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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, SKALSTUGAN, UMEÅ,

UDDEHOLM and DELARY

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

DECEMBER 1 - 31, 1977

1977					1977				
Dec.	1	Up	iP	00 20 02.2	Dec.	2	(cont.)		
		Um	iP	00 19 51.1 C			Up	Mx	Z 4.5 22
		Ud	iP	00 20 03.4 C			Sk	iPKKP	04 43 13.4
		De	eP	00 20 13			Um	iPKKP	04 43 14.1
"	1	Up	iP	21 19 04.2 C			i		04 43 23.9
				micr sec			Ud	iPKKP	04 43 07.7
		P	Z'	0.1 0.8			i		04 43 15.3
		Ki	iP	21 19 36.6 C			East Papua New Guinea region		
				micr sec			(h = 70 km).		
		P	Z'	0.1 1.0	"	2	Up	iP	13 07 41.0 C
		Sk	iP	21 19 37.7			i		13 08 02.4
		Um	iP	21 19 15.3 C					micr sec
		Ud	iP	21 19 19.5 C			P	Z'	1.1 1.6
		De	iP	21 19 05.1			Mx	E	1.5 20
		Southern Iran (h = N).					Mx	N	1.8 20
		m = 5.6 (Up,Ki).					Mx	Z	1.8 20
"	1	Up	iP	22 18 31.1			Ki	iP	13 06 47.5 C
		Ud	iP	22 18 45.2					micr sec
"	1	Ud	i(P)	22 30 04.9			P	Z'	0.2 1.0
"	1	Up	iP	23 36 03.1			Sk	iP	13 07 24.4 C
		Ki	iP	23 36 35.6			Um	iP	13 07 12.4 C
		Sk	iP	23 36 36.3			Ud	iP	13 07 44.5 C
		Um	iP	23 36 14.9			De	iP	13 08 06.3 C
		Ud	iP	23 36 18.3			Off east coast of Kamchatka		
		De	iP	23 36 04.7			(h = 15 km).		
		Southern Iran (h = N).					m = 6.5 (Up,Ki).		
"	2	Up	iP	03 58 28.4	"	3	Ud	iP	01 01 37.7
		Sk	iP	03 59 02.4			Afghanistan-USSR border		
		Um	iP	03 58 39.7			region (h = 150 km).		
		Ud	iP	03 58 44.2	"	3	Up	iP	05 18 45.0 D
		De	iP	03 58 29.8			i		05 19 07.4
		Southern Iran (h = N).							micr sec
"	2	Up	iPKKP	04 43 13.1			P	Z'	0.1 0.7
		i		04 43 23.7			Ki	iP	05 18 11.2
				micr sec			Sk	iP	05 18 42.3
		Mx	E	1.9 20			Um	iP	05 18 26.1 D
		Mx	N	2.2 20			i		05 18 47.9
		(cont.)					Ud	iP	05 18 52.3 D
							(cont.)		

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

1977				1977			
Dec.		(cont.)		Dec.		(cont.)	
	3				3		
		Ud	i 05 19 15.2			De	iP 13 53 41.4 D
		De	iP 05 19 04.8				ipP 13 53 56.0
		South of Honshu, Japan (h = 420 km).				Off west coast of northern Sumatra. h = 50 km (Up,Um,Ud,De). m = 6.4, M = 5.8 (Up,Ki).	
"	3	Up	iP 05 43 58.3	"	3	Up	i 13 57 54.7
			i 05 44 00.3				iRg 13 57 59.5
			ipP 05 44 03.3			Ud	iRg 13 57 37.5
		Ki	eP 05 45 17			Grängesberg, Sweden, 60.1°N, 15.0°E. Origin time = 13 57 14. Rockburst.	
		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	"	3	Ud	i(P) 14 06 28.5
		Albania. h = 25 km (Up,Um,Ud).		"	3	Ud	iP 15 08 30.1
"	3	Ud	i(P) 10 36 17.6	"	3	Ud	i(P) 16 00 37.0
"	3	Ud	i(P) 11 34 14.0	"	3	Ki	iP 17 15 28.6
"	3	Um	iP 12 36 52.1			Um	iP 17 15 45.0
		Ud	iP 12 36 41.8			Ud	iP 17 16 15.9
		Costa Rica (h = 60 km).				De	eP 17 16 30
						Sea of Japan (h = 540 km).	
"	3	Up	iP 13 53 32.2	"	3	Ud	eP 17 25 11
			ipP 13 53 46.7	"	3	Ud	iPKP1 18 18 56.3
			iS 14 03 37.4			De	iPKP1 18 19 04.2
			micr sec			Tonga Islands region (h = N).	
		P	Z' 0.6 1.5	"	3	Um	iP 20 09 01.2
		pP	Z' 0.4 1.0			Ud	iP 20 09 33.0
		Mx	E 2.4 21	"	4	Ud	i(P) 05 50 38.8
		Mx	N 3.4 21	"	4	Up	iPKP1 06 09 59.6
		Mx	Z 5.4 20				micr sec
		Ki	iP 13 53 32.6			Mx	E 1.2 20
			i 13 53 51.7			Mx	N 1.4 20
			iS 14 03 39			Mx	Z 3.3 20
			micr sec			Ki	ePKP 06 09 49
		P	Z' 0.2 1.0				micr sec
		i	Z' 0.6 1.3			Mx	E 1.1 17
		Mx	E 3.7 20			Mx	N 2.6 19
		Mx	N 3.2 19			Mx	Z 3.8 19
		Mx	Z 5.5 19			Sk	iPKP 06 09 55.6
		Sk	iP 13 53 48.4			Um	iPKP 06 09 57.4
			i 13 54 07.9				i 06 09 58.8
		Um	iP 13 53 30.0 D			Ud	iPKP1 06 10 02.5
			ipP 13 53 44.5				(cont.)
			iS 14 03 31				
		Ud	iP 13 53 43.7 D				
			ipP 13 53 58.2				
		(cont.)					

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

1977				1977			
Dec.				Dec.			
4	(cont.)			5	Up	iPKP1	14 33 19.9
	Ud	i	06 10 04.4			i	14 34 11.5
	De	iPKP	06 10 10.5				micr sec
		iPKP1	06 10 12.2			Mx	N 1.1 20
	South of Fiji Islands					Mx	Z 1.5 22
	(h = 55 km).				Ki		micr sec
	M = 5.9 (Up,Ki).					Mx	E 1.1 20
"	4	De	iP 06 19 41.0			Mx	N 1.8 20
"	4	Ud	i(P) 11 20 24.6			Mx	Z 2.4 20
"	4	Up	iP 11 48 51.5 C		Ud	iPKP1	14 33 21.4
		Ki	iP 11 48 05.2 C		De	iPKP1	14 33 31.2
			micr sec			i	14 34 24.0
		P	Z' 0.2 1.1		South of Fiji Islands		
		Sk	iP 11 48 40.8 C		(h = N).		
		Um	iP 11 48 26.3 C		M = 5.7 (Up,Ki).		
		Ud	iP 11 48 57.8 C	"	5	Up	micr sec
		De	iP 11 49 15.9 C			Mx	E 1.1 19
			ipP 11 51 07.6			Mx	Z 0.8 20
	Sea of Okhotsk.					Ud	iPP 16 02 48.9
	h = 550 km (De).				San Juan Province, Argentina		
"	4	Up	iPKP1 14 42 03.4		(h = 30 km).		
			i 14 42 08.2	"	5	Ud	iP 16 31 22.7
		Ki	iPKP 14 41 59.6	"	5	Ud	iP 18 03 50.2
		Sk	e(PKP) 14 42 00	"	6	Ki	iP 06 30 24.6
			ePKP 14 42 10		Taiwan (h = 45 km).		
		Um	i(PKP) 14 42 01.5	"	6	Up	iP 10 59 57.9
			iPKP 14 42 06.0			iPP	11 01 08.4
		Ud	iPKP1 14 42 05.9				micr sec
		De	iPKP1 14 42 15.5			P	Z' 0.3 1.3
			iPKP 14 42 19.3			Mx	E 0.9 16
	Fiji Islands region					Mx	N 1.4 19
	(h = 270 km).					Mx	Z 0.7 17
"	5	Up	iSn 03 48 11.6		Ki	iP 11 00 02.2 C	
			i 03 48 29.2			iPP	11 01 16.5
			iSgl 03 48 54.6				micr sec
		Ki	iSn 03 48 47.5			P	Z' 0.1 1.0
		Sk	iSn 03 46 56.9			Mx	E 1.4 10
		Um	iPn 03 46 51.4			Mx	N 2.5 12
			iSn 03 48 19.9			Mx	Z 1.4 10
		Ud	iPn 03 46 20.4		Sk	iP 11 00 22.0	
			iSn 03 47 24.5			iPP	11 01 40.7
		De	iPn 03 46 52.4		Um	iP 10 59 53.7	
			iSn 03 48 24.1			iPP	11 01 07.7
			iSgl 03 49 16.6		Ud	iP 11 00 15.0	
	Norwegian Sea, near					i	11 01 42.6
	62 1/4° N, 2° E.				De	iP 11 00 13.6	
	M _L = 3.1 (Up,De).				Kirgiz SSR (h = N).		
	Origin time = 03 44 49.				m = 5.8, M = 5.1 (Up,Ki).		
"	5	De	iPKP1 14 29 56.4				
	South of Tonga Islands						
	(h = N).						

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

1977					1977				
Dec.	6	Up		micr sec	Dec.	8	Up	iP	01 59 55.4
		Mx	E	1.2 16			Ki	iP	01 59 19.8
		Mx	N	0.9 17			Um	iP	01 59 29.2
		Mx	Z	2.6 19			Ud	iP	02 00 04.3
		Ki	iPKP	17 23 51.4		"	8	Up	iPKP
				micr sec				i	06 34 45.7
		Mx	E	0.7 16					06 34 58.2
		Mx	N	0.8 17					micr sec
		Mx	Z	1.0 17				PKP	Z' 0.1 1.0
		Um	iPKP	17 23 49.9				Mx	N 1.8 20
			iPKKP	17 34 19.5				Mx	Z 2.9 21
		Ud	iPKP	17 23 40.1			Ki	ePKP	06 34 35
			iPKKP	17 34 37.6					micr sec
		San Juan Province, Argentina						Mx	E 0.8 17
		(h = 20 km).						Mx	N 3.9 21
		M = 5.6 (Up,Ki).						Mx	Z 4.2 21
"	6	Up		micr sec			Sk	iPKP	06 34 42.6
		Mx	E	1.1 19			Um	iPKP	06 34 40.6
		Mx	N	2.2 24				i	06 34 56.1
		Ki	iP	18 06 32.4			Ud	iPKP	06 34 46.2
			iPP	18 10 48.4			De	iPKP	06 34 53.8
				micr sec			South of Tonga Islands		
		Mx	E	1.7 19			(h = N).		
		Mx	N	1.3 19			M = 6.0 (Up,Ki).		
		Mx	Z	3.7 21		"	8	Ki	iP
		Ud	iPP	18 11 15.8				Sk	iP
		South of Sumbawa Island							iS
		(h = N).							09 07 20.6
		M = 5.7 (Up,Ki).							09 07 56.9
"	7	Ki	iP	09 10 48.5		"	8	Ki	iP
		Ud	iP	09 11 20.7					11 56 27.3
		Mariana Islands (h = 140 km).				"	8	Up	iP
"	7	Up	iP	16 28 52.7					14 06 44.6
		Ki	iP	16 28 38.2				P	Z' 0.2 1.3
		Sk	iP	16 29 05.6				Ki	iP
		Ud	eP	16 29 05					14 05 56.2
		Tsinghai Province, China							micr sec
		(h = N).						P	Z' 0.1 1.0
"	7	Ki	iP	20 43 40.4			Um	iP	14 06 18.0 D
		Um	iP	20 43 52.9			Ud	iP	14 06 50.0 D
		Ud	iP	20 44 15.5			Sea of Okhotsk (h = 500 km).		
		Volcano Islands region					m = 5.3 (Up,Ki).		
		(h = 200 km).				"	8	Um	iP
"	8	Up	iP	00 46 02.1				Ud	iP
		Ki	iP	00 47 11.5					23 44 41.0
		Sk	iP	00 46 40.0					23 44 59.3
		Ud	iP	00 46 08.9			Hindu Kush region (h = 240 km).		
		De	eP	00 45 39		"	9	Up	iRg
		Crete (h = 60 km).						Ud	iSgl
									12 09 32.7
									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				1977			
Dec.	9	Ki iP	14 51 30.1	Dec.	10	Up iP	05 54 07.9 C
		Um iP	14 51 35.2			i	05 54 10.4
		Ud iP	14 51 52.7			i	05 54 16.3
		Banda Sea (h = 140 km).				i	06 00 22
							micr sec
"	9	Um iP	15 13 50.1			P	Z' 0.2 1.0
		Ud iP	15 14 21.4			i	Z' 0.2 1.0
		Hokkaido, Japan region				Mx	E 1.3 17
		(h = 70 km).				Mx	N 1.8 17
						Mx	Z 2.3 17
"	9	Up iRg	15 27 01.2			Ki iP	05 54 40.1
		Ud iSgl	15 27 54.7				micr sec
		Dannemora, Sweden, 60.1°N,				P	Z' 0.1 0.7
		17.5°E.				Mx	E 4.8 11
		Origin time = 15 26 44.				Mx	N 4.0 11
		Rockburst.				Mx	Z 5.5 13
		Felt.				Sk iP	05 54 41.9
"	9	Up iP	15 58 33.0			Um iP	05 54 19.2
			micr sec			i	05 54 21.6
		Mx E	1.6 17			Ud iP	05 54 22.9 C
		Mx N	1.2 14			i	05 54 25.4
		Mx Z	2.2 14			i	05 54 31.0
		Ki iP	15 59 42.5			De iP	05 54 08.8
			micr sec			Southern Iran (h = 45 km).	
		Mx E	0.8 17			m = 5.9, M = 5.5 (Up,Ki).	
		Mx N	0.6 14	"	10	Ki iP	15 30 43.8
		Sk iP	15 59 16.7				micr sec
		Um iP	15 59 09.1			Mx E	0.8 17
		Ud iP	15 58 43.1			Mx N	1.3 17
		De iP	15 58 09.6			Sk eP	15 31 16
		Turkey (h = 20 km).				Um iP	15 30 58.2
		M = 4.6 (Up,Ki).				Ud iP	15 31 24.9
						South of Honshu, Japan	
"	9	Up iP	17 06 23.2			(h = N).	
			micr sec	"	10	Up iP	23 22 14.5
		PKP1 Z'	0.1 0.6				micr sec
		Ud iP	17 06 25.5			Mx E	2.5 25
		De iP	17 06 35.3			Mx N	1.7 19
"	9	Up i	21 03 30.1			Ki iP	23 21 26.4
		iRg	21 03 34.6				micr sec
		Ud iRg	21 03 21.0			Mx E	1.8 18
		Central Sweden.				Mx N	1.3 17
		Near-surface event.				Um iP	23 21 48.2
"	9	Ud iP	21 05 59.3			i	23 21 49.5
		Luzon, Philippine Islands				Ud iP	23 22 20.3
		(h = 60 km).				i	23 22 21.3
						Kuril Islands (h = 130 km).	
						M = 5.4 (Up,Ki).	
"	10	Ud iP	00 48 41.5	"	11	Ud iP	08 19 26.4
		De iP	00 48 52.8			Southern Iran (h = N).	
		Fiji Islands region					
		(h = 620 km).					

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

1977				1977			
Dec.	11	Ud	iP	12 46 56.4	Dec.	13	(cont.)
"	11	Up	iP	16 34 19.8			Up iS 01 33 53
				micr sec			micr sec
			P	Z' 0.1 1.0			P Z' 0.1 1.1
		Ki	iP	16 34 25.6			Mx E 5.1 18
				micr sec			Mx N 8.3 18
			P	Z' 0.2 1.0			Mx Z 11.4 17
		Sk	iP	16 34 07.5	Ki	iP	01 25 19.7 C
		Um	iP	16 34 25.8		iS	01 34 21
		Ud	iP	16 34 08.8 C			micr sec
		De	iP	16 34 10.1		P	Z' 0.3 1.0
		Venezuela (h = 20 km).				Mx	E 8.4 17
		m = 6.0 (Up,Ki).				Mx	N 6.2 16
						Mx	Z 6.8 17
"	11	Up	iSgl	21 48 01.2	Sk	iP	01 24 54.2
		Sk	eSgl	21 47 35	Um	iP	01 25 16.3 C
		Um	eSgl	21 48 54		iS	01 34 16
		Ud	iPgl	21 46 40.1	Ud	iP	01 24 52.6
			iSgl	21 47 00.5	De	iP	01 24 50.8
		Southeast Norway, 60.9°N, 10.9°E.			North Atlantic Ocean (h = N).		
		Origin time = 21 46 12.			m = 6.0, M = 6.1 (Up,Ki).		
		M _L = 2.4 (Ud).		"	13	Ud	iPKP1 01 40 39.7
		Felt.				De	iPKP1 01 40 50.6
		Solution by combination with NORSAR.				South of Fiji Islands (h = 470 km).	
"	12	Up	iP	02 55 53.5	"	13	De iPKP1 03 26 08.0
				micr sec			Fiji Islands region (h = 530 km).
			Mx	E 1.2 20	"	13	Ud iP 05 17 50.0
			Mx	N 2.9 20			Kuril Islands (h = 90 km).
		Ki	iP	02 55 30.8	"	13	Ud iP 07 05 13.1
				micr sec			Off east coast of Honshu, Japan (h = N).
			Mx	E 3.7 13	"	13	Ki iP 09 00 31.0
			Mx	N 2.0 14			West Caroline Islands (h = 45 km).
			Mx	Z 2.5 14	"	13	Ki iP 14 40 39.3
		Sk	iP	02 55 59.7			Molucca Sea (h = 55 km).
		Ud	iP	02 56 03.7	"	14	Up iPKP1 00 57 51.4
		Taiwan (h = 25 km).				Ki	iPKP 00 57 38.0
		M = 5.8 (Up,Ki).				Ud	iPKP1 00 57 53.1
"	12	Up	Mx	21 38			i 00 58 40.1
				micr sec		De	iPKP2 00 58 07.3
			Mx	N 1.0 19			Kermadec Islands region (h = 55 km).
			Mx	Z 3.0 20	"	14	Ki iP 03 14 19.1
		Ki	Mx	21 39			Um iP 03 14 04.0
				micr sec			(cont.)
			Mx	N 1.0 19			
		South Pacific Cordillera (h = N).					
		M = 5.7 (Up,Ki).					
"	13	Up	iP	01 25 05.8			
		(cont.)					

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1977				1977			
Dec.	Date	Station	Time	Dec.	Date	Station	Time
1977	Dec. 14	(cont.)		1977	Dec. 16	(cont.)	
		De	iPKP1 19 10 54.5			Up	micr sec
			iSKP1 19 13 36.8			P	Z' 0.1 1.0
		Fiji Islands region (h = 660 km).				Ki	iP 07 21 59.2
							micr sec
"	14	Up	iP 23 37 09.1			P	Z' 0.1 1.0
		Um	iP 23 36 43.4			Um	iP 07 22 19.5
		Ud	iP 23 37 14.8			Ud	iP 07 22 49.9 C
		De	iP 23 37 33.1			De	iP 07 23 07.1
		Kuril Islands (h = 55 km).				Kuril Islands (h = 40 km). m = 5.9 (Up,Ki).	
"	15	Ud	iP 08 11 40.1	"	16	Up	iP 07 42 24.7
		De	iP 08 11 06.6			i	07 42 29.5
		Crete (h = 45 km).					micr sec
"	15	Up	iP 09 13 10.7			P	Z' 0.1 1.0
		Um	iP 09 12 44.8			i	Z' 0.1 1.0
		Ud	iP 09 13 15.7			Mx	E 2.8 10
		De	eP 09 13 35			Mx	N 3.7 10
		Kuril Islands (h = 50 km).				Ki	iP 07 43 34.6
"	15	Ki	iP 11 05 35.3				micr sec
		Um	iP 11 05 32.6			P	Z' 0.1 1.1
		Ud	iP 11 05 45.6			Sk	iP 07 43 08.0
		De	iP 11 05 43.6			Um	iP 07 43 00.7
		Northern Sumatra (h = 50 km).				i	07 43 05.7
"	15	Up	i(P) 13 37 07.2			Ud	iP 07 42 34.9
						De	iP 07 42 02.1
"	15	Up	iP 15 13 00.2			i	07 42 07.7
			i 15 13 13.4			Turkey (h = 35 km). m = 5.4 (Up,Ki).	
		Ki	iP 15 13 39.9	"	16	Up	iP 09 19 35.0
		Um	iP 15 13 13.7				micr sec
		Ud	iP 15 13 17.8 C			P	Z' 0.2 1.3
		De	iP 15 13 04.2			Ki	iP 09 18 42.9
		Eastern Caucasus (h = N).					micr sec
"	15	Up	iP 15 28 36.5			P	Z' 0.1 1.2
		Um	iP 15 28 50.8			Um	iP 09 19 05.0
		Ud	iP 15 28 54.6			De	iP 09 19 59.8
		Eastern Caucasus (h = N).				Off east coast of Kamchatka (h = N). m = 5.9 (Up,Ki).	
"	15	De	iPKP1 16 10 38.5	"	16	Up	iP 10 25 12.4
		Tonga Is. region.				i	10 25 17.2
"	15	Up	iP 23 04 29.5			Tsinghai Province, China (h = N).	
		Ki	iP 23 04 33.2	"	16	Up	iP 15 21 54.2 C
		Northern Colombia (h = 60 km).				iPP	15 24 37.1
"	15	De	iP 23 31 21.1				micr sec
		Tanzania (h = N).				P	Z' 0.4 1.0
"	16	Up	iP 07 22 42.9			Ki	iP 15 21 15.4
		(cont.)				iPP	15 23 41.8
						(cont.)	

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

1977				1977			
Dec. 16	(cont.)			Dec. 18	Up	iP	00 07 08.3
	Ki		micr sec		Ki	iP	00 07 47.5
		P	Z' 0.3 1.0		Ud	iP	00 07 19.2
	Sk	iP	15 21 48.5 C		Eastern Gulf of Aden (h = N).		
		iPP	15 24 26.6	" 18	Up	iP	00 58 28.5
	Um	iP	15 21 32.6 C		Ud	iP	00 58 35.4
	Ud	iP	15 22 01.6 C		Southern Greece (h = 120 km).		
		i	15 24 40.1	" 18	Ud	iP	01 08 30.3
	De	iP	15 22 16.3 C		Kodiak Island region (h = 30 km).		
	Near east coast of Honshu, Japan (h = 45 km). m = 6.3 (Up,Ki).			" 18	Up	iP	07 07 34.5
" 17	Up	iP	11 43 20.5			ipP	07 08 05.2
	Ki	iP	11 42 26.4			iPcP	07 08 17.9
	Um	iP	11 42 52.9		Ki	iP	07 06 41.7
	Ud	iP	11 43 18.8		Um	iP	07 07 10.0
	De	iP	11 43 41.5			iPcP	07 08 01.3
	Fox Islands, Aleutian Islands (h = 45 km).				Ud	iP	07 07 40.2
" 17	Up	iRg	14 30 24.9			iPcP	07 08 20.3
	Ud	iSgl	14 30 03.1		De	ipP	07 08 33.7
		iRg	14 30 06.9		Kamchatka. h = 120 km (Up).		
	Central Sweden. Near-surface event.			" 18	Up	iP	16 55 02.7
" 17	Up	iPKP1	16 21 10.8			iS	17 01 27
	Ki	iPKP	16 21 06.2				micr sec
	Ud	iPKP1	16 21 12.8		P	Z' 0.1	1.1
	De	iPKP1	16 21 24.7		Mx	E 13	17
	Fiji Islands region (h = 600 km).				Mx	N 11	13
" 17	Ki	iPKP	16 41 24.3		Mx	Z 23	16
	New Hebrides Islands (h = 230 km).				Ki	iP	16 55 01.8
" 17	Up	iP	17 38 24.0				micr sec
	Ki	iP	17 37 29.9		P	Z' 0.3	1.0
			micr sec		Mx	E 13	15
		P	Z' 0.1 1.0		Mx	N 15	15
	Um	iP	17 37 57.0		Mx	Z 14	15
	Ud	iP	17 38 22.9		Sk	iP	16 55 24.9
	De	iP	17 38 44.0		Um	iP	16 54 55.9
	Fox Islands, Aleutian Islands (h = 40 km).					iS	17 01 13
" 17	Up	iP	21 46 33.0		Ud	iP	16 55 19.8 C
	Ud	iP	21 46 37.4		De	iP	16 55 20.5 C
	Kuril Islands (h = 150 km).				Southern Sinkiang Prov., China (h = N). m = 5.7, M = 6.1 (Up,Ki).		
" 17	Ud	iP	23 36 54.0	" 18	Ud	iP	22 37 35.3
	Near coast of Venezuela (h = 30 km).			" 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				1977					
Dec.	21	Up	iP	05 06 11.6	Dec.	22	Up	iP	04 56 48.1
				micr sec				i	04 56 54.2
			P	Z' 0.1 1.2				iS	05 06 24
		Ki	iP	05 05 35.7					micr sec
		Sk	iP	05 06 07.2				P	Z' 0.1 1.0
		Ud	iP	05 06 17.2				i	Z' 0.5 1.5
		Southeast of Shikoku, Japan						Mx	E 17 15
		(h = N).						Mx	N 10 14
"	21	De	iPKP1	05 27 08.7				Mx	Z 37 16
		Fiji Islands region					Ki	iP	04 56 17.9
		(h = 610 km).						i	04 56 24.4
"	21	Up	iPKP1	07 14 45.1					micr sec
		Ud	iPKP1	07 14 45.9				P	Z' 0.1 1.4
"	21	Up	iP	08 36 13.4				i	Z' 1.3 2.2
		Ki	iP	08 36 51.9				Mx	E 17 14
		Um	iP	08 36 27.4				Mx	N 11 15
		Ud	iP	08 36 32.1			Sk	iP	04 56 49.2
		De	iP	08 36 19.8				i	04 56 54.5
		Eastern Caucasus (h = N).					Um	iP	04 56 30.1
"	21	Ud	iP	08 41 10.6				i	04 56 36.2
		Afghanistan-USSR border						iS	05 05 47
		region (h = 200 km).					Ud	iP	04 56 57.0
"	21	Ud	i(P)	13 00 55.4				i	04 57 03.3
"	21	Up	iP	16 50 00.3			De	iP	04 57 08.2
				micr sec				i	04 57 14.9
			P	Z' 0.2 1.0	"	22	Ud	iP	08 41 26.6
			Mx	E 1.0 18	"	22	Up	iP	13 22 28.3
		Ki	iP	16 49 06.9			Ud	iP	13 22 22.1
				micr sec	"	22	Up	iP	14 16 13.3
			P	Z' 0.1 1.0			Ud	iP	14 16 17.5
		Sk	iP	16 49 44.4			De	iP	14 16 37.6
		Um	iP	16 49 31.8			Near east coast of Kamchatka		
		Ud	iP	16 50 04.0			(h = N).		
		De	iP	16 50 25.1	"	22	Up	eP	18 00 05
		Off east coast of Kamchatka					Ud	iP	18 00 17.0
		(h = N).					India-China border region		
"	21	Up	eP	20 24 49			(h = N).		
		Um	iP	20 24 46.6	"	22	Up	iP	19 09 39.0
		Ud	iP	20 25 05.5			Um	iP	19 09 21.7
		Hindu Kush region (h = 55 km).					Ud	iP	19 09 47.3
"	22	Ud	iPKP1	02 19 53.3			Southwestern Ryukyu Islands		
		De	iPKP1	02 20 03.6			(h = N).		
		Kermadec Islands region							
		(h = 250 km).		"	22	Up	iP	22 29 20.2	
"	22	Ki	iP	04 52 10.6			i	22 29 29.8	
		Um	iP	04 52 07.0				micr sec	
		Ud	iP	04 52 34.8				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 iPKP1 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	iPKP1	01 16 39.8
		De	iPKP1	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	ePKP1	01 47 50
		Sk	iPKP1	01 47 41.6
		Ud	iPKP1	01 47 51.0
		De	iPKP1	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	iPKP1	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
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"	29	Ud	iP	01 50	04.8
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Mindanao, Philippine
Islands (h = 50 km).

1977	Dec.	29	Ki	iP	07 52	01.8
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"	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).

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).

" 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).

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August 1, 1979