgl 22 43 58.9
Ud iSgl 22 44 35.8
i 22 44 43.4
De iSgl 22 45 05.6
Esthonia, near 59 1/4°N, 27 1/2°E.
Origin time = 22 40 58.
Near-surface event.
Solution from Helsinki regional bulletin.

" 22 Up iP 00 17 19.7
Ki iP 00 17 01.7
Ud iP 00 17 28.7

" 22 Up iPKP1 04 00 41.4
Sk iPKP1 04 00 35.4
Um iPKP1 04 00 29.6
Ud iPKP1 04 00 41.4
South of Kermadec Islands (h = N).

" 22 Up iP 08 01 25.0
Sk eP 08 01 36
Ud iP 08 01 44.7

" 22 Up iPKP2 08 09 49.0
ipPKP2 08 09 58.7
i 08 10 05.0
micr sec
PKP2 Z' 0.1 1.3
Ki iPKP1 08 09 17.0
ipPKP1 08 09 27.0
micr sec
PKP1 Z' 0.1 1.3
Sk iPKP1 08 09 30.9 D
ipPKP1 08 09 40.6
Um iPKP1 08 09 26.5 D
ipPKP1 08 09 36.1
Ud iPKP1 08 09 37.2
ipPKP1 08 09 46.8
i 08 10 02.1
East of North Island, New Zealand.
h = 35 km (Up,Ki,Sk,Um,Ud).

1977
Sep. 22 Up iSgl 11 52 16.4
Sk iSn 11 51 28.9
Ud iSn 11 51 13.7
iSgl 11 51 21.3
De eSgl 11 52 29
Southern Norway, 60.6°N, 7.2°E.
Origin time = 11 49 43.
M_L = 2.8 (Ud).
By combination with Bergen readings.

" 22 De iP 12 51 36.4

" 22 De iP 16 19 54.7

" 22 Ki iPKP1 18 45 15.6
Sk iPKP1 18 45 29.2
iPKP2 18 45 39.5
Um iPKP1 18 45 24.4
Off east coast of North Island, New Zealand (h = 45 km).

" 23 Ki iPKP 00 00 39.3
Sk iPKP 00 00 50.8
Um iPKP 00 00 45.2
New Hebrides Islands (h = 25 km).

" 23 Up iP 03 02 15.2
i 03 02 18.6
micr sec
i Z' 0.1 1.1
Mx E 0.3 6
Mx N 0.4 8
Mx Z 0.8 9
Ki iP 03 03 35.9
ipP 03 03 42.0
micr sec
pP Z' 0.1 1.4
Mx E 0.5 8
Mx N 0.9 9
Mx Z 1.0 9
Sk iP 03 03 00.5
ipP 03 03 06.0
Um iP 03 02 59.5
i 03 03 02.9
Ud iP 03 02 22.6
i 03 02 24.9
De ipP 03 01 44.6
Albania.
h = 25 km (Ki,Sk).
m = 5.1 (Up,Ki).

" 23 Up iPP 06 16 19.0
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 23 (cont.)

Ki	iP		06 11 52.8
	i(PP)		06 15 03.1
	iPP		06 16 08.7
			micr sec
	P	Z'	0.3 1.5
Sk	iP		06 12 10.2
	i(PP)		06 16 23.9
	iPP		06 16 31.5
Um	iP		06 11 53.9
	i		06 12 06.9
	i(PP)		06 15 11.5
	iPP		06 16 07.0
Ud	iP		06 12 10.2
	i		06 12 26.9
De	i(PP)		06 16 17.2
	iPP		06 16 35.6

South of Sumbawa Island (h = N).

"	23	Ud	iP	11 57 46.7
"	23	Um	iP	13 38 16.5
		Ud	iP	13 38 38.5
"	23	Up	iSgl	14 24 44.3
		Sk	iSgl	14 24 44.6
		Ud	iSgl	14 23 42.3
		De	eSn	14 23 36

Southwest coast of Norway, near 58 1/2°N, 6 1/2°E.
Origin time = 14 21 38.
M_L = 2.7 (Ud).
By combination with Bergen and Kongsberg readings.

"	23	Ud	e(P)	15 21 49
"	23	Ud	iPKPl	15 44 01.2
		De	iPKPl	15 44 12.0
"	23	Up	iP	20 59 29.9
			i(PP)	21 03 45.3
		Ki	iP	20 59 15.5 C
				micr sec
			P Z'	0.1 1.0
		Sk	iP	20 59 36.0 C
		Um	iP	20 59 20.5 C
			iPP	21 03 33.0
		Ud	iP	20 59 38.4 C
			iPP	21 04 11.3

Banda Sea (h = 310 km).

"	23	Um	iPKP	22 11 43.1

(cont.)

1977
Sep. 23 (cont.)

		Ud	iPKP	22 11 54.5
"	24	Um	iP	02 07 19.9
			i	02 07 29.0
"	24	Ud	iP	02 43 15.5
		De	eP	02 42 51
"	24	Up	iP	05 14 37.6
		Ki	iP	05 16 23.1
		Sk	iP	05 15 20.4
		Ud	iP	05 14 40.8
"	24	Up	iP	05 43 15.3
		Sk	iP	05 42 57.5
		Um	iP	05 42 52.7
"	24	Up	iP	20 48 27.8
		Ki	iP	20 49 37.2
		Sk	iP	20 49 06.5
		Um	iP	20 49 01.6
		Ud	iP	20 48 34.3
		De	iP	20 48 00.7

Crete (h = 60 km).

"	24	Ki	i(P)	23 58 43.8
"	25	Up	iP	02 23 34.9
		Ud	iP	02 23 49.4
"	25	Up	iP	03 17 45.0
			i	03 17 59.6
		Ki	iP	03 18 54.4
		Sk	iP	03 18 23.4
		Um	iP	03 18 18.7
		Ud	iP	03 17 51.4
		De	iP	03 17 17.9

Crete (h = 60 km).

"	25	Ki	iPKP	06 31 58.3

South Sandwich Islands region (h = N).

"	25	Up	iP	08 27 54.4
		Ud	iP	08 28 09.1
		De	eP	08 27 26
"	25	Ud	iP	10 24 18.1

Afghanistan-USSR border region (h = 200 km).

"	25	Up	iP	14 44 29.2
		Ud	iP	14 44 44.4
		De	iP	14 44 25.4

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Sep.	25	Ud	iP	15 15 39.5
		Hindu Kush region (h = 210 km).		
"	25	Up	iPKPl	16 33 20.0
			iSKPl	16 36 29.3
		Ki	iPKP	16 33 12.6
		Um	i(PKP)	16 33 14.0
			iPKP	16 33 20.0
			iSKPl	16 36 04.6
		Ud	iPKPl	16 33 22.2 C
		De	iPKPl	16 33 32.9 C
		Fiji Islands region (h = 610 km).		
"	25	Up	iPP	18 50 04.7
		Um	iPP	18 49 51.0
		Ud	iPP	18 50 18.1
		South of Sumbawa Island (h = N).		
"	25	Up	iP	20 01 58.6
			i	20 02 21.6
		Ki	iP	20 03 03.0
		Sk	i	20 03 01.0
		Um	iP	20 02 28.7
		Ud	iP	20 02 12.1
		De	iP	20 01 43.5
		Turkey (h = 20 km).		
"	25	Ki	iP	20 33 10.2
		Ud	iP	20 34 07.6
"	25	Um	iP	22 52 08.0
		Ud	iP	22 52 32.1
		Philippine Islands region (h = N).		
"	26	Ki	i(P)	00 59 13.3
"	26	Up	iP	01 47 23.6
		Ki	eP	01 46 31
		Um	iP	01 46 55.9
		Ud	iP	01 47 27.2
		De	iP	01 47 48.7
		Off east coast of Kamchatka (h = N).		
"	26	Ki	iPKPl	05 16 55.9
				micr sec
			Mx E	1.2 18
			Mx N	1.4 20
			Mx Z	1.5 18
		West coast of Macquarie Islands (h = N).		
"	26	Up	iP	08 31 46.5
		(cont.)		

1977				
Sep.	26	(cont.)		
		Up	i	08 31 50.1
		Ki	iP	08 30 52.8
		Sk	iP	08 31 28.9
		Um	iP	08 31 17.5
		Ud	iP	08 31 49.9
		De	iP	08 32 11.9
		Near east coast of Kamchatka (h = 45 km).		
"	26	Up	iP	16 39 10.9
		Ud	iP	16 39 19.9
		Northeast of Taiwan (h = 70 km).		
"	26	Up	iP	19 57 32.3
		Ki	iP	19 57 51.2
		Sk	iP	19 58 00.2
		Um	iP	19 57 36.6
		Ud	iP	19 57 47.1
		De	iP	19 57 38.5
		Pakistan (h = N).		
"	27	Ud	i(P)	03 10 31.8
"	27	Up	iP	06 10 01.6
		Ud	eP	06 10 10
"	27	Up	iP	09 06 29.3
		Ud	iP	09 06 49.6
"	27	Up	iPKPl	11 38 14.9
		Ud	iPKPl	11 38 17.5
		De	iPKPl	11 38 27.4
"	27	Up	iP	14 11 48.7
		Ki	iP	14 11 13.9
		Sk	iP	14 11 22.5
		Um	iP	14 11 34.0
		Ud	iP	14 11 40.4
		Southern Nevada. Underground explosion.		
"	27	De	i(P)	15 32 24.0
"	27	Ud	iPKPl	17 41 28.2
		De	iPKPl	17 41 37.8
		Tonga Islands (h = N).		
"	27	Up	iP	20 47 29.8
		Ki	iP	20 46 58.2
		Sk	iP	20 47 11.9
		Um	iP	20 47 07.0
"	28	Up	iP	03 42 26.8
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Sep. 28 (cont.)

Ki	iP		03 41 59.5
Um	iP		03 42 08.2
Ud	iP		03 42 36.1

" 28

Up	iPKP2		04 59 07.8
Ki	iPKP1		04 58 35.2
			micr sec
	PKP1	Z'	0.2 1.5
Sk	iPKP1		04 58 48.9
Um	iPKP1		04 58 44.2
Ud	iPKP2		04 59 10.3
De	iPKP2		04 59 25.6

East of North Island, New Zealand (h = N).

" 28

Ki	iP		05 34 02.9
Um	iP		05 34 22.7
Ud	iP		05 34 54.4

Sea of Okhotsk (h = 370 km).

" 28

Ud	eP		08 58 01

Near east coast of Honshu, Japan (h = 70 km).

" 28

Up	iSn		11 33 58.9
	iSgl		11 34 12.1
Sk	i		11 36 30.1
	iSgl		11 36 36.1
Um	iSgl		11 36 03.8
Ud	iSgl		11 34 57.9
De	iPgl		11 33 29.3
	iSgl		11 34 20.7

Coast of Latvia, near 56 1/2°N, 21°E.
Origin time = 11 32 20.
M_L = 2.8 (Up,Um,Ud,De).
Explosion?

" 28

Ki	iPKP		12 31 23.0
Um	iPKP		12 31 30.1
Ud	iPKP1		12 31 30.7
De	iPKP1		12 31 42.8

Tonga Islands (h = N).

" 28

Up	iSgl		13 23 22.1
Sk	iSgl		13 22 41.0
Ud	iSgl		13 22 17.9
De	iSgl		13 23 20.5

Southern Norway, 60.4°N, 7.5°E.
Origin time = 13 20 42.
M_L = 2.9 (Ud).
By combination with Bergen and Kongsberg readings.

1977
Sep. 28

Ki	iP		15 35 13.7
Sk	iP		15 35 36.3

" 28

Ki	iP		22 15 58.7
Um	iP		22 15 48.2
Ud	iP		22 16 07.4

Afghanistan-USSR border region (h = 110 km).

" 29

Up	iP		08 07 18.3
			micr sec
	P	Z'	0.1 1.0
Ki	iP		08 06 25.4
Ud	iP		08 07 23.5
De	iP		08 07 43.5

Off east coast of Kamchatka (h = N).

" 29

Ud	iP		14 47 05.1

" 30

Up	iP		07 04 45.8 C
			micr sec
	P	Z'	1.0 1.0
Ki	iP		07 05 16.4 C
			micr sec
	P	Z'	0.2 1.0
Sk	iP		07 05 23.1 C
Um	iP		07 04 52.5 C
Ud	iP		07 05 06.6 C
De	iP		07 04 57.3 C

Western Kazakh SSR.
m = 5.9 (Up,Ki).
Underground explosion.

" 30

Ki	ipP		07 23 16.9
Sk	ipP		07 23 05.3
Um	iP		07 23 03.8
	ipP		07 23 20.8
Ud	ipP		07 23 11.9

Nicaragua.
h = 70 km (Um).

" 30

Up	iP		07 48 09.1
Ki	iP		07 48 40.4
Um	iP		07 48 08.1
Ud	iP		07 47 57.5

" 30

Up	iP		10 30 40.3
	i		10 30 43.7
Ki	ipP		10 30 09.1
Sk	i		10 30 18.7
Um	iP		10 30 26.3
Ud	iP		10 30 31.7
De	iP		10 30 48.8

Utah (h = 5 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Sep.	30	Up	iP	16 46 35.1
		Sk	iP	16 47 06.4
		Um	iP	16 47 18.2
		Ud	i	16 46 39.8
		Western Mediterranean Sea (h = 10 km).		
"	30	Up	iP	19 24 43.3
		Ki	iP	19 24 46.2 D
		Sk	iP	19 25 06.7
		Um	iP	19 24 38.2
		Ud	iP	19 24 59.9 D
		De	eP	19 25 00
		Tadzhik-Sinkiang border region (h = 20 km).		

Conny Holmqvist
Ota Kulhánek
Klaus Meyer
Rutger Wahlström

June 19, 1979

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BOX 517
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SWEDEN

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SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

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1977
Oct. 1 Ud iP 06 42 53.7
Afghanistan-USSR border region (h = 160 km).

" 1 Ud iP 12 02 22.7

" 1 Ki iP 13 06 21.0
micr sec
P Z' 0.1 1.1
Ud iP 13 06 41.4
South of Sumbawa Island (h = N).

" 1 Up iP 13 17 36.7
micr sec
P Z' 0.1 0.8
Ki iP 13 17 37.9 C
micr sec
P Z' 0.1 0.9
Sk iP 13 17 53.6
Um iP 13 17 33.6
Ud iP 13 17 48.4 C
Nicobar Islands region (h = 110 km).
m = 5.7 (Up,Ki).

" 1 Up iPKP2 15 15 07.1
Sk iPKP1 15 14 55.8
Um iPKP1 15 14 51.0 D
Ud iPKP1 15 15 04.5 D
Kermadec Islands (h = N).

" 2 Ki ePKP1 03 58 46
iPKP2 03 58 52.0
Sk iPKP2 03 59 15.9
Cook Strait, New Zealand (h = 180 km).

1977
Oct. 2 Up iP 07 29 52.4 C
Ki iP 07 29 16.9
Um iP 07 29 32.2
Ud iP 07 29 59.9 C
South of Honshu, Japan (h = 300 km).

" 2 Up eP 13 15 42
iS 13 26 14
micr sec
Mx E 1.9 20
Mx N 6.8 19
Mx Z 3.8 19
Ki iP 13 15 22.3
i 13 15 27.7
micr sec
P Z' 0.1 0.9
i Z' 0.2 1.0
Mx E 2.8 14
Mx N 6.1 19
Sk i 13 15 51.7
Um iP 13 15 25.8
Ud iP 13 15 47.9 D
Panay, Philippine Islands (h = N).
M = 6.1 (Up,Ki).

" 2 Ud iP 19 00 11.0
i 19 00 12.9
Off coast of northern Peru (h = 45 km).

" 3 Ki iP 00 26 29.9
Ud iP 00 26 54.3
Mindanao, Philippine Islands (h = 110 km).

" 3 Up iSgl 00 37 06.0
Sk e 00 35 19
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 3 (cont.)

Sk iSgl 00 35 27.2
Ud iSgl 00 36 09.2
Off coast of west Norway,
near 62 3/4°N, 5°E.
Origin time = 00 33 38.
M_L = 2.7 (Ud).
By combination with Bergen
and Kongsberg readings.

" 3 Sk iP 01 52 33.1
Ud iP 01 52 34.6

" 3 Ki iP 04 49 38.3
micr sec
P Z' 0.1 1.5
Sk eP 04 49 02
Ud iP 04 49 03.8
i 04 49 07.1
North Atlantic Ocean (h = N).

" 3 Sk iPKP 05 07 47.9
Loyalty Islands (h = N).

" 3 Ud iP 11 02 15.0

" 3 Ki iP 11 29 44.4 C
Sk iP 11 29 23.3
Ud iP 11 29 23.0
Windward Islands (h = 100 km).

" 3 Ki iP 13 54 12.7
Volcano Islands region
(h = 200 km).

" 3 Ud iPKP1 19 22 18.6
Fiji Islands region
(h = 550 km).

" 3 Up iPKP2 19 55 17.1
i 19 55 28.2
micr sec
PKP2 Z' 0.1 1.4
Sk iPKP1 19 55 06.4
i 19 55 17.8
Um iPKP1 19 55 02.3
Ud i(PKP) 19 55 02.0
iPKP1 19 55 15.4
Kermadec Islands region
(h = 35 km).

" 3 Up iP 22 57 28.4 D
i 22 57 39.6
(cont.)

1977
Oct. 3 (cont.)
Up micr sec
P Z' 0.1 1.0
Ki iP 22 57 29.7 D
micr sec
P Z' 0.1 1.0
Sk iP 22 57 43.4
Um iP 22 57 26.2 D
Ud iP 22 57 38.8
Northern Sumatra (h = 15 km).
m = 6.0 (Up,Ki).

" 4 Up iP 06 28 11.9
Arabian Sea (h = N).

" 4 Up iP 08 06 00.9
Ud iP 08 06 03.3

" 4 Up iP 11 13 42.8
Ki iP 11 13 21.0
Ud iP 11 13 52.0 C
Philippine Islands region
(h = 70 km).

" 4 Ki iP 11 21 08.0 C

" 4 Ud i 12 41 39.1
iSgl 12 41 44.0
Southwest Norway, near
60°N, 6 1/2°E.
Origin time = 12 39 49.
M_L = 2.6 (Ud).
By combination with Kongsberg
readings.

" 4 Up iP 13 56 39.7
ipP 13 56 47.3
micr sec
P Z' 0.1 1.2
Ki iP 13 56 49.0
ipP 13 56 54.6
micr sec
P Z' 0.1 1.0
Sk iP 13 56 28.3
ipP 13 56 35.5
Um iP 13 56 47.7
Ud iP 13 56 29.6
ipP 13 56 36.0
Near coast of Venezuela.
h = 20 km (Up,Ki,Sk,Ud).
m = 5.8 (Up,Ki).

" 4 Up iP 14 00 56.7
Ki iP 14 01 29.3
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 4 (cont.)

Sk	iP		14 01 38.0
Ud	iP		14 01 04.3

" 4 Um iP 15 12 07.4
Near east cost of Honshu, Japan (h = 80 km).

" 4 Up	iP		15 50 21.3	C
	i		15 50 35.7	
			micr sec	
	P	Z'	0.1 0.9	
Ki	iP		15 49 42.7	C
Sk	iP		15 50 15.7	
Um	iP		15 49 59.4	C
Ud	iP		15 50 28.2	C

Honshu, Japan (h = 70 km).

" 4 Ud eSgl 16 34 31
Southwest Norway, near 60°N, 6°E.
Origin time = 16 32 30.
M_L = 2.5 (Ud).
By combination with Bergen and Kongsberg readings.

" 4 Ud iSgl 16 38 19.0
Same location as the preceding event.
Origin time = 16 36 18.
By combination with Bergen and Kongsberg readings.

" 4 Up	iP		17 49 06.8
Ki	iP		17 48 17.9
Um	iP		17 48 40.5
Ud	iP		17 49 11.3

Kuril Islands (h = 45 km).

" 4 Up	iP		21 47 30.1
Ud	iP		21 47 37.8

Greece (h = N).

" 5 Up	iP		03 26 40.2	
Ki	iP		03 26 05.7	
Um	iP		03 26 20.5	D
Ud	iP		03 26 46.2	

Bonin Islands region (h = N).

" 5 Up	iP		05 39 30.1
	iS		05 43 15.7
			micr sec
	P	Z'	1.1 1.9

(cont.)

1977
Oct. 5 (cont.)

Up			micr	sec
	Mx	E	16	14
	Mx	N	26	19
	Mx	Z	19	18
Ki	iP		05 40 33.7	
	iS		05 45 20	
			micr	sec
	P	Z'	0.4	1.0
	Mx	E	3.7	13
	Mx	N	3.9	12
	Mx	Z	4.7	12
Sk	iP		05 40 15.2	
Um	iP		05 40 00.1	D
	i		05 40 08.0	
	iS		05 44 20	
Ud	iP		05 39 43.1	
	i		05 39 47.4	
	i		05 44 01.6	

Turkey (h = N).
m = 6.0, M = 5.9 (Up,Ki).

" 5 Up	iRg		08 14 01.9
Ud	i(Sgl)		08 13 31.7
	iRg		08 13 37.3

Central Sweden.
Near-surface event.

" 5 Up	iPKPl		10 47 24.1
			micr sec
	PKPl	Z'	0.3 1.2
Sk	iPKPl		10 47 16.5
Um	iPKP		10 47 14.0
Ud	iPKPl		10 47 25.5
	i		10 47 38.7

Kermadec Islands region (h = 55 km).

" 5 Up	iPKPl		11 15 05.3
			micr sec
	PKPl	Z'	0.1 1.0
Sk	iPKPl		11 14 55.6
Ud	iPKPl		11 15 03.9
	i		11 15 15.6

Kermadec Islands region (h = 160 km).

" 5 Ud i(P) 12 44 44.6

" 5 Ud	i(Sgl)		13 39 04.7
	iRg		13 39 09.7

Regional, near-surface event.

" 5 Ud iPKPl 13 48 15.9
Tonga Islands region (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	5	Up	i(PKP)		14 33 33.4
			i		14 33 36.3
			iPKP		14 33 42.4
					micr sec
			PKP	Z'	0.1 1.0
		Ki	i(PKP)		14 33 20.0
			iPKP		14 33 27.6
			iSKPl		14 36 00.1
					micr sec
			PKP	Z'	0.1 1.0
		Sk	i(PKP)		14 33 28.6
			i		14 33 33.1
			iPKP		14 33 38.1
		Um	i(PKP)		14 33 25.9
			iPKP		14 33 33.5
		Ud	i(PKP)		14 33 33.6
			iPKP		14 33 43.5
		Fiji Islands region (h = 570 km).			
"	5	Up	iP		16 13 00.8
		Ki	iP		16 14 07.4
		Sk	iP		16 13 32.0
		Ud	iP		16 13 05.3
"	5	Up	eP		18 04 14
			ipP		18 04 19.3
		Ki	ipP		18 04 09.2
		Ud	iP		18 04 26.5
			ipP		18 04 33.8
		Burma. h = 20 km (Up,Ud).			
"	5	Ki	iP		19 05 05.2
		South of Sumbawa Island (h = N).			
"	5	Ki	iP		23 51 10.2
					micr sec
			P	Z'	0.1 1.0
"	6	Ki	iP		00 10 45.9
			i		00 10 50.5
					micr sec
			i	Z'	0.2 1.3
		Um	iP		00 11 33.6
		North of Svalbard (h = N).			
"	6	Ki	iP		02 16 44.5
		Ud	iP		02 17 11.0
		Philippine Islands region (h = 70 km).			
"	6	Ki	iP		03 05 55.7
		Ud	iP		03 07 22.8
		North of Svalbard (h = N).			
1977 Oct.	6	Ud	iP		06 55 37.2
		Hindu Kush region (h = 70 km).			
"	6	Up	iP		07 32 32.1
		Sk	iP		07 32 02.6
		Ud	iP		07 32 12.5
		North Atlantic Ocean (h = N).			
"	6	Ki	iPgl		15 35 18.7
			iSgl		15 35 45.5
"	6	Up	iP		18 12 10.4
		Ud	iP		18 12 18.9
"	6	Up	iPKP		22 06 29.9
		Sk	i(PKP)		22 06 20.8
		Um	i(PKP)		22 06 12.9
		Ud	e(PKP)		22 06 26
			iPKP		22 06 32.2
"	6	Up	iP		22 26 24.3
		Ki	iP		22 26 23.1 C
		Sk	iP		22 26 37.4
		Um	iP		22 26 21.1 C
		Ud	iP		22 26 33.1 C
		Southern Sumatra (h = 110 km).			
"	7	Up	iP		04 59 41.7
			ipP		04 59 50.3
					micr sec
			Mx	E	1.2 20
			Mx	N	1.8 20
			Mx	Z	2.8 23
		Ki	iP		04 59 33.7
			ipP		04 59 42.0
			iSKS		05 10 19
					micr sec
			Mx	E	3.7 19
			Mx	N	3.9 21
			Mx	Z	4.7 21
		Sk	ipP		04 59 59.6
		Um	iSKS		05 10 14
		Ud	iP		04 59 52.2
		South of Sumbawa Island. h = 25 km (Up,Ki). M = 5.9 (Up,Ki).			
"	7	Ki	iP		05 53 27.7
		Ud	iP		05 53 45.1
		South of Sumbawa Island (h = N).			
"	7	Up	iP		12 24 42.2
			ipP		12 24 53.0
			iSKS		12 35 24
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 7 (cont.)

Up			micr	sec
	Mx	E	72	26
	Mx	N	13	23
	Mx	Z	16	25
Ki	iP		12 24 33.9	
	ipP		12 24 44.1	
	iSKS		12 35 19	
			micr	sec
	pP	Z'	0.1	1.0
	Mx	E	11	20
	Mx	N	33	28
	Mx	Z	15	20
Sk	iP		12 24 51.2	
Um	i		12 24 41.6	
	iSKS		12 35 19	
Ud	iP		12 24 50.9	
	iPP		12 29 11.9	

South of Sumbawa Island.
h = 35 km (Up,Ki).
M = 6.6 (Up,Ki).

" 7 Ud iP 12 37 13.0
Sumbawa Island region
(h = N).

" 7 Up iP 12 47 34.1
i 12 47 47.7
Sk iP 12 48 18.3
i 12 48 24.5
Um i 12 48 25.4
Ud iP 12 47 40.8
i 12 48 13.8
Greece (h = N).

" 7 Ki iP 14 52 35.9
Ud iP 14 52 53.2
South of Sumba Island
(h = N).

" 7 Up eP 17 15 10

			micr	sec
	Mx	E	1.5	25
	Mx	N	4.7	28
	Mx	Z	2.1	29
Ki	iP		17 15 03.3	
			micr	sec
	Mx	N	6.8	27
Sk	iP		17 15 21.4	
Ud	iP		17 15 20.9	

Sumbawa Island region
(h = N).
M = 6.0 (Up,Ki).

" 7 Up iP 17 50 44.1
(cont.)

1977
Oct. 7 (cont.)

Up			micr	sec
	Mx	E	1.6	26
	Mx	N	3.8	23
	Mx	Z	3.3	26
Ki	iP		17 50 36.0	
	i		17 50 40.0	
			micr	sec
	Mx	E	3.3	21
	Mx	N	4.4	26
	Mx	Z	4.7	21
Sk	eP		17 50 54	
	iPP		17 55 17.0	
Um	iP		17 50 37.0	
Ud	iP		17 50 52.7	
	i		17 51 02.8	

Sumbawa Island region
(h = N).
M = 5.9 (Up,Ki).

" 7 Up iP 18 37 41.5

" 7 Up iP 19 06 10.9
Ki iP 19 05 20.2
Ud iP 19 06 17.0
i 19 06 31.1
Kuril Islands region
(h = 70 km).

" 7 Ki iP 19 18 09.4
i 19 18 17.9
South of Sumbawa Island
(h = N).

" 7 Ki iP 19 23 53.2
Sumbawa Island region (h = N).

" 7 Um iP 21 43 47.1
Ud iP 21 44 16.8

" 7 Up

			micr	sec
	Mx	E	1.8	30
	Mx	N	3.4	26
	Mx	Z	2.0	28
Ki	iP		21 50 00.7	
			micr	sec
	Mx	E	1.5	20
	Mx	N	1.3	17
	Mx	Z	3.1	21
Ud	iP		21 50 18.9	

South of Sumbawa Island (h = N).
M = 5.7 (Up,Ki).

" 7 Ki iP 22 21 43.2
Sk iP 22 22 20.7
Um iP 22 22 02.1
Ud iP 22 22 22.0

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Oct.	7	Um	iP		23 17 26.9
		Ud	iP		23 17 52.4
		Ryukyu Islands (h = N).			
"	8	Ki	iP		00 26 42.3
		Sumba Island region (h = N).			
"	8	Ud	iP		00 28 37.1
"	8	Ud	iP		01 48 58.3
"	8	Um	iP		02 55 19.3
"	8	Up	ipP		03 17 53.3
		Sk	ipP		03 17 45.9
		Um	ipP		03 18 00.6
		Ud	iP		03 17 11.5 C
			ipP		03 17 45.1
		Peru (h = 130 km).			
"	8	Um	iP		10 25 15.4
"	8	Up	iP		10 30 52.7
			i		10 31 25.9
		Ud	iP		10 30 58.7
		De	iP		10 30 25.6
		Crete (h = 60 km).			
"	8	Ud	iPKPl		17 37 42.7
		De	iPKPl		17 37 54.3
		Fiji Islands region (h = 610 km).			
"	8	Up	iP		21 19 35.7 C
			i		21 19 44.0
			iSKS		21 29 57
			iS		21 30 10
					micr sec
			P	Z'	0.1 1.1
			i	Z'	0.2 1.2
			Mx	E	2.4 18
			Mx	N	5.0 20
			Mx	Z	3.9 17
		Ki	iP		21 19 15.6
			i		21 19 30.8
					micr sec
			P	Z'	0.5 1.8
			Mx	E	2.2 16
			Mx	N	3.3 15
			Mx	Z	2.5 16
		Sk	i		21 19 48.5
		Um	iP		21 19 22.2 C
			iSKS		21 29 41
		Ud	iP		21 19 42.8
		Luzon, Philippine Islands (h = 30 km).			
		m = 6.4, M = 5.9 (Up,Ki).			

1977					
Oct.	9	Ki	iP		04 16 24.2 C
					micr sec
			P	Z'	0.1 1.0
		Sk	eP		04 17 01
		Ud	iP		04 17 21.6
		Komandorsky Islands region (h = N).			
"	9	Up	iP		11 04 26.4
			i		11 04 33.9
			i		11 07 49.9
					micr sec
			i	Z'	0.1 0.8
		Ki	iP		11 02 55.4
			i		11 03 08.1
		Sk	iP		11 04 06.5
			i		11 04 10.8
		Um	iP		11 03 34.4
			i		11 03 44.0
		Ud	iP		11 04 37.2 C
			i		11 05 12.5
		De	iP		11 05 08.6
		Novaya Zemlya. Underground explosion.			
"	9	Ud	iP		11 51 33.7
"	9	Sk	iPKPl		12 17 40.8
		Um	iPKPl		12 17 35.7
		Ud	iPKPl		12 17 49.2 C
		Kermadec Islands (h = N).			
"	9	Ud	iP		14 03 36.4
			i		14 03 47.7
"	9	Ki	iP		15 36 56.7
		Sk	iP		15 37 20.8
		Ud	iP		15 37 25.9
			i		15 37 35.1
		Luzon, Philippine Islands (h = 60 km).			
"	9	Ki	iP		16 52 09.4
		Sk	eP		16 52 23
		Ud	iP		16 52 47.6
		Alberta Province, Canada (h = N).			
"	9	Ki	iP		17 10 54.1
		Ud	iP		17 11 12.8
		South of Sumbawa Island (h = N).			
"	9	Ud	iP		22 51 22.8
"	9	Up	iP		23 22 28.9
		Ki	iP		23 21 57.2
		Sk	iP		23 22 11.1

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Oct.	10	Ki	iP		08 56 06.4
		Sk	eP		08 55 35
		Ud	iP		08 55 03.9
		De	iP		08 54 32.9
		Crete (h = 80 km).			
"	10	Up	iPdiff		12 11 07
			iPKPl		12 13 25.7 D
			iPP		12 16 52.9
			i		12 24 12.0
					micr sec
			PKPl	Z'	1.5 0.6
			PP	Z'	1.4 1.7
			Mx	E	22 22
			Mx	N	46 23
			Mx	Z	49 23
		Ki	i(PKP)		12 13 07.8
			iPKP		12 13 12.7
			i		12 13 16.9
			iPP		12 15 59.5
			i		12 25 05.6
					micr sec
			i	Z'	4.7 3.0
			PP	Z'	0.4 1.6
			Mx	E	27 18
			Mx	N	22 19
			Mx	Z	43 19
		Sk	iPKPl		12 13 19.2
			iPP		12 16 33.9
		Um	iPKPl		12 13 14.7
			iPP		12 16 26.9
		Ud	iPKPl		12 13 27.1 D
			iPP		12 16 50.7
		De	iPKPl		12 13 34.6
			i		12 13 38.8
		South of Tonga Islands (h = N).			
		m = 6.7, M = 7.2 (Up,Ki).			
"	10	Up	iPKPl		12 20 31.0
		Ki	iPKP		12 20 18.0
		Ud	iPKPl		12 20 32.8
		De	iPKPl		12 20 41.5
		South of Tonga Islands.			
		Origin time = 12 01 00.			
		Approximate origin times, based upon the same coordinates as for the earthquake at 11 53 54, October 10, are given for those aftershocks, which have not been reported by NEIS. Up and Ud are obviously our most sensitive stations for this sequence.			

1977					
Oct.	10	Up	iPKPl		12 22 03.9 C
		Ud	iPKPl		12 22 05.4 C
		South of Tonga Islands.			
		Origin time = 12 02 32.			
"	10	Up	iPKPl		12 28 26.9
		Ud	iPKPl		12 28 28.1
		Probably south of Tonga Islands.			
"	10	Up	iPKPl		12 31 10.1
					micr sec
			PKPl	Z'	0.1 1.0
		Ud	iPKPl		12 31 11.5 C
		De	iPKPl		12 31 20.5
		South of Tonga Islands.			
		Origin time = 12 11 38.			
"	10	Ud	iP		12 39 25.2
"	10	Up	iPKPl		12 40 24.2
		Ud	iPKPl		12 40 26.4
		Probably south of Tonga Islands.			
"	10	Up	iPKPl		12 43 13.0 C
		Ud	iPKPl		12 43 14.0
		Probably south of Tonga Islands.			
"	10	Up	iPKPl		12 46 14.1 C
		Ud	iPKPl		12 46 15.4 C
		De	iPKPl		12 46 24.9
		South of Tonga Islands.			
		Origin time = 12 26 42.			
"	10	Up	iPKPl		12 54 59.8
		Ud	iPKPl		12 55 01.8
			i		12 55 17.6
		De	iPKPl		12 55 10.1
		South of Tonga Islands.			
		Origin time = 12 35 29.			
"	10	Up	iPKPl		12 57 25.9
		Ud	iPKPl		12 57 27.6
		Probably south of Tonga Islands.			
"	10	Ud	iP		13 05 54.6
"	10	Up	iPKPl		13 16 59.1
		Um	iPKP		13 16 51.9
		Ud	iPKPl		13 17 00.9 C
		South of Tonga Islands.			
		Origin time = 12 57 28.			
"	10	Up	iPKPl		13 19 26.9
		Ud	iPKPl		13 19 29.0
		De	iPKPl		13 19 38.5
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Dealry

1977
Oct. 10 (cont.)
South of Tonga Islands.
Origin time = 12 59 56.

" 10 Up iPKPl 13 21 32.9
i 13 21 40.4
i 13 21 51.9
micr sec
i Z' 0.1 1.0
i Z' 0.3 1.3
Ud iPKPl 13 21 34.6
i 13 21 44.2
i 13 21 53.2
De iPKPl 13 21 45.5
i 13 21 54.7
i 13 22 05.1
South of Tonga Islands.
Origin time = 13 02 02.

" 10 Up iPKPl 13 22 43.3
i 13 22 56.5
micr sec
PKPl Z' 0.1 0.9
Um iPKPl 13 22 32.9
Ud iPKPl 13 22 44.9
i 13 22 58.1
De iPKPl 13 22 56.0
South of Tonga Islands.
Origin time = 13 03 12.

" 10 Up iPKPl 13 28 13.6
micr sec
PKPl Z' 0.1 0.8
Um ePKPl 13 28 04
Ud iPKPl 13 28 14.5
De iPKPl 13 28 25.5
South of Tonga Islands
(h = N).

" 10 Up iPKPl 13 35 31.5
Ud iPKPl 13 35 33.0
Probably south of Tonga
Islands.

" 10 Up iPKPl 13 50 09.9
i 13 50 23.3
Ud iPKPl 13 50 13.3
i 13 50 24.0
De iPKP2 13 50 23.4
South of Tonga Islands
(h = N).

" 10 Ud iP 13 58 52.4

" 10 Up iP 14 00 52.5
Ud iP 14 00 54.2

1977
Oct. 10 Ud iP 14 21 02.2

" 10 Ud iP 14 34 41.9

" 10 Ud iP 14 44 25.5 C

" 10 Up iPKPl 14 52 02.4
Um i 14 52 02.8
Ud iPKPl 14 52 03.8 C
Probably south of Tonga Islands.

" 10 Up iPKPl 14 57 36.7
Ud iPKPl 14 57 38.1 C
i 14 57 49.3
Probably south of Tonga Islands.

" 10 Ud iP 14 59 22.3
i 14 59 33.1

" 10 Ud iP 15 05 37.0
i 15 05 47.8

" 10 Up iPKPl 15 32 19.4 C
Ki iPKP 15 32 10.0
Ud iPKPl 15 32 20.8 C
De iPKPl 15 32 31.0
South of Tonga Islands.
Origin time = 15 12 48.

" 10 Ud iPgl 15 38 38.2
iSgl 15 38 58.3
iRg 15 39 06.5
De iSgl 15 39 30.1
Origin time = 15 38 11.
Regional, near-surface event.

" 10 Up iPKPl 15 51 19.9
Um iP 15 51 29.3
Ud iPKPl 15 51 21.0
De iPKP 15 51 27.0
South of Tonga Islands.
Origin time = 15 31 48.

" 10 Up iPKPl 16 00 26.8
Ki iPKPl 16 00 06.3
Um iPKPl 16 00 15.8
Ud iPKPl 16 00 28.3 C
South of Tonga Islands.
Origin time = 15 40 55.

" 10 Up iPKPl 16 03 38.7
Ud iPKPl 16 03 40.1 C
Probably south of Tonga Islands.

" 10 Ud iP 16 18 26.1

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	10	Ud	iP	16 21 58.8
"	10	Up	iPKP1	16 40 40.3
		Ud	iPKP1	16 40 44.2
		De	iPKP2	16 40 55.8
		South of Tonga Islands.		
		Origin time = 16 21 11.		
"	10	Ud	iP	16 44 22.9
"	10	Up	iPKP1	16 49 27.5 C
		Ud	iPKP1	16 49 27.6
			i	16 49 39.5
		De	iPKP1	16 49 39.1
		South of Tonga Islands.		
		Origin time = 16 29 55.		
"	10	Up	iPKP1	16 51 16.1
		Ud	iPKP1	16 51 17.5
		De	iPKP1	16 51 28.2
		South of Tonga Islands.		
		Origin time = 16 31 44.		
"	10	Ud	iPKP1	16 54 59.8 C
		De	iPKP1	16 55 08.6
		Probably south of Tonga Islands.		
"	10	Up	iPKP1	17 05 49.1
		Ud	iPKP1	17 05 49.3
		Probably south of Tonga Islands.		
"	10	Ud	iP	17 12 40.1
			i	17 12 48.1
"	10	Up	iPKP1	17 31 26.3
			i	17 31 37.5
		Um	iPKP1	17 31 03.4
		Ud	iPKP1	17 31 27.4
			i	17 31 38.6
		De	iPKP1	17 31 38.0
			i	17 31 49.2
		South of Tonga Islands.		
		Origin time = 17 11 54.		
"	10	Up	iP	17 51 28.9
"	10	Up	iPKP1	18 04 55.1
			i	18 05 07.1
		Ud	iPKP1	18 04 57.6
			i	18 05 08.2
		De	iPKP1	18 05 07.2
		South of Tonga Islands.		
		Origin time = 17 45 25.		

1977 Oct.	10	Up	iPKP1	18 10 08.4 C
		Ud	iPKP1	18 10 09.8 C
		De	iPKP2	18 10 22.1
		South of Tonga Islands.		
		Origin time = 17 50 37.		
"	10	Ud	iP	18 11 28.9
"	10	Up	iPKP1	18 12 40.2
		Ud	iPKP1	18 12 41.8
		Probably south of Tonga Islands.		
"	10	Up	iPKP1	18 48 11.5
		Ud	iPKP1	18 48 12.8
			i	18 48 22.9
		Probably south of Tonga Islands.		
"	10	Ud	iP	18 57 10.9
		De	iP	18 56 39.4
		Dodecanese Islands (h = N).		
"	10	Up	iPKP1	19 13 52.2
		Ud	iPKP1	19 13 53.7 C
		De	iPKP1	19 14 04.0
		South of Tonga Islands.		
		Origin time = 18 54 21.		
"	10	Up	iPKP1	19 25 53.2
		Ud	iPKP1	19 25 55.2
			i	19 26 18.0
		De	iPKP1	19 26 01.6
		South of Tonga Islands.		
		Origin time = 19 06 22.		
"	10	Ud	iP	19 28 02.7
"	10	Up	iPKP1	19 33 31.0
		Ud	iPKP1	19 33 29.0
		Probably south of Tonga Islands.		
"	10	Ud	iP	19 43 54.1
"	10	Up	iPKP1	19 51 00.9 C
		Um	i	19 50 46.0
		Ud	iPKP1	19 51 02.3 C
		South of Tonga Islands.		
		Origin time = 19 31 29.		
"	10	Up	iPKP1	20 07 18.0
		Ud	iPKP1	20 07 15.9
		Probably south of Tonga Islands.		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	10	Up	iPKPl	20 07 54.2	C
		Ud	iPKPl	20 07 55.7	C
		Probably south of Tonga Islands.			
"	10	Up	iPKPl	21 28 50.8	
			ipPKPl	21 29 07.6	
				micr sec	
			pPKPl Z'	0.1 1.0	
		Ud	iPKPl	21 28 52.6	C
			ipPKPl	21 29 09.1	
		De	iPKPl	21 29 02.9	
			ipPKPl	21 29 19.4	
		South of Tonga Islands h = 60 km (Up,Ud,De).			
"	10	Um	iP	22 32 21.0	
		Ud	iP	22 32 37.3	
"	10	Up	iPKPl	23 15 36.7	
		Ud	iPKPl	23 15 35.6	
		Probably south of Tonga Islands.			
"	10	Up	iPKPl	23 23 07.5	
		Ud	iPKPl	23 23 09.8	C
		Probably south of Tonga Islands.			
"	11	Up	iPKPl	00 32 19.3	
		Ud	iPKPl	00 32 21.1	
		De	iPKP2	00 32 35.1	
		South of Tonga Islands. Origin time = 00 12 48.			
"	11	Up	iPKPl	01 27 33.7	
		Ud	iPKPl	01 27 35.7	C
		Probably south of Tonga Islands.			
"	11	Up	iP	01 53 05.7	
"	11	Up	iPKPl	02 01 02.9	C
		Ud	iPKPl	02 01 04.5	
		De	iPKPl	02 01 14.8	
		South of Tonga Islands. Origin time = 01 41 31.			
"	11	Up	iPKPl	02 08 45.1	
		Ud	iPKPl	02 08 47.3	
		Probably south of Tonga Islands.			
"	11	Up	iPKPl	02 23 14.3	
		Ud	iPKPl	02 23 16.4	C
		Probably south of Tonga Islands.			
1977 Oct.	11	Up	iPKPl	02 24 57.5	
			i	02 25 06.9	
		Ud	iPKPl	02 24 58.7	
			i	02 25 08.5	
		Probably south of Tonga Islands.			
"	11	Up	iPKPl	02 33 40.7	
		Ud	iPKPl	02 33 42.3	
		Probably south of Tonga Islands.			
"	11	Up	iPKPl	02 34 39.0	
		Ud	iPKPl	02 34 40.7	
		Probably south of Tonga Islands.			
"	11	Up	iPKPl	02 43 23.3	
			i	02 43 37.6	
		Ud	iPKPl	02 43 24.6	C
			i	02 43 37.2	
		De	ePKPl	02 43 34	
		South of Tonga Islands. Origin time = 02 23 52.			
"	11	Up	iPKP	03 17 16.7	
		Ud	iPKPl	03 17 18.5	
		Probably south of Tonga Islands.			
"	11	Ki	iP	04 13 07.8	
		Um	iP	04 13 04.3	C
		Ud	iP	04 13 38.7	
"	11	Ud	iP	04 23 54.2	
"	11	Up	iPKPl	04 34 26.9	C
		Ud	iPKPl	04 34 28.3	
		Probably south of Tonga Islands.			
"	11	Up	iP	05 14 12.6	
		Um	iP	05 13 44.4	
		Ud	iP	05 14 12.9	
		Andreanof Islands, Aleutian Is. (h = N).			
"	11	Up	iP	05 29 51.8	
		Um	iP	05 29 34.4	
		Ud	iP	05 29 59.3	
"	11	Up	iP	05 30 52.3	
		Ud	iP	05 30 53.6	
"	11	Up	iPKPl	06 02 59.3	C
			i	06 03 10.0	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 11 (cont.)

Um	i(PKP)	06 02 43.9	
Ud	iPKPl	06 03 00.7	C
	i	06 03 10.8	
De	iPKPl	06 03 10.9	

South of Tonga Islands.
Origin time = 05 43 28.

" 11

Up	iPKP2	06 17 17.7	
Um	iPKPl	06 17 02.3	
Ud	iPKPl	06 17 16.2	
De	iPKP2	06 17 33.0	

Kermadec Islands (h = N).

" 11

Up	iPKPl	06 48 32.9	
	i	06 48 41.5	
Ki	i(PKP)	06 48 08.2	
Sk	e	06 48 35	
Um	iPKPl	06 48 21.3	
Ud	iPKPl	06 48 34.8	
	i	06 48 43.4	
De	iPKP2	06 48 51.2	

Kermadec Islands (h = N).

" 11

Up	iPKPl	07 24 09.9	
Ud	iPKPl	07 24 10.8	
De	iPKPl	07 24 22.1	

South of Tonga Islands.
Origin time = 07 04 38.

" 11

Up	eP	08 07 26	
Ki	iP	08 06 52.1	
Sk	iP	08 06 56.2	
Um	iP	08 07 12.0	C
Ud	iP	08 07 17.2	C
De	iP	08 07 34.0	

Utah (h = 5 km).

" 11

Up	ePKPl	08 19 19	
	i	08 19 22.5	
Um	i(PKP)	08 18 58.9	
	iPKPl	08 19 06.1	
Ud	i(PKP)	08 19 11.4	
	iPKPl	08 19 20.6	
De	iPKPl	08 19 28.9	
	iPKP2	08 19 39.1	

" 11

Ud	i(P)	12 01 41.7	

" 11

Up	iP	12 05 46.6	
	i	12 06 04.8	
Ki	eP	12 05 12	
	i	12 05 28.9	
Sk	iP	12 05 41.6	
Um	iP	12 05 26.8	

(cont.)

1977
Oct. 11 (cont.)

Um	i	12 05 44.9	
Ud	iP	12 05 53.7	C
	i	12 06 12.0	

South of Honshu, Japan
(h = 60 km).

" 11

Up	iPKPl	12 13 38.6	
Um	iPKPl	12 13 27.7	
Ud	iPKPl	12 13 40.2	

South of Tonga Islands.
Origin time = 11 54 07.

" 11

Ud	iPKPl	12 32 29.0	
De	iPKPl	12 32 39.9	

South of Fiji Islands
(h = 550 km).

" 11

Um	iP	12 35 06.7	

" 11

Up	eP	12 56 55	
Ud	iP	12 56 49.2	

" 11

Up	iPKPl	13 51 42.3	
Ud	iPKPl	13 51 43.8	
	i	13 51 54.4	
De	iPKPl	13 51 54.3	

South of Tonga Islands.
Origin time = 13 32 11.

" 11

Um	iP	14 08 06.0	

" 11

Ud	i(P)	14 23 28.6	

" 11

Up	epP	14 32 55	
Ki	ipP	14 32 23.7	
Um	ipP	14 32 36.1	
Ud	iP	14 32 55.3	
Ud	ipP	14 33 03.8	

East China Sea (h = 25 km).

" 11

Up	eP	20 22 36	

" 11

Up	iP	21 10 03.4	

" 11

De	iP	21 28 00.9	

" 11

Ud	iP	22 52 26.0	

" 12

Ki	iP	00 55 46.6	
Sk	iP	00 56 20.1	
Um	iP	00 56 02.3	
	i	00 56 09.0	
Ud	iP	00 56 33.6	

Sea of Japan (h = 440 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	12	Ud	iP	01 04 00.7
		North Atlantic Ocean (h = N).		
"	12	Um	iP	01 40 26.7
"	12	Up	iP	03 00 53.1
		Ki	iP	03 00 52.2
		Sk	iP	03 01 06.4 D
		Um	iP	03 00 50.0
		Ud	iP	03 01 02.6
		De	i	03 01 07.4
		Southern Sumatra (h = N).		
"	12	Ud	iPKPl	05 37 18.4
		De	iPKPl	05 37 28.0
		Fiji Islands region (h = 620 km).		
"	12	De	iP	05 40 11.8
"	12	Ud	iP	09 21 00.7
		Hindu Kush region (h = 80 km).		
"	12	Ud	iP	10 19 04.2
		Greece (h = 50 km).		
"	12	Up	iPKP2	12 18 57.7
		Ki	i	12 18 41.1
		Sk	ePKP2	12 18 56
		Um	iPKP2	12 18 50.7
		Ud	iPKP2	12 19 01.8
		East of North Island, N.Z. (h = 350 km).		
"	12	Ki	iP	13 34 53.7
			i	13 35 46.1
			i	13 35 57.7
			i	13 36 10.4
		Sk	i	13 36 51.1
		Ud	iP	13 36 11.5
"	12	Up	i(P)	13 57 09.7
"	12	Up	iPKPl	15 18 22.3
		Ud	iPKPl	15 18 22.8
		Probably south of Tonga Islands.		
"	12	Up	ePKPl	15 42 11
		Ud	iPKPl	15 42 12.9 C
		Probably south of Tonga Islands.		
"	12	Ud	iP	16 27 48.2

1977 Oct.	12	Ud	iP	19 52 02.2 D
		Off coast of Hokkaido, Japan (h = 60 km).		
"	12	Up	i(P)	20 22 35.3
"	12	Ud	iP	20 43 05.4
		Crete (h = N).		
"	12	Up	iP	22 51 13.0
"	13	Up	iP	00 19 14.6 C
		Ki	iP	00 18 20.5
		Ud	iP	00 19 14.5
		Andreanof Islands, Aleutian Is. (h = 30 km).		
"	13	Up	i	00 59 44.6 C
		Ki	ePKP	00 59 21
		Um	iPKP	00 59 15.3
			iPKPl	00 59 24.0
		Ud	i	00 59 36.6
		De	iPKPl	00 59 26.7
		West of Macquarie Island (h = N).		
"	13	Up	iPKP	01 04 07.9
		Ki	iPKP	01 03 54.0
		Sk	i(PKP)	01 03 54.7
		Ud	i	01 04 13.2
		De	iPKPl	01 04 12.4
		Fiji Islands region (h = 600 km).		
"	13	Up	iPKPl	01 36 00.3 C
		Ud	iPKPl	01 36 01.7 C
		De	iPKPl	01 36 11.0
		South of Tonga Islands. Origin time = 01 16 29.		
"	13	Up	iPKPl	05 56 02.4
		Ud	iPKPl	05 56 03.7
		Probably south of Tonga Islands.		
"	13	Up	iP	07 09 02.3
			i	07 09 05.9
			i	07 09 13.4
				micr sec
			i Z'	0.1 1.0
		Ki	iP	07 09 06.8
			i	07 09 09.3
				micr sec
			i Z'	0.1 1.0
		Sk	iP	07 09 22.8
		(cont.)		

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 13 (cont.)

Um	iP		07 09 03.0 D
	i		07 09 05.8
Ud	iP		07 09 17.5
	i		07 09 20.4
De	iP		07 09 12.0

Nicobar Islands region (h = N).
M = 5.8 (Up,Ki).
Double P, average separation 3 s.

" 13

Up	iP		08 02 19.8
Ki	iP		08 02 20.6
	ipP		08 02 28.2
Sk	ipP		08 02 44.2
Um	iP		08 02 15.1
Ud	iP		08 02 31.8
De	iP		08 02 31.1

Nicobar Islands region (h = N).

" 13

Up	iP		08 48 10.7
Ki	iP		08 47 51.9
	i		08 48 06.8
Um	i		08 48 11.3
Ud	iP		08 48 19.7

Luzon, Philippine Islands (h = 45 km).

" 13

Sk	eSgl		11 03 53
Ud	i		11 03 04.3
	iSgl		11 03 31.8

" 13

Ki	i(P)		11 28 30.8
	i		11 28 37.3

" 13

Up	iP		11 42 29.8
	ipP		11 42 46.0
			micr sec
	P	Z'	0.1 0.9
	pP	Z'	0.2 0.9
Ki	iP		11 42 24.2
	i		11 42 34.4
	ipP		11 42 41.3
			micr sec
	pP	Z'	0.2 1.0
Sk	iP		11 42 46.2
	ipP		11 43 02.4
Um	iP		11 42 22.4
	ipP		11 42 40.0
Ud	iP		11 42 43.1
	ipP		11 42 58.2
	i		11 43 12.3
De	iP		11 42 44.1

(cont.)

1977
Oct. 13 (cont.)

De	ipP		11 42 00.2

Burma-India border region.
h = 60 km (Up,Ki,Sk,Um,Ud,De).
m = 6.2 (Up,Ki).

" 13

Ud	iP		14 12 20.1

" 13

De	iP		14 59 29.7

" 13

Up	iP		18 24 19.8 C

" 13

Up	iP		20 46 22.3 C
Ki	eP		20 46 28
Sk	iP		20 46 47.1
Um	iP		20 46 19.3
Ud	iP		20 46 38.7

Tadzhik SSR (h = 140 km).

" 13

Up	iP		21 30 34.5
			micr sec
	P	Z'	0.2 1.5
Ki	iP		21 30 35.8
			micr sec
	P	Z'	0.1 1.0
Sk	iP		21 30 53.5
Um	iP		21 30 32.4
Ud	iP		21 30 43.6
De	iP		21 29 46.7

Nicobar Islands region (h = N).
m = 5.8 (Up,Ki).

" 14

Ki	iPgl		03 42 14.8
	iSgl		03 42 33.8
Sk	iSgl		03 44 48.0
Um	iSgl		03 43 36.0

Norrbotten, Sweden, 67.0°N, 23.4°E.
Origin time = 03 41 49.
M_L = 2.7 (Ki,Um).
Checked with Finnish station readings.

" 14

Up	iPKP		05 14 53.0
			micr sec
	Mx	E	4.0 23
	Mx	N	2.0 22
Ki	iPKP		05 14 36.0
			micr sec
	PKP	Z'	0.1 1.0
	Mx	N	2.0 21
Sk	iPKP		05 14 45.7
Um	iPKP		05 14 44.6 C
Ud	i(PKP)		05 14 38.7

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 14 (cont.)
Ud iPKP 05 14 51.8
De i(PKP) 05 14 48.8
Tonga Islands (h = N).
M = 6.0 (Up,Ki).

" 14 Up iP 07 04 39.3
Ud iP 07 05 06.8
De iP 07 04 55.5

" 14 Up iSgl 11 09 41.8
Ud iSgl 11 10 29.6
De i 11 09 31.5
iSgl 11 10 03.0
Coast of Latvia, near
57 1/4°N, 21°E.
Origin time = 11 08 06.
M_L = 2.4 (Ud).
Explosion?

" 14 De iPKP 11 11 22.3
Tonga Islands (h = 250 km).

" 14 Ki i(P) 11 35 50.6

" 14 Up iP 11 59 58.8
i 12 00 05.4
micr sec
i Z' 0.1 1.2
Ki iP 11 59 40.8
i 11 59 46.7
Um iP 11 59 45.6
Ud i 12 00 09.7
Luzon, Philippine Islands
(h = 60 km).

" 14 Ki iP 12 31 09.9

" 14 Up iPKP 12 48 09.7
micr sec
PKP Z' 0.1 1.2
Ki iPKP 12 47 55.7 C
micr sec
PKP Z' 0.1 1.0
Sk iPKP 12 48 06.8 C
Um iPKP 12 48 01.8 C
Ud iPKP 12 48 11.8
De i(PKP) 12 48 04.5
iPKP 12 48 17.0
New Hebrides Islands
(h = 130 km).

" 14 Up iRg 12 50 51.3
Regional, near-surface event.

1977
Oct. 14 Up iRg 12 51 32.8
Ud i(Sgl) 12 51 26.4
Regional, near-surface event.

" 14 Up iRg 14 07 49.7
Ud iSgl 14 08 48.0
Regional, near-surface event.

" 14 Ud iP 14 16 24.0
Turkey (h = N).

" 14 Up iSgl 14 26 27.7
Sk iSgl 14 26 30.5
Ud iPgl 14 24 35.4
iSgl 14 25 31.3
De iPgl 14 24 45.8
iSgl 14 25 47.9
Coast of southwest Norway,
near 58 1/2°N, 6°E.
M_L = 2.9 (Up,Ud).
Origin time = 14 23 21.
Checked with Kongsberg readings.

" 14 Ki i(P) 16 51 28.4

" 14 Ud iP 17 03 09.1

" 14 Ud iP 17 48 30.9

" 14 Ud iP 17 57 36.5

" 14 Um iP 19 01 06.8
Ud iP 19 01 12.7
i 19 01 33.3

" 14 Ud iP 19 46 34.5

" 14 Ud iP 20 40 41.3
South of Timor (h = N).

" 14 Up iP 20 56 27.9 C
Ki iP 20 56 06.8
Ud iP 20 56 37.0
Philippine Islands region
(h = 15 km).

" 14 Ud iP 21 16 28.5

" 14 Ud iP 21 31 40.5

" 15 Ud iP 00 38 51.3
De iP 00 38 18.5

" 15 Ki iP 02 25 54.1
Ud iP 02 26 17.8
Molucca Passage (h = 70 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977

Oct.	15	Ud	iPKP		07 42 40.1
		De	iPKP		07 42 46.1
		New Britain region (h = 70 km).			
"	15	Up	iPKP		10 38 40.8
		Ud	iPKP		10 38 42.1 C
		Probably south of Tonga Islands.			
"	15	Ud	iP		11 57 36.0
"	15	Ud	iP		14 34 14.8
		Tierra del Fuego (h = N).			
"	15	Ud	iPKPl		21 17 00.8
		De	iPKPl		21 17 09.3
		South of Fiji Islands (h = 350 km).			
"	15	Ud	iP		21 20 03.3
"	15	Up	iP		23 15 44.2
"	16	Up	iP		02 10 30.0 C
			i		02 10 31.3
			i		02 10 38.8
			iS		02 19 23
					micr sec
			P	Z'	0.1 0.7
			i	Z'	2.0 1.5
			Mx	E	2.9 17
			Mx	N	4.5 15
			Mx	Z	17 17
		Ki	iP		02 09 41.7
					micr sec
			P	Z'	0.2 1.5
			Mx	E	3.9 16
			Mx	N	4.1 15
			Mx	Z	4.6 16
		Sk	iP		02 10 17.1 C
			i		02 10 18.4
		Um	iP		02 10 03.4
			i		02 10 05.1
			iS		02 18 32
		Ud	iP		02 10 34.9 C
			i		02 10 36.6
		De	iP		02 10 53.7 C
			i		02 10 55.4
		Kuril Islands (h = N).			
		m = 6.5, M = 5.8 (Up,Ki).			
		Double P, small and large, average separation 1.5 s.			

1977

Oct.	16	Up	iPKPl		02 43 19.8
			i		02 43 29.0
		Ud	iPKPl		02 43 20.8
			i		02 43 31.6
		De	iPKPl		02 43 31.3
		South of Tonga Islands.			
		Origin time = 02 23 48.			
"	16	Up	iPKPl		02 50 02.8
			i		02 50 13.0
					micr sec
			PKPl	Z'	0.1 1.0
		Um	iPKP		02 49 52.8
		Ud	iPKPl		02 50 04.1
			i		02 50 14.3
		De	iPKPl		02 50 14.7
			i		02 50 29.8
		South of Tonga Islands (h = N).			
"	16	Up	iPKPl		03 10 48.5
		Ud	iPKPl		03 10 50.1
		De	iPKPl		03 11 00.0
		South of Tonga Islands.			
		Origin time = 02 51 17.			
"	16	Up	iP		03 20 09.1
			ipP		03 20 16.6
					micr sec
			pP	Z'	0.2 1.5
		Ki	iP		03 20 47.6
					micr sec
			P	Z'	0.2 2.0
		Sk	iP		03 20 22.0
			ipP		03 20 28.5
		Um	iP		03 20 31.6 C
			ipP		03 20 37.6
			i		03 20 51.4
		Ud	iP		03 20 05.7
			ipP		03 20 12.8
		De	iP		03 19 49.1
			ipP		03 19 55.3
		South Atlantic Ridge.			
		h = 20 km (Up,Sk,Um,Ud,De).			
		m = 6.0 (Up,Ki).			
"	16	Ud	iP		03 49 10.3
"	16	Ki	iP		04 34 44.1
		Sk	eP		04 35 13
		Ud	iP		04 35 37.4
		De	iP		04 36 01.9
		Southern Alaska (h = 80 km).			
"	16	Ud	iP		05 06 35.6

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977					
Oct.	16	Ud	iP	07 20 13.7	
"	16	Up	iP	10 56 08.2	C
			i	10 56 15.6	
				micr sec	
			P Z'	0.1 1.0	
		Ki	iP	10 55 19.1	
		Sk	iP	10 55 55.1	
			i	10 56 01.8	
		Um	iP	10 55 41.1	
			i	10 55 47.3	
		Ud	iP	10 56 13.4	
			i	10 56 22.2	
		De	iP	10 56 32.1	
		Kuril Islands (h = 40 km).			
"	16	Ud	iP	13 09 53.6	
			i	13 10 02.7	
"	16	Up	iPKPl	13 33 49.7	
			i	13 34 14.1	
				micr sec	
			PKPl Z'	0.2 1.4	
		Sk	iPKPl	13 33 43.2	
		Um	iPKPl	13 33 37.6	C
		Ud	iPKPl	13 33 50.2	
		De	iPKPl	13 33 58.1	
		Kermadec Islands region (h = 20 km).			
"	16	Um	iP	14 07 47.1	
		Ud	iP	14 08 01.2	
"	16	Um	iP	15 10 06.5	
		Ud	iP	15 10 24.9	
		Afghanistan-USSR border region (h = 260 km).			
"	16	Up	iSgl	16 02 59.8	
		Sk	iSgl	16 02 15.4	
		Ud	iPgl	16 01 11.4	
			iSgl	16 01 53.3	
		De	eSgl	16 02 59	
		Southern Norway, near 60 1/2°N, 7 1/2°E. Origin time = 16 00 15. By combination with Kongsberg readings.			
"	16	Ud	iP	17 39 40.7	
"	16	Ud	iP	17 52 10.8	
"	16	Up	iP	19 17 14.9	
		(cont.)			

1977					
Oct.	16	(cont.)			
		Up		micr sec	
			P Z'	0.1 0.9	
		Ki	iP	19 16 25.8	
		Sk	eP	19 17 02	
		Um	iP	19 16 48.1	
		Ud	iP	19 17 20.2	
		De	iP	19 17 39.4	
		Kuril Islands region (h = 45 km).			
"	16	Up	iP	19 22 02.5	C
			i	19 22 14.1	
				micr sec	
			P Z'	0.1 0.8	
		Ki	iP	19 21 13.2	
		Sk	iP	19 21 49.6	
		Um	iP	19 21 36.5	
		Ud	iP	19 22 07.6	C
		De	iP	19 22 27.2	
		Kuril Islands (h = N).			
"	16	Ud	iP	19 50 33.2	C
"	16	Up	iP	20 14 36.7	
		Ud	iP	20 14 41.5	
"	16	Up	iP	21 16 18.2	
		Ki	iP	21 15 26.9	
		Ud	iP	21 16 21.9	
		Kuril Islands (h = 40 km).			
"	16	Up	iP	21 23 14.5	
				micr sec	
			Mx E	2.5 25	
			Mx N	6.9 25	
			Mx Z	5.9 25	
		Ki	iP	21 23 05.2	
				micr sec	
			P Z'	0.1 0.1	
			Mx E	2.6 20	
			Mx N	8.5 25	
		Sk	iP	21 23 24.6	
		Um	iP	21 23 10.9	
		Ud	iP	21 23 22.2	
		De	eP	21 23 24	
		Sumbawa Island region (h = N). M = 6.2 (Up,Ki).			
"	16	Ud	iP	23 38 07.6	
"	17	Um	iP	02 24 59.1	
		Ud	iP	02 25 09.8	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	17	Up	iPKPl		03 33 56.2
		Ud	iPKPl		03 33 58.2 C
		De	iPKPl		03 34 07.5
		South of Tonga Islands (h = N).			
		Late arrivals when compared			
		with NEIS solutions.			
"	17	Up	iP		03 57 17.3
					micr sec
			P	Z'	0.1 0.8
		Ki	iP		03 57 07.2
		Sk	iP		03 57 32.0
		Um	iP		03 57 07.1
		Ud	iP		03 57 30.1
		De	iP		03 57 35.9
		Burma-China border region			
		(h = N).			
"	17	Ud	i(P)		08 17 23.1
"	17	Ki	iP		10 54 35.6
			i		10 54 47.4
		Um	i		10 54 44.1
		Molucca Sea (h = 70 km).			
"	17	De	i(P)		14 19 08.4
"	17	De	iP		15 12 26.0
"	17	Ud	iP		15 22 13.1
		De	iP		15 21 42.5 C
		Dodecanese Islands			
		(h = 150 km).			
"	17	Up	iPKPl		17 46 09.6
			i		17 46 19.2
			i		17 46 38.7
			i		18 08 14
					micr sec
			PKPl	Z'	0.7 1.2
			Mx	E	9.0 24
			Mx	N	27 27
			Mx	Z	25 24
		Ki	iPKP		17 45 59.2 C
					micr sec
			PKP	Z'	0.4 1.7
			Mx	E	12 23
			Mx	N	18 22
		Sk	iPKPl		17 46 05.3 C
		Um	iPKPl		17 45 57.7 C
			iPKP		17 46 05.6
		Ud	iPKPl		17 46 12.7 C
		De	iPKPl		17 46 20.0 C
			i		17 46 30.0
		North of New Zealand (h = N).			
		M = 6.9 (Up,Ki).			

1977 Oct.	17	Ud	iP		17 55 23.0
"	17	Up	i		18 42 19.9
		Ki	iP		18 41 50.0
		Sk	i		18 42 24.1
		Um	i		18 42 05.9
		Ud	iP		18 42 24.3
		Taiwan (h = N).			
"	17	Ud	iP		19 19 15.4
		De	iP		19 19 24.2
"	17	Up	iPKPl		19 31 49.2
			i		19 31 57.8
		Ki	i		19 32 09.7
			i		19 32 15.5
		Um	i		19 31 51.9
		Ud	iPKPl		19 31 53.5 C
			i		19 31 59.3
		De	iPKPl		19 32 02.5 C
			i		19 32 10.6
		North of New Zealand (h = N).			
"	17	Ud	iP		21 26 36.4
"	18	Ud	iPKPl		00 06 19.7
		De	iPKPl		00 06 30.1
		South of Fiji Islands			
		(h = 530 km).			
"	18	Ud	iP		00 09 07.9
"	18	Up	iPKPl		02 17 27.4
		Ud	iPKPl		02 17 31.0
		De	iPKPl		02 17 40.3 C
		North of New Zealand			
		(h = 20 km).			
"	18	Up	iP		06 06 11.0
		Ud	iP		06 06 07.1
			i		06 06 07.7
		De	iP		06 06 16.9
"	18	Ud	iP		06 21 14.2
		West Irian region (h = N).			
"	18	Sk	iP		06 44 13.1
		Um	iP		06 44 35.1
		Ud	iP		06 44 18.7
"	18	Up	iP		07 14 34.6
			ipP		07 14 49.4
		Ki	iP		07 13 41.3
			ipP		07 13 56.2
		Sk	iP		07 14 08.3
		(cont.)			

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 18 (cont.)

Um	iP		07 14 08.6	
Ud	iP		07 14 31.5	
	ipP		07 14 46.2	

South of Alaska.
h = 55 km (Up,Ki,Ud).

" 18

Ud	iP		08 45 16.4	

Banda Sea (h = 110 km).

" 18

Ud	iP		09 27 58.4	

" 18

Up	iP		09 43 33.0	
Ud	iP		09 42 58.2	

" 18

Um	iP		10 20 00.6	
Ud	iP		10 20 08.2	

Central California (h = 5 km).

" 18

Up	iP		12 40 51.6	

" 18

Ud	iP		12 51 25.0	
	i		12 51 33.6	

" 18

Ud	iP		14 49 32.0	
De	iP		14 48 59.2	

" 18

Up	iSgl		15 00 44.1	
Ud	i		14 59 19.2	
	iSgl		14 59 41.3	

" 18

Up	iP		20 33 15.7	C
	i		20 33 25.2	
			micr sec	
	P	Z'	0.2 1.0	
Ki	iP		20 32 25.9	
Sk	eP		20 32 59	
Um	iP		20 32 48.9	C
Ud	iP		20 33 20.3	
De	iP		20 33 40.7	

Kuril Islands region
(h = N).

" 18

Up	iP		21 22 49.5	
	i		21 23 34.1	
			micr sec	
	P	Z'	0.1 1.0	
Ki	iP		21 22 00.6	
	i		21 22 35.8	
Sk	iP		21 22 37.8	
Ud	iP		21 22 55.1	D
	i		21 23 39.1	
De	iP		21 23 14.4	

Kuril Islands (h = N).

1977
Oct. 18

Ud	i(PKP)		23 42 45.0	
De	iPKPl		23 42 54.5	

Fiji Islands region
(h = 600 km).

" 18

Ud	iP		23 57 42.0	

" 19

Ki	iP		02 24 41.9	D
	i		02 25 07.7	
Sk	iP		02 25 09.7	
Ud	iP		02 25 36.2	
De	eP		02 26 00	
	i		02 26 23.5	

Central Alaska (h = 100 km).

" 19

Ud	iPKP		02 41 04.6	
	i		02 41 13.7	
De	iPKPl		02 41 10.7	

Tonga Islands (h = N).

" 19

Up	iP		02 55 58.3	C
Ki	eP		02 55 42	
Sk	eP		02 56 08	
Ud	iP		02 56 09.0	
De	iP		02 56 15.5	

Eastern China (h = N).

" 19

Up	iP		05 09 20.0	
Ki	iP		05 09 27.3	C
Sk	iP		05 09 45.5	
Um	iP		05 09 18.1	
Ud	iP		05 09 36.5	

Afghanistan-USSR border
region (h = 230 km).

" 19

Up	iP		06 42 50.0	
	i		06 43 05.1	
			micr sec	
	P	Z'	0.2 0.9	
	Mx	E	0.7 13	
	Mx	N	1.0 14	
	Mx	Z	2.3 17	
Ki	iP		06 43 25.1	C
			micr sec	
	P	Z'	0.2 0.8	
	Mx	E	2.0 14	
	Mx	N	3.3 12	
Sk	iP		06 43 24.8	C
Um	iP		06 43 02.8	C
Ud	iP		06 43 05.7	C
	i		06 43 20.9	
	iPP		06 44 54.0	
De	iP		06 42 49.9	C

Southern Iran (h = N).
m = 5.9, M = 5.2 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 19 Ud iP 07 23 38.0
Kashmir-Tibet border region
(h = N).

" 19 Ud iP 07 37 26.3

" 19 Ud i(PKP) 08 01 06.1
iPKP 08 01 17.7
De iPKPl 08 01 18.9
Tonga Islands (h = 260 km).

" 19 Ud iP 10 44 58.5

" 19 Up iP 11 47 33.2 C
ipP 11 47 44.6
micr sec
P Z' 0.1 1.0
Ki iP 11 46 44.1
Sk iP 11 47 19.7
Um iP 11 47 07.0
Ud iP 11 47 37.9
ipP 11 47 49.0
De iP 11 47 57.8
Kuril Islands region.
h = 40 km (Up,Ud).

" 19 Up iP 12 57 24.6
Sk eP 12 58 03
Ud iP 12 57 32.9
Greece (h = N).

" 19 Up iP 13 39 20.9

" 19 Up iPKPl 13 46 19.4
Ud iPKPl 13 46 21.2
De iPKPl 13 46 31.1
South of Fiji Islands (h = N).

" 19 Ud iP 15 24 37.7
De iP 15 24 27.7

" 19 Up iP 17 38 10.5
ipP 17 38 16.3
micr sec
pP Z' 0.1 0.8
Mx N 1.0 14
Mx Z 0.6 15
Ki iP 17 37 55.4
micr sec
Mx E 0.6 14
Mx N 1.1 15
Sk iP 17 38 24.4
Um iP 17 37 56.6
ipP 17 38 03.1
Ud iP 17 38 24.9
(cont.)

1977
Oct. 19 (cont.)
Ud ipP 17 38 31.3
De iP 17 38 30.6
Southern Sinkiang Prov., China.
h = 20 km (Up,Um,Ud).
M = 5.0 (Up,Ki).

" 19 Ud iP 20 35 31.4

" 19 Up iP 20 41 46.4
Ud iP 20 41 39.0

" 19 Up iP 21 31 21.8
micr sec
Mx N 1.0 19
Mx Z 1.5 22
Ki iP 21 30 31.5
micr sec
Mx N 0.7 16
Ud iP 21 31 26.0 D
De iP 21 31 45.9
Kuril Islands (h = 60 km).
M = 5.0 (Up,Ki).

" 19 Ud iP 21 34 48.1
De iP 21 34 19.3
Crete (h = 55 km).

" 19 Up iP 22 51 12.2
i 22 51 22.9
micr sec
P Z' 0.3 0.9
Ki iP 22 50 49.1 D
micr sec
P Z' 0.3 0.9
Sk iP 22 51 16.2 D
Um iP 22 50 57.3
i 22 51 08.3
Ud iP 22 51 21.8 D
De iP 22 51 29.9
Taiwan region (h = 160 km).
m = 6.0 (Up,Ki).

" 20 Ki iP 02 20 33.5
Sk eP 02 21 10
Um iP 02 20 52.8 C
Ud iP 02 21 22.7
Hokkaido, Japan region
(h = 40 km).

" 20 Ud iP 03 07 00.9
i 03 07 07.6

" 20 Ud iP 03 21 04.3
Celebes Sea (h = 420 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 20 Up iP 05 50 57.6
ipP 05 51 11.0
iS 05 59 51
micr sec
P Z' 0.4 0.8
Mx E 1.3 17
Mx N 7.4 19
Mx Z 5.0 17
Ki iP 05 50 08.2
eS 05 58 24
micr sec
P Z' 0.1 1.0
Mx E 3.8 15
Mx N 4.0 17
Sk iP 05 50 44.6
Um iP 05 50 32.4
iS 05 59 04
Ud iP 05 51 03.1 C
ipP 05 51 16.1
De iP 05 51 22.0
ipP 05 51 35.2
Kuril Islands.
h = 50 km (Up,Ud,De).
m = 6.1, M = 5.9 (Up,Ki).

" 20 Up iP 06 16 16.1 C
i 06 16 29.9
micr sec
P Z' 0.1 0.9
Ki iP 06 15 24.3
Sk iP 06 16 03.1
Ud iP 06 16 21.0 C
De iP 06 16 40.4
Kuril Islands (h = N).

" 20 Up iP 07 26 01.7
Ud iP 07 26 01.2

" 20 Up iP 07 33 54.0
Ud iP 07 33 59.5

" 20 Up iP 08 08 02.7 C
i 08 08 16.8
micr sec
P Z' 0.2 1.0
Mx E 0.8 14
Mx N 0.9 16
Mx Z 0.6 16
Ki iP 08 07 13.8
micr sec
Mx E 0.6 13
Mx N 0.9 18
Sk iP 08 07 49.7 C
Um iP 08 07 36.8
Ud iP 08 08 07.8 C
i 08 08 20.5
(cont.)

1977
Oct. 20 (cont.)
De iP 08 08 27.2
Kuril Islands (h = 35 km).
M = 5.2 (Up,Ki).

" 20 Up iP 08 28 17.9 C
ipP 08 28 28.0
micr sec
P Z' 0.1 1.1
Ki iP 08 27 21.8 C
ipP 08 27 31.9
micr sec
P Z' 0.1 1.1
Sk iP 08 27 59.1 C
Um iP 08 27 48.7 C
Ud iP 08 28 20.1
ipP 08 28 30.9
De iP 08 28 43.5 C
ipP 08 28 54.1
Komandorsky Islands region.
h = 35 km (Up,Ki,Ud,De).
m = 5.8 (Up,Ki).

" 20 Ki iP 09 33 06.5
Ud iP 09 33 04.6
Near coast of Nicaragua
(h = 70 km).

" 20 Up iP 11 25 12.9
i 11 25 22.3
micr sec
P Z' 0.1 1.0
Sk iP 11 25 00.0
Ud iP 11 25 17.2
i 11 25 31.0
De iP 11 25 37.0
Kuril Islands (h = 40 km).

" 20 Up micr sec
Mx N 2.2 29
Mx Z 1.6 28
Ki eP 11 49 12
micr sec
Mx E 1.2 21
Mx N 1.9 26
Ud iP 11 49 28.8
i 11 49 38.8
Sumbawa Islands region
(h = N).
M = 5.6 (Up,Ki).

" 20 Ud i(P) 12 21 00.0

" 20 Up iP 12 37 28.8 C
micr sec
Z' 0.1 1.0
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 20 (cont.)
Sk eP 12 37 13
Ud iP 12 37 33.6 C
Kuril Islands (h = N).

" 20 Up iP 12 56 40.4
micr sec
P Z' 0.1 1.2
Sk iP 12 56 27.3
Ud iP 12 56 46.0 C
De iP 12 57 05.2
Kuril Islands (h = 35 km).

" 20 Ud iSgl 13 26 09.0

" 20 Ki iP 13 29 30.3 C
Ud iP 13 29 55.4
Halmahera (h = 80 km).

" 20 Up iSgl 16 26 08.2
Sk iSgl 16 25 28.5
Um iSgl 16 27 04.1
Ud iPgl 16 24 18.6
i(Sn) 16 24 45.6
iSgl 16 25 06.1
De eSgl 16 26 02
e 16 26 12
Southwest Norway, near
60 1/4°N, 6 1/2°E.
Origin time = 16 23 15.
M_L = 2.5 (Up,Ud).

" 20 Up e(P) 17 43 22

" 20 Ud iP 19 23 24.6

" 20 Ud iP 20 34 22.9
California-Mexico border
region (h = 5 km).

" 21 Ud iP 00 21 38.9
California-Mexico border
region (h = 5 km).

" 21 Up iP 00 56 55.7
ipP 00 57 08.2
micr sec
P Z' 0.2 1.2
Ki iP 00 56 06.1
Sk iP 00 56 42.5
Um iP 00 56 29.4
Ud iP 00 57 00.6 C
ipP 00 57 11.7
Kuril Islands.
h = 40 km (Up,Ud).

1977
Oct. 21 Up iP 01 12 01.5
Ki iP 01 11 29.5
Sk iP 01 12 00.6
Ud iP 01 12 09.7
De iP 01 12 22.7
Kyushu, Japan (h = 70 km).

" 21 Ud iP 04 15 06.0

" 21 Ki iP 05 49 39.2
Sk iP 05 49 58.9
Ud iP 05 50 07.7
De iP 05 50 20.4

" 21 De iPKPl 09 39 05.8
Fiji Islands region
(h = 600 km).

" 21 Up iP 15 03 01.8
i 15 03 10.8
micr sec
P Z' 0.1 0.9
Ki iP 15 03 40.1
Sk iP 15 03 37.8 C
iPP 15 05 20.7
Um iP 15 03 15.3
Ud iP 15 03 17.9 C
De iP 15 03 01.3 C
Iran (h = N).

" 21 Up eP 19 20 40
Ki iP 19 19 45.4
micr sec
P Z' 0.1 1.0
Sk iP 19 20 16.3
i 19 20 49.8
Um iP 19 20 11.8
Ud iP 19 20 37.9
De iP 19 21 00.9
Fox Islands, Aleutian Islands
(h = 70 km).

" 21 Ud iP 21 52 45.1

" 21 Up iPKPl 22 33 29.1
Um iPKP 22 33 24.9
i 22 33 27.0
Ud iPKPl 22 33 32.5 C
De iPKPl 22 33 40.9
North of New Zealand (h = N).

" 22 Up iP 01 35 40.7
ipP 01 36 22.3
i 01 36 26.8
Ki iP 01 35 42.9
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 22 (cont.)

Ki	ipP		01 36 24.4
Sk	iP		01 35 27.4
	ipP		01 36 08.1
Um	iP		01 35 46.1
	ipP		01 36 26.4
Ud	iP		01 35 30.1
	ipP		01 36 11.1
	i		01 36 16.6
De	iP		01 35 29.3
	ipP		01 36 11.8
	i		01 36 18.1

Northern Colombia.
h = 170 km (Up,Ki,Sk,Um,Ud,De).

" 22

Ud	iP		03 22 22.3
De	iP		03 22 20.9

" 22

Ud	iP		03 32 30.0

" 22

Ud	iPKP1		05 55 35.8
De	iPKP2		05 55 44.7

North of New Zealand (h = N).

" 22

Up	iP		10 07 31.6	
	iS		10 11 54.1	
			micr	sec
	P	Z'	0.1	1.0
	Mx	E	0.7	13
	Mx	N	1.7	14
	Mx	Z	2.2	13
Ki	iP		10 08 40.5	
			micr	sec
	P	Z'	0.1	0.9
	Mx	E	0.9	13
	Mx	N	1.3	13
Sk	iP		10 08 10.1	
Um	iP		10 08 05.4	
	iS		10 12 55	
Ud	iP		10 07 38.4 C	
	iS		10 12 10.5	
De	iP		10 07 04.3	
	iS		10 11 12.5	

Crete (h = N).
m = 5.6, M = 4.8 (Up,Ki).

" 22

Ud	iP		10 13 23.7
De	iP		10 12 49.1

Southern Greece (h = 110 km).

" 22

Ki	iP		12 09 32.0
Sk	eP		12 10 08
Um	iP		12 09 50.9
Ud	iP		12 10 20.3
	i		12 10 33.0

(cont.)

1977
Oct. 22 (cont.)

De	iP		12 10 34.3

Near east coast of Honshu, Japan (h = 44 km).

" 22

Ki	iSgl		14 47 25.4
Um	iSgl		14 47 40.3

" 22

Up	iP		15 49 30.1
Ud	iP		15 49 46.2
De	iP		15 49 28.8

" 22

Up	iP		15 59 49.0
Um	iP		15 59 31.4

" 22

Ud	iPKP		18 08 12.6

North of New Zealand (h = N).

" 22

Up	iPdiff		18 10 46	
	iPKP		18 14 37.7	
	i(PP)		18 15 12.1	
	iSKS		18 20 17.2	
	i		18 21 17.7	
	iS		18 21 55	
	i		18 25 47.1	
	iPKKP		18 25 59.2	
			micr	sec
	(PP)	Z'	0.4	1.6
	Mx	E	0.9	16
	Mx	N	1.9	21
	Mx	Z	2.1	19
Ki	iPKP		18 14 46.6	
	i(PP)		18 15 36.6	
	i		18 25 36.0	
	iPKKP		18 25 44.1	
			micr	sec
	(PP)	Z'	0.6	2.2
	Mx	E	1.0	19
	Mx	N	4.7	21
Sk	iPdiff		18 10 39.2	
	iPKP		18 14 34.6	
	iPP		18 15 10.4	
	i		18 25 51.7	
	iPKKP		18 26 06.6	
Um	iPKP		18 14 43.8	
	iSKS		18 20 29	
	iS		18 22 19	
	i		18 25 37.0	
	iPKKP		18 25 47.8	
	i		18 28 01.9	
Ud	iPdiff		18 10 34.5	
	iPKP		18 14 35.6	
	i(PP)		18 14 58.7	
	iPP		18 15 05.5	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 22 (cont.)

Ud	i	18 17 03.1	
	i	18 23 37.0	
	i	18 25 44.6	
	iPKKP	18 26 07.2	
De	iPdiff	18 10 27.2	
	iPP	18 14 53.5	
	i	18 16 11.3	
	i	18 25 56.1	
	iPKKP	18 26 15.3	
	i	18 28 14.7	

Santiago del Estero Prov., Arg. (h = 610 km).
m = 6.5, M = 5.9 (Up,Ki).
M not corrected for focal depth.

" 22	Ud	iP	20 05 28.5
		i	20 05 37.9
	De	iP	20 05 00.0

" 22	Ud	iPKPl	23 52 40.8
	De	iPKPl	23 52 52.0

South of Fiji Islands (h = 510 km).

" 23	Up	ePKPl	03 04 18
		eSKPl	03 07 04
	Ki	eSKPl	03 06 40
	Um	i(PKP)	03 04 10.0
		iSKPl	03 06 52.2
	Ud	iPKPl	03 04 17.7
		iSKPl	03 07 05.0
	De	iPKPl	03 04 29.3
		iSKPl	03 07 14.4

Fiji Islands region (h = 590 km).

" 23	Up	iP	05 49 48.9
	Sk	iP	05 50 32.5
	Um	iP	05 50 29.7
	Ud	iP	05 49 55.4
		i	05 50 00.0
	De	iP	05 49 19.3

Greece (h = 60 km).

" 23	Up	iP	09 56 42.5
	De	iP	09 56 38.6

Mid-Indian Rise (h = N).

" 23	Up	iPKP	10 51 06.9	
		ipPKP	10 51 29.5	
		iSKPl	10 54 29.9	
			micr	sec
		Mx N	0.9	24
		Mx Z	1.7	29

(cont.)

1977
Oct. 23 (cont.)

Ki	iPKP	10 50 52.0	
	ipPKP	10 51 15.3	
	i	10 54 05.2	
		micr	sec
	PKP Z'	0.1	1.5
	Mx N	1.6	24
Sk	iPKP	10 51 02.2	
	iSKPl	10 54 25.2	
Um	iPKP	10 50 59.9	
	ipPKP	10 51 22.5	
	iSKPl	10 54 17.9	
Ud	i(PKP)	10 50 57.9	
	iPKP	10 51 07.4	
	i	10 54 43.8	
De	iPKPl	10 51 05.8	
	ipPKPl	10 51 30.4	

Loyalty Islands region.
h = 60 km (Up,Ki,Um,De).
M = 5.5 (Up,Ki).

" 23	Up	iP	11 16 57.2
	Um	iP	11 16 32.1
	Ud	iP	11 17 02.9

" 23	Up	iP	11 29 32.4
	Ki	iP	11 28 50.2
	Um	iP	11 29 08.5
	Ud	iP	11 29 40.6

Near e. coast of eastern USSR (h = 340 km).

" 23	Up	iPKPl	11 44 23.6
	Ud	iPKPl	11 44 25.8
	De	iPKPl	11 44 35.6

" 23	Up	iPKPl	12 56 55.1
	Sk	iPKPl	12 56 47.9
		i	12 57 03.0
	Um	iPKPl	12 56 44.4
	Ud	iPKPl	12 56 56.4
	De	iPKPl	12 57 05.6

Kermadec Islands (h = 20 km).

" 23	Up	iSgl	19 08 11.4
	Sk	eSgl	19 09 16
	Ud	iPgl	19 07 18.3
		iSgl	19 07 28.8
	De	iSgl	19 08 35.7

Lake Vänern, Sweden, 59.3°N, 13.4°E.
Origin time = 19 07 04.
M_L = 2.2 (De).

" 23	Ud	i(P)	20 50 13.1

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	24	Up	iPKPl		00 39 49.9	C	
					micr	sec	
			PKPl	Z'	0.1	1.0	
		Ki	iPKP		00 39 34.8		
		Sk	iPKPl		00 39 43.9	C	
			i		00 40 05.1		
		Um	iPKPl		00 39 38.0	C	
		Ud	iPKPl		00 39 52.0	C	
			iPKP2		00 39 56.9		
		De	iPKPl		00 40 00.3	C	
		Kermadec Islands (h = 20 km).					
"	24	Ki	iP		01 54 38.1		
"	24	Up	iP		01 56 52.0		
		Ki	eP		01 56 13		
		Sk	eP		01 56 45		
			ipP		01 57 01.0		
		Um	iP		01 56 31.0		
			ipP		01 56 45.7		
		Ud	iP		01 56 59.3		
			ipP		01 57 13.7		
		De	iP		01 57 12.3		
		South of Honshu, Japan.					
		h = 55 km (Sk,Um,Ud).					
"	24	Ud	iP		02 20 55.0		
"	24	Um	iP		03 20 12.1	C	
		Ud	iP		03 20 36.4	C	
		Bonin Islands region					
		(h = 510 km).					
"	24	Up	iP		05 43 50.2		
		Ki	iP		05 44 55.4		
		Sk	iP		05 44 29.1		
		Ud	iP		05 43 58.6		
		De	eP		05 43 28		
		Crete (h = N).					
"	24	Up	iP		06 04 15.5		
			i		06 04 24.7		
					micr	sec	
			i	Z'	0.1	1.0	
			Mx	E	0.8	14	
			Mx	N	0.7	14	
			Mx	Z	2.1	19	
		Ki	i		06 04 36.7		
					micr	sec	
			Mx	E	0.9	13	
			Mx	N	0.8	14	
			Mx	Z	1.0	14	
		Sk	iP		06 03 53.4		
		Um	iP		06 04 22.4		
		Ud	iP		06 03 57.4	C	
		De	iP		06 04 03.5		
		North Atlantic Ridge (h = N).					
		M = 4.6 (Up,Ki).					

1977 Oct.	24	Up	iP		07 19 53.9		
		Ki	iP		07 18 59.5		
		Sk	iP		07 19 29.6		
		Um	iP		07 19 27.8	C	
		Ud	iP		07 19 52.5	C	
		De	iP		07 20 14.3		
		Alaska Peninsula (h = 200 km).					
"	24	Ud	iP		10 38 23.8		
"	24	Up	iP		18 45 26.7	C	
			i		18 45 34.2		
					micr	sec	
			P	Z'	0.1	0.9	
		Ki	iP		18 44 37.8		
		Sk	iP		18 45 13.2	C	
		Um	iP		18 45 00.4		
		Ud	iP		18 45 31.4	C	
		De	i		18 46 03.0		
		Kuril Islands (h = 30 km).					
"	25	Ud	iP		00 00 11.7		
		Kuril Islands (h = N).					
"	25	Ki	iP		06 46 17.0		
		Sk	iP		06 46 10.2		
		Um	iP		06 46 25.2		
		Mexico-Guatemala border					
		region (h = 120 km).					
"	25	Up			micr	sec	
			Mx	N	2.3	30	
		Ki	iP		07 04 32.7		
		Sk	iP		07 04 50.9		
		Ud	iP		07 04 48.8		
		Sumbawa Island region (h = N).					
"	25	Sk	iPdiff		10 14 20.0		
		Northern Chile (h = 110 km).					
"	25	Up	iRg		13 59 30.0		
		Ud	iRg		13 59 45.0		
		Central Sweden.					
		Near-surface event.					
"	25	Up	iSgl		16 53 09.5		
		Sk	iSgl		16 51 46.7		
		Ud	i		16 52 05.7		
			iSgl		16 52 08.6		
		De	iSgl		16 53 25.7		
		West coast of Norway, near					
		61 3/4°N, 5°E.					
		Origin time = 16 49 50.					
		M_L = 2.7 (Ud).					
"	25	Ki	iPKPl		17 09 37.2		
		(cont.)					

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 25 (cont.)
Ud iPKP2 17 10 16.4
Off w. coast of S. Island, N.Z. (h = N).

" 25 Up iP 18 08 22.6
Ki iP 18 08 17.4 D
Ud iP 18 08 39.5 D
De iP 18 08 40.3
Southern Sinkiang Prov., China (h = 30 km).

" 25 Up iP 18 23 24.1
i 18 23 35.5
Ki iP 18 23 03.0
i 18 23 14.9
Um i 18 23 22.6
Ud iP 18 23 33.9
De iP 18 23 40.3
Philippine Islands region (h = N).

" 25 Up iP 22 06 38.2 C
i 22 06 50.0
Ki iP 22 05 59.0
i 22 06 12.2
Sk iP 22 06 32.4
Um iP 22 06 16.2 C
Ud iP 22 06 45.3 C
Near east coast of Honshu, Japan (h = 40 km).

" 25 Up iP 22 16 19.1 C
Ki iP 22 15 30.1
Um iP 22 15 53.5
Ud iP 22 16 24.3

" 26 Ki ePKP 01 23 23
iPKP2 01 23 37.9
South Island, New Zealand (h = N).

" 26 Up iSgl 04 12 44.9
Ki eSgl 04 13 29
Sk iPgl 04 10 18.6
iSgl 04 10 55.8
Um iSgl 04 12 46.0
Ud iSgl 04 11 52.9
De iSgl 04 13 25.3
Off west coast of Norway, near 63 1/2°N, 6°E.
Origin time = 04 09 28.
M_L = 2.9 (Up,Sk,Um,Ud,De).

" 26 Up iP 07 22 31.5
Ud iP 07 22 35.8

1977
Oct. 26 Up iP 13 25 00.4
Ud iP 13 25 05.0

" 26 Sk iPgl 14 00 07.0
iSgl 14 00 11.7
iRg 14 00 14.4
Origin time = 13 59 59.
Regional, near-surface event.

" 26 Up i 14 10 04.0
Ki iP 14 09 11.4
Um iP 14 09 29.8
Ud iP 14 10 00.0
i 14 10 07.3
De i 14 10 27.2
Off east coast of Honshu, Japan (h = 20 km).

" 26 Up iP 15 21 56.4
i 15 22 01.3
i 15 22 42.5
micr sec
P Z' 0.4 0.9
Ki iP 15 21 03.3
i 15 21 48.3
micr sec
P Z' 0.2 0.7
Sk iP 15 21 36.0
Um iP 15 21 29.1 C
Ud iP 15 21 57.3 C
De iP 15 22 19.1
Rat Islands, Aleutian Islands (h = N).
m = 6.5 (Up,Ki).

" 26 Up iP 17 09 48.6
Ki iP 17 10 27.5
Sk iP 17 10 27.3
Um iP 17 10 03.1
Ud iP 17 10 03.9
De iP 17 09 48.4
Iran (h = 50 km).

" 26 Ud iP 19 41 20.0

" 26 Ud iP 21 33 19.5

" 27 Up iP 00 25 52.0
Um iP 00 25 34.1
Ud iP 00 25 54.0

" 27 Up iP 00 29 32.9
i 00 29 41.9
micr sec
P Z' 0.1 0.9
Ki iP 00 30 12.2
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 27 (cont.)

Sk	iP		00 30 09.2
Um	iP		00 29 48.5
Ud	iP		00 29 48.0 C
De	iP		00 29 30.7 C

Southern Iran (h = 35 km).

" 27

Ud	iP		00 35 19.7
	i		00 35 41.9
De	iP		00 35 32.3

Off coast of Honshu, Japan (h = N).

" 27

Up	iP		05 39 04.4 C
Sk	iP		05 39 19.1 C
Ud	iP		05 39 17.8 C
De	iP		05 39 19.2

Tibet (h = N).

" 27

Up	iP		07 04 49.4
	iS		07 09 19.2
			micr sec
	P	Z'	0.1 1.0
	Mx	E	2.4 13
	Mx	N	3.4 13
Ki	iP		07 05 54.8
			micr sec
	P	Z'	0.1 0.9
Sk	iP		07 05 28.3
Um	iP		07 05 20.5
Ud	iP		07 04 57.7
De	iP		07 04 26.0
	iS		07 08 30.8

Dodecanese Islands (h = 50 km).
m = 5.5 (Up,Ki).

" 27

Up	i		09 59 13.2
	iRg		09 59 15.3

Regional, near-surface event.

" 27

Ud	iRg		10 45 20.9

Regional, near-surface event.

" 27

Ud	iP		11 47 37.3 C
De	iP		11 47 47.9 C

" 27

Ud	i(P)		11 56 35.2

" 27

Ud	iP		13 28 14.0
De	iP		13 27 45.3

Dodecanese Islands (h = N).

" 27

Ud	iP		13 35 55.9

" 27

Ud	iP		17 01 10.9

1977
Oct. 27

Um	i(PKP)		18 12 19.5
Ud	i(PKP)		18 12 26.9
	iPKPl		18 12 29.8
De	iPKPl		18 12 38.6

Fiji Islands region (h = 620 km).

" 27

Up	iP		22 48 36.2
	iS		22 52 49
			micr sec
	Mx	E	5.8 14
	Mx	N	3.9 15
Ki	iP		22 49 47.6
			micr sec
	Mx	E	5.4 11
Sk	iP		22 49 15.8
Um	iP		22 49 06.3
	ipP		22 49 14.0
	iS		22 53 54
Ud	iP		22 48 43.6
De	iP		22 48 11.8
	ipP		22 48 20.0

Turkey.
h = 30 km (Um,De).
M = 5.3 (Up,Ki).

" 28

Up	iP		13 28 52.5
Ud	iP		13 29 02.0
De	iP		13 29 11.4

Taiwan region (h = 25 km).

" 28

Ud	iP		21 22 49.6

Tadzik-Sinkiang border region (h = 35 km).

" 28

Up	iPKPl		23 33 04.2
Ud	iPKPl		23 33 04.0
De	iPKPl		23 33 15.3

South of Fiji Islands (h = 500 km).

" 28

Ud	iP		23 21 29.5

Albania (h = 10 km).

" 29

Up	iP		02 03 18.4
Ud	iP		02 03 32.2

India-China border region (h = N).

" 29

Up	iP		03 13 52.8
			micr sec
	P	Z'	0.1 1.0
Ki	iP		03 13 36.9 C
			micr sec
	P	Z'	0.2 0.5
Sk	iP		03 14 08.0 C

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Oct. 29 (cont.)

Um	iP	03 13 37.5	C
Ud	iP	03 14 09.1	C
De	iP	03 14 16.1	C

Eastern Kazakh SSR.
m = 6.0 (Up,Ki).
Underground explosion.

" 29

Up	iP		03 14 00.0	C
			micr	sec
	P	Z'	1.1	1.0
Ki	iP		03 13 43.4	C
			micr	sec
	P	Z'	0.8	0.7
Sk	iP		03 14 14.9	C
Um	iP		03 13 44.6	C
Ud	iP		03 14 16.5	C
De	iP		03 14 24.0	C

Eastern Kazakh SSR.
m = 6.7 (Up,Ki).
Underground explosion.

" 29

Up	iSgl	07 12 36.4
Sk	iSgl	07 11 59.1
Um	eSgl	07 13 35
Ud	iPgl	07 10 57.3
	iSgl	07 11 35.1
De	iSgl	07 12 41.0

Southern Norway, near
60 1/2°N, 8°E.
Origin time = 07 10 07.
M_L = 2.6 (Sk,Ud,De).

" 29

Up	iPKP		10 33 59.5
Ki	iPKP		10 33 45.3
			micr sec
	PKP	Z'	0.1 1.0
Sk	iPKP		10 33 56.0
Um	iPKP		10 33 52.0
Ud	iPKP		10 34 01.5
	iSKPl		10 37 09.0
De	iPKP		10 34 07.9

New Hebrides Islands
(h = 180 km).

" 29 Ud iP 10 44 51.2
Kuril Islands (h = 60 km).

" 29 Ud iP 10 50 15.7

" 29 Ud iP 12 24 46.8

" 29 Up iP 16 38 53.9
Northern Sulawesi
(h = 70 km).

1977
Oct. 29

Ud	iPKPl	17 35 11.1	
De	iPKPl	17 35 22.1	C

Fiji Islands region
(h = 540 km).

" 29

Up	iP	21 26 09.3	
Sk	iP	21 25 54.7	
Um	iP	21 26 11.7	C
Ud	iP	21 25 59.1	
De	iP	21 26 03.8	

Panama (h = 40 km).

" 30

Ki	iPKPl	01 17 22.9
Um	iPKPl	01 17 30.8
	iPKP2	01 17 42.3

North Island, New Zealand
(h =N).

" 30

Up	iPKPl	01 23 20.4
	iSKPl	01 26 12.9
Ud	iPKPl	01 23 21.5
	iSKPl	01 26 11.2
De	iPKPl	01 23 33.7

Fiji Islands region
(h = 570 km).

" 30

Up	iPP	02 09 23.6
Ud	iP	02 05 07.6
	iPP	02 09 36.5

South of Sumbawa Island
(h = N).

" 30

Up	iP	02 30 42.3
Sk	iP	02 30 29.4
Um	iP	02 30 46.0
Ud	iP	02 30 30.9
	i	02 30 40.9

Panama (h = N).

" 30

Up	i(PKP)	06 43 40.3
	iPKPl	06 43 42.7
	iSKPl	06 46 30.1
Sk	i(PKP)	06 43 33.5
	iSKPl	06 46 22.6
Um	i(PKP)	06 43 33.7
	iPKP	06 43 41.3
	iSKPl	06 46 17.7
Ud	i(PKP)	06 43 41.7
	iPKPl	06 43 44.8
	iSKPl	06 46 31.8
De	iPKPl	06 43 53.6 C
	iSKPl	06 46 40.1

Fiji Islands region
(h = 600 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Oct.	30	Up	iPKP	13 12 20.1	
			ipPKP	13 12 45.7	
			i	13 15 34.6	
			iSKPl	13 15 38.7	
		Ki	iPKP	13 12 05.2	
		Sk	iPKP	13 12 17.6	
		Um	iPKP	13 12 12.3	
			ipPKP	13 12 40.8	
		Ud	iPKP	13 12 22.6	
			ipPKP	13 12 51.4	
			iSKPl	13 15 39.0	
		De	iPKP	13 12 27.7	
			ipPKP	13 12 55.9	
			iSKPl	13 15 48.7	
		New Hebrides Islands. h = 100 km (Up,Um,Ud,De).			
"	30	Ud	iP	14 50 29.7	
"	30	Up	iPKPl	16 45 31.6	C
			i	16 45 42.9	
		Ki	iPKP	16 45 14.3	
		Um	iPKP	16 45 23.4	
		Ud	iPKPl	16 45 33.4	C
			i	16 45 38.1	
			i	16 45 44.8	
		De	iPKPl	16 45 43.0	C
			i	16 45 54.2	
		Kermadec Islands region (h = 45 km).			
"	30	Up	iP	17 18 08.8	
		Ud	iP	17 18 22.6	
"	30	Up	iPKPl	17 27 46.5	
		Ud	iPKPl	17 27 48.2	
		De	iPKPl	17 27 57.6	C
"	30	Up	iPKPl	17 39 07.3	
		Ud	iPKPl	17 39 09.0	C
		De	iPKPl	17 39 18.6	
		Kermadec Islands region (h = N).			
"	30	Up	iP	21 05 23.0	C
		Ki	iP	21 05 03.1	
			i	21 05 14.8	
		Um	iP	21 05 09.2	
		Ud	iP	21 05 31.9	C
		De	iP	21 05 38.0	
		Philippine Islands region (h = 60 km).			
"	30	Up	iPKPl	21 32 49.5	
		Ud	iPKPl	21 32 49.9	
		(cont.)			

1977 Oct.	30	(cont.)			
		De	iPKPl	21 33 00.8	
		Kermadec Islands region (h = N).			
"	30	Up	iP	21 36 56.9	
		Ud	iP	21 36 57.8	
"	30	Up	iP	21 49 13.4	
		Ud	iP	21 49 19.7	
		Kuril Islands (h = 170 km).			
"	30	Up	iPKPl	22 46 35.1	
			i	22 46 59.2	
				micr sec	
			PKPl Z'	0.1 0.8	
		Ud	iPKPl	22 46 36.4	
			i	22 47 01.2	
		De	iPKPl	22 46 45.0	
		Kermadec Islands region (h = 55 km).			
"	31	Ki	iP	01 05 44.4	
		El Salvador (h = 80 km).			
"	31	Ud	iPKP2	02 06 35.2	
		Auckland Islands region (h = 10 km).			
"	31	Ki	iP	09 49 51.2	
		Ud	iP	09 50 50.8	
		Near east coast of Kamchatka (h = 70 km).			
"	31	Up	iP	10 29 42.6	D
		Ud	iP	10 29 45.0	
"	31	Ud	iPKPl	13 26 37.7	
		De	iPKPl	13 26 47.4	
		Tonga Islands (h = 90 km).			

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July 12, 1979

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S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N,	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

N O V E M B E R 1 - 30, 1977

1977 Nov.	1	Ud	iPKPl	08 44 47.3
		De	iPKPl	08 44 59.1
		Tonga Islands region (h = N).		
"	1	Ud	i(P)	14 29 06.0
"	1	Ud	iP	15 53 42.8
"	1	Ud	i(Pgl)	16 44 40.5
			i	16 44 41.5
			i(Sgl)	16 45 07.4
		De	i(Sgl)	16 45 52.1
"	1	Um	iP	19 01 31.6
"	1	Up	iP	20 41 38.4
		Ki	iP	20 41 36.2
		Ud	iP	20 41 47.3
		De	iP	20 41 46.5
		Sunda Strait (h = 100 km).		
"	1	De	iPKPl	21 35 33.3
		Fiji Islands region (h = 250 km).		
"	2	Ki	eP	01 13 59
		Ud	eP	01 14 34
		Taiwan (h = 90 km).		
"	2	Ud	iP	01 30 37.9
"	2	Up	i	02 55 10.5
		Ki	iPKPl	02 54 40.8
				micr sec
			PKPl Z'	0.1 1.0
		Sk	ePKPl	02 54 56
			i	02 55 06.2
		Um	iPKPl	02 54 50.4
		Ud	iPKPl	02 55 01.4
1977 Nov.	2	Ki	iSgl	05 38 16.7
"	2	Up	iP	06 41 14.8
			i	06 41 27.4
				micr sec
			P Z'	0.1 1.2
		Ki	iP	06 40 22.3 D
			i	06 40 32.6
				micr sec
			P Z'	0.1 1.1
		Sk	eP	06 40 59
		Um	iP	06 40 47.9
		Ud	eP	06 41 18
			i	06 41 31.9
		De	iP	06 41 39.7
		Off east coast of Kamchatka (h = N).		
		m = 5.7 (Up,Ki).		
"	2	Ud	i(P)	13 37 42.4
"	2	Up	ipP	15 01 55.0
		Ud	iP	15 01 29.9
			ipP	15 01 44.5
		Peru.		
		h = 50 km (Ud).		
"	2	Up	iPKPl	16 28 45.7
		Sk	iPKPl	16 28 39.2
		Ud	iPKPl	16 28 47.6
			i	16 28 51.4
		De	iPKPl	16 28 56.5
"	3	Up	iP	02 27 07.9
			iS	02 30 26
			i	02 33 32.0
				micr sec
			P Z'	0.9 1.8
			(cont.)	

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 3 (cont.)

Up			micr	sec
	Mx	E	9.6	10
	Mx	N	7.0	7
	Mx	Z	9.8	11
Ki	iP		02 28 29.0	
	i		02 28 31.2	
	iLg2		02 37 00.9	
			micr	sec
	i	Z'	0.4	1.9
	Mx	E	10	8
	Mx	N	14	8
	Mx	Z	13	9
Sk	iP		02 27 55.0	
	i		02 36 02.4	
Um	iP		02 27 47.4	
	i		02 27 52.9	
	iS		02 31 52.7	
	iLg2		02 34 58.8	
Ud	iP		02 27 19.5	
	i		02 27 20.5	
	iLg2		02 33 26.0	
	i		02 34 29.5	
De	iP		02 26 38.3	
	i		02 26 44.9	
	i		02 31 58.1	

Bulgaria (h = 5 km).
m = 5.7 (Up,Ki).

" 3 Ud iP 12 39 06.6
Kuril Islands (h = 45 km).

" 3 Ud eP 16 39 32

" 3 Ki iP 17 38 08.0

		micr	sec
P	Z'	0.1	1.2

Um iP 17 38 18.5
Ud iP 17 38 39.7
South of Mariana Islands (h = N).

" 3 Ki iP 17 48 37.3
Ud iP 17 49 09.1
South of Mariana Islands (h = 35 km).

" 3 Ki iP 19 52 33.7
Ud iP 19 52 03.9
Turkey (h = N).

" 4 Ud iP 09 39 24.8

" 4 Up iP 10 03 54.9
(cont.)

1977
Nov. 4 (cont.)

Up	i		10 04 00.1	
	iS		10 12 56	
	i		10 32 24.2	
			micr	sec
	P	Z'	0.1	0.9
	i	Z'	0.2	1.0
	Mx	E	13	21
	Mx	N	47	23
	Mx	Z	63	23
Ki	iP		10 03 00.7	
	i		10 03 08.5	
	i		10 03 31.4	
	iS		10 11 18	
	iP'P'		10 32 25.6	
			micr	sec
	P	Z'	0.1	1.2
	i	Z'	0.1	0.9
	Mx	E	18	21
	Mx	N	18	21
	Mx	Z	17	22
Sk	iP		10 03 33.9	
	i		10 03 44.0	
	iP'P'		10 32 15.8	
Um	iP		10 03 27.4	
	i		10 03 33.6	
	iS		10 12 07	
	i		10 32 30.8	
Ud	iP		10 03 54.2	
	i		10 03 56.3	
De	iP		10 04 16.8	
	i		10 05 00.6	

Andreanof Islands, Aleutian Islands (h = N).
m = 6.0, M = 6.5 (Up,Ki).

" 4 Up iP 10 13 03.7
iPcP 10 13 27.8

		micr	sec
P	Z'	0.1	0.9

Ki iP 10 12 09.3
Ud iP 10 13 03.4
i 10 13 24.2
De iP 10 13 25.8
Andreanof Islands, Aleutian Islands (h = N).

" 4 Ud iP 11 02 46.4

" 4 Ud iP 11 34 02.0

" 4 Up iP 18 18 32.1
i 18 18 47.3
i 18 19 09.9

		micr	sec
P	Z'	0.1	1.0

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 4 (cont.)

Ki	eP		18 17 40
	i		18 17 55.6
Sk	e		18 18 14
	e		18 18 27
Um	iP		18 18 04.9
Ud	iP		18 18 30.8
	i		18 18 32.1
De	iP		18 18 52.4

Andreanof Islands, Aleutian Islands (h = N).

" 5

Up	iP		00 03 53.4
Ki	iP		00 03 55.3
Sk	iP		00 04 14.6
Ud	iP		00 04 08.4

Nepal (h = 15 km).

" 5

Up	iP		01 37 15.3
Ki	iP		01 36 43.7

Mariana Islands region (h = 40 km).

" 5

Up	iP		02 15 08.8
Ki	iP		02 15 36.5
Ud	eP		02 15 17

" 5

Up	iP		14 55 01.2
	i		14 55 03.7
	iPcP		14 55 27.4
		micr	sec
	i	Z' 0.1	1.0
	Mx	E 2.1	22
	Mx	N 6.0	22
	Mx	Z 9.3	22
Ki	iP		14 54 09.0
		micr	sec
	Mx	E 2.0	19
	Mx	N 2.0	18
	Mx	Z 2.7	18
Sk	iP		14 54 41.6
Um	iP		14 54 35.6
	iPcP		14 55 08.7
	iS		15 03 12
Ud	iP		14 55 03.1
	iPcP		14 55 27.1
De	iP		14 55 26.0

Andreanof Islands, Aleutian Islands (h = N).
M = 5.6 (Up,Ki).

" 6

Ud	iS		01 26 56.3
De	iP		01 24 38.6
	iS		01 25 44.7

Germany (h = 25 km).

1977
Nov. 6

Up	iP		02 49 55.0
	i		02 50 16.6
Ki	iP		02 49 01.5
Sk	eP		02 49 38
Um	iP		02 49 26.9
Ud	iP		02 49 58.5
	i		02 50 05.1
	i		02 50 21.7
	i		02 50 34.3
De	iP		02 50 20.2

Near east coast of Kamchatka (h = 70 km).

" 6

Sk	iP		02 53 45.1
Um	iP		02 53 36.1
Ud	iP		02 53 08.1

Bulgaria (h = 25 km).

" 6

Ud	iP		03 28 20.6

Mid-Indian Rise (h = N).

" 6

Ud	iP		05 51 39.5

" 6

Up	iP		07 18 49.5 C

" 6

Ud	iP		07 40 59.6

" 6

Up	iP		07 45 23.4
	i		07 45 37.1
		micr	sec
	P	Z' 0.2	0.9
Ki	iP		07 44 30.1
		micr	sec
	P	Z' 0.1	1.2
Um	iP		07 44 56.2
Ud	iP		07 45 24.6
De	iP		07 45 46.2

Andreanof Islands, Aleutian Islands (h = N).
m = 5.9 (Up,Ki).

" 6

Ud	iP		13 39 27.5

Afghanistan-USSR border region (h = 160 km).

" 6

Sk	iP		15 01 51.5

South of Panama (h = N).

" 6

Ud	iP		15 36 41.0

Andreanof Islands, Aleutian Islands (h = N).

" 6

Sk	iP		17 16 11.6
Ud	iP		17 15 32.6

Rumania (h = 130 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 6 Ki iP 17 31 00.9
micr sec
P Z' 0.1 1.0
Um iP 17 31 05.2
Ud iP 17 31 23.1 C
Northern Sulawesi (h = N).

" 7 Up iSgl 00 39 44.8
Ki iPn 00 35 19.8
iPgl 00 35 26.4
iSn 00 35 55.9
iSgl 00 36 06.4
Sk iSn 00 38 04.5
iSgl 00 38 54.1
Um iSgl 00 37 35.1
Ud iSn 00 39 11.7
i 00 40 04.4
iLgl 00 40 12.6
De iLgl 00 41 50.3
North Finland-USSR, near 69°N, 28 1/2°E.
M_L = 3.6 (Up,Ki,Sk,Um,Ud,De).
Origin time = 00 34 32.
Felt.

" 7 Up iP 04 55 04.0
Greece (h = N).

" 7 Up iP 08 30 28.0
micr sec
P Z' 0.3 1.5
Ki iP 08 29 39.6
micr sec
P Z' 0.1 0.9
Sk eP 08 30 16
Um iP 08 30 01.9
Ud iP 08 30 33.2
De iP 08 30 52.3
Kuril Islands (h = N).
m = 5.9 (Up,Ki).

" 7 Up iP 08 37 20.4
iPP 08 41 03.2
micr sec
P Z' 0.1 0.9
Ki iP 08 36 53.6
micr sec
P Z' 0.1 1.0
Sk iP 08 37 17.1
Um iP 08 37 05.0
Ud iP 08 37 26.5
iPP 08 41 16.0
De eP 08 37 40
Mariana Islands (h = 260 km).
m = 6.0 (Up,Ki).

1977
Nov. 7 Up iRg 09 30 58.6
Probably rockburst at the Dannemora iron ore mines, Sweden, 60.1°N, 17.5°E.

" 7 Up iRg 09 31 10.5
Probably rockburst at the Dannemora iron ore mines.

" 7 Up e(P) 10 25 04

" 7 Ud i(P) 10 34 02.5

" 7 Sk iSgl 11 49 05.4
Ud iSgl 11 48 41.5
De iSgl 11 49 44.6
Southern Norway, 60.4°N, 7.5°E.
Origin time = 11 47 06.
M_L = 2.4 (Ud).
By combination with Bergen and Kongsberg readings.

" 7 Up iRg 15 01 19.4
Probably rockburst at the Dannemora iron ore mines.

" 7 Up iPgl 16 01 17.2
iSgl 16 01 21.1
iRg 16 01 23.5
Um iSgl 16 03 08.1
Ud iPgl 16 01 47.8
iSgl 16 02 15.6
iRg 16 02 28.6
Rockburst at the Dannemora iron ore mines.
Origin time = 16 01 06.
Felt.

" 7 Up iRg 16 01 38.5
Probably rockburst at the Dannemora iron ore mines.

" 7 Up iRg 17 36 11.5
Probably rockburst at the Dannemora iron ore mines.

" 7 Up iRg 20 06 37.9
Probably rockburst at the Dannemora iron ore mines.

" 7 Up iP 21 44 39.7
i 21 44 51.4
Ki iP 21 44 09.1
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 7 (cont.)

Ki	i		21 44 20.4
Um	iP		21 44 18.8
	i		21 44 33.0

" 7

Up	iPKKP		23 26 12.4
Ki	iPKP		23 15 44.1
Sk	ePKKP		23 26 16
Ud	iPKP		23 15 57.2
	iPKKP		23 26 06.9
De	iPKP		23 16 03.4

Solomon Islands (h = 80 km).

" 8

Up	iPKPl		03 21 17.5
Sk	iPKPl		03 21 09.9
Um	iPKPl		03 21 04.8
Ud	iPKPl		03 21 18.1
De	iPKPl		03 21 26.5

Kermadec Islands region (h = 350 km).

" 8

Up	iPl		04 00 05.0	
	iP2		04 00 08.6	
			micr	sec
	P2	Z'	0.1	0.9
	Mx	E	1.5	20
	Mx	N	6.8	20
	Mx	Z	3.8	19
Ki	iPl		03 59 47.8	
			micr	sec
	Pl	Z'	0.1	1.7
	Mx	E	1.9	17
	Mx	N	4.0	17
	Mx	Z	1.4	20
Sk	eP2		04 00 14	
Um	iP2		03 59 56.6	
Ud	iPl		04 00 14.0	
	iP2		04 00 17.5	
De	eP2		04 00 22	

Luzon, Philippine Islands (h = N).
m = 5.9, M = 6.0 (Up,Ki).

" 8

Ki	iP		09 35 13.9	
	ipP		09 35 22.8	
			micr	sec
	pP	Z'	0.1	1.2
Ud	ipP		09 35 49.5	

Luzon, Philippine Islands.
h = 30 km (Ki).

" 8

Up	i(P)		14 09 21.4

" 8

Up	iP		15 10 02.7

(cont.)

1977
Nov. 8 (cont.)

Up			micr	sec
	P	Z'	0.2	1.3
	Mx	N	2.0	19
Ki	iP		15 09 14.1	
			micr	sec
	P	Z'	0.1	1.4
	Mx	E	3.8	15
	Mx	N	4.3	16
	Mx	Z	2.7	18
Sk	eP		15 09 50	
Um	iP		15 09 36.3	
Ud	iP		15 10 07.5	C
	i		15 10 38.0	
De	iP		15 10 27.0	

Kuril Islands (h = N).
m = 6.0, M = 5.6 (Up,Ki).

" 8

Ud	iP		15 43 41.0

Banda Sea (h = 360 km).

" 8

Sk	eP		21 50 46	
Um	iP		21 50 47.8	
	i		21 51 10.2	
Ud	iP		21 50 13.4	C
	i		21 50 23.2	

Mediterranean Sea (h = N).

" 9

Um	iP		00 49 39.5
Ud	iP		00 50 11.2

Kuril Islands (h = 50 km).

" 9

Ud	iP		05 37 34.0

" 9

Ud	iP		05 39 24.0

" 9

Ud	iP		08 24 42.2

Kuril Islands (h = 25 km).

" 9

Ki	iPKP		09 03 36.2
Um	iPKP		09 03 42.7
	iSKP		09 07 08.8
Ud	iPKP		09 03 52.7

New Hebrides Islands (h = 25 km).

" 9

Ud	iP		11 27 25.5

Iran (h = N).

" 9

Up	iPn		14 16 42.2
	iSn		14 18 11.0
	i		14 18 13.5
	i		14 18 25.8
Ki	iPn		14 16 54.8
	i		14 17 05.0

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 9 (cont.)

Ki	iSn	14 18 29.6	
	i	14 18 50.1	
Sk	iPn	14 15 56.9	
	i	14 16 38.4	
	i	14 16 49.5	
	iSn	14 16 52.5	
Um	iPn	14 16 43.0	
	i	14 16 51.8	
	iSn	14 18 11.0	
	i	14 18 28.1	
Ud	iPn	14 16 17.1	
	i	14 16 18.5	
	i	14 16 26.0	
	iSn	14 17 26.9	
	i	14 17 55.0	
De	iPn	14 16 51.3	
	iSn	14 18 27.0	
	i	14 19 12.7	

Norwegian Sea, near 63°N, 1 1/2°E.
Origin time = 14 14 42.
Checked with Finnish and Norwegian station readings.

" 9	Um	i(P)	14 26 20.3
	Ud	i(P)	14 26 52.0
" 9	Ki	i	20 34 41.1
	Um	iPKP2	20 34 46.9
	Ud	ePKPl	20 34 57

Off east coast of North Island, New Zealand (h = 40 km).

" 9	Up	iPl	21 25 23.9
	Ki	iPl	21 24 36.1
	Sk	iP2	21 25 18.8
	Um	iPl	21 24 58.6
	Ud	iPl	21 25 30.4
	De	iP2	21 25 55.6

Kuril Islands (h = N).

" 9	Up	iP	22 11 48.9	C
			micr sec	
		P Z'	0.6 1.3	
	Ki	iP	22 11 14.6	C
			micr sec	
		P Z'	0.4 1.4	
	Sk	iP	22 11 22.9	C
	Um	iP	22 11 34.3	C
		i	22 11 51.6	
	Ud	iP	22 11 41.1	C

(cont.)

1977
Nov. 9 (cont.)

De	iP	22 11 57.3	C

Southern Nevada.
m = 6.5 (Up,Ki).
Underground explosion.

" 10	Ki	iPKPl	04 34 51.3
	Um	ePKPl	04 34 59
	Ud	i	04 35 37.8

Off east coast of North Island, New Zealand (h = 55 km).

" 10	Um	iP	05 37 37.1
	Ud	iP	05 38 02.8 C
" 10	Up	iPKPl	09 19 01.2 D
			micr sec
		PKPl Z'	0.3 0.8
	Ki	iPKP	09 18 48.0
	Um	iPKPl	09 18 48.9 D
	Ud	iPKPl	09 19 02.9 D
	De	iPKPl	09 19 12.8 D

South of Fiji Islands (h = 480 km).

" 10	Up	iP	13 59 48.3
		iPP	14 01 06.2
			micr sec
		PP Z'	0.1 1.0
	Ki	iP	14 00 13.0
	Sk	iP	14 00 19.5
	Um	iP	13 59 55.6
	Ud	iP	14 00 04.8
		iPP	14 01 35.6
	De	iP	13 59 55.2

Iran (h = 25 km).

" 10	Up	iSgl	15 43 46.1
	Ki	i	15 41 14.7
		iPgl	15 41 16.1
		i	15 41 44.6
		iSgl	15 41 47.7
	Sk	i	15 43 08.1
		iSgl	15 43 10.4
	Um	iPgl	15 41 10.2 C
		i	15 41 12.5
		iSgl	15 41 38.1
	Ud	i	15 44 07.8
		iSgl	15 44 09.8

North Gulf of Bothnia, 65.6°N, 22.9°E.
M_L = 3.2 (Up,Ki,Sk,Um,Ud).
Origin time = 15 40 33.
Felt.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977				
Nov.	10	Up	i(P)	20 35 16.2
"	10	Ud	i(P)	21 31 12.4
"	10	Up	iPKPl	22 26 27.2
		Ud	iPKPl	22 26 29.1
"	10	Up	iP	23 19 16.3 C
		Ki	iP	23 20 21.8 C
		Ud	iP	23 19 24.5
		De	eP	23 18 53
		Dodecanese Islands (h = N).		
"	11	Up	iPKPl	00 43 35.0
			i	00 44 41.2
		Ud	iPKPl	00 43 37.6
		South of Fiji Islands (h = 200 km).		
"	11	Ud	iP	04 42 12.9
"	11	Ud	eP	05 20 36
		Ryukyu Islands (h = 100 km).		
"	11	Ki	i(P)	15 14 53.8
		Sk	i(P)	15 15 25.4
"	11	Up	iPKPl	15 31 19.1
		Sk	iPKPl	15 31 11.7
		Ud	iPKPl	15 31 20.9
		De	iPKPl	15 31 29.6
		Kermadec Islands (h = 110 km).		
"	11	Up	iPgl	18 50 56.9 D
			iSgl	18 51 06.8
			iRg	18 51 12.6
		Ki	iSgl	18 54 32.8
		Sk	iPgl	18 51 46.7
			iSn	18 52 24.6
			iSgl	18 52 37.9
		Um	iPgl	18 51 48.8
			iSn	18 52 25.3
			i	18 52 34.3
			iSgl	18 52 38.0
		Ud	iPgl	18 51 06.9 C
			iSgl	18 51 26.1
			i	18 51 29.6
		De	iSgl	18 52 52.7
		Rockburst at the Vingesbacke iron ore mine, Sweden, 60.5°N, 16.4°E. Origin time = 18 50 43. Felt.		

1977				
Nov.	12	Ki	eP	02 33 43
		Um	iP	02 34 09.4
		Ud	iP	02 34 35.8
		Fox Islands, Aleutian Islands (h = N).		
"	12	Up	iP	03 27 42.1
		Um	iP	03 27 16.6
		Ud	iP	03 27 48.2
		De	iP	03 28 06.9
		Kuril Islands (h = 20 km).		
"	12	Sk	iP	05 18 23.7
		Ud	iP	05 18 23.1
"	12	Up	iPKPl	19 23 08.9
		Ki	iPKP	19 22 58.3
		Sk	ePKP	19 23 06
		Um	ePKP	19 23 06
		Ud	iPKPl	19 23 10.0 C
		De	iPKPl	19 23 21.0 C
		Fiji Islands region (h = 510 km).		
"	12	Ki	iP	23 06 32.8
		Sk	iP	23 06 46.1
		Northern Sumatra (h = 80 km).		
"	13	Sk	eSgl	00 30 57
		Ud	iSgl	00 30 23.0
"	13	Ud	iP	06 53 18.9
		Hokkaido, Japan region (h = 70 km).		
"	13	Up	iP	13 33 01.4
		Ki	eP	13 32 08
		Ud	iP	13 33 01.9
		Rat Islands, Aleutian Islands (h = 30 km).		
"	13	Up	eP	21 12 35
		Um	iP	21 12 27.2
		Ud	iP	21 12 48.7
		Eastern India (h = N).		
"	13	Up	iP	21 24 53.6
			i	21 25 04.0
				micr sec
			i Z'	0.2 1.3
			Mx E	2.8 15
			Mx N	2.1 15
		Ki	iP	21 24 32.3
			i	21 24 40.1

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 13 (cont.)

Ki			micr	sec	
	P	Z'	0.1	1.5	
	i	Z'	0.1	1.2	
	Mx	N	3.2	20	
Sk	i		21 25 07.3		
Um	iP		21 24 42.5		
	i		21 24 50.2		
	iS		21 34 29		
Ud	iP		21 25 05.1		
	i		21 25 14.0		

Philippine Islands region (h = N).
m = 5.8, M = 5.7 (Up,Ki).

" 13	Up	iPKPl	21 49 39.9	
	Sk	ePKPl	21 49 38	
	Ud	iPKPl	21 49 41.9	C
" 14	Up	iP	00 48 36.5	
	Ki	iP	00 48 04.7	C
	Sk	iP	00 48 33.9	
	Um	iP	00 48 18.8	
	Ud	iP	00 48 44.2	C
	De	iP	00 48 56.0	

Bonin Islands region (h = 410 km).

" 14	Ki	iPKP	10 24 55.1	
	Um	iPKP	10 24 48.5	

South Sandwich Islands region (h = 180 km).

" 14	Ud	iPKPl	13 42 39.1	

South of Tonga Islands (h = N).

" 14	Up	iPKPl	13 48 29.9	C
	Ud	iPKPl	13 48 31.1	

South of Tonga Islands (h = N).

" 14	Up	i(P)	14 00 26.3	
		i	14 00 35.2	
	Ud	i(P)	14 00 26.0	
" 14	Ki	iP	16 57 46.5	
		ipP	16 57 56.3	
			micr	sec
		pP	Z' 0.1	1.4
	Um	iP	16 57 43.1	
		ipP	16 57 52.8	
	Ud	iP	16 57 56.1	
		i	16 58 19.0	

(cont.)

1977
Nov. 14 (cont.)

De	i		16 58 20.4	

Northern Sumatra.
h = 30 km (Ki,Um).

" 14	Up	iP	19 39 53.0	
	Ki	iP	19 38 59.7	
			micr	sec
		P	Z' 0.1	0.7
	Sk	iP	19 39 30.8	
		iPcP	19 40 04.9	
	Um	iP	19 39 26.5	
		i	19 39 38.2	
		iPcP	19 40 02.5	
	Ud	iP	19 39 52.4	
	De	iP	19 40 15.1	

Fox Islands, Aleutian Islands (h = 70 km).

" 14	Up	i	22 59 55.4	
	Ud	ePKPl	22 58 48	
		i	22 58 56.8	

South of Tonga Islands (h = N).

" 15	Up	iP	05 07 54.9	
	Ki	iP	05 07 00.9	
	Ud	iP	05 07 52.9	

Alaska Peninsula (h = 40 km).

" 15	Up	iSgl	14 25 35.7	
	Sk	iSgl	14 25 34.1	
		i	14 25 45.8	
	Ud	iSgl	14 24 36.7	

Southern Norway.

" 15	Up	iP	18 17 52.9	
" 15	Up	iP	20 28 17.8	
	Ki	iP	20 28 21.2	
			micr	sec
		P	Z' 0.1	0.6
	Sk	iP	20 28 41.4	
	Um	iP	20 28 13.7	
	Ud	iP	20 28 35.0	D
		ipP	20 29 11.9	

Tadzhik-Sinkiang border region.
h = 170 km (Ud).

" 15	Up	iPKPl	21 12 10.7	
			micr	sec
		PKPl	Z' 0.1	0.9
	Ud	iPKPl	21 12 12.4	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 15 (cont.)
South of Fiji Islands
(h = 310 km).
Arrivals are abouth 15 s
late when related to
the NEIS solution.

" 16 Ki eP 03 42 48
i 03 42 53.3
iS 03 44 17.7
South of Svalbard.
By combination with Finnish
station readings.

" 16 Ki iP 07 24 58.9
Sk iP 07 25 20.9
Ud iP 07 25 25.6
Mindanao, Philippine
Islands (h = 90 km).

" 16 Ki iP 15 09 21.0
e 15 09 51
Sk eP 15 09 56
Um iP 15 09 39.1 D
Ud iP 15 10 07.7
Near east coast of Honshu,
Japan (h = 110 km).

" 16 Up iP 15 40 25.4
Ud iP 15 40 26.4
Rat Islands, Aleutian
Islands (h = 70 km).

" 16 Um iP 16 04 10.9
i 16 04 49.9
Northern Sulawesi (h = 150 km).

" 16 Up iPKPl 16 46 30.4
Ud iPKPl 16 46 32.1 C
South of Fiji Islands
(h = 110 km).

" 16 Up iP 18 55 41.1
micr sec
P Z' 0.1 1.1
Ki iP 18 54 46.7
Ud iP 18 55 40.1
Rat Islands, Aleutian
Islands (h = 60 km).

" 16 Up iP 19 08 54.0
Ki iP 19 08 29.1 D
Ud eP 19 09 03
Southwestern Ryukyu Islands
(h = 130 km).

1977
Nov. 16 Up iP 19 47 12.0 D
micr sec
P Z' 0.2 1.4
Ki iP 19 46 29.0 D
Sk iP 19 47 04.1 D
Um iP 19 46 48.2 D
Ud iP 19 47 18.9 D
Hokkaido, Japan region
(h = 70 km).

" 16 Ki iP 21 21 49.3
Hokkaido, Japan region
(h = 140 km).

" 16 Ki iPKP 21 59 31.5
i 21 59 47.4
Fiji Islands region
(h = 580 km).

" 16 Up iSgl 23 47 34.1
Sk iSn 23 46 12.7
iSgl 23 46 36.6
Um iSgl 23 48 14.4
Ud iSgl 23 46 33.8
Coast of southwest Norway,
near 60 1/2°N, 4 1/2°E.
Origin time = 23 44 13.
M_L = 2.7 (Ud).
Felt.
By combination with Bergen
and Kongberg readings.

" 17 Up iRg 05 12 58.7
Ud iRg 05 12 58.8
Central Sweden.
Near-surface event.

" 17 Ud iP 05 41 51.5

" 17 Sk iP 06 33 11.1
De iP 06 31 51.3
Bulgaria (h = 10 km).

" 17 Up iPKP 15 39 19.8 C
micr sec
PKP Z' 0.1 0.9
Ki iPKP 15 39 35.1 C
micr sec
PKP Z' 0.2 0.9
Sk iPKP 15 39 24.3 C
Um iPKP 15 39 28.0
Ud iPKP 15 39 18.3
South Sandwich Islands
region (h = 130 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Nov.	17	Up	iP		17 31 39.9		
					micr	sec	
			P	Z'	0.2	1.5	
		Ki	iP		17 31 35.9		
		Sk	iP		17 31 52.6		
		Um	iP		17 31 36.1		
		Ud	eP		17 31 50		
		Sunda Strait (h = 70 km).					
"	17	Up	iP		17 32 04.8		
			iS		17 41 35		
					micr	sec	
			P	Z'	0.2	0.9	
		Ki	iP		17 31 28.2		
					micr	sec	
			P	Z'	0.1	1.0	
		Sk	iP		17 32 00.0		
		Um	iP		17 31 44.0		
			iS		17 40 53		
		Ud	iP		17 32 12.3		
		De	iP		17 32 25.5		
		South of Honshu, Japan (h = 110 km).					
		m = 5.8 (Up,Ki).					
"	17	Ki	iP		19 28 36.9		
		Ud	iP		19 29 04.2 D		
		Mindanao, Philippine Islands (h = 180 km).					
"	18	Up	iPKPl		03 17 55.2		
		Ki	ePKP		03 17 41		
		Sk	iPKP		03 17 50.4		
		Um	iPKPl		03 17 44.6		
		Ud	iPKPl		03 17 56.2		
		De	iPKPl		03 18 06.3 D		
		Kermadec Islands region (h = 60 km).					
"	18	Ud	iP		04 11 07.2		
"	18	Um	iP		04 05 59.1		
			i		04 06 06.3		
		Off east coast of Honshu, Japan (h = N).					
"	18	Ki	eP		04 35 24		
		Ud	iP		04 36 13.8		
		Hokkaido, Japan region (h = N).					
"	18	Ki	iP		05 07 53.3		
		Ud	iP		05 08 17.3		
		Mindanao, Philippine Islands (h = 90 km).					
1977 Nov.	18	Up	iP		05 29 24.9		
			iS		05 36 56		
			i		05 40 36.1		
					micr	sec	
			P	Z'	0.6	1.0	
			Mx	E	40	16	
			Mx	N	225	27	
			Mx	Z	69	17	
		Ki	iP		05 29 19.0 C		
			iS		05 36 43		
					micr	sec	
			P	Z'	0.6	1.5	
			Mx	E	55	13	
			Mx	N	56	14	
			Mx	Z	319	19	
		Sk	iP		05 29 43.0 C		
		Um	iP		05 29 17.2 C		
			i		05 29 34.7		
			eS		05 36 40		
		Ud	iP		05 29 39.5		
		De	iP		05 29 42.8 C		
		Tibet (h = N).					
		m = 6.4, M = 7.1 (Up,Ki).					
"	18	Up	iP		05 42 34.4		
		Ud	iP		05 42 48.8		
		Tibet (h = N).					
"	18	Up	iP		06 47 07.3		
		Ki	iP		06 47 25.6 C		
		Sk	iP		06 47 35.8 C		
		Um	iP		06 47 10.8		
		Pakistan (h = 25 km).					
"	18	Up	iP		10 30 42.7		
			iPP		10 34 19.0		
			iS		10 41 37		
					micr	sec	
			P	Z'	0.1	0.9	
			Mx	E	2.0	15	
			Mx	N	7.5	21	
			Mx	Z	4.8	18	
		Ki	iP		10 30 42.4 C		
			i		10 31 10.0		
					micr	sec	
			P	Z'	0.2	1.0	
			Mx	E	4.6	17	
			Mx	N	5.6	18	
			Mx	Z	7.7	19	
		Sk	iP		10 30 55.8		
			ipP		10 31 08.4		
			iPP		10 34 39.4		
		Um	iP		10 30 39.8		
			ipP		10 30 50.4		
			iS		10 34 32		
		Ud	iP		10 30 51.8 C		

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 18 (cont.)

Ud	ipP		10 31 04.2	
	iPP		10 34 37.5	
De	iP		10 30 50.4	
	ipP		10 31 02.7	

Southern Sumatra.
h = 40 km (Sk,Um,Ud,De).
m = 6.3, M = 6.2 (Up,Ki).

" 18

Up	iP		11 36 42.2	
Ki	eP		11 36 36	
Ud	iP		11 36 57.0	

Tibet (h = N).

" 18

Um	iP		12 01 33.4	
Ud	eP		12 01 46	

" 18

Ud	iP		13 25 47.1	

" 18

Ud	iP		15 20 10.8	C

Tibet (h = N).

" 18

Um	i(P)		17 24 35.8	

" 18

Up	iP		17 32 38.4	
			micr sec	
	P	Z'	0.1 1.0	
Ki	iP		17 32 33.4	
	i		17 33 44.7	
Sk	iP		17 32 56.8	
Um	iP		17 32 31.0	
	i		17 32 34.8	
Ud	iP		17 32 53.2	C
	i		17 33 01.7	
De	iP		17 32 57.0	
	i		17 33 02.3	

Tibet (h = N).

" 18

Up	i		21 00 29.3	
	iRg		21 00 34.0	
Um	iSgl		21 02 08.5	
Ud	iRg		21 00 20.9	
De	iSgl		21 01 38.0	

Bergslagen area, Sweden,
near 60°N, 15°E.
Origin time = 20 59 48.
Near-surface event.

" 18

Up	iP		23 22 03.3	C
Ki	iP		23 21 56.5	
Sk	iP		23 22 21.6	
Ud	iP		23 22 17.9	C

Tibet (h = N).

1977
Nov. 19

Up	iPKP		01 01 21.7	C
Ki	iPKP		01 01 36.1	C
			micr sec	
	PKP	Z'	0.1 1.0	
Um	iPKP		01 01 29.9	
Ud	iPKP		01 01 19.8	

South Sandwich Islands
region (h = 140 km).

" 19

Up	iP		07 24 05.6	C
Ud	eP		07 24 11	

Kuril Islands (h = 35 km).

" 19

Up	iP		11 58 50.9	
Ki	iP		11 58 59.6	
Um	iP		11 58 48.9	
Ud	iP		11 59 08.0	

Afghanistan-USSR border
region (h = 100 km).

" 19

Up	iP		22 14 46.5	
	ipP		22 14 58.7	
			micr sec	
	P	Z'	0.1 1.0	
Ki	iP		22 13 53.3	
Um	iP		22 14 19.8	
Ud	iP		22 14 46.1	

Andreanof Islands, Aleutian
Islands (h = 45 km).

" 20

Ki	iP		19 02 44.0	C

Central Alaska (h = 80 km).

" 20

Ki	iP		22 41 33.2	

" 21

Ki	eP		02 19 10	D
Um	iP		02 19 29.1	
Ud	iP		02 20 00.6	

Eastern Sea of Japan
(h = 230 km).

" 21

Up	iP		03 02 25.2	
			micr sec	
	P	Z'	0.1 1.1	
	Mx	E	5.4 19	
	Mx	N	7.1 16	
	Mx	Z	9.5 20	
Ki	iP		03 01 53.2	
			micr sec	
	Mx	E	4.2 16	
	Mx	N	4.3 15	
	Mx	Z	4.9 15	
Sk	e		03 02 08	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 21 (cont.)

Um	iP		03 02 15.5	
	iS		03 12 19	
Ud	iP		03 02 13.7	

Gulf of California (h = N).
M = 6.1 (Up,Ki).

" 21

Up	iPKP1		10 11 46.8	
	iPKP2		10 11 53.2	
			micr	sec
	PKP1	Z'	0.1	0.9
	PKP2	Z'	0.1	0.8
Ki	e(PKP)		10 11 25	
	i		10 11 29.6	
Sk	iPKP1		10 11 41.4	
Um	iPKP1		10 11 36.4	
Ud	iPKP1		10 11 49.0	
De	iPKP1		10 10 56.7	

Kermadec Islands region
(h = 320 km).

" 21

Up	iP		11 51 45.2	C
	iPP		11 55 35.0	
			micr	sec
	PP	Z'	0.3	1.6
Ki	iP		11 51 29.5	
	iPP		11 55 13.2	
			micr	sec
	P	Z'	0.1	1.0
	PP	Z'	0.2	1.4
Sk	iP		11 51 52.8	
Um	iP		11 51 35.0	
	iPP		11 55 18.4	
Ud	iP		11 51 54.5	C
	i		11 52 24.3	
	i(PP)		11 55 25.3	

Mindanao, Philippine
Islands (h = 600 km).
m = 6.0 (Up,Ki).

" 21

Up	iP		14 45 28.9
Ud	iP		14 45 32.8
De	iP		14 45 53.4

Near east coast of Kamchatka
(h = N).

" 21

Ki	iP		16 52 22.6
	iS		16 54 08.6
	iLg2		16 55 17.3
Um	iP		16 53 10.9
	i		16 55 44.1
	iS		16 56 07.3
	iLg1		16 57 14.0
Ud	iP		16 54 07.1

Svalbard region (h = 10 km).

1977
Nov. 21

Ki	iP		18 15 13.3
Ud	eP		18 15 36

Mindanao, Philippine
Islands (h = 610 km).

" 21

Ud	iP		21 39 44.6

" 21

Up	iPKP1		23 24 16.0	
	iPKP2		23 24 19.5	
			micr	sec
	PKP1	Z'	0.1	0.7
	PKP2	Z'	0.1	0.7
Ki	iPKP		23 23 59.9	
Sk	iPKP1		23 24 10.1	C
Um	iPKP1		23 24 04.2	
Ud	iPKP1		23 24 18.1	
	iPKP2		23 24 23.0	
De	iPKP1		23 24 26.6	
	iPKP2		23 24 36.3	

Kermadec Islands region
(h = 330 km).

" 22

Up	iP		07 03 48.2
			micr sec
	P	Z'	0.1 1.0
Ki	iP		07 03 56.2
Um	iP		07 03 46.6
Ud	iP		07 04 05.1

Afghanistan-USSR border
region (h = 120 km).

" 22

Ud	iPKP		08 58 43.7

Fiji Islands region
(h = 90 km).

" 22

Up	iP		11 41 58.2
Ki	iP		11 41 44.0	C
Sk	iP		11 42 13.5
Um	iP		11 41 44.5	C
Ud	iP		11 42 13.7	C

Northern Sinkiang province,
China (h = N).

" 22

Up	iPP		16 17 11.4	
			micr	sec
	PP	Z'	0.2	1.4
	Mx	E	3.1	26
	Mx	N	3.6	22
	Mx	Z	6.7	24
Ki	ePKP		16 15 18	
	i(PP)		16 16 10.8	
			micr	sec
	Mx	E	2.6	20
	Mx	N	3.9	22
	Mx	Z	2.9	22

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 22 (cont.)

Sk	iPKP		16 15 28.8
	iPP		16 17 05.9
Um	iPKP		16 15 23.6
	ipPKP		16 15 42.7
	iSKS		16 22 13
Ud	iPKP		16 15 33.0
	iPP		16 17 23.4
De	iPKP		16 15 40.5
	ipPKP		16 15 58.4

Solomon Islands.
h = 70 km (Um,De).
M = 6.1 (Up,Ki).

" 22

Ki	iP		17 00 36.5
Um	iP		17 00 41.9

Banda Sea (h = N).

" 22

Ud	iSgl		18 00 38.5

Southwest coast of Norway, near 58 1/2°N, 6 1/2°E.
Origin time = 17 58 30.
M_L = 2.6 (Ud).
By combination with Bergen and Kongsberg readings.

" 22

Sk	e(P)		18 17 21
	i		18 17 24.0

" 22

Ud	iP		19 24 43.4

" 22

Up	iP		21 27 39.7
			micr sec
	P	Z'	0.1 1.0
Ki	eP		21 27 02
	ipP		21 27 06.2
			micr sec
	pP	Z'	0.1 1.0
Sk	eP		21 27 15
	ipP		21 27 18.1
Um	iP		21 27 22.2
	ipP		21 27 27.1
Ud	iP		21 27 34.2
	ipP		21 27 37.6

Near coast of northern California.
h = 15 km (Ki,Sk,Um,Ud).
m = 5.8 (Up,Ki).

" 23

Up	iPKPl		02 30 31.2 C
Ud	iPKPl		02 30 33.9 C
De	iPKPl		02 30 44.3 C

South of Fiji Islands (h = 520 km).

" 23

Ki	iP		05 42 52.5
Sk	iP		05 43 20.4
Ud	eP		05 43 44

(cont.)

1977
Nov. 23 (cont.)

De	iP		05 44 07.7

Kodiak Island region (h = N).

" 23

Up	i(P)		07 56 26.7

" 23

Up	iPdiff		09 41 14
	i		09 41 37
	iPKP		09 45 04.2
	iPP		09 45 54.4
	iPKKP		09 55 52.7
			micr sec
	PP	Z'	19 4.0
	Mx	E	94 19
	Mx	N	84 20
	Mx	Z	166 19
Ki	ePdiff		09 41 31
	iPKP		09 45 10.1
	iPP		09 46 26.9
	iPKKP		09 55 45.1
			micr sec
	PP	Z'	21 3.5
	Mx	E	75 17
	Mx	N	89 18
	Mx	Z	84 18
Sk	i		09 41 57.2
	iPKP		09 45 00.2
	iPP		09 45 44.0
	iPKKP		09 55 48.7
Um	iPKP		09 45 08.3
	i		09 45 33.1
	iPP		09 46 19.3
	iPKKP		09 55 48.1
Ud	iPKP		09 44 59.6
	iPP		09 45 54.1
	iPKKP		09 55 58.4
	i		09 56 05.8
De	iPKP		09 44 58.0
	i		09 45 22.6
	iPP		09 45 39.0
	iPKKP		09 55 55.4

San Juan province, Argentina (h = 15 km).
m = 8.2, M = 7.5 (Up,Ki).

" 23

Ud	iPKP		09 53 32.9

San Juan province, Argentina (h = N).

" 23

Ud	iP		09 54 13.7

" 23

Ud	iP		10 47 44.7

" 23

Ud	iPKP		12 02 50.2

San Juan province, Argentina (h = N).

" 23

Up	Mx		13 00

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 23 (cont.)

Up			micr	sec
	Mx	E	1.9	17
	Mx	N	1.0	18
	Mx	Z	2.7	20
Ki	Mx		13	09
			micr	sec
	Mx	E	0.8	17
	Mx	N	1.3	17

San Juan province, Argentina
(h = 20 km).
M = 5.8 (Up,Ki).

" 23 Um iPKP 16 54 45.6
San Juan province, Argentina
(h = 15 km).

" 23 Ud iPKP 16 59 22.3
San Juan province, Argentina
(h = N).

" 23

Up	iP		17 06	14.5
			micr	sec
	P	Z'	0.1	1.0
	Mx	E	1.7	18
	Mx	N	2.4	19
	Mx	Z	6.2	20
Ki	iP		17 05	20.7
			micr	sec
	P	Z'	0.2	1.0
	Mx	E	2.0	19
	Mx	N	2.9	19
	Mx	Z	2.8	20
Sk	iP		17 05	53.1
Um	iP		17 05	47.1 C
	iPcP		17 06	23.0
Ud	iP		17 06	14.2 C
	i		17 07	01.8
De	iP		17 06	37.4

Fox Islands, Aleutian
Islands (h = 55 km).
m = 6.0, M = 5.5 (Up,Ki).

" 23 Um iPKP 22 10 44.7
Ud iPKP 22 10 34.8
San Juan province, Argentina
(h = N).

" 23 Um iPKP 22 16 06.5
San Juan province, Argentina
(h = N).

" 23 Um iPKP 23 46 18.6
San Juan province, Argentina
(h = N).

1977
Nov. 24 Um iPKP 02 16 13.6
San Juan province, Argentina
(h = N).

" 24 Um iPKP 02 17 14.6
Ud iPKP 02 17 06.9
San Juan province, Argentina
(h = N).

" 24

Up			micr	sec
	Mx	E	1.8	19
	Mx	N	1.8	20
	Mx	Z	5.2	20
Ki	ePKP		02 21	17
			micr	sec
	Mx	E	1.2	18
	Mx	N	2.3	19
	Mx	Z	1.3	19
Um	iPKP		02 21	14.7
Ud	ePKP		02 21	06
	i		02 21	12.7

San Juan province, Argentina
(h = 25 km).
M = 5.9 (Up,Ki).

" 24

Up	iP	02 26	55.5
Um	iP	02 26	42.2
	i	02 26	45.1
Ud	iP	02 27	00.6

" 24

Up	iP	02 31	56.6
Um	iP	02 31	42.3
	i	02 31	45.7
Ud	iP	02 32	01.5
	i	02 32	04.9

" 24

Up	iPKP		17 19	16.0
			micr	sec
	PKP	Z'	0.1	1.1
Ki	iPKP		17 19	14.8
			micr	sec
	PKP	Z'	0.1	1.0
Ud	iPKP		17 19	22.7

Tuamotu archipelago region
(h = 0).

" 24 Um iPKP 18 38 57.6
Ud iPKP 18 38 48.6
San Juan province, Argentina
(h = N).

" 24 De iPKP1 20 30 07.7
Fiji Islands region
(h = 550 km).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Nov.	24	Ud	iP		22 41 36.4	
		Off east coast of Honshu, Japan (h = 25 km).				
"	24	Up	iP		22 49 19.7	C
					micr	sec
			P	Z'	0.1	1.0
		Ud	iP		22 49 21.7	C
"	24	Ud	eP		23 30 10	
"	25	Ki	iP		01 30 31.2	
"	25	Ki	iP		06 42 38.0	
		Sk	iP		06 43 24.5	
"	25	Ud	iSgl		07 48 40.1	
			i		07 48 50.9	
		Off coast of southwest Norway, not far from Bergen. Origin time = 07 46 23. M_L = 2.5 (Ud). By combination with Bergen readings.				
"	25	Ud	iP		11 23 29.0	
		Molucca Passage (h = 80 km).				
"	26	Ud	iPKPl		05 39 53.9	
		De	iPKPl		05 40 00.3	
		Fiji Islands region (h = 560 km).				
"	26	Ud	iP		06 02 57.9	
"	26	Up	iP		13 24 32.5	D
					micr	sec
			P	Z'	0.1	1.0
		Ki	e		13 25 56	
		Sk	iP		13 25 12.6	
			i		13 25 14.9	
		Um	iP		13 25 10.9	
			i		13 25 12.3	
		Ud	iP		13 24 43.1	
			i		13 24 43.1	
		De	iP		13 24 02.4	
		Greece (h = 70 km).				
"	26	Ki	iP		14 18 57.1	
		Mariana Islands (h = 55 km).				
"	26	Ud	iP		15 52 35.8	
"	26	Ud	iP		22 29 42.3	
		Luzon, Philippine Islands (h = 60 km).				

1977 Nov.	26	Up	iP		22 57 05.9	
		Ki	iP		22 56 33.7	
		Sk	iP		22 57 08.3	
		Um	iP		22 56 46.6	
			i		22 56 52.6	
		Ud	i		22 57 17.1	
		De	iP		22 57 29.6	
		Northeastern China (h = N).				
"	27	Up	eP		02 32 42	
			i		02 32 42.6	
			iS		02 43 24	
					micr	sec
			P	Z'	0.1	1.0
			Mx	E	1.8	19
			Mx	N	5.4	20
			Mx	Z	6.4	17
		Ki	iP		02 32 24.7	
			i		02 32 26.7	
			iS		02 42 48	
					micr	sec
			P	Z'	0.2	1.3
			Mx	E	2.9	21
			Mx	N	7.8	21
			Mx	Z	2.4	20
		Sk	iP		02 32 46.1	
		Um	iP		02 32 30.8	D
			iS		02 43 00	
		Ud	iP		02 32 50.5	
		De	iP		02 32 56.9	
		Samar, Philippine Islands (h = N). m = 6.1, M = 6.1 (Up,Ki).				
"	27	Up	iP		08 47 02.3	C
			iS		08 56 00	
					micr	sec
			P	Z'	0.6	1.1
			Mx	E	11	28
			Mx	N	7.5	27
			Mx	Z	2.9	31
		Ki	iP		08 46 13.5	C
			i		08 46 16.4	
			i		08 46 53.5	
			iS		08 54 37	
					micr	sec
			P	Z'	0.2	1.1
			i	Z'	0.6	1.5
			Mx	E	9.5	17
			Mx	N	9.8	17
			Mx	Z	13	17
		Sk	iP		08 46 50.2	C
			i		08 47 01.3	
		Um	iP		08 46 36.6	C
			iS		08 55 15	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 27 (cont.)

Ud	iP		08 47 07.5	C
	i		08 47 10.0	
De	iP		08 47 26.4	
	i		08 47 38.2	

Kuril Islands (h = N).
m = 6.6, M = 6.1 (Up,Ki).

" 27

Ki	eP		09 47 03	
	i		09 47 13.6	
			micr	sec
	i	Z'	0.1	1.0
Sk	i		09 47 33.0	
Um	i		09 47 14.9	
Ud	iP		09 47 20.7	
	i		09 47 41.8	

Northern Sulawesi (h = 70 km).

" 27

Up	i		10 26 34.1	
Ki	eP		10 25 35	
Um	iP		10 25 57.0	
Ud	iP		10 26 28.5	

Kuril Islands (h = N).

" 27

Ud	iPKPl		10 37 52.9	
De	iPKPl		10 39 02.5	

Fiji Islands region
(h = 200 km).

" 27

Ki	iP		10 56 55.4	
Sk	iP		10 57 24.1	
Um	iP		10 57 21.0	
Ud	iP		10 57 46.3	

Aleutian Islands region
(h = N).

" 27

Up	i(PKP)		12 58 29.5	
	iPKPl		12 58 33.1	
	iSKPl		13 01 21.9	
			micr	sec
	PKPl	Z'	0.1	1.0
Ki	ePKP		12 58 24	
	iSKPl		13 00 56.3	
Sk	e(PKP)		12 58 22	
	iSKPl		13 01 14.6	
Um	i(PKP)		12 58 20.4	
	iPKP		12 58 30.5	
	iSKPl		13 01 09.9	
Ud	iPKPl		12 58 31.2	
	i		12 58 31.7	
	iSKPl		13 02 23.7	
De	iPKPl		12 58 41.9	
	iSKPl		13 01 32.6	

Fiji Islands region
(h = 560 km).

1977
Nov. 27

Ud	iP		13 10 01.0	

" 27

Up	iP		15 15 14.0	
Ki	iP		15 14 17.9	C
Sk	iP		15 14 46.3	
Um	iP		15 14 46.4	
	i		15 14 48.9	
Ud	iP		15 15 10.6	
De	eP		15 15 35	

Alaska Peninsula (h = 120 km).

" 27

Ki	iPKP		17 47 21.5	
	i		17 47 30.2	

Southern Pacific Ocean
(h = N).

" 27

Ud	iP		22 06 50.5	

Talaud Islands (h = 60 km).

" 27

Ki	iP		22 13 48.5	
Ud	iP		22 14 23.2	

Mariana Islands (h = N).

" 27

Ki	eP		22 14 18	

Mariana Islands region
(h = N).

" 28

Um	iPKP		00 36 04.0	
Ud	iPKP		00 35 56.9	

San Juan province, Argentina
(h = N).

" 28

Ud	iP		00 46 54.8	

" 28

Up	iP		03 04 24.6	C
	i		03 04 36.5	
	iS		03 08 36.3	
			micr	sec
	P	Z'	0.3	1.0
	Mx	E	0.8	7
	Mx	N	0.8	6
	Mx	Z	1.8	9
Ki	iP		03 05 30.8	C
	i		03 05 43.0	
	i		03 05 49.2	
	iPcP		03 08 18.8	
			micr	sec
	P	Z'	0.2	0.8
	Mx	E	1.3	10
Sk	eP		03 05 03	
	i		03 05 04.1	C
	iPcP		03 08 10.5	
	iS		03 09 48.5	
Um	iP		03 04 55.5	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 28 (cont.)

Um	iPcP	03 08 07.0	
	iS	03 09 32.5	
Ud	eP	03 04 33	
	i	03 04 33.8	C
	iPcP	03 08 01.8	
	iS	03 08 55.0	
De	iP	03 04 02.7	C
	iS	03 08 01.5	

Dodecanese Islands (h = 90 km).
m = 5.8 (Up,Ki).

" 28 Ki eP 03 15 42

" 28

Ki	iPKP	04 38 20.6	
Um	iPKP	04 38 17.9	C
Ud	iPKP	04 38 08.7	

San Juan province, Argentina
(h = 35 km).

" 28

Up	iP		04 49 07.8	
	ipP		04 50 02.7	
			micr	sec
	P	Z'	0.1	1.2
Ki	iP		04 48 57.6	C
	ipP		04 49 53.5	
			micr	sec
	P	Z'	0.1	1.2
Sk	iP		04 48 50.8	C
	ipP		04 49 46.5	
Um	iP		04 49 05.7	C
	ipP		04 50 02.6	
	i		04 50 33.3	
Ud	iP		04 48 59.0	C
	i		04 49 06.0	

Mexico-Guatemala border
region.
h = 230 km (Up,Ki,Sk,Um).
m = 5.5 (Up,Ki).

" 28

Up	iP	06 26 03.6	
Ki	i	06 26 29.7	
Ud	iP	06 26 14.6	

Sunda Strait (h = 90 km).

" 28

Up			micr	sec
	Mx	E	1.2	16
	Mx	N	1.1	16
	Mx	Z	3.6	19
Ki	iPKP		06 50 15.4	
			micr	sec
	Mx	E	1.2	18
	Mx	N	1.3	17

San Juan province, Argentina
(h = 15 km).
M = 5.7 (Up,Ki).

1977
Nov. 28

Up	iP	07 00 54.9	
Um	iP	07 00 39.4	
Ud	iP	07 01 01.3	C

" 28

Ki	iP	10 17 37.2	C
Ud	eP	10 18 29	

Hokkaido, Japan region
(h = 70 km).

" 28

Ki	iP	10 49 11.2
Um	iP	10 49 09.9
Ud	eP	10 49 24

Java (h = 110 km).

" 28

Up	iP	13 17 06.1
Um	iP	13 16 39.0
	i	13 17 11.4
Ud	iP	13 17 06.0

Andreanof Islands, Aleutian
Islands (h = 230 km).

" 28 Ki iP 13 59 35.8
Off west coast of northern
Sumatra (h = 55 km).

" 28

Up	iP	22 25 12.2
	ipP	22 25 38.9
Ki	iP	22 24 38.3
Sk	iP	22 25 08.1
Um	iP	22 24 52.7
	i	22 25 29.1
Ud	iP	22 25 19.1
	ipP	22 25 45.5

Bonin Islands region.
h = 100 km (Up,Ud).

" 29 Ud iP 00 08 46.9
Kuril Islands region
(h = 40 km).

" 29

Up	iP	02 04 17.4
Ki	iP	02 04 11.8
Um	iP	02 04 10.0
Ud	iP	02 04 30.0

Burma (h = N).

" 29

Up	iP	20 22 01.5
Sk	iP	20 22 45.0
	i	20 22 48.5
Um	iP	20 22 38.4
Ud	iP	20 22 08.8
De	iP	20 21 35.2

Greece (h = 45 km).

" 30 Up iP 04 13 55.2 C
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Nov. 30 (cont.)

Up	iPn		04 14 58.1	
	iPP		04 15 13.7	
			micr	sec
	P	Z'	1.3	0.8
Ki	iP		04 13 38.5	C
	iPn		04 14 38.0	
			micr	sec
	P	Z'	1.3	0.8
Sk	iP		04 14 10.2	C
	i		04 15 17.7	
	iPn		04 15 27.6	
	iPP		04 15 33.2	
Um	iP		04 13 39.8	C
Ud	iP		04 14 11.6	C
	iPn		04 15 24.2	
	iPP		04 15 33.7	
De	iP		04 14 18.6	C
	iPn		04 15 41.0	

Eastern Kazakh SSR.
m = 6,9 (Up,Ki).
Underground explosion.

" 30

Up	iP	05 52 57.5	
Ki	iP	05 52 11.5	
Um	iP	05 52 32.8	C
Ud	iP	05 53 03.5	C

Kuril Islands (h = 80 km).

" 30

Um	iP	08 01 50.0

Southern Honshu, Japan
(h = 350 km).

" 30

Up	ePKPl		10 34 01	
	iSKPl		10 36 53.0	
			micr	sec
	PKPl	Z'	0.1	1.0
Ki	iPKP		10 33 52.7	
	iSKPl		10 36 28.5	
Sk	iPKP		10 34 03.0	
	iSKPl		10 36 45.2	
Um	i(PKP)		10 33 53.5	
	iPKP		10 34 00.0	
	iSKPl		10 36 40.7	
Ud	iPKPl		10 34 01.5	
	iSKPl		10 36 54.1	
De	iPKPl		10 34 12.0	
	i		10 36 52.9	
	iSKPl		10 37 02.8	

Fiji Islands region (h = 550 km).

" 30 Ud iP 10 45 31.2

" 30

Ki	iP		12 20 58.9	
			micr	sec
	P	Z'	0.8	2.4
Sk	iP		12 21 23.7	

(cont.)

1977
Nov. 30 (cont.)

Um	iP	12 21 09.9
Ud	iP	12 21 31.6

South of Mariana Islands
(h = 30 km).

" 30

Up	iP	13 17 38.9
Ki	iP	13 17 23.0
Um	iP	13 17 28.5
Ud	iP	13 17 48.5

Mindoro, Philippine Islands
(h = 120 km).

Ingrid Båth
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Klaus Meyer
Rutger Wahlström

July 19, 1979

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BOX 517
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SWEDEN

S E I S M O L O G I C A L B U L L E T I N

U P P S A L A, K I R U N A, S K A L S T U G A N, U M E Å, U D D E H O L M and D E L A R Y

Uppsala	(Up):	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(Ki):	67°50.4'N	20°25.0'E;	h = 390 m
Skalstugan	(Sk):	63°34.8'N,	12°16.8'E;	h = 580 m
Umeå	(Um):	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(Ud):	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(De):	56°28.2'N,	13°52.2'E;	h = 150 m

D E C E M B E R 1 - 31, 1977

1977						
Dec.	1	Up	iP		00 20 02.2	
		Um	iP		00 19 51.1	C
		Ud	iP		00 20 03.4	C
		De	eP		00 20 13	
"	1	Up	iP		21 19 04.2	C
					micr	sec
			P	Z'	0.1	0.8
		Ki	iP		21 19 36.6	C
					micr	sec
			P	Z'	0.1	1.0
		Sk	iP		21 19 37.7	
		Um	iP		21 19 15.3	C
		Ud	iP		21 19 19.5	C
		De	iP		21 19 05.1	
		Southern Iran (h = N).				
		m = 5.6 (Up,Ki).				
"	1	Up	iP		22 18 31.1	
		Ud	iP		22 18 45.2	
"	1	Ud	i(P)		22 30 04.9	
"	1	Up	iP		23 36 03.1	
		Ki	iP		23 36 35.6	
		Sk	iP		23 36 36.3	
		Um	iP		23 36 14.9	
		Ud	iP		23 36 18.3	
		De	iP		23 36 04.7	
		Southern Iran (h = N).				
"	2	Up	iP		03 58 28.4	
		Sk	iP		03 59 02.4	
		Um	iP		03 58 39.7	
		Ud	iP		03 58 44.2	
		De	iP		03 58 29.8	
		Southern Iran (h = N).				
"	2	Up	iPKKP		04 43 13.1	
			i		04 43 23.7	
					micr	sec
			Mx	E	1.9	20
			Mx	N	2.2	20
		(cont.)				

1977						
Dec.	2	(cont.)				
		Up	Mx	Z	4.5	22
		Sk	iPKKP		04 43 13.4	
		Um	iPKKP		04 43 14.1	
			i		04 43 23.9	
		Ud	iPKKP		04 43 07.7	
			i		04 43 15.3	
		East Papua New Guinea region (h = 70 km).				
"	2	Up	iP		13 07 41.0	C
			i		13 08 02.4	
					micr	sec
			P	Z'	1.1	1.6
			Mx	E	1.5	20
			Mx	N	1.8	20
			Mx	Z	1.8	20
		Ki	iP		13 06 47.5	C
					micr	sec
			P	Z'	0.2	1.0
		Sk	iP		13 07 24.4	C
		Um	iP		13 07 12.4	C
		Ud	iP		13 07 44.5	C
		De	iP		13 08 06.3	C
		Off east coast of Kamchatka (h = 15 km).				
		m = 6.5 (Up,Ki).				
"	3	Ud	iP		01 01 37.7	
		Afghanistan-USSR border region (h = 150 km).				
"	3	Up	iP		05 18 45.0	D
			i		05 19 07.4	
					micr	sec
			P	Z'	0.1	0.7
		Ki	iP		05 18 11.2	
		Sk	iP		05 18 42.3	
		Um	iP		05 18 26.1	D
			i		05 18 47.9	
		Ud	iP		05 18 52.3	D
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 3 (cont.)

Ud	i	05 19 15.2	
De	iP	05 19 04.8	

South of Honshu, Japan
(h = 420 km).

" 3	Up	iP	05 43 58.3
		i	05 44 00.3
		ipP	05 44 03.3
	Ki	eP	05 45 17
	Sk	iP	05 44 41.1
	Um	iP	05 44 39.2
		ipP	05 44 45.8
	Ud	iP	05 44 03.9
		i	05 44 05.8
		ipP	05 44 09.0
	De	ipP	05 43 30.8

Albania.
h = 25 km (Up,Um,Ud).

" 3	Ud	i(P)	10 36 17.6
" 3	Ud	i(P)	11 34 14.0
" 3	Um	iP	12 36 52.1
	Ud	iP	12 36 41.8

Costa Rica (h = 60 km).

" 3	Up	iP		13 53 32.2	
		ipP		13 53 46.7	
		iS		14 03 37.4	
				micr	sec
		P	Z'	0.6	1.5
		pP	Z'	0.4	1.0
		Mx	E	2.4	21
		Mx	N	3.4	21
		Mx	Z	5.4	20
	Ki	iP		13 53 32.6	
		i		13 53 51.7	
		iS		14 03 39	
				micr	sec
		P	Z'	0.2	1.0
		i	Z'	0.6	1.3
		Mx	E	3.7	20
		Mx	N	3.2	19
		Mx	Z	5.5	19
	Sk	iP		13 53 48.4	
		i		13 54 07.9	
	Um	iP		13 53 30.0 D	
		ipP		13 53 44.5	
		iS		14 03 31	
	Ud	iP		13 53 43.7 D	
		ipP		13 53 58.2	

(cont.)

1977
Dec. 3 (cont.)

De	iP	13 53 41.4 D	
	ipP	13 53 56.0	

Off west coast of northern Sumatra.
h = 50 km (Up,Um,Ud,De).
m = 6.4, M = 5.8 (Up,Ki).

" 3	Up	i	13 57 54.7
		iRg	13 57 59.5
	Ud	iRg	13 57 37.5

Grängesberg, Sweden,
60.1°N, 15.0°E.
Origin time = 13 57 14.
Rockburst.

" 3	Ud	i(P)	14 06 28.5
" 3	Ud	iP	15 08 30.1
" 3	Ud	i(P)	16 00 37.0
" 3	Ki	iP	17 15 28.6
	Um	iP	17 15 45.0
	Ud	iP	17 16 15.9
	De	eP	17 16 30

Sea of Japan (h = 540 km).

" 3	Ud	eP	17 25 11
" 3	Ud	iPKPl	18 18 56.3
	De	iPKPl	18 19 04.2

Tonga Islands region (h = N).

" 3	Um	iP	20 09 01.2
	Ud	iP	20 09 33.0
" 4	Ud	i(P)	05 50 38.8
" 4	Up	iPKPl	06 09 59.6
			micr sec
		Mx E	1.2 20
		Mx N	1.4 20
		Mx Z	3.3 20
	Ki	ePKP	06 09 49
			micr sec
		Mx E	1.1 17
		Mx N	2.6 19
		Mx Z	3.8 19
	Sk	iPKP	06 09 55.6
	Um	iPKP	06 09 57.4
		i	06 09 58.8
	Ud	iPKPl	06 10 02.5

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 4 (cont.)

Ud	i	06 10 04.4	
De	iPKP	06 10 10.5	
	iPKPl	06 10 12.2	

South of Fiji Islands
(h = 55 km).
M = 5.9 (Up,Ki).

" 4	De	iP	06 19 41.0	
" 4	Ud	i(P)	11 20 24.6	
" 4	Up	iP	11 48 51.5	C
	Ki	iP	11 48 05.2	C
			micr sec	
		P Z'	0.2 1.1	
	Sk	iP	11 48 40.8	C
	Um	iP	11 48 26.3	C
	Ud	iP	11 48 57.8	C
	De	iP	11 49 15.9	C
		ipP	11 51 07.6	

Sea of Okhotsk.
h = 550 km (De).

" 4	Up	iPKPl	14 42 03.4
		i	14 42 08.2
	Ki	iPKP	14 41 59.6
	Sk	e(PKP)	14 42 00
		ePKP	14 42 10
	Um	i(PKP)	14 42 01.5
		iPKP	14 42 06.0
	Ud	iPKPl	14 42 05.9
	De	iPKPl	14 42 15.5
		iPKP	14 42 19.3

Fiji Islands region
(h = 270 km).

" 5	Up	iSn	03 48 11.6
		i	03 48 29.2
		iSgl	03 48 54.6
	Ki	iSn	03 48 47.5
	Sk	iSn	03 46 56.9
	Um	iPn	03 46 51.4
		iSn	03 48 19.9
	Ud	iPn	03 46 20.4
		iSn	03 47 24.5
	De	iPn	03 46 52.4
		iSn	03 48 24.1
		iSgl	03 49 16.6

Norwegian Sea, near
62 1/4°N, 2°E.
M_L = 3.1 (Up,De).
Origin time = 03 44 49.

" 5	De	iPKPl	14 29 56.4

South of Tonga Islands
(h = N).

1977
Dec. 5

Up	iPKPl		14 33 19.9	
	i		14 34 11.5	
			micr sec	
	Mx	N	1.1 20	
	Mx	Z	1.5 22	
Ki			micr sec	
	Mx	E	1.1 20	
	Mx	N	1.8 20	
	Mx	Z	2.4 20	
Ud	iPKPl		14 33 21.4	
De	iPKPl		14 33 31.2	
	i		14 34 24.0	

South of Fiji Islands
(h = N).
M = 5.7 (Up,Ki).

" 5	Up		micr sec	
	Mx	E	1.1 19	
	Mx	Z	0.8 20	
	Ud	iPP	16 02 48.9	

San Juan Province, Argentina
(h = 30 km).

" 5	Ud	iP	16 31 22.7
" 5	Ud	iP	18 03 50.2
" 6	Ki	iP	06 30 24.6

Taiwan (h = 45 km).

" 6	Up	iP	10 59 57.9	
		iPP	11 01 08.4	
			micr sec	
		P Z'	0.3 1.3	
		Mx E	0.9 16	
		Mx N	1.4 19	
		Mx Z	0.7 17	
	Ki	iP	11 00 02.2	C
		iPP	11 01 16.5	
			micr sec	
		P Z'	0.1 1.0	
		Mx E	1.4 10	
		Mx N	2.5 12	
		Mx Z	1.4 10	
	Sk	iP	11 00 22.0	
		iPP	11 01 40.7	
	Um	iP	10 59 53.7	
		iPP	11 01 07.7	
	Ud	iP	11 00 15.0	
		i	11 01 42.6	
	De	iP	11 00 13.6	

Kirgiz SSR (h = N).
m = 5.8, M = 5.1 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 6 Up micr sec
Mx E 1.2 16
Mx N 0.9 17
Mx Z 2.6 19
Ki iPKP 17 23 51.4
micr sec
Mx E 0.7 16
Mx N 0.8 17
Mx Z 1.0 17
Um iPKP 17 23 49.9
iPKKP 17 34 19.5
Ud iPKP 17 23 40.1
iPKKP 17 34 37.6
San Juan Province, Argentina
(h = 20 km).
M = 5.6 (Up,Ki).

" 6 Up micr sec
Mx E 1.1 19
Mx N 2.2 24
Ki iP 18 06 32.4
iPP 18 10 48.4
micr sec
Mx E 1.7 19
Mx N 1.3 19
Mx Z 3.7 21
Ud iPP 18 11 15.8
South of Sumbawa Island
(h = N).
M = 5.7 (Up,Ki).

" 7 Ki iP 09 10 48.5
Ud iP 09 11 20.7
Mariana Islands (h = 140 km).

" 7 Up iP 16 28 52.7
Ki iP 16 28 38.2
Sk iP 16 29 05.6
Ud eP 16 29 05
Tsinghai Province, China
(h = N).

" 7 Ki iP 20 43 40.4
Um iP 20 43 52.9
Ud iP 20 44 15.5
Volcano Islands region
(h = 200 km).

" 8 Up iP 00 46 02.1
Ki iP 00 47 11.5
Sk iP 00 46 40.0
Ud iP 00 46 08.9
De eP 00 45 39
Crete (h = 60 km).

1977
Dec. 8 Up iP 01 59 55.4
Ki iP 01 59 19.8
Um iP 01 59 29.2
Ud iP 02 00 04.3

" 8 Up iPKP 06 34 45.7
i 06 34 58.2
micr sec
PKP Z' 0.1 1.0
Mx N 1.8 20
Mx Z 2.9 21
Ki ePKP 06 34 35
micr sec
Mx E 0.8 17
Mx N 3.9 21
Mx Z 4.2 21
Sk iPKP 06 34 42.6
Um iPKP 06 34 40.6
i 06 34 56.1
Ud iPKP 06 34 46.2
De iPKP 06 34 53.8
South of Tonga Islands
(h = N).
M = 6.0 (Up,Ki).

" 8 Ki iP 09 07 20.6
Sk iP 09 07 56.9
iS 09 09 42.0
Greenland Sea.
Origin time = 09 05 42.

" 8 Ki iP 11 56 27.3

" 8 Up iP 14 06 44.6
micr sec
P Z' 0.2 1.3
Ki iP 14 05 56.2
micr sec
P Z' 0.1 1.0
Um iP 14 06 18.0 D
Ud iP 14 06 50.0 D
Sea of Okhotsk (h = 500 km).
m = 5.3 (Up,Ki).

" 8 Um iP 23 44 41.0
Ud iP 23 44 59.3
Hindu Kush region (h = 240 km).

" 9 Up iRg 12 09 32.7
Ud iSgl 12 10 26.4
Dannemora, Sweden, 60.1°N,
17.5°E.
Origin time = 12 09 16.
Rockburst.
Felt.

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 9 Ki iP 14 51 30.1
Um iP 14 51 35.2
Ud iP 14 51 52.7
Banda Sea (h = 140 km).

" 9 Um iP 15 13 50.1
Ud iP 15 14 21.4
Hokkaido, Japan region
(h = 70 km).

" 9 Up iRg 15 27 01.2
Ud iSgl 15 27 54.7
Dannemora, Sweden, 60.1°N,
17.5°E.
Origin time = 15 26 44.
Rockburst.
Felt.

" 9 Up iP 15 58 33.0
micr sec
Mx E 1.6 17
Mx N 1.2 14
Mx Z 2.2 14
Ki iP 15 59 42.5
micr sec
Mx E 0.8 17
Mx N 0.6 14
Sk iP 15 59 16.7
Um iP 15 59 09.1
Ud iP 15 58 43.1
De iP 15 58 09.6
Turkey (h = 20 km).
M = 4.6 (Up,Ki).

" 9 Up iPKPl 17 06 23.2
micr sec
PKPl Z' 0.1 0.6
Ud iPKPl 17 06 25.5
De iPKPl 17 06 35.3

" 9 Up i 21 03 30.1
iRg 21 03 34.6
Ud iRg 21 03 21.0
Central Sweden.
Near-surface event.

" 9 Ud iP 21 05 59.3
Luzon, Philippine Islands
(h = 60 km).

" 10 Ud iPKPl 00 48 41.5
De iPKPl 00 48 52.8
Fiji Islands region
(h = 620 km).

1977
Dec. 10 Up iP 05 54 07.9 C
i 05 54 10.4
i 05 54 16.3
i 06 00 22
micr sec
P Z' 0.2 1.0
i Z' 0.2 1.0
Mx E 1.3 17
Mx N 1.8 17
Mx Z 2.3 17
Ki iP 05 54 40.1
micr sec
P Z' 0.1 0.7
Mx E 4.8 11
Mx N 4.0 11
Mx Z 5.5 13
Sk iP 05 54 41.9
Um iP 05 54 19.2
i 05 54 21.6
Ud iP 05 54 22.9 C
i 05 54 25.4
i 05 54 31.0
De iP 05 54 08.8
Southern Iran (h = 45 km).
m = 5.9, M = 5.5 (Up,Ki).

" 10 Ki iP 15 30 43.8
micr sec
Mx E 0.8 17
Mx N 1.3 17
Sk eP 15 31 16
Um iP 15 30 58.2
Ud iP 15 31 24.9
South of Honshu, Japan
(h = N).

" 10 Up iP 23 22 14.5
micr sec
Mx E 2.5 25
Mx N 1.7 19
Ki iP 23 21 26.4
micr sec
Mx E 1.8 18
Mx N 1.3 17
Um iP 23 21 48.2
i 23 21 49.5
Ud iP 23 22 20.3
i 23 22 21.3
Kuril Islands (h = 130 km).
M = 5.4 (Up,Ki).

" 11 Ud iP 08 19 26.4
Southern Iran (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 11 Ud iP 12 46 56.4

" 11 Up iP 16 34 19.8
micr sec
P Z' 0.1 1.0
Ki iP 16 34 25.6
micr sec
P Z' 0.2 1.0
Sk iP 16 34 07.5
Um iP 16 34 25.8
Ud iP 16 34 08.8 C
De iP 16 34 10.1
Venezuela (h = 20 km).
m = 6.0 (Up,Ki).

" 11 Up iSgl 21 48 01.2
Sk eSgl 21 47 35
Um eSgl 21 48 54
Ud iPgl 21 46 40.1
iSgl 21 47 00.5
Southeast Norway, 60.9°N, 10.9°E.
Origin time = 21 46 12.
M_L = 2.4 (Ud).
Felt.
Solution by combination with NORSAR.

" 12 Up iP 02 55 53.5
micr sec
Mx E 1.2 20
Mx N 2.9 20
Ki iP 02 55 30.8
micr sec
Mx E 3.7 13
Mx N 2.0 14
Mx Z 2.5 14
Sk iP 02 55 59.7
Ud iP 02 56 03.7
Taiwan (h = 25 km).
M = 5.8 (Up,Ki).

" 12 Up Mx 21 38
micr sec
Mx N 1.0 19
Mx Z 3.0 20
Ki Mx 21 39
micr sec
Mx N 1.0 19
South Pacific Cordillera (h = N).
M = 5.7 (Up,Ki).

" 13 Up iP 01 25 05.8
(cont.)

1977
Dec. 13 (cont.)
Up iS 01 33 53
micr sec
P Z' 0.1 1.1
Mx E 5.1 18
Mx N 8.3 18
Mx Z 11.4 17
Ki iP 01 25 19.7 C
iS 01 34 21
micr sec
P Z' 0.3 1.0
Mx E 8.4 17
Mx N 6.2 16
Mx Z 6.8 17
Sk iP 01 24 54.2
Um iP 01 25 16.3 C
iS 01 34 16
Ud iP 01 24 52.6
De iP 01 24 50.8
North Atlantic Ocean (h = N).
m = 6.0, M = 6.1 (Up,Ki).

" 13 Ud iPKP1 01 40 39.7
De iPKP1 01 40 50.6
South of Fiji Islands (h = 470 km).

" 13 De iPKP1 03 26 08.0
Fiji Islands region (h = 530 km).

" 13 Ud iP 05 17 50.0
Kuril Islands (h = 90 km).

" 13 Ud iP 07 05 13.1
Off east coast of Honshu, Japan (h = N).

" 13 Ki iP 09 00 31.0
West Caroline Islands (h = 45 km).

" 13 Ki iP 14 40 39.3
Molucca Sea (h = 55 km).

" 14 Up iPKP1 00 57 51.4
Ki iPKP 00 57 38.0
Ud iPKP1 00 57 53.1
i 00 58 40.1
De iPKP2 00 58 07.3
Kermadec Islands region (h = 55 km).

" 14 Ki iP 03 14 19.1
Um iP 03 14 04.0
(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 14 (cont.)

Ud	iP		03 13 55.1

South Indian Ocean (h = N).

" 14	Up	iPKPl		05 00 57.2
			micr	sec
		Mx	N 1.8	24
	Ud	iPKPl		05 00 57.7

Kermadec Islands region (h = 45 km).

" 14	Up	iP		09 00 26.0
		iS		09 11 01
			micr	sec
		P	Z' 0.1	1.2
	Ki	iP		09 00 08.2
		i		09 00 22.5
		iS		09 10 24
			micr	sec
		Mx	N 1.1	20
	Sk	iP		09 00 30.5
		i		09 00 43.6
	Um	iP		09 00 14.4
		iS		09 10 35
	Ud	iP		09 00 34.8
		i		09 00 47.6
		ipP		09 01 29.9

Leyte, Philippine Islands.
h = 220 km (Ud).

" 14	Up	iP		09 06 56.3
			micr	sec
		P	Z' 0.1	1.0
	Ki	iP		09 06 11.3
			micr	sec
		P	Z' 0.1	1.1
	Um	iP		09 06 31.7
		i		09 06 49.7
	Ud	iP		09 07 02.3
		i		09 07 20.5
	De	iP		09 07 18.8

Off coast of Hokkaido, Japan (h = 20 km).

" 14	Um	i(P)	12 47 29.4
" 14	Up	i(P)	13 13 11.5
" 14	Ud	i(P)	13 44 39.6
" 14	Sk	iSgl	14 20 56.1
	Ud	iSgl	14 19 56.7

Southwest coast of Norway, near 58 1/4°N, 6 1/2°E.
(cont.)

1977
Dec. 14 (cont.)
Origin time = 14 18 46.
M_L = 2.5 (Ud).
By combination with Bergen and Kongsberg readings.

" 14	Up	iP		15 41 48.9 C
			micr	sec
		P	Z' 0.4	1.4
	Ki	iP		15 41 14.5 C
			micr	sec
		P	Z' 0.3	1.5
	Sk	iP		15 41 22.6
	Um	iP		15 41 33.6 C
	Ud	iP		15 41 40.8 C
	De	iP		15 41 57.6

Southern Nevada.
m = 6.3 (Up,Ki).
Underground explosion.

" 14	Ki	iP	17 26 23.1
	Ud	iP	17 27 15.2

Unimak Island region (h = 30 km).

" 14	Ki	iP	17 55 42.4
	Ud	iP	17 56 08.3

Mindanao, Philippine Islands (h = 45 km).

" 14	Up	iSgl	18 01 25.7
	Ud	iSgl	18 00 26.0

Southwest coast of Norway, near 58 1/4°N, 6 1/2°E.
Origin time = 17 58 15.
M_L = 2.2 (Ud).
By combination with Bergen and Kongsberg readings.

" 14	Up	iPKPl		19 10 41.6
		iSKPl		19 13 25.9
	Ki	i(PKP)		19 10 23.9
		iPKP		19 10 34.3
		iSKPl		19 13 02.7
			micr	sec
		PKP	Z' 0.1	0.9
	Sk	i(PKP)		19 10 32.1
		iSKPl		19 13 15.7
	Um	i(PKP)		19 10 27.1
		iPKP		19 10 35.8
		iSKPl		19 13 14.6
	Ud	iPKPl		19 10 43.5
		iSKPl		19 13 27.6

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 14 (cont.)

De	iPKPl	19 10 54.5	
	iSKPl	19 13 36.8	

Fiji Islands region
(h = 660 km).

" 14	Up	iP	23 37 09.1	
	Um	iP	23 36 43.4	
	Ud	iP	23 37 14.8	
	De	iP	23 37 33.1	

Kuril Islands (h = 55 km).

" 15	Ud	iP	08 11 40.1	
	De	iP	08 11 06.6	

Crete (h = 45 km).

" 15	Up	iP	09 13 10.7	
	Um	iP	09 12 44.8	
	Ud	iP	09 13 15.7	
	De	eP	09 13 35	

Kuril Islands (h = 50 km).

" 15	Ki	iP	11 05 35.3	
	Um	iP	11 05 32.6	
	Ud	iP	11 05 45.6	
	De	iP	11 05 43.6	

Northern Sumatra (h = 50 km).

" 15	Up	i(P)	13 37 07.2	
" 15	Up	iP	15 13 00.2	
		i	15 13 13.4	
	Ki	iP	15 13 39.9	
	Um	iP	15 13 13.7	
	Ud	iP	15 13 17.8	C
	De	iP	15 13 04.2	

Eastern Caucasus (h = N).

" 15	Up	iP	15 28 36.5	
	Um	iP	15 28 50.8	
	Ud	iP	15 28 54.6	

Eastern Caucasus (h = N).

" 15	De	iPKPl	16 10 38.5	

Tonga Is. region.

" 15	Up	iP	23 04 29.5	
	Ki	iP	23 04 33.2	

Northern Colombia (h = 60 km).

" 15	De	iP	23 31 21.1	

Tanzania (h = N).

" 16	Up	iP	07 22 42.9	

(cont.)

1977
Dec. 16 (cont.)

			micr	sec
Up				
	P	Z'	0.1	1.0
Ki	iP		07 21 59.2	
			micr	sec
	P	Z'	0.1	1.0
Um	iP		07 22 19.5	
Ud	iP		07 22 49.9	C
De	iP		07 23 07.1	

Kuril Islands (h = 40 km).
m = 5.9 (Up,Ki).

" 16	Up	iP		07 42 24.7	
		i		07 42 29.5	
				micr	sec
		P	Z'	0.1	1.0
		i	Z'	0.1	1.0
		Mx	E	2.8	10
		Mx	N	3.7	10
	Ki	iP		07 43 34.6	
				micr	sec
		P	Z'	0.1	1.1
	Sk	iP		07 43 08.0	
	Um	iP		07 43 00.7	
		i		07 43 05.7	
	Ud	iP		07 42 34.9	
	De	iP		07 42 02.1	
		i		07 42 07.7	

Turkey (h = 35 km).
m = 5.4 (Up,Ki).

" 16	Up	iP		09 19 35.0	
				micr	sec
		P	Z'	0.2	1.3
	Ki	iP		09 18 42.9	
				micr	sec
		P	Z'	0.1	1.2
	Um	iP		09 19 05.0	
	De	iP		09 19 59.8	

Off east coast of Kamchatka
(h = N).
m = 5.9 (Up,Ki).

" 16	Up	iP	10 25 12.4	
		i	10 25 17.2	

Tsinghai Province, China
(h = N).

" 16	Up	iP	15 21 54.2	C
		iPP	15 24 37.1	
			micr	sec
		P	Z' 0.4	1.0
	Ki	iP	15 21 15.4	
		iPP	15 23 41.8	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 16 (cont.)

Ki			micr	sec	
	P	Z'	0.3	1.0	
Sk	iP		15 21 48.5		C
	iPP		15 24 26.6		
Um	iP		15 21 32.6		C
Ud	iP		15 22 01.6		C
	i		15 24 40.1		
De	iP		15 22 16.3		C

Near east coast of Honshu, Japan (h = 45 km).
m = 6.3 (Up,Ki).

" 17

Up	iP	11 43 20.5
Ki	iP	11 42 26.4
Um	iP	11 42 52.9
Ud	iP	11 43 18.8
De	iP	11 43 41.5

Fox Islands, Aleutian Islands (h = 45 km).

" 17

Up	iRg	14 30 24.9
Ud	iSgl	14 30 03.1
	iRg	14 30 06.9

Central Sweden.
Near-surface event.

" 17

Up	iPKPl	16 21 10.8
Ki	iPKP	16 21 06.2
Ud	iPKPl	16 21 12.8
De	iPKPl	16 21 24.7

Fiji Islands region (h = 600 km).

" 17

Ki	iPKP	16 41 24.3

New Hebrides Islands (h = 230 km).

" 17

Up	iP		17 38 24.0		
Ki	iP		17 37 29.9		
			micr	sec	
	P	Z'	0.1	1.0	
Um	iP		17 37 57.0		
Ud	iP		17 38 22.9		
De	iP		17 38 44.0		

Fox Islands, Aleutian Islands (h = 40 km).

" 17

Up	iP	21 46 33.0
Ud	iP	21 46 37.4

Kuril Islands (h = 150 km).

" 17

Ud	iP	23 36 54.0

Near coast of Venezuela (h = 30 km).

1977
Dec. 18

Up	iP	00 07 08.3
Ki	iP	00 07 47.5
Ud	iP	00 07 19.2

Eastern Gulf of Aden (h = N).

" 18

Up	iP	00 58 28.5
Ud	iP	00 58 35.4

Southern Greece (h = 120 km).

" 18

Ud	iP	01 08 30.3

Kodiak Island region (h = 30 km).

" 18

Up	iP	07 07 34.5
	ipP	07 08 05.2
	iPcP	07 08 17.9
Ki	iP	07 06 41.7
Um	iP	07 07 10.0
	iPcP	07 08 01.3
Ud	iP	07 07 40.2
	iPcP	07 08 20.3
De	ipP	07 08 33.7

Kamchatka.
h = 120 km (Up).

" 18

Up	iP		16 55 02.7		
	iS		17 01 27		
			micr	sec	
	P	Z'	0.1	1.1	
	Mx	E	13	17	
	Mx	N	11	13	
	Mx	Z	23	16	
Ki	iP		16 55 01.8		
			micr	sec	
	P	Z'	0.3	1.0	
	Mx	E	13	15	
	Mx	N	15	15	
	Mx	Z	14	15	
Sk	iP		16 55 24.9		
Um	iP		16 54 55.9		
	iS		17 01 13		
Ud	iP		16 55 19.8		C
De	iP		16 55 20.5		C

Southern Sinkiang Prov., China (h = N).
m = 5.7, M = 6.1 (Up,Ki).

" 18

Ud	iP	22 37 35.3

" 19

Up	i(P)	07 41 05.8

" 19

Up	iP		11 03 37.4		
			micr	sec	
	P	Z'	0.1	0.9	

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 19 (cont.)

Ud	iP		11 03 37.8

Andreanof Islands, Aleutian Is. (h = 55 km).

" 19	Ud	i(P)		12 42 53.4
" 19	Up	iP		23 41 58.0
		iPP		23 43 26.7
			micr	sec
		P	Z' 0.2	1.0
		PP	Z' 0.9	1.5
	Ud	iP		23 42 13.2 C
		iPP		23 43 46.9
	De	iP		23 41 59.5 C

Iran (h = 30 km).
m = 6.1 (Up).

" 20	Ud	iP		07 35 11.1
	De	iP		07 35 09.2

Tadzhik SSR (h = 20 km).

" 20	Up	iP		09 01 08.8
		i		09 01 16.4
			micr	sec
		P	Z' 0.2	0.9
	Ki	iP		09 00 18.7
			micr	sec
		P	Z' 0.4	1.4
	Ud	iP		09 01 14.0
		i		09 01 21.4
	De	iP		09 01 33.7

Kuril Islands (h = 140 km).
m = 6.0 (Up,Ki).

" 20	Up	eP	10 06 32
		il	10 06 47.2
	Ki	iP	10 06 29.7
		il	10 06 46.5
	Ud	iP	10 06 42.1
		il	10 06 56.4
	De	il	10 06 55.7

Southern Sumatra (h = 110 km).

" 20	Up	iPgl	15 23 07.8
		iSgl	15 23 52.9
	Sk	iSgl	15 23 33.6
	Um	iSgl	15 24 51.5
	Ud	iPgl	15 22 30.7
		iSgl	15 22 51.3
	De	iSgl	15 24 29.4

Southeast Norway, 60.8°N, 11.1°E.
Origin time = 15 22 07.
M_L = 2.6 (Up,Sk,Um,Ud,De).

1977
Dec. 20

Up	iPKPl		15 29 41.8
	ipPKPl		15 29 53.2
Sk	ipPKPl		15 29 43.7
Ud	iPKPl		15 29 42.3
	ipPKPl		15 29 52.4
De	iPKPl		15 29 50.8
	ipPKPl		15 30 01.1

Kermadec Islands.
h = 35 km (Up,Ud,De).

" 20	Ud	iP		19 21 14.1

Kashmir-India border region (h = N).

" 20	Ud	iP		20 08 49.4
	De	iP		20 08 14.4

Sicily (h = 190 km).

" 21	Up	iP		01 12 58.7
		iPP		01 16 15
		iS		01 23 15
			micr	sec
		P	Z' 1.0	1.0
		Mx	E 23	23
		Mx	N 32	22
		Mx	Z 35	25
	Ki	iP		01 12 31.4
		iS		01 22 19
			micr	sec
		P	Z' 6.7	3.0
		Mx	E 32	17
		Mx	N 48	17
		Mx	Z 28	19
	Sk	iP		01 12 56.5
		iPP		01 16 09.7
	Um	iP		01 12 40.6
		iS		01 22 54.0
	Ud	iP		01 13 05.8
		iS		01 23 30.8
	De	iP		01 13 17.8

Volcano Islands region (h = N).
m = 7.0, M = 6.9 (Up,Ki).

" 21	Ki	iP	02 16 42.5
	Sk	iP	02 17 01.7
	Um	iP	02 16 33.6
	Ud	iP	02 16 53.4
	De	eP	02 16 52

Kashmir-India border region (h = N).

" 21	Um	iPKP	04 06 13.5
	Ud	iPKP	04 06 05.6
		iPKKP	04 17 01.0

San Juan Province, Argentina (h = N).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Dec.	21	Up	iP		05 06 11.6	
					micr	sec
			P	Z'	0.1	1.2
		Ki	iP		05 05 35.7	
		Sk	iP		05 06 07.2	
		Ud	iP		05 06 17.2	
		Southeast of Shikoku, Japan (h = N).				
"	21	De	iPKPl		05 27 08.7	
		Fiji Islands region (h = 610 km).				
"	21	Up	iPKPl		07 14 45.1	
		Ud	iPKPl		07 14 45.9	
"	21	Up	iP		08 36 13.4	
		Ki	iP		08 36 51.9	
		Um	iP		08 36 27.4	
		Ud	iP		08 36 32.1	
		De	iP		08 36 19.8	
		Eastern Caucasus (h = N).				
"	21	Ud	iP		08 41 10.6	
		Afghanistan-USSR border region (h = 200 km).				
"	21	Ud	i(P)		13 00 55.4	
"	21	Up	iP		16 50 00.3	
					micr	sec
			P	Z'	0.2	1.0
			Mx	E	1.0	18
		Ki	iP		16 49 06.9	
					micr	sec
			P	Z'	0.1	1.0
		Sk	iP		16 49 44.4	
		Um	iP		16 49 31.8	
		Ud	iP		16 50 04.0	
		De	iP		16 50 25.1	
		Off east coast of Kamchatka (h = N).				
"	21	Up	eP		20 24 49	
		Um	iP		20 24 46.6	
		Ud	iP		20 25 05.5	
		Hindu Kush region (h = 55 km).				
"	22	Ud	iPKPl		02 19 53.3	
		De	iPKPl		02 20 03.6	
		Kermadec Islands region (h = 250 km).				
"	22	Ki	iP		04 52 10.6	
		Um	iP		04 52 07.0	
		Ud	iP		04 52 34.8	

1977 Dec.	22	Up	iP		04 56 48.1	
			i		04 56 54.2	
			iS		05 06 24	
					micr	sec
			P	Z'	0.1	1.0
			i	Z'	0.5	1.5
			Mx	E	17	15
			Mx	N	10	14
			Mx	Z	37	16
		Ki	iP		04 56 17.9	
			i		04 56 24.4	
					micr	sec
			P	Z'	0.1	1.4
			i	Z'	1.3	2.2
			Mx	E	17	14
			Mx	N	11	15
		Sk	iP		04 56 49.2	
			i		04 56 54.5	
		Um	iP		04 56 30.1	
			i		04 56 36.2	
			iS		05 05 47	
		Ud	iP		04 56 57.0	
			i		04 57 03.3	
		De	iP		04 57 08.2	
			i		04 57 14.9	
		East China Sea (h = N). m = 6.5, M = 6.5 (Up,Ki).				
"	22	Ud	iP		08 41 26.6	
"	22	Up	iP		13 22 28.3	
		Ud	iP		13 22 22.1	
"	22	Up	iP		14 16 13.3	
		Ud	iP		14 16 17.5	
		De	iP		14 16 37.6	
		Near east coast of Kamchatka (h = N).				
"	22	Up	eP		18 00 05	
		Ud	iP		18 00 17.0	
		India-China border region (h = N).				
"	22	Up	iP		19 09 39.0	
		Um	iP		19 09 21.7	
		Ud	iP		19 09 47.3	
		Southwestern Ryukyu Islands (h = N).				
"	22	Up	iP		22 29 20.2	
			i		22 29 29.8	
					micr	sec
			P	Z'	0.1	1.1
		Ki	iP		22 28 38.6	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 22 (cont.)

Ki	i		22 28 48.2		
			micr	sec	
	P	Z'	0.4	1.9	
Sk	iP		22 29 12.7		
	i		22 29 24.6		
Um	iP		22 28 57.6		
	i		22 29 07.7		
Ud	iP		22 29 27.2		
	i		22 29 36.7		
De	iP		22 29 43.3		
	i		22 29 54.4		

Off coast of Honshu, Japan (h = 25 km).
m = 5.9 (Up,Ki).

" 23	Ki	iP		01 53 53.2	
" 23	Up	i(P)		02 42 11.0	
" 23	Um	i(P)		02 58 28.5	
" 23	Um	i(P)		03 05 23.7	
" 23	Up	iP		07 35 50.2	
	Ki	ipP		07 37 01.5	
	Sk	epP		07 36 46	
	Um	iP		07 36 21.7	
	Ud	iP		07 36 07.4	
		ipP		07 36 10.5	
	De	iP		07 35 35.5	

Black Sea.
h = 10 km (Ud).

" 23	Up	iRg		07 53 22.8	
	Ud	iRg		07 53 45.6	

East-central Sweden.
Near-surface event.

" 23	Up	iP		11 19 01.8	
		iS		11 22 13.3	
				micr	sec
		P	Z'	0.1	1.4
		Mx	E	1.9	20
		Mx	N	2.5	20
		Mx	Z	5.2	20
	Ki	iP		11 17 42.3	
		i		11 17 51.2	
				micr	sec
		i	Z'	0.2	0.7
		Mx	E	6.1	14
		Mx	N	5.0	15
	Sk	iP		11 18 04.1	
		iS		11 19 44.3	

(cont.)

1977
Dec. 23 (cont.)

Um	iP		11 18 25.3		
Ud	iP		11 18 50.8		
	iS		11 21 10.5		
De	iP		11 19 37.6		

Jan Mayen Island region (h = 10 km).

" 23	Up	iP		21 10 44.9	
	Um	iP		21 10 40.9	
	Ud	iP		21 10 59.4	

India-Bangladesh border region (h = N).

" 23	Up	iP		21 13 29.9	
				micr	sec
		P	Z'	0.5	1.3
		Mx	E	9.0	16
		Mx	N	13	15
		Mx	Z	16	17
	Ki	iP		21 12 46.8	
				micr	sec
		P	Z'	0.2	1.0
		Mx	E	15	16
		Mx	N	20	15
		Mx	Z	25	15
	Sk	iP		21 13 22.5	
	Um	iP		21 13 04.6	
	Ud	iP		21 13 36.4	
	De	iP		21 13 52.4	

Off east coast of Honshu, Japan (h = 20 km).
m = 6.3, M = 6.5 (Up,Ki).

" 23	Up	iP		21 20 42.3	
				micr	sec
		P	Z'	0.2	1.4
	Ki	iP		21 20 00.1	
				micr	sec
		P	Z'	0.1	0.8
	Sk	iP		21 20 34.8	
	Um	iP		21 20 18.7	
	Ud	iP		21 20 48.6	
	De	iP		21 21 04.5	

Off east coast of Honshu, Japan (h = 25 km).
m = 6.0 (Up,Ki).

" 23	Up	iP		21 25 44.9 D	
				micr	sec
		P	Z'	0.4	1.5
		Mx	E	13	17
		Mx	N	15	17
		Mx	Z	23	19

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 23 (cont.)

Ki	iP		21 25 03.4	
			micr	sec
	P	Z'	0.1	1.1
	Mx	E	18	15
	Mx	N	12	15
	Mx	Z	26	15
Sk	iP		21 25 35.9	
Um	iP		21 25 21.7	
Ud	iP		21 25 51.0	
De	iP		21 26 08.1	

Off east coast of Honshu, Japan (h = 40 km).
m = 6.0, M = 6.5 (Up,Ki).

" 23

Up	iP		22 14 07.9	
	i		22 14 09.9	
	iPP		22 17 30.5	
			micr	sec
	P	Z'	0.1	1.0
Ki	iP		22 13 40.2	
	i		22 13 43.0	
	iPP		22 16 59.7	
			micr	sec
	P	Z'	0.1	1.0
Um	iP		22 13 50.9	
	i		22 13 53.0	
	iPP		22 17 19.2	
Ud	iP		22 14 14.9	
De	iP		22 14 26.4	

Mariana Islands (h = 600 km).
m = 5.6 (Up,Ki).

" 23

Up	iP		22 21 55.7	
			micr	sec
	P	Z'	0.1	1.3
Ki	iP		22 21 13.8	
			micr	sec
	P	Z'	0.1	1.3
Um	iP		22 21 32.9	
Ud	iP		22 22 02.9	

Off east coast of Honshu, Japan (h = 30 km).
m = 5.7 (Up,Ki).

" 23

Ki	iP	23 18 03.0
Um	iP	23 18 22.3
Ud	iP	23 18 52.6

Off east coast of Honshu, Japan (h = 15 km).

" 24 Ud iP 09 04 09.4

" 24 Ud iPKPl 16 08 03.4
South of Fiji Islands (h = N).

1977
Dec. 25 Ud iP 02 15 08.5
Tyrrhenian Sea (h = 480 km).

" 25 Ud i(P) 07 25 52.8

" 25

Ki	iPKP	13 38 18.4
Ud	iPKP	13 38 00.9

South Sandwich Islands region (h = 100 km).

" 25

Up	iP		16 26 19.0	
	i		16 26 21.0	C
	e		16 34 16	
			micr	sec
	i	Z'	0.1	0.8
	Mx	E	0.8	14
	Mx	N	3.6	13
	Mx	Z	1.9	14
Ki	iP		16 26 25.7	
			micr	sec
	P	Z'	0.1	1.0
	Mx	E	1.8	13
	Mx	N	5.9	14
	Mx	Z	1.0	12
Sk	iP		16 26 44.2	
	iPP		16 28 17.4	
Um	iP		16 26 15.9	
Ud	iP		16 26 36.0	C
	i		16 26 38.2	
De	iP		16 26 33.6	

Afghanistan-USSR border region (h = N).
m = 5.4 , M = 5.5 (Up,Ki).

" 25 Ud iP 17 46 13.8

" 25

Up	iP	18 31 42.7
Ki	iP	18 31 01.1
Um	iP	18 31 20.4
Ud	iP	18 31 48.4

Off east coast of Honshu, Japan (h = 20 km).

" 25

Up	iP		22 45 34.9	
			micr	sec
	Mx	E	0.8	15
	Mx	N	0.7	14
Ki	iP		22 45 08.0	
			micr	sec
	Mx	E	0.7	13
Ud	iP		22 45 41.6	

Taiwan (h = 40 km).
M = 5.2 (Up,Ki).

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977 Dec.	26	Ud	iP		01 04 51.1	
"	26	Ud	iPKPl		01 16 39.8	
		De	iPKPl		01 16 49.7	
		South of Tonga Islands (h = N).				
"	26	Ud	iP		04 09 38.3	
"	26	Up	iP		04 09 53.3	
		Ki	iP		04 09 36.8	C
		Um	iP		04 09 37.4	C
		Ud	iP		04 10 09.0	C
		Eastern Kazakh SSR. Underground explosion.				
"	26	Ki	iP		06 58 05.8	
		Um	iP		06 58 09.5	
		Molucca Passage (h = 35 km).				
"	26	Up	iP		09 04 32.5	
		Ki	iP		09 03 58.3	
		Sk	iP		09 04 30.0	
		Um	iP		09 04 13.0	
		Ud	iP		09 04 40.7	
		Near s. coast of Honshu, Japan (h = 340 km).				
"	26	Up	iP		09 52 00.2	
			i		09 52 07.9	
					micr	sec
			P	Z'	0.5	1.6
		Ki	iP		09 51 41.3	
			i		09 51 50.2	
					micr	sec
			P	Z'	0.2	1.4
		Um	iP		09 51 47.3	
		Ud	iP		09 52 08.4	
			i		09 52 16.5	
		Luzon, Philippine Islands (h = N). m = 6.3 (Up,Ki).				
"	27	Up	ePKPl		01 47 50	
		Sk	iPKPl		01 47 41.6	
		Ud	iPKPl		01 47 51.0	
		De	iPKPl		01 48 00.7	
		Kermadec Islands region (h = 100 km).				
"	27	Up	iP		06 54 02.8	
		Ki	iP		06 53 30.2	
		Sk	iP		06 54 00.7	
		Um	iP		06 53 44.1	
		(cont.)				

1977 Dec.	27	(cont.)				
		Ud	iP		06 54 10.1	
		South of Honshu, Japan (h = 470 km).				
"	27	Up	i(PKP)		11 56 27.7	
		Ki	iPKP		11 56 24.7	
					micr	sec
			PKP	Z'	0.1	1.0
		Sk	ePKP		11 56 35	
		Um	iPKP		11 56 30.0	
		Ud	i(PKP)		11 56 29.3	
			iPKP		11 56 40.8	
		De	iPKPl		11 56 41.0	
		Fiji Islands region (h = 560 km).				
"	27	Up	iP		15 19 39.1	
					micr	sec
			P	Z'	0.1	1.0
		Ki	iP		15 18 43.1	
					micr	sec
			P	Z'	0.2	0.9
		Sk	iP		15 19 11.5	
		Um	iP		15 19 11.6	
		Ud	iP		15 19 35.7	
		De	iP		15 19 59.6	
		Southern Alaska (h = 180 km). m = 5.6 (Up,Ki).				
"	28	Up	iP		02 53 58.7	
			i		02 54 00.8	
			i		02 54 03.6	
			iPP		02 55 51	
			iS		03 00 55	
					micr	sec
			i	Z'	0.2	0.9
			i	Z'	1.8	1.5
			Mx	E	39	19
			Mx	N	52	19
			Mx	Z	44	17
		Ki	iP		02 54 48.6	
			i		02 54 50.3	
			i		02 54 53.8	
			iS		03 02 20	
					micr	sec
			i	Z'	0.6	1.4
			i	Z'	1.8	1.4
			Mx	E	32	14
			Mx	N	30	13
			Mx	Z	36	14
		Sk	iP		02 54 33.4	
			i		02 54 35.5	
			i		02 54 39.0	
		(cont.)				

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 28 (cont.)

Um	iP		02 54 21.2
	i		02 54 23.6
	i		02 54 26.6
Ud	iP		02 54 08.8
	i		02 54 10.9
	i		02 54 13.9
De	iP		02 53 45.6
	i		02 53 47.6
	i		02 53 50.9

Red Sea (h = N).
m = 6.7, M = 6.6 (Up,Ki).
Multiple event with successively increasing amplitudes.

" 28

Sk	i(P)		07 54 58.9
	i		07 56 40.3

" 28

Ki	iP		11 15 26.7
Sk	iP		11 15 54.3
Um	iP		11 16 11.7
Ud	iP		11 16 41.8

Norwegian Sea (h = N).

" 28

Up	iP		20 36 34
	iS		20 39 56
			micr sec
	P	Z'	0.8 2.1
	Mx	E	1.4 18
	Mx	N	2.2 18
	Mx	Z	5.4 20
Ki	iP		20 36 16.9
	i		20 36 19.7
	iS		20 39 31
			micr sec
	i	Z'	0.6 1.7
	Mx	E	5.4 17
	Mx	N	3.3 15
	Mx	Z	5.5 15
Sk	iP		20 36 45.9
Um	iP		20 36 28.5
	i		20 36 31.2
	iS		20 39 46
Ud	iP		20 36 14.5
	i		20 36 20.7
De	i		20 36 43.4

Iceland (h = 10 km).
m = 5.5 (Up,Ki).

" 28

Ki	iP		23 32 49.0

" 29

Ud	iP		01 50 04.8

Mindanao, Philippine Islands (h = 50 km).

1977
Dec. 29

Ki	iP		07 52 01.8

" 29

Um	iP		12 01 09.7
De	iP		12 00 34.5

Zaire Republic (h = N).

" 29

Up			micr sec
	Mx	N	2.5 23
Ki	iP		12 08 20.5
			micr sec
	Mx	N	1.6 24
Ud	iP		12 08 45.2
De	iP		12 08 53.2

Mindanao, Philippine Islands (h = 55 km).
M = 5.5 (Up,Ki).

" 29

Up	eP		16 57 48
	i		16 57 52.3
Sk	iP		16 58 27.3
Um	iP		16 58 25.3
Ud	iP		16 57 54.2
De	iP		16 57 18.9

Greece (h = 20 km).

" 29

Up	iP		19 56 38.4 C
	ipP		19 58 33.0
	iS		20 05 51.5
			micr sec
	P	Z'	0.1 0.6
Ki	iP		19 56 06.8 C
	ipP		19 58 05.3
			micr sec
	P	Z'	0.2 0.6
Sk	iP		19 56 36.1
	ipP		19 58 36.4
Um	iP		19 56 20.8 C
	ipP		19 58 19.1
Ud	iP		19 56 45.8 C
	ipP		19 58 47.2
De	iP		19 56 56.7 C

Bonin Islands region.
h = 550 km (Up,Ki,Sk,Um,Ud).
m = 5.6 (Up,Ki).

" 30

Up	iP		09 13 40.9
Ki	iP		09 12 46.5
Ud	iP		09 13 39.2
De	iP		09 14 03.1

Fox Islands, Aleutian Islands (h = 40 km).

" 30

Up	iP		17 39 19.5 C
	iS		17 42 44.4

(cont.)

Up = Uppsala, Ki = Kiruna, Sk = Skalstugan, Um = Umeå, Ud = Uddeholm, De = Delary

1977
Dec. 30 (cont.)

Up	iScS		17 50 12.3	
			micr	sec
	P	Z'	0.8	1.0
Ki	iP		17 40 34.6	
			micr	sec
	P	Z'	0.7	1.3
Sk	iP		17 39 55.8	
Um	iP		17 39 58.9	
	iS		17 43 32.8	
Ud	iP		17 39 22.3	C
	iS		17 42 50.0	
De	iP		17 38 44.1	C

Southern Italy (h = 280 km).
m = 6.1 (Up,Ki).

" 30

Up	iP	18 13 01.8
Sk	iP	18 13 38.5
Um	iP	18 13 39.8
Ud	iP	18 13 03.9
De	iP	18 12 25.9

Southern Italy (h = 300 km).

" 30

Up	iP	23 31 05.2
Ki	iP	23 31 21.8
Um	iP	23 31 07.8
Ud	iP	23 31 20.5
De	iP	23 31 14.1

Pakistan (h = 15 km).

" 31

Up	iP		03 33 29.1	
			micr	sec
	P	Z'	0.1	1.1
Ki	iP		03 33 14.0	
Sk	eP		03 33 43	
Ud	iP		03 33 43.8	

Southern Sinkiang Prov.,
China (h = 5 km).

" 31

Up	iPP	08 11 03.7
	iSKS	08 17 20
Um	iPP	08 11 23.4
	iSKS	08 17 33.9
Ud	iPP	08 10 38.7

Southern Peru (h = 160 km).

" 31

Up	iP	08 28 51.2
Um	iP	08 28 33.3
Ud	iP	08 28 58.3
De	iP	08 29 09.7

Bonin Islands region
(h = 420 km).

1977
Dec. 31

Ki	iP		11 53 24.6	
			micr	sec
	P	Z'	0.1	1.3
Um	iP		11 53 32.9	
Ud	iP		11 53 51.6	

Mindanao, Philippine Islands
(h = 45 km).

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August 1, 1979