SEISMOLOGICAL DEPARTMENT
BOX 12019
S-750 12 UPPSALA
SWEDEN

SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

JANUARY 1 - 31, 1988

1988					
Jan.	1	UPP	iP	00 15 26.1	
		KIR	iP	00 14 52.1	
		UME	iP	00 15 06.3	
		Bonin Islands region (h = 30 km).			
"	1	KIR	eP	14 42 29	
		Laptev Sea (h = 10 km).			
"	1	UPP	iPKP2	21 22 54.0	
			i	21 23 03.3	
		KIR	i	21 22 36.9	
		UME	iPKP2	21 22 41.6	
			i	21 22 43.8	
		South of Kermadec Islands (h = N).			
"	1	UPP	iP	22 25 30.0	
			i	22 25 34.0	
		KIR	iP	22 25 27.6	
		UME	iP	22 25 24.9	
		Burma (h = 25 km).			
"	2	KIR	iPKP	06 55 00.8	
		Vanuatu Islands (h = 140 km).			
"	2	KIR	eP	10 42 55	
		Komandorsky Islands region			
		(h = N).			
"	2	UPP	iP	12 52 40.5 C	
			iS	13 01 21	
				micr sec	
			P Z'	1.3 1.1	
		KIR	iP	12 51 56.4 C	
				micr sec	
			P Z'	0.9 1.2	
		(cont.)			

1988				
Jan.	2	(cont.)		
		UME	iP	12 52 16.1 C
			iS	13 00 36
		Hokkaido, Japan region		
		(h = 180 km).		
		m = 6.6 (UPP,KIR).		
"	2	KIR	iP	13 50 20.2
		South of Mariana Islands		
		(h = 50 km).		
"	3	KIR	iSg1	20 38 47.8
		Norwegian Sea, 67.7°N, 10.1°E.		
		Origin time = 20 36 52.		
		Solution from Norwegian station		
		readings.		
"	3	UPP	iP	21 42 14.2
			ipP	21 42 18.5
		KIR	iP	21 41 49.6
			ipP	21 41 54.1
		UME	iP	21 41 57.1
			ipP	21 42 01.1
		Northern China.		
		h = 15 km (UPP,KIR,UME).		
"	4	UPP	iPKP1	04 50 41.4
			iPKP2	04 50 51.5
		KIR	ePKP1	04 50 21
		UME	iPKP2	04 50 31.6
		Off E. coast of N. Island, N.Z.		
		(h = 140 km).		
"	4	UPP	iP	10 47 33.6
		KIR	iP	10 46 47.3
		UME	iP	10 47 08.7
		Kuril Islands (h = 210 km).		

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jan. 4 UPP iP 10 48 23.2
KIR iP 10 47 32.9
UME iP 10 48 57.8

" 4 UPP iP 18 56 29.8
UME iP 18 57 11.1
Greece-Albania border region
(h = 5 km).

" 5 KIR iP 06 30 49.5
Tajik-Xinjiang border region
(h = 170 km).

" 6 KIR iP 15 02 13.0
Mindanao, Philippine Islands
(h = 90 km).

" 6 UPP iP 15 38 52.6
i 15 38 54.8
micr sec
Mx Z 6.0 15
KIR eP 15 38 53
micr sec
Mx Z 3.7 14
UME eP 15 38 47
Southern Xinjiang, China
(h = 10 km).
M = 5.4 (UPP,KIR).

" 8 UPP iP 02 51 26.2
KIR iP 02 50 40.9
Kuril Islands (h = 70 km).

" 8 UPP iP 13 10 18.6
KIR eP 13 11 35
Southern Italy (h = 10 km).

" 8 UPP iP 16 54 06.7
i 16 54 21.0
KIR iP 16 55 29.4
UME iP 16 53 47.5
Romania (h = 140 km).

" 9 UPP iP 01 07 04.1
iS 01 10 33
micr sec
P Z' 0.3 1.3
Mx Z 15.9 15
KIR iP 01 08 24.3
micr sec
Mx Z 17.8 12
UME iP 01 07 46.8
iS 01 11 48
(cont.)

1988
Jan. 9 (cont.)
Albania (h = 25 km).
M = 5.6 (UPP,KIR).

" 9 UPP iP 03 23 33.3
micr sec
P Z' 0.1 0.8
KIR eP 03 22 45
UME iP 03 23 07.1
Kuril Islands (h = N).

" 9 UPP iP 04 02 31.7
KIR iP 04 02 37.9
UME iP 04 02 28.3
Tajik, SSR (h = N).

" 9 UPP iP 22 07 20.0
micr sec
Mx Z 3.7 14
KIR iP 22 08 30.3
Mediterranean Sea (h = 30 km).

" 10 KIR iP 06 41 14.1
Tibet (h = 10 km).

" 10 UPP iP 07 34 25.1
Northern China (h = 10 km).

" 10 UPP iP 07 53 45.8
KIR iP 07 53 34.0
Yunnan Province, China
(h = 10 km).

" 10 UPP iP 23 33 23.2
Western Idaho (h = 5 km).

" 11 UPP iP 21 17 47.8 D
micr sec
P Z' 0.3 1.0
UME iP 21 17 18.9 D
Near east coast of Kamchatka
(h = 45 km).

" 12 UPP iPKP 07 49 08.6
iPKP1 07 49 13.4
UME iPKP 07 48 56.6
Kermadec Islands region
(h = 15 km).

" 13 UPP iP 01 11 30.8
KIR iP 01 10 36.4
UME iP 01 11 03.8
Andreanof Islands, Aleutian Is.
(h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jan. 13 UPP iP 01 12 50.3
micr sec
P Z' 0.3 1.0
KIR iP 01 12 57.9
micr sec
P Z' 0.2 1.1
UME iP 01 12 23.6
Andreanof Islands, Aleutian Is.
(h = N).
m = 6.2 (UPP,KIR).

" 13 UPP iP 01 18 10.9
KIR iP 01 17 17.7
UME iP 01 17 43.7
Andreanof Islands, Aleutian Is.
(h = N).

" 13 UPP iP 01 20 35.4
KIR iP 01 19 42.3
UME iP 01 20 08.7
Andreanof Islands, Aleutian Is.
(h = N).

" 13 UPP iP 01 28 04.7
Andreanof Islands, Aleutian Is.
(h = N).

" 13 UPP iP 04 09 03.0
KIR iP 04 08 09.4
UME iP 04 08 35.2
Andreanof Islands, Aleutian Is.
(h = N).

" 13 UPP iP 06 03 28.4
UME iP 06 03 35.6
Iran-USSR border region (h = N).

" 13 UPP iP 07 06 50.2
KIR iP 07 05 56.6
UME iP 07 06 22.5
Andreanof Islands, Aleutian Is.
(h = N).

" 13 UME iPKP1 08 27 08.0
South of Kermadec Islands (h = N).

" 13 UPP iPKP2 10 42 40.2
UME iPKP1 10 42 19.9
South of Kermadec Islands (h = N).

" 13 UPP iP 11 13 08.4
KIR iP 11 12 32.5
UME iP 11 12 20.0

1988 Jan. 13 UME iPKP1 12 07 06.9
South of Kermadec Islands (h = N).

" 13 UPP iPKP 15 57 29.6
KIR iPKP 15 57 19.6
UME iPKP 15 57 24.1
South of Fiji Islands (h = 110 km).

" 13 UME iPKP 16 41 47.3
New Ireland region (h = 30 km).

" 13 UME iPKP 17 17 22.1
iPKP1 17 17 23.4
South of Kermadec Islands (h = N).

" 13 UPP iP 21 30 28.1
ipP 21 31 19.0
micr sec
P Z' 0.1 1.0
KIR iP 21 30 46.3
ipP 21 31 27.3
UME iP 21 30 35.2
ipP 21 31 17.5
Hindu Kush region.
h = 200 km (UPP,KIR,UME).

" 13 UPP iPKP2 22 36 38.9
UME iPKP1 22 36 21.2
South of Kermadec Islands
(h = 60 km).

" 14 UPP iP 16 19 54.3

" 14 UPP iPKP 19 22 23.2
i 19 22 27.4
micr sec
PKP Z' 0.1 0.8
South of Fiji Islands (h = 370 km).

" 15 UPP iPKP 08 59 18.4
KIR iPKP 08 59 11.1
UME (e)PKP 08 59 07
iPKP 08 59 20.9
Tonga Islands (h = 210 km).

" 15 UPP iP 10 51 46.7
KIR iP 10 51 10.5
UME iP 10 51 26.4
South of Honshu, Japan
(h = 240 km).

" 15 KIR iP 17 01 39.6
UME iP 17 00 53.9
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jan. 15 (cont.)
South of Honshu, Japan
(h = 450 km).

" 16 KIR iPKP2 06 07 24.7
West of Macquarie Island
(h = 10 km).

" 16 UPP iP 11 53 43.5
KIR iP 11 53 05.4
UME iP 11 53 22.6
Near east coast of Honshu, Japan
(h = 50 km).

" 17 UPP iP 03 43 39.6
iS 03 49 43
KIR iP 03 43 49.8
UME iP 03 43 38.5
Hindu Kush region (h = 120 km).

" 17 UPP iPKP1 14 11 21.0
UME iPKP1 14 11 10.6
South of Kermadec Islands
(h = 50 km).

" 17 UPP iP 22 16 34.9
UME iP 22 16 19.2

" 18 UPP iP 02 51 05.1
KIR iP 02 50 44.2
UME iP 02 50 52.9
Philippine Islands region
(h = 160 km).

" 18 UME iP 04 48 10.0

" 18 UPP iP 04 49 01.5
UME iP 04 48 52.8

" 18 UPP iPKP 10 13 11.3
iPKP2 10 13 22.6
KIR iPKP 10 12 56.0
UME iPKP 10 13 04.5
South of Kermadec Islands
(h = 70 km).

" 18 UPP iP 10 03 02.9 C
ipP 10 03 48.2
micr sec
P Z' 0.1 1.0
KIR iP 10 03 12.1 C
micr sec
P Z' 0.3 0.8
(cont.)

1988
Jan. 18 (cont.)
UME iP 10 03 01.3 C
Hindu Kush region (h = 210 km).
m = 5.6 (UPP,KIR).

" 19 KIR iPKP1 00 05 51.3
UME iPKP1 00 05 50.1
West of Macquarie Islands
(h = 10 km).

" 19 UPP iP 02 36 41.6 D
i 02 37 24.1
micr sec
P Z' 0.1 0.6
KIR iP 02 36 50.5 D
micr sec
P Z' 0.2 1.0
UME iP 02 36 39.9 D
Hindu Kush region (h = 200 km).
m = 5.6 (UPP,KIR).

" 19 UPP iP 03 38 04.1 D
micr sec
P Z' 0.1 0.9
KIR iP 03 37 48.7 D
micr sec
P Z' 0.2 1.0
UME iP 03 37 54.4 D
Celebes Sea (h = 340 km).
m = 6.1 (UPP,KIR).

" 19 UDD iSg1 07 04 28.6
MYV iSg1 07 04 45.4
Off coast of southwestern Norway,
61.1°N, 4.1°E.
Origin time = 07 02 08.
M_L(UPP) = 2.5 1.
Solution from Bergen bulletin.

" 19 UPP iPdiff 07 45 03
iPP 07 49 35.6
iSKS 07 55 30
iS 07 57 06
micr sec
Mx Z 77 24
KIR iPKP 07 49 05.8
UME ePKP 07 49 03
iSKS 07 55 48
iS 07 57 35
Near coast of Northern Chile
(h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jan. 19
UPP iP 16 13 10.3
KIR iP 16 12 53.2
UME iP 16 13 04.3
Near coast of Michoacan, Mexico
(h = 80 km).

" 19
KIR iP 23 20 08.3
UME iP 23 19 24.3
Yugoslavia (h = 10 km).

" 21
UPP iPKP 08 41 34.2
micr sec
Mx Z 9.1 28
KIR iPKP 08 41 20.9
UME iPKP 08 41 26.5
Vanuatu Islands (h = 45 km).

" 21
KIR iPg1 11 54 12.6
iSg1 11 54 40.0
UME iSg1 11 54 40.1
Norrbotten, Sweden, 65.8°N, 21.4°E.
Origin time = 11 53 35.
By combination with Finnish station readings.

" 21
UPP iSg1 15 32 32.3
UDD iSg1 15 31 27.1
North Sea, 58.7°N, 1.9°E.
Origin time = 15 28 15.
M_L(UPP) = 2.9 1.
Solution from Bergen bulletin.

" 21
UDD iSg1 16 12 50.5
Southern Norway, 60.1°N, 10.5°E.
Origin time = 16 12 03.
M_L(UPP) = 2.1 1.
Solution from Bergen bulletin.

" 22
UPP iPKP 00 54 50.5
micr sec
Mx Z 10.3 24
KIR iPKP 00 54 45.2
UME iPKP 00 54 44.5
Northern Territory, Australia
(h = 5 km).

" 22
UPP iPKP 04 16 18.3
micr sec
Mx Z 11.4 27
KIR iPKP 04 16 11.2
UME iPKP 04 16 13.2
Northern Territory, Australia
(h = 5 km).

1988 Jan. 22
UPP iP 06 23 38.6
UME iP 06 24 18.1
i 06 24 22.2
Greece (h = 35 km).

" 22
UPP iPKP 12 24 49.4
micr sec
PKP Z' 0.4 1.5
Mx Z 18.0 24
KIR iPKP 12 23 44.5
micr sec
PKP Z' 0.3 1.0
UME iPKP 12 23 41.0
Northern Territory, Australia
(h = 5 km).

" 22
KIR iPKP 21 12 50.1
UME iPKP 21 12 51.3
Northern Territory, Australia
(h = 5 km).

" 23
UPP iP 02 56 34.2
ipP 02 56 47.3
micr sec
P Z' 0.2 0.9
KIR iP 02 55 41.2
ipP 02 55 54.3
micr sec
P Z' 0.2 1.0
UME iP 02 56 07.4
ipP 02 56 20.7
i 02 56 41.5
Andreanof Islands, Aleutian Is.
h = 50 km (UPP,KIR,UME).
m = 6.1 (UPP,KIR).

" 23
UPP iSn 06 25 24.5
i 06 25 57.4
KIR iPn 06 23 26.2
iSn 06 24 48.3
i 06 25 06.8
UME iPn 06 23 30.1
iSn 06 24 55.9
UDD iPn 06 23 27.1
iSn 06 24 50.4
DEL iSn 06 26 03.2
MYV iPn 06 23 04.8
i 06 23 53.2
iSn 06 24 11.6
Norwegian Sea, near 66 3/4°N, 2°E.
Origin time = 06 21 34.
M_L(UPP) = 3.6 1.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jan. 23
UPP iP 11 56 42.1
i 11 56 44.0
ipP 11 56 52.6
micr sec
P Z' 0.4 1.1
KIR iP 11 55 54.6
micr sec
P Z' 0.2 0.9
UME iP 11 56 16.5
ipP 11 56 27.5
Kuril Islands.
h = 35 km (UPP,UME).
m = 6.3 (UPP,KIR).

" 23 UME iPKP1 18 14 37.6
East of North Island, N.Z. (h = N).

" 23 UPP iPKP 23 07 34.2
South of Fiji Islands (h = 200 km).

" 24 KIR iSg1 11 12 17.2
UME iSg1 11 13 01.6
Northern coast of Norway, 67.1°N, 13.3°E.
Origin time = 11 10 46.
M_L(UPP) = 3.1 (0.71) 3.
Solution from Bergen bulletin.

" 24 UPP iP 14 27 10.7 D
ipP 14 27 25.5
micr sec
P Z' 0.1 1.0
KIR iP 14 26 41.9 D
micr sec
P Z' 0.1 1.0
UME iP 14 27 53.3 D
ipP 14 28 08.2
Ryukyu Islands.
h = 55 km (UPP,UME).
m = 5.7 (UPP,KIR).

" 24 UPP e(PKP) 16 18 09.2
iPKP 16 18 21.5
micr sec
PKP Z' 0.1 1.0
KIR iPKP 16 18 06.5
micr sec
PKP Z' 0.3 1.2
UME iPKP 16 18 13.0
iSKP1 16 20 49.7
Fiji Islands region (h = 570 km).

1988 Jan. 25
UPP iP 01 22 14.3
micr sec
P Z' 0.2 0.9
KIR iP 01 21 03.1
micr sec
P Z' 0.2 0.8
UME iP 01 22 03.2
Tibet (h = N).
m = 6.2 (UPP,KIR).

" 25 KIR iP 10 03 05.0
UME iP 10 03 30.0
Off east coast of Kamchatka (h = N).

" 25 UPP iP 20 31 30.7
KIR iP 20 30 51.4
UME iP 20 31 08.7
Near east coast of Honshu, Japan (h = 45 km).

" 26 UPP iP 09 41 23.4
iS 09 46 42
micr sec
Mx Z 6.0 13
KIR iP 09 42 08.0
micr sec
Mx Z 5.7 18
UME iP 09 41 40.4
ipP 09 41 50.4
iS 09 47 13.4
Iran-Iraq border region (h = 35 km).
M = 5.4 (UPP,KIR).

" 26 KIR iP 09 53 03.0
UME iP 09 52 36.6
Iran-Iraq border region (h = 80 km).

" 26 UME iP 11 09 38.1
North Atlantic Ocean (h = 10 km).

" 26 UME iP 11 43 41.1
North Atlantic Ocean (h = 10 km).

" 26 UME iP 13 53 55.8
North Atlantic Ocean (h = 10 km).

" 26 KIR iP 13 55 23.0
UME iP 13 55 27.0
North Atlantic Ocean (h = 10 km).

" 26 KIR iP 14 43 50.1
UME iP 14 43 24.7
Iran-Iraq border region (h = 35 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jan. 26
KIR iP 15 48 11.1
UME iP 15 48 16.8
North Atlantic Ocean (h = 10 km).

" 26
KIR iP 16 36 50.9
UME iP 16 36 55.5
North Atlantic Ocean (h = 10 km).

" 26
KIR iP 19 29 54.1
UME iP 19 29 59.6
North Atlantic Ocean (h = 10 km).

" 27
KIR iP 03 53 15.9
N.W. Iran-USSR border region
(h = N).

" 27
UPP iP 07 50 50.2
KIR iP 07 51 32.4
Iran-Iraq border region (h = 35 km).

" 27
KIR iP 13 12 20.7
Iran-Iraq border region (h = 40 km).

" 27
UPP micr sec
Mx Z 4.2 22
KIR iP 19 22 13.2
micr sec
Mx Z 2.1 16
North Atlantic Ocean (h = 10 km).
M = 4.8 (UPP,KIR).

" 27
KIR iP 19 25 46.2
North Atlantic Ocean (h = 10 km).

" 28
KIR iP 01 42 08.5
i 01 42 13.2
UME iP 01 41 42.1
Iran-Iraq border region (h = 40 km).

" 28
KIR iP 05 10 28.6
UME iP 05 10 01.2
Iran-Iraq border region (h = 35 km).

" 28
KIR iP 05 40 13.0
UME iP 05 39 46.1
Iran-Iraq border region (h = 80 km).

" 28
UPP iP 11 33 24.0
iS 11 44 32
micr sec
Mx Z 5.1 22
(cont.)

1988 Jan. 28
(cont.)
KIR iP 11 33 08.0
micr sec
P Z' 0.2 0.9
Mx Z 3.0 19
UME iP 11 33 13.2
iSKS 11 43 37
iS 11 44 05
Mindanao, Philippine Islands
(h = 45 km).
M = 5.8 (UPP,KIR).

" 28
UPP iP 15 54 02.2
micr sec
Mx Z 1.6 17
KIR iP 15 55 08.2
micr sec
Mx Z 1.5 18
Near coast of Libya (h = 10 km).
M = 4.7 (UPP,KIR).

" 28
UPP iP 21 16 29.9
KIR iP 21 17 06.1
UME iP 21 16 43.8
Southern Iran (h = 25 km).

" 29
KIR iPn 02 26 07.2
UME iP 02 26 45.1
Jan Mayen Island region
(h = 10 km).

" 29
UPP iP 02 50 14.8
iS 02 59 25
micr sec
P Z' 0.1 0.9
Mx Z 5.8 15
KIR iP 02 49 29.4
micr sec
P Z' 0.4 0.8
Mx Z 7.6 19
UME iP 02 49 51.4
ipP 02 50 05.4
iS 02 58 29
Kuril Islands (h = 45 km).
m = 6.2, M = 5.9 (UPP,KIR).

" 29
UPP ipP 06 39 12.0
KIR iP 06 38 13.9
ipP 06 38 25.9
micr sec
P Z' 0.1 0.9
UME iP 06 38 35.6
ipP 06 38 48.1
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988

Jan.	29	(cont.)		
		Kuril Islands region.		
		h = 45 km (KIR,UME).		
"	29	KIR	iP	11 01 24.9
		Western Iran (h = N).		
"	29	KIR	iP	15 37 40.0
		Southern Iran (h = N).		
"	29	KIR	iPKP	17 06 53.2
		Tonga Islands (h = 110 km).		
"	29	UME	iP	21 29 49.2
		Near east coast of Honshu, Japan		
		(h = 80 km).		
"	31	UPP	ePn	18 53 50
			eSn	18 55 21
		KIR	iPn	18 52 44
			e	18 53 38
			eSg1	18 53 53
		UME	iPn	18 53 10.2
			i	18 53 16.0
			iSn	18 54 16.0
			iSg1	18 54 53.0
		UDD	iPn	18 53 40.1
			i	18 53 47.4
			iSn	18 55 11.5
			iSg1	18 55 53.7
		DEL	iPn	18 54 27.6
			e	18 56 39
			iLg1	18 57 34.0
			i	18 57 58.0
		MYV	iPn	18 53 02.5
			i	18 53 10.7
			iPg1	18 53 19.5
			i	18 54 19.9
		Norwegian Sea, near 68°N, 9 1/2°E.		
		Origin time = 18 51 38.		
		M_L(UPP) = 4.5 (0.29) 6.		

September 14, 1989

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Ota Kulhánek
Klaus Meyer
Samuel Kamano Muchuku

SEISMOLOGICAL DEPARTMENT
BOX 12019
S-750 12 UPPSALA
SWEDEN

SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

FEBRUARY 1 - 29, 1988

1988 Feb.	1	UPP	iP	06 47 08.7
		KIR	iP	06 48 15.4
		Crete (h = 20 km).		
"	1	KIR	iP	14 26 32.4
		Austria (h = 10 km).		
"	2	UPP	iPKP2	19 21 34.2
		UME	iPKP1	19 21 10.5
			iPKP2	19 21 18.1
		Off e. coast of N. Island, N.Z. (h = 90 km).		
"	2	KIR	iP	23 58 37.1
		Northern Colombia (h = 150 km).		
"	3	KIR	eP	05 53 52
		UME	iP	05 54 08.9
		Near east coast of Honshu, Japan (h = 90 km).		
"	3	KIR	iP	08 22 01.6
		UME	iP	08 22 44.2
			i	08 22 49.7
		North of Franz Josef Land (h = 10 km).		
"	3	UPP	iP	09 54 28.4
			i	09 54 45.2
		KIR	iP	09 53 37.2
		UME	iP	09 54 05.7
		Off east coast of Kamchatka (h = 40 km).		
"	3	KIR	iP	10 59 10.7
		UME	iP	10 59 29.6 C
		Eastern Sea of Japan (h = 260 km).		
1988 Feb.	3	UME	iP	11 59 15.7
"	3	UPP	iP	17 47 08.9
		UME	iP	17 46 50.2
		Bonin Islands region (h = 40 km).		
"	4	UPP	iP	02 46 56.4
		KIR	iP	02 46 04.2
		UME	iP	02 46 28.5
		Aleutian Islands region (h = N).		
"	4	UPP	iP	02 54 57.9
				micr sec
			P Z'	0.1 1.1
		KIR	iP	02 54 05.0
		UME	iP	02 54 30.3
		Off east coast of Kamchatka (h = 30 km).		
"	4	UME	iSg1	11 55 59.6
			iRg	11 56 00.5
		Local near-surface event.		
"	5	UME	iP	08 17 40.6
		South of Mariana Islands (h = 70 km).		
"	5	UPP	iPKP	14 19 26.6
				micr sec
			PKP Z'	56 25
		UME	iPKP	14 19 34.5
			iPP	14 20 21.0
			iPKKP	14 30 39.4
		Near coast of northern Chile (h = 35 km).		

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988							
Feb.	5	UPP	Mx		19 49		
					micr	sec	
			Mx	Z	15	24	
		Near coast of northern Chile					
		(h = 30 km).					
"	6	UME	iP		10 56	16.6	
			i		10 56	49.4	
"	6	UPP	iP		15 00	55.9	
			i		15 00	57.8	
			i		15 01	07.1	
			iS		15 09	30	
					micr	sec	
			i	Z'	0.3	0.8	
			Mx	Z	8.1	20	
		KIR	iP		15 00	51.8	
			i		15 00	53.3	
			i		15 01	03.5	
					micr	sec	
			i	Z'	0.1	1.0	
			i	Z'	0.7	1.1	
		UME	iP		15 00	49.2	C
			i		15 00	51.0	
		India-Bangladesh border region					
		(h = N).					
		m = 6.6 (UPP,KIR).					
"	6	UPP	eP		18 17	21	
			iS		18 27	33	
					micr	sec	
			Mx	Z	3.8	23	
		UME	iS		18 27	42	
		Bolivia (h = 290 km).					
"	6	UME	iP		18 47	07.8	
		Yugoslavia (h = 15 km).					
"	6	KIR	iPKP		21 48	55.3	
		UME	iPKP		21 49	00.5	
		Tonga Islands (h = 130 km).					
"	7	UPP	iP		08 56	49.7	
			iS		09 04	45	
					micr	sec	
			P	Z'	0.4	1.5	
			Mx	Z	3.4	18	
		KIR	iP		08 55	52.6	
			i		08 55	56.0	
					micr	sec	
			i	Z'	0.3	1.0	
		UME	iP		08 56	21.1	
			i		08 56	22.6	
		(cont.)					

1988							
Feb.	7	(cont.)					
			iS		09 03	56	
		Southern Alaska (h = 140 km).					
		m = 6.1 (UPP,KIR).					
"	7	UPP	iP		18 26	02.0	D
			i		18 26	04.2	
			iS		18 35	02	
			iP'P'		18 54	15.2	
					micr	sec	
			P	Z'	0.3	1.0	
			i	Z'	2.2	1.5	
			Mx	Z	7.3	23	
		KIR	iP		18 25	09.4	D
			iP'P'		18 54	31.4	
					micr	sec	
			P	Z'	1.8	1.5	
		UME	iP		18 25	33.9	D
			iP'P'		18 54	19.6	
			iS		18 34	12	
		Aleutian Islands region (h = N).					
		m = 7.0 (UPP,KIR).					
"	7	UPP	iPKP1		18 34	41.1	
		KIR	ePKP		18 34	23	
		UME	iPKP1		18 34	29.6	
		Kermadec Islands region (h = N).					
"	8	UPP	iP		11 28	35.3	
		UME	iP		11 29	24.4	
		Northern Italy (h = 25 km).					
"	8	UPP	iP		14 04	17.8	
					micr	sec	
			Mx	Z	5.7	21	
		KIR	iP		14 04	03.2	
			i		14 04	07.9	
		UME	iP		14 04	12.5	
			i		14 04	16.7	
		Guerrero, Mexico (h = 60 km).					
"	9	KIR	eP		02 33	44	
		UME	iP		02 33	41.8	
		Leeward Islands (h = 50 km).					
"	9	KIR	iP		21 07	45.8	
		Kirghiz SSR (h = N).					
"	10	UPP	iP		00 05	46.7	
		KIR	iP		00 06	24.6	
		UME	iP		00 06	02.4	
		Arabian Sea (h = 10 km).					

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Feb. 10 KIR iP 07 22 12.3
UME iP 07 22 08.6
Northern Sumatera (h = 60 km).

" 10 UME iP 11 47 59.7

" 10 UPP iP 21 41 32.5

" 11 KIR iP 15 42 03.4
Off east coast of Kamchatka
(h = N).

" 12 UPP iS 05 46 34
micr sec
Mx Z 3.6 18
KIR micr sec
Mx Z 3.8 18
UME iS 05 46 12
Gulf of California (h = 10 km).
M = 5.7 (UPP,KIR).

" 12 UPP iP 16 31 59.3
KIR iP 16 31 21.3
UME iP 16 31 37.1
Near east coast of Honshu, Japan
(h = 60 km).

" 12 UPP iP 19 27 23.6
iS 19 37 08
micr sec
P Z' 0.1 1.1
Mx Z 11 18
KIR iP 19 27 00.3
micr sec
Mx Z 3.9 14
UME iP 19 27 08.9
iS 19 36 38
Taiwan region (h = 35 km).
M = 6.0 (UPP,KIR).

" 13 UPP iP 03 12 03.6 C
micr sec
P Z' 2.1 1.0
Mx Z 1.7 11
KIR iP 03 11 47.4 C
micr sec
P Z' 2.5 0.8
Mx Z 1.2 11
UME iP 03 11 48.2
Eastern Kazakh SSR.
m = 7.1, M = 4.9 (UPP,KIR).
Underground explosion.

1988
Feb. 13 UPP iPKP1 15 25 02.5
UME iPKP1 15 24 51.0
South of Fiji Islands (h = N).

" 13 KIR iP 20 29 56.8
North Atlantic Ridge (h = 10 km).

" 14 UPP iP 00 07 54.9
ipP 00 08 04.8
micr sec
P Z' 0.1 1.0
KIR iP 00 07 03.5
ipP 00 07 12.5
micr sec
P Z' 0.1 1.0
UME iP 00 07 28.1
ipP 00 07 37.6
Aleutian Islands region.
h = 35 km (UPP,KIR,UME).
m = 5.9 (UPP,KIR).

" 14 UPP iP 00 08 39.7
KIR iP 00 07 46.4
UME iP 00 08 12.0
Andreanof Islands, Aleutian Is.
(h = 55 km).

" 14 UPP iP 01 00 54.6
micr sec
P Z' 0.1 1.0
KIR iP 01 00 26.1 C
micr sec
P Z' 0.2 1.0
UME iP 01 00 38.8 C
Mariana Islands region (h = 310 km).
m = 5.8 (UPP,KIR).

" 14 KIR iP 16 06 20.7
Taiwan region (h = 40 km).

" 14 UPP iP 16 15 01.3
KIR iP 16 14 36.5
Taiwan region (h = 45 km).

" 15 UPP i(P) 08 33 50.3

" 15 UME iP 11 29 06.5

" 15 UPP iP 18 21 48.2
KIR iP 18 21 14.8
UME iP 18 21 33.7
Southern Nevada.
Underground explosion.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Feb. 15
UPP iP 19 26 29.2
KIR iP 19 25 35.1
UME iP 19 26 04.1
Gulf of Alaska (h = 10 km).

" 16
UPP iP 02 21 50.0
UME iP 02 21 22.7
Near Islands, Aleutian Islands
(h = N).

" 16
UPP iP 03 40 36.9
micr sec
P Z' 0.1 1.0
KIR iP 03 39 43.7
UME iP 03 40 09.8
Near Islands, Aleutian Islands
(h = N).

" 16
UPP iP 04 33 28.7 C
iS 04 42 22
iP'P' 05 01 43.6
micr sec
P Z' 0.8 1.0
Mx Z 4.9 19
KIR iP 04 32 35.6 C
micr sec
P Z' 0.5 1.2
Mx Z 4.9 15
UME iP 04 33 01.6 C
iS 04 41 32
Rat Islands, Aleutian Islands
(h = N).
m = 6.6, M = 5.7 (UPP,KIR).

" 16
UPP iP 05 33 24.7
KIR iP 05 32 52.0
UME iP 05 33 06.2
South of Honshu, Japan
(h = 400 km).

" 16
UPP iP 05 55 32.2
micr sec
P Z' 0.3 1.0
KIR iP 05 54 38.5
micr sec
P Z' 0.2 1.3
UME iP 05 55 04.4
Rat Islands, Aleutian Islands
(h = N).
m = 6.2 (UPP,KIR).

" 16
UPP iP 05 57 17.5

1988 Feb. 16
UPP iP 06 16 40.9
KIR eP 06 15 50
UME iP 06 16 14.7
Near Islands, Aleutian Islands
(h = N).

" 16
KIR iP 06 33 10.1
UME iP 06 33 18.5
Talaud Islands (h = 45 km).

" 16
UPP iP 12 52 17.8
KIR iP 12 52 53.8
UME iP 12 52 31.0
Southern Iran (h = 50 km).

" 17
UPP iP 05 33 16.1 C
i 05 33 25.9
micr sec
P Z' 0.1 1.0
KIR iP 05 32 23.0
UME iP 05 32 49.2
Near Islands, Aleutian Islands
(h = N).

" 17
UPP iP 05 35 32.6
KIR iP 05 34 40.0
UME iP 05 35 05.0
Rat Islands, Aleutian Islands (h = N).

" 17
UPP iP 06 40 11.8
KIR iP 06 40 05.1
India-China border region
(h = 45 km).

" 17
UPP iP 07 25 58.4
micr sec
P Z' 0.3 1.0
KIR iP 07 25 05.6
micr sec
P Z' 0.3 1.5
UME iP 07 25 31.4 C
i 07 25 43.0
Near Islands, Aleutian Islands
(h = N).
m = 6.2 (UPP,KIR).

" 17
UPP iP 08 04 06.8
micr sec
P Z' 0.1 1.0
KIR iP 08 03 13.7
UME iP 08 03 40.0
Near Islands, Aleutian Islands
(h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Feb. 17 KIR iP 09 38 58.3
UME iP 09 39 20.4
Kuril Islands (h = N).

" 17 UPP eP 23 52 55
KIR iP 23 52 35.3
micr sec
P Z' 0.1 1.3
UME iP 23 52 40.7
Talaud Islands (h = 20 km).

" 18 UPP iP 05 15 58.5
KIR iP 05 15 30.5
Ryukyu Islands (h = 35 km).

" 18 KIR iP 18 22 28.0
Southern Iran (h = N).

" 18 UDD iSn 21 52 49.1
Norwegian Sea, 60.7°N, 3.3°E.
Origin time = 21 50 38.
Solution from Norwegian station readings.

" 19 UPP iP 02 44 44.5
UME iP 02 44 18.4
Near Islands, Aleutian Islands (h = N).

" 19 UPP i(P) 08 23 15.9

" 19 UPP iP 11 50 26.8
Off coast of Hokkaido, Japan (h = N).

" 19 UPP iP 17 54 35.7
Qinghai Province, China (h = N).

" 19 UPP eP 22 47 29
KIR iP 22 46 34.2
UME iP 22 47 00.9
i 22 47 12.7
Near east coast of Kamchatka (h = 120 km).

" 19 UPP iP 23 28 08.3
KIR iP 23 28 04.6 C
UME iP 23 28 02.3 C
Burma (h = 70 km).

" 20 UPP iPdiff 01 39 32.9
KIR iPdiff 01 39 20.1
(cont.)

1988
Feb. 20 (cont.)
micr sec
Pdiff Z' 0.1 1.0
UME iPdiff 01 39 24.5
iS 01 50 38
Banda Sea (h = 320 km).

" 20 UPP iP 22 22 51.6
iS 22 23 18.4
micr sec
P Z' 0.2 0.8
Mx Z 1.7 18
KIR iP 22 22 03.8
micr sec
P Z' 0.2 0.8
Mx Z 1.9 20
UME iP 22 22 25.6
Kuril Islands (h = 55 km).
m = 6.1, M = 5.2 (UPP,KIR).

" 21 UPP iP 01 16 34.1
KIR iP 01 16 02.2
UME iP 01 16 16.0
Bonin Islands region (h = 430 km).

" 21 UPP iP 17 08 42.1
micr sec
P Z' 0.1 1.0
KIR iP 17 08 15.7 D
micr sec
P Z' 0.1 0.8
UME iP 17 08 27.2 D
Mariana Islands (h = 55 km).
m = 6.2 (UPP,KIR).

" 22 UPP iP 02 09 36.0
UME iP 02 10 00.5
North of Ascension Island (h = 10 km).

" 22 UPP iP 08 58 44.8
KIR iP 08 58 44.1
UME iP 08 58 41.5
Southern Sumatera (h = 70 km).

" 22 UPP iP 14 59 29.5
KIR iP 15 00 05.9
UME iP 14 59 42.6
Southern Iran (h = 70 km).

" 22 UPP iP 18 42 57.5
KIR iP 18 42 38.6
UME iP 18 42 44.7
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988							
Feb.	22	(cont.)					
		Luzon, Philippine Islands					
		(h = 60 km).					
"	22	UPP			micr	sec	
			Mx	Z	21	24	
		KIR	iPKP		19 31	23.2	
			iPP		19 32	09.1	
					micr	sec	
			Mx	Z	13	23	
		UME	iPP		19 31	59.0	
			iPKKP		19 42	48.6	
		Northern Chile (h = 70 km).					
		M = 6.5 (UPP,KIR).					
		M uncorrected for focal depth.					
"	23	KIR	iP		06 49	22.5	
		UME	iP		06 48	58.0	
		Southern Iran (h = N).					
"	23	UPP	iP		16 26	35.8	
		UME	iP		16 26	50.9	
		North Atlantic Ridge (h = 10 km).					
"	24	KIR	iP		02 09	44.3	
		UME	iP		02 09	49.6	
		Molucca Passage (h = 70 km).					
"	24	UPP	iP		03 05	18.6	
		KIR	iP		03 04	25.9	
		UME	iP		03 04	51.4	
		Andreanof Islands, Aleutian Is.					
		(h = 60 km).					
"	24	UPP	iP		04 04	45.1	C
			i		04 04	47.2	
			i		04 04	52.3	
			iS		04 15	14	
					micr	sec	
			i	Z'	0.3	0.9	
			i	Z'	0.6	1.0	
			Mx	Z	83	16	
		KIR	iP		04 04	26.3	C
					micr	sec	
			P	Z'	2.7	1.8	
			Mx	Z	47	16	
		UME	iP		04 04	32.6	C
		Luzon, Philippine Islands					
		(h = 25 km).					
		m = 6.9, M = 7.0 (UPP,KIR).					
"	24	KIR	iP		08 56	58.1	
		UME	iP		08 57	05.0	
		Luzon, Philippine Islands (h = N).					

1988							
Feb.	24	UPP	iP		08 57	37.4	
			iS		09 08	10	
					micr	sec	
			Mx	Z	3.5	14	
		KIR	iP		08 57	17.1	
					micr	sec	
			P	Z'	0.1	1.0	
			Mx	Z	1.2	14	
		UME	iP		08 57	23.8	
		Luzon, Philippine Islands (h = N).					
		M = 5.6 (UPP,KIR).					
"	24	KIR	iP		10 52	40.5	
		UME	iP		10 53	05.6	
		Aleutian Islands region (h = N).					
"	24	UME	iP		16 45	00.9	
		Volcano Islands region (h = N).					
"	24	UPP	iP		17 30	43.2	
			i		17 30	52.5	
					micr	sec	
			Mx	Z	0.9	14	
		KIR	iP		17 30	23.4	
					micr	sec	
			Mx	Z	1.2	14	
		UME	iP		17 30	29.1	
		Luzon, Philippine Islands					
		(h = 30 km).					
		M = 5.3 (UPP,KIR).					
"	25	KIR	eP		06 49	11	
		UME	iP		06 48	59.5	
		Pakistan (h = N).					
"	26	UPP	iPdiff		06 31	18.5	
					micr	sec	
			Pdiff	Z'	0.1	1.1	
			Mx	Z	11	20	
		KIR	iPP		06 35	56.1	
					micr	sec	
			Mx	Z	12	16	
		UME	iPdiff		06 31	35.6	
			i(PP)		06 34	49.5	
		Atlantic-Indian Rise (h = 10 km).					
		M = 6.4 (UPP,KIR).					
"	26	UPP	iP		11 58	06.5	
		UME	iP		11 58	05.8	
		Hindu Kush region (h = 40 km).					
"	26	KIR	iSn		23 45	07.9	
			iSg1		23 45	28.9	
		(cont.)					

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Feb. 26 (cont.)
UME iSg1 23 46 19.0
Northwestern USSR, 67.7°N, 34.2°E.
Origin time = 23 42 52.
M_L(UPP) = 2.8 1.
Solution from Finnish station readings.

" 27 UPP iP 08 00 53.2
Kuril Islands (h = N).

" 28 UPP iP 03 30 54.8 C
KIR iP 03 30 55.1 C
UME iP 03 30 51.1 C
Andaman Islands region
(h = 120 km).

" 29 UPP iP 05 42 04.6 D
micr sec
P Z' 3.5 2.4
Mx Z 72 21
KIR iP 05 41 08.9 D
micr sec
P Z' 3.6 2.5
Mx Z 79 19
UME iP 05 41 35.4 D
Komandorsky Islands region
(h = N).
m = 7.0, M = 6.8 (UPP,KIR).

" 29 KIR iP 06 29 37.8
Komandorsky Islands region
(h = N).

" 29 KIR iP 10 16 52.2
Halmahera (h = 60 km).

" 29 KIR iSg1 14 10 14.5
UME iPg1 14 08 51.9
iSg1 14 09 10.0
Gulf of Bothnia, 64.7°N, 22.8°E.
Origin time = 14 08 27.
M_L(UPP) = 2.2 (0.13) 3.
By combination with Finnish station readings.

August 16, 1989

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

MARCH 1 - 31, 1988

1988 Mar. 2 UDD iSg1 11 10 55.3
Coast of southwestern Norway, 60.1°N, 4.7°E.
Origin time = 11 08 31.
M_L(UPP) = 2.5 1.
Solution from Norwegian station readings.

" 2 UPP iP 18 49 23.3
KIR iP 18 49 27.1 C
UME iP 18 49 17.9
Tajik, SSR (h = 50 km).

" 3 UPP iP 03 33 09.0
Taiwan (h = 35 km).

" 3 KIR iPn 17 39 10.8
iSn 17 40 08.9
UME iSn 17 41 41.5
Norwegian Sea 72.6°N, 13.5°E.
Origin time = 17 37 52.
By combination with Finnish station readings.

" 5 UME iP 07 49 22.2

" 5 UPP iSg1 15 01 44.0
UDD iPg1 15 00 51.7
iSg1 15 00 59.9
MYV iSg1 15 02 27.0
Värmland, Sweden, 59.5°N, 13.8°E.
Origin time = 15 00 41.
M_L(UPP) = 2.4 1.
By combination with HFS readings.

1988 Mar. 6 UPP iP 14 35 07.4
Chagos Archipelago region (h = 10 km).

" 6 UPP iP 22 44 39.9
micr sec
P Z' 0.1 0.9
KIR iP 22 43 52.7
micr sec
P Z' 0.1 0.9
UME iP 22 44 14.1
Kuril Islands (h = 35 km).
m = 5.9 (UPP,KIR).

" 6 UPP iP 22 45 57.5 D
i 22 46 04.7
iS 22 54 22.2
iP'P' 23 15 08.5
micr sec
P Z' 4.2 1.5
i Z' 2.0 1.0
Mx E 368 16
Mx N 390 16
KIR iP 22 45 04.6 D
micr sec
P Z' 19.1 2.5
Mx Z 535 16
UME iP 22 45 32.8 D
Gulf of Alaska (h = 10 km).
m = 7.6 (UPP,KIR).
M = 7.7 (UPP).
M calculated from Wiechert records.

" 6 UPP iP 23 24 55.4 D
micr sec
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Mar. 6 (cont.)

		P	Z'	0.5	1.0
	KIR	iP		23 24 01.5	D
				micr	sec
		P	Z'	0.7	1.1 D
	UME	iP		23 24 29.5	D

Gulf of Alaska (h = 10 km).
m = 6.6 (UPP,KIR).

" 7

UPP	iP		13 04 38.1
KIR	iP		13 04 40.0
UME	iP		13 04 36.8

Southern Sumatera (h = 30 km).

" 7

UPP	iP			15 32 31.6	
	i			15 32 40.7	
				micr	sec
	P	Z'	0.2	1.0	
KIR	iP			15 31 47.5	C
	i			15 31 56.0	
				micr	sec
	P	Z'	0.2	1.0	
UME	iP			15 32 07.6	C

North Pacific Ocean (h = 10 km).
m = 5.9 (UPP,KIR).

" 8

UME	iP		03 51 15.3

South of Honshu, Japan
(h = 70 km).

" 8

UPP	iP		09 35 24.0
KIR	iP		09 34 37.1
UME	iP		09 34 58.8 D

Kuril Islands (h = 35 km).

" 8

UME	iP		11 14 02.1

Bonin Islands region (h = 35 km).

" 8

UPP	iP		11 43 37.5
KIR	iP		11 44 52.8
UME	iP		11 44 17.3

Greece (h = 45 km).

" 8

KIR	eP		15 52 06
UME	eP		15 52 05

Ceram Sea (h = 50 km).

" 8

UPP	iP			16 38 14.7	
				micr	sec
	P	Z'	0.3	1.0	
	Mx	Z	2.6	19	
KIR	iP			16 37 21.6	
				micr	sec

(cont.)

1988
Mar. 8 (cont.)

P		Z'	0.3	1.2	
	Mx	Z	4.7	15	
UME	iP			16 37 46.8	

Rat Islands, Aleutian Islands
(h = N).
m = 6.3, M = 5.6 (UPP,KIR).

"

UME	iP		19 07 37.5

Southern Italy (h = 280 km).

" 9

UDD	iSg1		17 09 44.0

Off coast of southwestern Norway,
60.9°N, 4.1°E.
Origin time = 17 07 17.
M_L(UPP) = 2.6 1.
Solution from Norwegian station
readings.

" 9

UPP	eP		17 19 39
KIR	eP		17 18 48
UME	iP		17 19 10.9

Rat Islands, Aleutian Islands
(h = N).

" 9

UPP	Mx			22 33	
				micr	sec
	Mx	Z	3.4	18	
KIR	Mx			22 31	
				micr	sec
	Mx	Z	2.6	21	

Off coast of Peru (h = 30 km).

" 10

UPP	iP		04 26 40.6
KIR	iP		04 25 46.1
UME	iP		04 26 14.8

Gulf of Alaska (h = 10 km).

" 10

UPP	iP			06 29 01.0	
	ipP			06 29 16.6	
	iS			06 38 35	
				micr	sec
	P	Z'	0.2	1.0	
	pP	Z'	0.5	1.0	
	Mx	Z	24	30	
KIR	iP			06 29 11.5	
	ipP			06 29 29.0	
				micr	sec
	P	Z'	1.5	2.1	
	pP	Z'	4.0	2.5	
	Mx	Z	15	23	
UME	iP			06 29 10.8	
	ipP			06 29 26.1	

(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Mar. 10 (cont.)
iS 06 38 52
Trinidad.
h = 55 km (UPP,KIR,UME).
m = 6.7, M = 6.2
(UPP,KIR).

" 10 UPP iP 06 42 03.1
ipP 06 42 19.5
KIR iP 06 42 15.6
ipP 06 42 31.3
Trinidad.
h = 55 km (UPP,KIR).

" 10 UPP iPdiff 08 11 19.0
i(PP) 08 14 27.6
iPP 08 15 39.2
KIR iPdiff 08 11 06.6
UME iPdiff 08 11 08.0
Flores Sea (h = 610 km).

" 10 UPP i(PKP) 10 43 15.4
iPKP 10 43 18.5
iSKP 10 46 04.6
KIR i(PKP) 10 42 57.9
iPKP 10 43 11.7
iSKP 10 45 37.3
UME i(PKP) 10 43 01.5
iPKP 10 43 17.2
iSKP 10 45 49.3
Fiji Islands region (h = 620 km).

" 10 UPP iPKP1 21 14 25.4
UME iPKP1 21 14 12.0
Kermadec Islands (h = N).

" 11 UPP iP 00 42 03.1
KIR iP 00 41 28.8
UME iP 00 41 43.0 D
South of Honshu, Japan (h = 300 km).

" 11 UPP iP 03 57 42.7
KIR iP 03 57 40.2
UME iP 03 57 45.0
Panama-Costa Rica border region (h = 25 km).

" 11 UPP iP 07 45 15.4
Iran (h = N).

" 11 UPP iP 16 12 46.3
Trinidad (h = 55 km).

1988
Mar. 11 UME iSg1 16 16 19.1
UDD ISg1 16 14 42.3
MYV iSg1 16 14 50.0
Off coast of southwestern Norway, 61 1/2°N, 4 1/2°E.
Origin time = 16 12 20.
By combination with Norwegian station readings.

" 12 UPP iPKP1 01 03 59.6
iPKP2 01 04 07.2
KIR iPKP1 01 03 38.0
UME iPKP1 01 03 43.1
iPKP2 01 03 49.6
South of Kermadec Islands (h = 70 km).

" 12 UPP iP 04 43 48.7
ipP 04 44 04.1
iS 04 53 26
KIR iP 04 44 01.1
ipP 04 44 14.9
UME iP 04 43 58.4
ipP 04 44 12.7
iS 04 53 40
Trinidad.
h = 50 km (UPP,KIR,UME).

" 12 UME iP 08 44 55.6

" 12 UPP iP 08 49 10.1
micr sec
P Z' 0.1 1.0
KIR iP 08 48 15.5
micr sec
P Z' 0.2 0.8
UME iP 08 48 41.2
Near east coast of Kamchatka (h = 20 km).
m = 6.0 (UPP,KIR).

" 12 UPP iPdiff 12 25 07.6
KIR iPdiff 12 24 48.3
West Irian region (h = 50 km).

" 12 UPP iP 23 05 41.1 D
micr sec
P Z' 0.6 0.1
UME iP 23 05 22.0 D
South of Honshu, Japan (h = 400 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988						
Mar.	13	UPP	iP		09 39 42.1	
			ipP		09 39 53.7	
		KIR	iP		09 39 25.1	
			ipP		09 39 36.6	
		UME	iP		09 39 29.9	
			ipP		09 39 41.7	
		Philippine Islands region.				
		h = 40 km (UPP,KIR,UME).				
"	13	UPP	Mx		12 38	
					micr	sec
			Mx	Z	2.4	20
		KIR	Mx		12 38	
					micr	sec
			Mx	Z	4.6	22
		Off coast of central Chile				
		(h = 40 km).				
		M = 5.9 (UPP,KIR).				
"	13	UPP	iPKP		12 44 31.8	
			iSKP1		12 47 37.0	
		KIR	e(PKP)		12 44 08	
			iPKP		12 44 17.5	
		UME	iPKP		12 44 24.6	
		Vanuatu Islands (h = 190 km).				
"	13	UPP	Mx		13 56	
					micr	sec
			Mx	Z	3.5	25
		KIR	Mx		14 03	
					micr	sec
			Mx	Z	5.7	24
		South Indian Ocean (h = 10 km).				
		M = 5.9 (UPP,KIR).				
"	13	UME	iP		23 41 23.9	
		El Salvador (h = 90 km).				
"	14	UPP	iP		07 38 23.1	
		UME	iP		07 38 16.1	
		Kashmir-Tibet border region				
		(h = N).				
"	14	UPP	iPKP1		11 19 05.6	
			iPKP2		11 19 09.2	
		UME	iPKP1		11 18 54.6	
		Kermadec Islands (h = 270 km).				
"	14	UPP	iPdiff		12 43 08.8	
		KIR	iPdiff		12 43 14.3	
		Peru-Brazil border region				
		(h = 140 km).				

1988						
Mar.	14	UPP	iP		19 27 42.7	
		KIR	iP		19 26 51.7	
		UME	iP		19 27 16.2	
		Kuril Islands (h = 60 km).				
"	14	UME	iP		20 27 20.5	
		Pakistan (h = 15 km).				
"	15	KIR	eP		04 31 36	
		UME	iP		04 31 27.3	
		Northwestern Kashmir (h = 80 km).				
"	15	KIR	iP		09 38 07.9	
		UME	iP		09 38 18.4	
		South of Mariana Islands				
		(h = 15 km).				
"	15	UME	iPKP1		12 25 17.6	
		South of Kermadec Islands (h = N).				
"	16	UPP	iP		00 06 37.2	
		UME	iP		00 06 11.7	
		Gulf of Alaska (h = 10 km).				
"	16	UPP	Mx		01 52	
					micr	sec
			Mx	Z	4.3	20
		KIR	Mx		01 51	
					micr	sec
			Mx	Z	1.1	18
		Bismark Sea (h = 20 km).				
		M = 5.7 (UPP,KIR).				
"	16	UPP	iP		05 59 42.4	
					micr	sec
			P	Z'	0.1	0.9
		KIR	iP		05 59 53.8	
					micr	sec
			P	Z'	0.4	1.8
		UME	iP		05 59 51.3	
		Trinidad (h = 55 km).				
		m = 5.9 (UPP,KIR).				
"	16	KIR	iP		10 57 02.9	
		Southern Sumatera (h = 80 km).				
"	17	UPP	iSg1		19 01 11.4	
		UME	iSg1		19 02 16.3	
		UDD	iPn		18 59 13.8	
			iSg1		19 00 13.0	
		MYV	iSg1		19 00 49.2	
		Southwestern Norway, near 59 3/4°N,				
		6°E.				
		(cont.)				

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Mar. 17 (cont.)
Origin time = 18 58 12.
M_L(UPP) = 3.0 (0.23) 3.
Felt.

" 17 UPP iP 20 45 51.3
i 20 45 52.6
micr sec
P Z' 0.1 1.1
UME iP 20 45 29.6 D
Near s. coast of Honshu, Japan
(h = 100 km).

" 18 UME iP 21 50 47.4
Greece (h = 45 km).

" 18 UPP Mx 23 59
micr sec
Mx Z 11.6 18
Bismark Sea (h = N).

" 19 UME iP 15 30 05.6

" 19 UPP iP 20 27 29.7 C
micr sec
Mx Z 8.5 18
KIR iP 20 27 46.4 C
micr sec
P Z' 0.1 0.8
Mx Z 3.8 11
UME iP 20 27 33.0 C
Pakistan (h = 15 km).
M = 5.6 (UPP,KIR).

" 20 UPP iP 04 11 49.4
i 04 12 00.4
UME iP 04 12 29.6
Romania (h = 120 km).

" 20 UPP iP 14 42 59.2
i 14 43 05.6
iS 14 45 33
KIR iP 14 41 53.0 D
i 14 42 02.0
iS 14 43 45.6
micr sec
P Z' 0.2 0.7
UME iP 14 42 27.0
i 14 42 30.4
iS 14 44 38.9
i 14 45 07.2
Jan Mayen Island region
(h = 10 km).

1988 Mar. 21 UPP iSg1 20 23 10.4
KIR iSg1 20 24 42.8
UDD iSn 20 21 48.0
iSg1 20 22 09.0
MYV iSn 20 21 51.0
iSg1 20 22 16.2
Off coast of southwestern Norway,
61 1/4°N, 4 1/2°E.
Origin time = 20 19 48.
M_L(UPP) = 3.1 (0.16) 2.
By combination with Norwegian
station readings.

" 21 UPP iP 23 38 22.4 D
i 23 38 29.5
iPP 23 39 34.3
iS 23 44 01
micr sec
P Z' 1.0 0.5
Mx Z 20 16
KIR iP 23 37 14.4 D
i 23 37 22.7
micr sec
P Z' 0.7 1.0
Mx Z 22 16
UME iS 23 42 56
Laptev Sea (h = 10 km).
m = 6.3, M = 5.9 (UPP,KIR).

" 22 KIR iP 07 15 10.8
Kuril Islands (h = N).

" 22 KIR iPg1 20 29 00.5
iSg1 20 29 20.1
Northwestern Finland, 67.4°N,
24.6°E.
Origin time = 20 28 35.
M_L(UPP) = 2.3 1.
By combination with Finnish
station readings.

" 23 KIR iP 00 44 14.6
Near coast of Jalisco, Mexico
(h = 25 km).

" 23 UPP iPKP1 05 26 50.8
Kermadec Islands region (h = N).

" 23 UPP iP 12 31 11.1
KIR iP 12 30 51.9
micr sec
P Z' 0.1 1.1
Luzon, Philippine Islands
(h = 35 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Mar. 23 UPP iPKP1 14 03 17.4
South of Fiji Islands (h = 160 km).

" 23 UPP iP 16 01 08.6
iS 16 09 58
micr sec
Mx Z 12.0 21
KIR iP 16 01 35.9
North Atlantic Ridge (h = 10 km).

" 23 UPP iP 19 16 10.7
KIR iP 19 16 17.9
Afghanistan-USSR border region
(h = 120 km).

" 23 UPP eP 20 33 40
KIR eP 20 32 47
Fox Islands, Aleutian Islands
(h = N).

" 23 UPP i(P) 21 02 00.0
i 21 02 12.0

" 24 UPP iP 00 03 57.8
KIR iP 00 04 46.8
Ethiopia (h = 10 km).

" 24 UPP eP 17 26 42
i 17 26 47.4
KIR eP 17 25 05
North of Svalbard (h = 10 km).

" 25 UPP ePKP1 05 39 55
KIR iPKP 05 39 48.6
Fiji Islands region (h = 560 km).

" 25 UPP iP 15 55 54.1
KIR iP 15 55 34.7
Luzon, Philippine Islands (h = N).

" 25 UPP eP 16 32 32
i 16 32 40.7
KIR iP 16 32 38.5
Trinidad (h = 55 km).

" 25 UPP iP 19 46 17.4 C
i 19 46 23.7
iS 19 53 58
micr sec
P Z' 0.8 1.6
Mx Z 13.6 20
KIR iP 19 45 24.7 C
iS 19 52 21.3
(cont.)

1988
Mar. 25 (cont.)
micr sec
P Z' 1.6 1.1
Mx Z 8.4 12
UME iS 19 53 12
Northwest Territories, Canada
(h = 10 km).
m = 6.5, M = 5.9 (UPP,KIR).

" 25 UPP iP 20 02 07.1
KIR iP 20 01 15.1
Northwest Territories, Canada
(h = 10 km).

" 25 UPP iP 22 09 01.7
KIR iP 22 08 07.8 C
micr sec
P Z' 0.4 1.5
South of Alaska (h = N).

" 25 UPP iP 23 24 10.9

" 26 UPP iP 12 13 11.8
micr sec
Mx Z 2.4 14
KIR iP 12 14 23.0
micr sec
Mx Z 1.7 14
Mediterranean Sea (h = 10 km).
M = 4.9 (UPP,KIR).

" 26 UPP iP 13 00 46.5
KIR iP 13 01 25.8
Western Iran (h = 50 km).

" 26 UPP iP 20 39 41.7
micr sec
Mx Z 1.3 8
KIR iP 20 40 58.8
UME iS 20 44 44
Albania (h = 40 km).

" 26 UPP iP 23 06 12.7 D
iPP 23 07 46.7
micr sec
P Z' 0.3 1.0
KIR iP 23 06 16.3 D
micr sec
P Z' 1.0 0.9
Tajik-Xinjiang border region
(h = 120 km).
m = 6.3 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Mar. 27 UPP iP 15 18 28.1
KIR iP 15 18 36.8
Afghanistan-USSR border region
(h = 90 km).

" 28 KIR ePg1 13 36 28
iSg1 13 36 59.0
Northern Norway, 69.7°N, 25.2°E.
Origin time = 13 35 40.
M_L(UPP) = 2.4 1.
By combination with Finnish station readings.

" 28 UPP iPKP 18 55 45.6
KIR ePKP 18 55 46
Southern Pacific Ocean (h = 10 km).

" 29 UPP iP 01 26 42.6
i 01 26 53.9
KIR iP 01 25 49.8
Gulf of Alaska (h = 10 km).

" 29 UPP iP 08 42 29.2
micr sec
Mx Z 2.4 20
KIR iP 08 41 34.7
micr sec
P Z' 0.2 1.0
Mx Z 1.1 15
Fox Islands, Aleutian Islands
(h = N).
M = 5.2 (UPP,KIR).

" 29 UPP iP 13 49 54.3
KIR iP 13 50 00.1
micr sec
P Z' 0.1 1.0
Near coast of Venezuela
(h = 15 km).

" 29 UPP iP 15 43 49.2
KIR iP 15 42 55.7
Unimak Island region (h = N).

" 30 UPP iP 02 19 42.5
iS 02 25 24
micr sec
P Z' 0.1 1.1
Mx Z 9.2 21
KIR iP 02 20 22.9
micr sec
P Z' 1.3 0.2
Mx Z 9.2 18
(cont.)

1988
Mar. 30 (cont.)
UME iS 02 25 48
Iran (h = 35 km).
m = 5.6, M = 5.6 (UPP,KIR).

" 30 UPP iP 08 05 06.5
KIR iP 08 04 51.0
micr sec
P Z' 0.1 1.0
Mindanao, Philippine Islands
(h = 530 km).

" 30 UPP iP 11 24 19.6
KIR iP 11 25 27.6
Sicily (h = 30 km).

" 30 UME iPKP1 19 45 22.2
Kermadec Islands (h = 240 km).

" 30 KIR iP 21 48 21.0
UME iP 21 47 50.9
Turkey (h = 10 km).

" 31 UPP Mx 00 51
micr sec
Mx Z 5.4 23
KIR Mx 00 51
micr sec
Mx Z 2.9 22
Near coast of Northern Chile
(h = 40 km).
M = 5.9 (UPP,KIR).

" 31 UPP iP 02 12 12.5
KIR iP 02 11 55.0 C
micr sec
P Z' 0.1 0.7
UME iP 02 12 01.0 C
Mindanao, Philippine Islands
(h = 180 km).

" 31 UPP iP 07 47 04.6
i 07 47 25.8
UME iP 07 47 00.8
Central Mexico (h = 60 km).

" 31 UPP iSg1 14 41 05.9
UME iSg1 14 41 23.2
UDD iPg1 14 39 20.1
iSg1 14 40 11.0
MYV iSg1 14 39 59.4
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Mar. 31 (cont.)
Southwestern Norway,
near 62 1/4°N, 7°E.
Origin time = 14 38 11.
M_L(UPP) = 2.8 (0.29) 2.

" 31 UDD iSg1 18 14 52.1
MYV iSg1 18 14 40.4
Southwestern Norway, 62.2°N, 7.2°E.
Origin time = 18 12 56.
M_L(UPP) = 2.6 1.
Solution from Norwegian station
readings.

" 31 KIR iP 22 32 05.5
UME iP 22 32 32.9
Fox Islands, Aleutian Islands
(h = N).

" 31 UME iP 22 33 49.5
Near east coast of Honshu, Japan
(h = 70 km).

" 31 UME iP 23 17 56.8

September 15, 1989

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

APRIL 1 - 30, 1988

1988 Apr.	1	UPP	iPKP1	14 44 53.3	
		KIR	iPKP	14 44 44.3	
			iSKP1	14 47 15.7	
		UME	iPKP	14 44 52.1	
			iSKP1	14 47 28.8	
		Fiji Islands region (h = 570 km).			
"	1	UME	iP	21 46 21.7	
"	2	UPP	iPKP1	05 33 25.0	D
			iPKP2	05 33 30.6	
		KIR	iPKP1	05 33 02.0	
		UME	iPKP1	05 33 14.3	D
			i	05 33 28.5	
		Kermadec Islands region (h = 330 km).			
"	2	UME	iP	06 50 08.4	
"	2	UME	iPKP1	07 36 44.6	
		North Island, New Zealand (h = 150 km).			
"	2	UPP	iP	08 17 04.3	
			i	08 17 10.8	
		KIR	eP	08 18 21	
		UME	iP	08 17 39.8	
		Black Sea (h = N).			
"	2	UPP	iP	13 57 13.8	
		KIR	iP	13 57 23.5	
		UME	iP	13 57 12.7	
		Hindu Kush region (h = 230 km).			
"	2	UPP		micr	sec
			Mx Z	2.7	22
		(cont.)			
1988 Apr.	2	(cont.)			
		KIR		micr	sec
			Mx Z	4.3	20
		UME	iPKP	14 45 36.8	
		Tonga Islands (h = N).			
		M = 6.0 (UPP,KIR).			
"	2	UPP	iP	22 02 54.6	
		UME	iP	22 03 31.3	
		Aegean Sea (h = 25 km).			
"	3	UPP	iP	01 40 03.9	C
			iPn	01 40 53.8	
				micr	sec
			P Z'	0.8	0.7
			Mx Z	1.7	9
		KIR	iP	01 39 47.2	C
				micr	sec
			P Z'	0.8	0.9
			Mx Z	1.1	10
		UME	iP	01 39 48.7	C
		Eastern Kazakh SSR.			
		m = 6.7, M = 4.9 (UPP,KIR).			
		Underground explosion.			
"	3	UPP	iP	03 39 59.1	
				micr	sec
			Mx Z	0.5	9
		KIR		micr	sec
			Mx Z	0.6	9
		UME	iP	03 40 37.3	
		Greece (h = 35 km).			
		M = 4.4 (UPP,KIR).			
		M determined from surface waves with T = 9 s.			

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Apr. 3
UPP iP 09 01 17.5
UME iP 09 01 58.5
Greece-Albania border region
(h = 10 km).

" 3
UPP iP 14 39 12.4 C
iS 14 49 08
micr sec
P Z' 0.4 1.0
Mx Z 2.3 19
KIR iP 14 39 14.1 C
micr sec
P Z' 0.5 1.0
Mx Z 3.1 18
UME iP 14 39 09.4 C
iS 14 49 04
Off w. coast of northern Sumatera
(h = 30 km).
m = 6.4, M = 5.6 (UPP,KIR).

" 4
KIR i 02 33 28.5
iSg1 02 33 36.5
Lappland-Norrbotten, Sweden,
67.6°N, 22.0°E.
Origin time = 02 33 17.
M_L(UPP) = 2.2 1.
By combination with Finnish
station readings.

" 4
UPP iP 15 23 50.7
UME iP 15 23 32.4
Kyushu, Japan (h = 30 km).

" 4
UPP iP 15 54 39.4
i 15 54 41.0
micr sec
Mx Z 13 18
KIR iP 15 54 07.7
micr sec
Mx Z 19 17
UME iP 15 54 22.1
Kyushu, Japan (h = 40 km).
M = 6.3 (UPP,KIR).

" 4
UPP eP 16 26 09
UME iP 16 26 02.5
South of Java (h = 60 km).

" 4
UPP iP 16 42 14.8
UME iP 16 41 56.0
Kyushu, Japan (h = 45 km).

1988 Apr. 5
UPP iP 15 49 28.7 D
micr sec
P Z' 0.1 0.8
UME iP 15 49 17.4
Mindoro, Philippine Islands
(h = 30 km).

" 6
UME iP 03 20 14.4
Red Sea (h = 10 km).

" 7
UPP iP 03 16 55.4
micr sec
Mx Z 4.5 17
KIR iP 03 16 32.2
UME iP 03 16 39.9
Taiwan (h = 15 km).

" 7
UPP iP 05 47 54.8
UME iP 05 47 35.9
South of Honshu, Japan
(h = 110 km).

" 8
UPP iP 01 46 12.5
i 01 46 16.6
UME iP 01 46 04.4
Mindoro, Philippine Islands
(h = 50 km).

" 8
UPP iP 04 55 02.1 D
iS 05 05 26
micr sec
P Z' 0.1 1.0
Mx Z 4.8 15
KIR iP 04 54 45.1 D
micr sec
Mx Z 3.8 18
UME iP 04 54 50.7 D
iS 05 05 04
Mindoro, Philippine Islands
(h = 30 km).
M = 5.9 (UPP,KIR).

" 8
UPP iPdiff 11 34 35.9
KIR iPdiff 11 34 27.6
micr sec
Pdiff Z' 0.2 1.0
UME iPdiff 11 34 28.2
Sumbawa Island region
(h = 110 km).

" 8
UPP iP 20 50 59.3
Mindoro, Philippine Islands
(h = 45 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Apr. 9 UPP Mx 24 21
micr sec
Mx Z 21 19
KIR Mx 24 18
micr sec
Mx Z 17 22
Near n. coast of Papua New Guinea
(h = 30 km).
M = 6.6 (UPP,KIR).

" 10 KIR iP 04 58 48.0
UME iP 04 58 37.1
Afghanistan-USSR border region
(h = 230 km).

" 11 UPP i 20 37 36.4
UME iP 20 37 13.7
i 20 37 18.3
Northern China (h = 20 km).

" 11 UPP iP 22 47 06.5
KIR iP 22 46 43.3
UME iP 22 46 51.2
Taiwan (h = 25 km).

" 11 UPP iSKP1 22 57 22.6
KIR iPKP 22 54 28.1
iSKP1 22 57 01.0
UME i(PKP) 22 54 24.3
iPKP 22 54 36.8
iSKP1 22 57 10.9
Fiji Islands region (h = 620 km).

" 11 UPP iPKP1 23 20 07.0
South of Fiji Islands (h = N).

" 12 UPP iPKP2 05 24 03.5
KIR iPKP1 05 23 29.4
micr sec
PKP1 Z' 0.1 1.0
UME iPKP1 05 23 37.6
Off e. coast of N. Island, N.Z.
(h = 20 km).

" 12 UPP iP 16 46 30.9
KIR iP 16 45 38.3
Aleutian Islands region (h = N).

" 12 UPP iP 19 53 20.9
micr sec
P Z' 0.1 1.0
(cont.)

1988
Apr. 12 (cont.)
KIR iP 19 53 29.4
micr sec
P Z' 0.1 1.0
UME iP 19 53 28.3
Near coast of Venezuela
(h = 100 km).
m = 5.6 (UPP,KIR).

" 12 UPP ePdiff 23 33 05
iPP 23 38 12.8
iS 23 45 52
micr sec
Mx Z 54 18
KIR ePdiff 23 34 10
iPP 23 38 39.0
micr sec
Mx Z 25 18
UME iPP 23 38 34.6
Near coast of Peru (h = 35 km).
M = 6.9 (UPP,KIR).

" 13 UPP iP 00 13 07.7
KIR iP 00 12 15.0
UME iP 00 12 43.3
Gulf of Alaska (h = 10 km).

" 13 UPP Mx 01 40
micr sec
Mx Z 17 18
KIR Mx 01 40
micr sec
Mx Z 7.3 18
Near coast of Peru (h = 15 km).
M = 6.4 (UPP,KIR).

" 13 KIR iP 08 10 23.5
micr sec
P Z' 0.1 1.0
UME iP 08 10 29.0
Halmahera (h = 150 km).

" 13 KIR iP 21 01 33.2
UME iP 21 01 59.6
Fox Islands, Aleutian Islands
(h = 130 km).

" 13 UME iP 21 33 44.6
Southern Italy (h = 10 km).

" 13 KIR iSKP1 23 23 04.9
micr sec
SKP1 Z' 0.1 1.0
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Apr. 13 (cont.)
UME iSKP1 23 23 17.5
Fiji Islands region (h = 370 km).

" 14 KIR iP 02 33 14.1
UME iP 02 33 17.9
Molucca Passage (h = 80 km).

" 15 KIR iP 09 04 24.1
UME iP 09 04 33.1
Oaxaca, Mexico (h = 90 km).

" 15 UME iP 09 45 46.2

" 15 UPP iP 11 08 56.9
KIR iP 11 08 42.3
UME iP 11 08 45.7
Sichuan Province, China (h = N).

" 15 UPP iP 19 48 28.2
KIR eP 19 47 57
UME iP 19 48 10.6
Volcano Islands region (h = 45 km).

" 16 KIR iP 04 30 57.6
UME eP 04 31 42
North of Svalbard (h = 10 km).

" 16 KIR iP 21 29 11.5
i 21 29 15.6
micr sec
i Z' 0.1 1.0
UME iP 21 28 47.3
i 21 28 52.5
Zaire Republic (h = 10 km).

" 17 UPP iPKP 05 30 25.2
micr sec
Mx Z 3.4 18
KIR iPKP 05 30 42.8
UME iPKP 05 30 36.6
South Sandwich Islands region
(h = N).

" 17 UME iP 10 00 41.3
Off east coast of Honshu, Japan
(h = 30 km).

" 17 UME iP 10 05 25.2
Off east coast of Honshu, Japan
(h = 50 km).

" 17 UME iP 20 18 45.6

1988
Apr. 18 UPP iP 22 05 50.3
UME eP 22 06 24
Crete (h = 20 km).

" 18 UME iP 22 53 50.6
Off east coast of Honshu, Japan
(h = N).

" 19 UPP iP 02 07 29.9
UME iP 02 07 06.7
Hokkaido, Japan region (h = 70 km).

" 19 UPP iP 06 06 25.6
KIR iP 06 05 57.5 C
micr sec
P Z 0.1 0.9
UME iP 06 06 09.4 C
Mariana Islands region (h = 290 km).

" 19 UDD iSg1 12 36 25.1
Southern Norway, 61.2°N, 10.1°E.
Origin time = 12 35 23.
Solution from Norwegian station
readings.

" 19 UPP iP 19 24 13.5
KIR iP 19 23 56.5
UME iP 19 24 02.2
Talaud Islands (h = N).

" 19 UPP iP 21 02 19.5
i 21 06 21.5
KIR iP 21 02 03.6
micr sec
P Z' 0.1 1.0
UME iP 21 01 09.0 D
Halmahera (h = 80 km).

" 19 UPP iP 22 15 29.4 C
KIR iP 22 14 34.8 C
micr sec
P Z' 0.1 0.7
UME iP 22 15 03.6 C
Alaska peninsula (h = 80 km).

" 20 UPP eP 03 55 44
ipP 03 55 58.6
micr sec
pP Z' 0.3 1.6
Mx Z 3.6 16
KIR iP 03 56 28.5
micr sec
Mx Z 5.3 11
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddcholm, DEL = Delary, MYV = Myrviken

1988 Apr. 20 (cont.)

UME ipP 03 56 17.4
iS 04 00 49
N.W. Iran-USSR border region
(h = 55 km).
M = 5.2 (UPP,KIR).

" 20 UPP iP 04 36 45.3
micr sec
P Z' 0.2 1.4
UME iP 04 37 06.8
Central Mid-Atlantic Ridge
(h = 10 km).

" 20 UPP iP 06 50 04.4 D
i 06 50 12.7
micr sec
i Z' 0.2 1.1
KIR iP 06 50 02.6 D
i 06 50 10.5
UME iP 06 49 58.7 D
i 06 50 06.4
Nepal (h = 55 km).

" 20 UPP iP 10 39 29.7
Ryukyu Islands (h = 30 km).

" 21 KIR iSg1 07 32 32.4
Northern Finland, 67.3°N, 26.4°E.
Origin time = 07 31 24.
Solution from Finnish station
readings.

" 21 UDD iPg1 14 16 30.1
iSg1 14 16 51.0
DEL iRg 14 17 00.4
Southern Norway, 59.4°N, 10.8°E.
Origin time = 14 16 09.
Solution from Norwegian station
readings.
Probable explosion.

" 21 UPP iP 18 39 06.1 D
ipP 18 39 14.9
micr sec
P Z' 0.1 0.9
pP Z' 0.2 1.4
KIR iP 18 38 20.3 D
ipP 18 38 28.0
micr sec
P Z' 0.1 1.0
UME iP 18 38 41.1 D
ipP 18 38 49.2
(cont.)

1988 Apr. 21 (cont.)
Kuril Islands region.
h = 30 km (UPP,KIR,UME).
m = 5.9 (UPP,KIR).

" 22 UPP iP 02 01 10.7
KIR iP 02 01 50.3
UME iP 02 01 25.0
Iran (h = 30 km).

" 22 KIR iP 04 14 49.6
Leeward Islands (h = 60 km).

" 22 KIR iP 09 36 46.7
Eastern Kazakh SSR.
Underground explosion.

" 23 UPP iPKP1 04 33 18.4
micr sec
PKP1 Z' 0.1 1.0
UME iPKP1 04 33 05.8
Kermadec Islands (h = 60 km).

" 23 UPP iP 05 50 49.7
KIR iP 05 50 53.8
UME iP 05 50 45.2
Northwestern Kashmir (h = 40 km).

" 24 UPP eP 02 50 05
micr sec
Mx Z 1.6 17
KIR iP 02 49 45.0
micr sec
Mx Z 1.0 14
UME iS 03 00 15
Luzon, Philippine Islands
(h = 45 km).
M = 5.4 (UPP,KIR).

" 24 UPP eP 10 15 16
Greece (h = 10 km).

" 24 UPP iP 16 10 02.5
KIR iP 16 09 09.7
Rat Islands, Aleutian Islands
(h = N).

" 24 UPP iP 20 15 16.9
micr sec
Mx Z 3.2 17
KIR iP 20 14 53.4
Taiwan (h = 45 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Apr. 24 UPP iP 20 54 13.2
micr sec
Mx Z 6.2 12
KIR iP 20 55 23.4
iPP 20 55 49.2
i 21 00 34.0
micr sec
P Z' 0.1 1.1
UME iS 20 58 58
Turkey (h = 15 km).

" 24 UPP iSg1 21 17 20.7
KIR iPn 21 13 50.5
iSg1 21 14 52.9
UDD ePn 21 14 51
Off coast of northwestern Norway, near 68 1/4°N, 10°E.
Origin time = 21 12 46.
M_L(UPP) = 3.6 (0.13) 4.

" 25 UPP iPKP1 01 38 48.5
KIR iPKP 01 38 38.1
South of Fiji Islands (h = 90 km).

" 25 UPP micr sec
Mx Z 5.4 20
KIR iPKP 10 29 08.2
micr sec
Mx Z 7.3 21
Solomon Islands (h = 45 km).
M = 6.2 (UPP,KIR).

" 25 KIR iP 17 47 58.0
Afghanistan-USSR border region (h = 55 km).

" 25 UPP eP 20 13 49
iS 20 17 18
micr sec
P Z' 0.1 1.2
Mx Z 2.2 18
KIR iP 20 12 11.1
micr sec
Mx Z 2.4 17
UME eS 20 15 47
Svalbard region (h = 10 km).
M = 4.3 (UPP,KIR).
Note that Δ(UPP) = 19° and Δ(KIR) = 11°.

1988 Apr. 26 UPP iP 00 57 48.0
iS 01 01 00
micr sec
P Z' 0.6 1.3
Mx Z 12 12
KIR iP 00 59 14.6
micr sec
P Z' 0.1 1.0
Mx Z 13 13
UME iS 01 02 29
Adriatic Sea (h = 15 km).
m = 5.5, M = 5.5 (UPP,KIR).

" 26 UPP eP 01 55 43
micr sec
Mx Z 3.2 17
KIR iP 01 55 19.9
micr sec
Mx Z 2.5 15
Off coast of central Mexico (h = 10 km).
M = 5.7 (UPP,KIR).

" 26 UPP iP 01 57 50.2
iS 02 06 08
KIR iP 01 56 57.2
Gulf of Alaska (h = 10 km).

" 26 UPP iSg1 13 18 26.4
UDD iSg1 13 17 27.3
Southern Norway, 58.2°N, 6.5°E.
Origin time = 13 15 20.
M_L(UPP) = 2.7 1.
Solution from Norwegian station readings.

" 26 UPP iP 22 22 33.3
KIR iP 22 21 40.4
Rat Islands, Aleutian Islands (h = N).

" 27 UPP iP 00 54 04.6
i 00 54 11.9
North Sea (h = 10 km).

" 27 UPP iP 07 12 47.4
KIR iP 07 12 27.4
Luzon, Philippine Islands (h = N).

" 27 UPP iPKP1 21 40 21.4
South of Fiji Islands (h = 500 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988				
Apr.	28	UPP	iP	10 23 12.3
		KIR	iP	10 21 35.2
		Svalbard region (h = 10 km).		
"	28	UPP	iPKP	22 59 13.3
			iSKP1	23 01 56.4
			i	23 01 04.4
		KIR	iPKP	22 59 05.9
			iSKP1	23 01 30.6
		Fiji Islands region (h = 630 km).		
"	29	UPP	iPKP1	07 56 16.0
		South of Kermadec Islands (h = 80 km).		
"	29	UPP	iP	11 07 43.0

September 26, 1989

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

NOTE: Due to technical failure there are no short-periods records at Umeå (UME).

MAY 1 - 31, 1988

1988
May 1 UPP iPKP1 08 24 46.8
South of Kermadec Islands (h = N).

" 1 UPP iP 10 17 32.1
micr sec
Mx Z 1.6 20
KIR iP 10 16 41.6
micr sec
Mx Z 1.1 18
Kuril Islands region (h = 50 km).
M = 5.1 (UPP,KIR).

" 1 UPP iPKP 15 40 54.8
KIR iPKP 15 40 42.3
Santa Cruz Islands (h = 120 km).

" 1 KIR iSg1 22 50 47.9
Norrbotten, Sweden, 66.7°N, 23.2°E.
Origin time = 22 49 58.
M_L(UPP) = 2.3 1.
By combination with Finnish station readings.

" 1 UPP iPKP 23 25 09.0
micr sec
Mx Z 2.6 19
KIR iPKP 23 25 24.6
iSKP1 23 28 32.2
micr sec
Mx Z 2.1 19
South Sandwich Islands region
(h = 140 km).
M = 5.8 (UPP,KIR).
M uncorrected for focal depth.

1988
May 2 UPP iP 02 21 33.8 C
KIR iP 02 21 26.2 C
Southern Xinjiang, China
(h = 10 km).

" 2 UPP iP 03 19 35.7
KIR iP 03 18 42.7
Rat Islands, Aleutian Islands (h = N).

" 2 UPP iP 08 54 04.5
KIR iP 08 53 45.2
Luzon, Philippine Islands
(h = 25 km).

" 3 UPP iP 08 46 46.2
KIR iP 08 47 23.2
Eastern Caucasus (h = N).

" 3 UPP iP 09 00 34.8
KIR eP 09 01 15
Western Iran (h = 60 km).

" 3 UPP iP 09 20 47.5
iS 09 25 11
micr sec
P Z' 0.1 0.9
Mx Z 2.1 13
KIR iP 09 21 24.2
micr sec
P Z' 0.1 0.7
Mx Z 3.1 13
Eastern Caucasus (h = 20 km).
m = 5.6, M = 4.9 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
May 3 UPP iP 20 39 19.2
micr sec
P Z' 0.1 1.0
Mx Z 0.7 18
KIR eP 20 38 33
micr sec
Mx Z 1.0 17
Kuril Islands (h = 40 km).
M = 5.0 (UPP,KIR).

" 3 UPP e(PKP) 23 41 24
iPKP 23 41 31.4
iSKP1 23 45 09.7
micr sec
Mx Z 2.4 22
KIR ePKP 23 41 22
iSKP1 23 44 46.6
micr sec
Mx Z 1.7 17
Loyalty Islands region (h = 10 km).
M = 5.8 (UPP,KIR).

" 4 UPP iP 00 14 20.7
Mascarene Islands region
(h = 10 km).

" 4 UPP iP 01 04 03.7 C
micr sec
P Z' 1.6 0.9
Mx Z 2.0 10
KIR iP 01 03 47.6 C
micr sec
P Z' 1.4 0.5
Mx Z 0.6 9
Eastern Kazakh.
m = 7.0, M = 4.8 (UPP,KIR).
Underground explosion.

" 4 UPP iP 02 56 43.0
KIR eP 02 57 19
Eastern Caucasus (h = N).

" 4 UPP iP 07 40 31.5

" 4 UPP iP 23 59 53.3
ipP 24 00 27.9
iSKS 24 10 10
micr sec
P Z' 0.1 1.0
Mx Z 3.8 20
KIR iP 23 59 25.2
micr sec
P Z' 0.2 1.0
(cont.)

1988
May 4 (cont.)
Mx Z 1.4 20
Mariana Islands (h = 120 km).
m = 5.9, M = 5.5 (UPP,KIR).
M uncorrected for focal depth.

" 5 UPP iP 03 01 23.6
Kuril Islands (h = 80 km).

" 5 UPP iPKP1 05 34 42.5
South of Fiji Islands (h = 340 km).

" 5 UPP iPKP 10 23 27.1
micr sec
Mx Z 6.0 23
KIR iPKP 10 23 27.6
micr sec
Mx Z 4.1 22
Easter Islands region (h = 10 km).
M = 6.1 (UPP,KIR).

" 5 UPP ipP 11 32 49.7
KIR iP 11 31 33.7
Mariana Islands (h = 190 km).

" 5 UPP iSg1 17 28 36.5
UDD iPg1 17 26 42.5
iSg1 17 27 36.1
MYV iPg1 17 26 33.2
iSg1 17 27 23.6
Southwestern Norway, near 62 1/4°N,
6°E.
Origin time = 17 25 27.
M_L(UPP) = 2.7 1.

" 5 UPP iP 21 04 11.3
KIR iP 21 05 10.6
Southern Sumatera (h = 90 km).

" 5 UPP Mx 23 40
micr sec
Mx Z 2.7 24
KIR Mx 23 47
micr sec
Mx Z 1.7 17
Easter Island region (h = 10 km).
M = 5.8 (UPP,KIR).

" 5 KIR iPKP 23 54 55.0
South of Australia (h = 10 km).

" 6 UPP iP 05 18 24.6
KIR iP 05 17 58.6
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 May 6 (cont.)

			micr	sec
	P	Z'	0.2	1.4

South of Mariana Islands
(h = 25 km).

" 6

UPP	iP		09 34	59.5
	ipP		09 35	07.0
			micr	sec
	P	Z'	0.1	0.9
KIR	iP		09 34	59.6
	ipP		09 35	06.4

Andaman Islands region.
h = 20 km (UPP,KIR).

" 6 UPP iP 09 41 54.9
Andaman Islands region (h = N).

" 6

UPP	iP		14 58	50.8
	iPP		15 02	16
	iSKS		15 09	04
	iS		15 09	18
			micr	sec
	P	Z'	0.1	1.1
	Mx	Z	13	23
KIR	eP		14 58	44
			micr	sec
	Mx	Z	13	18

Nicaragua (h = 90 km).
M = 6.3 (UPP,KIR).
M uncorrected for focal depth.

" 6

UPP	iP		16 48	01.5
KIR	iP		16 48	08.1

Near coast of Peru (h = 50 km).

" 6

UPP	iPKP1		19 34	44.5
			micr	sec
	Mx	Z	1.9	20
KIR	iPKP1		19 34	24.1
			micr	sec
	Mx	Z	1.7	19

South of Kermadec Islands
(h = 45 km).
M = 5.8 (UPP,KIR).

" 7

UPP	iP		01 05	18.5 C
	i		01 05	26.9
	i		01 05	35.1
			micr	sec
	P	Z'	0.2	1.2
	Mx	Z	1.5	16

(cont.)

1988 May 7 (cont.)

KIR	iP		01 04	33.3 C
	ipP		01 04	41.6
			micr	sec
	P	Z'	0.2	1.0
	Mx	Z	2.2	14

Kuril Islands.
h = 30 km (UPP,KIR).
m = 6.1, M = 5.3 (UPP,KIR).

" 7

UPP	iP		01 08	17.4
			micr	sec
	P	Z'	0.1	1.1
KIR	iP		01 07	31.7
			micr	sec
	P	Z'	0.1	1.0

Kuril Islands (h = 40 km).
m = 5.8 (UPP,KIR).

" 7

UPP	iP		01 33	20.9
KIR	iP		01 32	34.7
			micr	sec
	P	Z'	0.1	1.0

Kuril Islands (h = 40 km).

" 7

UPP	iP		02 10	22.1 C
	iS		02 19	16
			micr	sec
	P	Z'	2.1	1.4
	Mx	Z	2.7	22
KIR	iP		02 09	33.8 C
			micr	sec
	P	Z'	0.8	1.0
	Mx	Z	2.1	19

Hokkaido, Japan region (h = 70 km).
m = 6.8, M = 5.3 (UPP,KIR).
M uncorrected for focal depth.

" 7

UPP	iP		06 26	06.7
KIR	iP		06 25	21.6

Kuril Islands (h = 40 km).

" 7

UPP	iP		07 55	45.6
KIR	iP		07 56	28.4

Western Caucasus (h = N).

" 7 UPP iPKP1 14 40 20.8
South of Kermadec Islands (h = N).

" 7

UPP	iP		15 33	53.8
KIR	iP		15 33	01.2

Rat Islands, Aleutian Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 May 7
UPP iPKP1 17 24 25.6
South of Kermadec Islands (h = N).

" 7
KIR iP 21 59 11.7
Southern Sumatera (h = 35 km).

" 7
UPP iP 22 54 25.0
i 22 54 26.0
iS 22 57 53
micr sec
i Z' 0.4 0.6
Mx Z 1.0 8
KIR iP 22 52 53.7 C
micr sec
P Z' 1.4 1.0
Mx Z 0.9 7
Novaya Zemlya.
m = 6.5 (UPP,KIR).
Underground explosion. Double P-phases, small and large, about 1 sec apart. The first onset reveals dilatation. The multiplicity of the P wave and dilatation of the first onset probably reflects the complex structure at the depth of deepest penetration, at about 400 km (Δ = 18°).

" 8
UPP iP 03 18 59.5
KIR iP 03 18 30.3
Mariana Islands (h = N).

" 8
UPP eP 06 57 08
KIR eP 06 57 38
Iran (h = 40 km).

" 8
UPP iP 18 01 56.3
micr sec
P Z' 0.1 0.8
Mx Z 1.1 12
KIR iP 18 01 36.2
Philippine Islands region
(h = 30 km).

" 8
UPP iP 19 57 17.3
iS 20 07 31
micr sec
P Z' 0.3 1.0
Mx Z 2.7 17
KIR iP 19 56 59.7
micr sec
P Z' 0.2 1.0
Mx Z 5.7 20
(cont.)

1988 May 8
(cont.)
Luzon, Philippine Islands
(h = 50 km).
m = 6.1, M = 5.8 (UPP,KIR).

" 8
UPP iP 20 05 08.2
micr sec
P Z' 0.1 1.0
KIR iP 20 04 50.7
Luzon, Philippine Islands
(h = 80 km).

" 8
UPP iP 22 54 58.6
micr sec
P Z' 0.1 1.0
KIR iP 22 54 15.6
Hokkaido, Japan region (h = 70 km).

" 9
UPP iPKP1 09 15 39.0
South of Kermadec Islands (h = N).

" 9
UPP iPKP1 12 41 42.6
KIR ePKP 12 41 23
Kermadec Islands (h = 55 km).

" 9
UPP iSg1 13 18 13.4
UDD iSg1 13 17 13.3
Near coast of southern Norway,
58.1°N, 6.3°E.
Origin time = 13 15 02.
M_L(UPP) = 2.4 1.
Solution from Norwegian station readings.

" 9
UPP iP 16 13 36.9
KIR iP 16 13 27.3
India-China border region
(h = 30 km).

" 9
UPP iP 16 56 59.3
KIR eP 16 58 12
Ionian Sea (h = 35 km).

" 10
UPP iP 21 01 39.2
KIR iP 21 01 29.4
India-China border region
(h = 25 km).

" 11
UPP i 17 46 12.3
iPP 17 46 18.4
KIR iP 17 41 50.2
i 17 45 29.8
South of Sumbawa Island
(h = 40 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 May 11
UPP iP 21 00 24.0
KIR iP 21 00 05.1
Luzon, Philippine Islands
(h = 45 km).

" 12
KIR eP 02 52 13
Alaska Peninsula (h = 25 km).

" 12
UPP iP 10 02 45.1

" 12
UPP iP 11 33 24.3
KIR iP 11 33 15.2

" 13
UPP iSg1 00 42 02.5
KIR iPn 00 38 28.4
iPg1 00 38 37.0
iSn 00 39 12.3
iSg1 00 39 26.4
UDD iSg1 00 42 30.5
MYV iSn 00 40 42.2
Northwestern USSR, 66.8°N, 29.6°E.
Origin time = 00 37 32.
M_L(UPP) = 3.1 (0.13) 4.

" 13
UPP iP 01 37 24.5
KIR iP 01 36 32.4

" 13
KIR iPKP 05 03 10.1
Tonga Islands (h = 270 km).

" 13
UPP iP 05 55 01.8
KIR eP 05 54 13
Kuril Islands region (h = N).

" 13
UPP iSg1 08 46 50.5
UDD iPn 08 45 00.8
iPg1 08 45 07.8
iSg1 08 45 53.7
MYV i 08 45 28.8
iSg1 08 45 52.4
Southwestern Norway, near
61 3/4°N, 7 1/2°E.
Origin time = 08 44 06.
M_L(UPP) = 2.5 1.

" 13
UPP iP 15 46 49.0
Southern Nevada.
Underground explosion.

" 13
UPP iP 16 23 10.7
Philippine Islands region
(h = 10 km).

1988 May 15
UPP iP 08 33 03.6
micr sec
P Z' 0.1 0.9
KIR iP 08 32 18.7
micr sec
P Z' 0.2 1.0
Kuril Islands (h = 55 km).
m = 6.0 (UPP,KIR).

" 15
UPP iP 20 32 07.7
i 20 32 11.9
KIR iP 20 32 10.6
Nepal-India border region
(h = 25 km).

" 16
UPP eP 05 14 33
Taiwan region (h = 30 km).

" 16
UPP iPKP 23 26 42.1
micr sec
Mx Z 4.0 21
KIR iPKP 23 26 30.0
micr sec
Mx Z 1.4 20
Vanuatu Islands (h = 15 km).
M = 5.8 (UPP,KIR).

" 16
UPP iSg1 23 54 24.4
KIR iPg1 23 50 34.2
iSg1 23 50 43.1
UDD iSg1 23 54 34.6
MYV iPn 23 51 41.7
iSn 23 52 39.8
iSg1 23 53 12.8
Lappland-Norrbotten, Sweden, 67.5°N,
22.0°E.
Origin time = 23 50 22.
M_L(UPP) = 3.4 (0.11) 3.
Felt.
By combination with Finnish station
readings.

" 17
UPP iSn 00 26 36.5
KIR iSn 00 26 13.3
UDD iSn 00 26 06.2
MYV iPn 00 24 36.2
iPg1 00 24 55.4
iSn 00 25 19.4
Norwegian Sea, near 65°N, 7 1/2°E.
Origin time = 00 23 38.
M_L(UPP) = 3.0 1.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
May 17 UPP iPKP 09 25 20.8
micr sec
PKP Z' 0.1 0.8
KIR iPKP 09 25 08.3
South of Fiji Islands (h = 480 km).

" 17 KIR eP 14 44 51
Turkey (h = 10 km).

" 17 UPP Mx 15 36
micr sec
Mx Z 10 23
KIR Mx 15 32
micr sec
Mx Z 4.7 21
Santa Cruz Islands region
(h = 30 km).
M = 6.2 (UPP,KIR).

" 18 UPP iP 05 22 30.3
iS 05 26 25.5
micr sec
P Z' 0.4 0.8
Mx Z 6.8 16
KIR iP 05 23 45.7
ipP 05 23 52.1
micr sec
P Z' 0.3 1.5
Mx Z 6.6 10
Greece (h = 25 km).
m = 5.9, M = 5.3 (UPP,KIR).

" 18 UPP iP 05 50 30.4
KIR iP 05 50 54.4
micr sec
P Z' 0.2 1.2
North Atlantic Ridge (h = 10 km).

" 18 UPP iP 05 55 21.0
KIR iP 05 55 46.8
North Atlantic Ridge (h = 10 km).

" 18 UPP iP 06 24 35.2
micr sec
P Z' 0.1 1.0
KIR iP 06 23 42.1
micr sec
P Z' 0.1 1.0
Near Islands, Aleutian Islands
(h = N).
m = 5.9 (UPP,KIR).

1988
May 18 KIR iP 08 09 42.1
Near E. coast of eastern USSR
(h = 530 km).

" 18 UPP iP 09 14 34.2
Greece (h = 35 km).

" 18 UPP iPKP1 22 09 28.5
Kermadec Islands region
(h = 240 km).

" 18 UPP eP 22 11 29

" 18 UPP iPKP2 23 27 14.2
KIR iPKP 23 26 41.7
North Islands, New Zealand
(h = 170 km).

" 19 UPP iP 04 21 42.8
Greece (h = 15 km).

" 20 UPP iP 06 03 25.9
KIR iP 06 03 36.1
Hindu Kush region (h = 150 km).

" 20 UPP iP 15 09 33.6
iS 15 18 24
micr sec
Mx Z 10 23
KIR iP 15 10 02.6
micr sec
Mx Z 5.1 19
Central Mid-Atlantic Ridge
(h = 10 km).
M = 5.8 (UPP,KIR).

" 21 UPP eP 00 21 07
iS 00 31 37
KIR iP 00 21 05.3
Southern Sumatera (h = 30 km).

" 21 UPP iP 02 47 55.0

" 21 UPP iP 15 26 54.1
micr sec
Mx Z 4.4 19
KIR eP 15 27 30
Central Mid-Atlantic Ridge
(h = 10 km).

" 21 UPP Mx 15 33
micr sec
Mx Z 2.7 22
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
May 21 (cont.)
Near coast of central Chile
(h = 40 km).

" 22 UPP iP 03 49 03.5
iS 03 58 58
micr sec
P Z' 0.1 0.6
Mx Z 1.4 9
KIR eP 03 50 20
Greece (h = 25 km).

" 22 KIR iP 09 35 40.6
Chiapas, Mexico (h = 170 km).

" 22 UPP iP 09 50 44.5 C
iS 09 59 46
micr sec
P Z' 0.1 0.9
Mx Z 5.0 17
KIR iP 09 49 50.6 C
ipP 09 50 02.5
micr sec
P Z' 0.2 1.0
Mx Z 3.8 15
Unimak Island region (h = N).
m = 6.0, M = 5.7 (UPP,KIR).

" 22 UPP iP 19 28 17.9
ipP 19 28 22.1
KIR iP 19 27 25.6
micr sec
P Z' 0.1 0.9
Northwest Territories, Canada
(h = 10 km).

" 22 UPP iP 22 52 10.5
Greece (h = 10 km).

" 22 UPP iP 23 40 36.0
KIR eP 23 39 43
Andreanof Islands, Aleutian Is.
(h = N).

" 23 UPP iPKP2 00 14 33.0
Kermadec Islands (h = 410 km).

" 23 UPP iSn 03 58 02.2
iSg1 03 58 34.7
KIR iLg1 04 01 38.1
UDD iPg1 03 56 46.6
iSg1 03 57 39.1
(cont.)

1988
May 23 (cont.)
DEL eSn 03 57 19
eSg1 03 57 38
MYV iSn 03 58 45.4
Off coast of southern Norway, near
57 3/4°N, 7°E.
Origin time = 03 55 35.
M_L(UPP) = 2.7 (0.22) 3.

" 23 KIR iP 14 14 11.1
Mariana Islands region
(h = 320 km).

" 23 UPP iP 19 01 33.1
KIR iP 19 00 39.5
Near east coast of Kamchatka
(h = N).

" 23 UPP iP 23 44 32.9
Greece (h = 10 km).

" 24 UPP iPKP1 05 19 26.2
South Kermadec Islands
(h = 50 km).

" 24 KIR eP 14 40 59
Catamarca Province, Argentina
(h = N).

" 25 UPP iPKP1 00 02 47.8
KIR iPKP 00 02 33.1
South of Fiji Islands (h = 100 km).

" 25 UPP iP 00 13 07.4
KIR iP 00 13 11.6
Kirghiz-Xinjiang border region
(h = N).

" 25 UPP iP 12 52 27.9
KIR iP 12 51 56.8
Bonin Islands region (h = 530 km).

" 25 UPP ePKP1 13 45 08.5
i 13 45 13.4
Northwest of New Zealand (h = N).

" 25 UPP iP 14 16 22.3
ipP 14 16 33.9
iS 14 25 27
micr sec
P Z' 0.2 0.9
pP Z' 0.3 0.8
Mx Z 3.1 25
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 May 25 (cont.)

KIR	iP		14 15 29.9	C
	ipP		14 15 41.6	
			micr	sec
	P	Z'	0.1	1.0
	pP	Z'	0.2	1.0
	Mx	Z	1.4	20

Andreanof Islands, Aleutian Is.
h = 40 km (UPP,KIR).
m = 6.3, M = 5.2 (UPP,KIR).

" 25 UPP iP 14 52 01.9
Andreanof Islands, Aleutian Is.
(h = 40 km).

" 25 UDD iSg1 16 37 56.6
Off coast of southern Norway,
57.5°N, 6.9°E.
Origin time = 16 35 45.
M_L(UPP) = 2.7 1.
Solution from Norwegian station readings.

" 25 UPP ePKP1 17 09 35
Kermadec Islands region (h = N).

" 25

UPP	iP		18 30 06.8	C
	ipP		18 30 12.6	
			micr	sec
	P	Z'	0.1	0.9
	pP	Z'	0.1	0.9
KIR	iP		18 29 53.9	
	ipP		18 30 00.3	
			micr	sec
	P	Z'	0.1	1.0
	pP	Z'	0.1	1.0

Northern Xinjiang, China.
h = 45 km (UPP,KIR).
m = 5.6 (UPP,KIR).

" 26 KIR iP 10 17 19.9
Southern Sumatera (h = 180 km).

" 26 UDD iSg1 11 57 58.1
Southern Norway, 61.2°N, 10.3°E.
Origin time = 11 56 55.
Solution from Norwegian station readings.

" 26 UPP iP 16 39 49.4
Sikkim (h = 45 km).

1988 May 26 UPP iP 19 12 34.2
i 19 12 40.7
Vancouver Island region
(h = 10 km).

" 26 UPP eP 23 38 30
Vancouver Island region
(h = 10 km).

" 27 UPP iPKP1 03 03 42.0
South of Fiji Islands (h = 90 km).

" 27 UPP ipP 14 22 23.9
i 14 22 25.8
KIR ipP 14 23 53.2
Yugoslavia (h = 25 km).

" 27 UPP iP 15 49 51.0
Ionian Sea (h = N).

" 28 UPP iP 03 27 16.1
Andreanof Islands, Aleutian Is.
(h = N).

km).

" 28 UPP iPKP 08 15 49.1
KIR iPKP 08 15 42.0
Fiji Islands region (h = 610 km).

" 28 UPP iP 08 18 36.5

" 28 UPP iP 14 38 58.0
KIR iP 14 38 23.5
South of Honshu, Japan
(h = 120 km).

" 28 UPP iSg1 14 59 02.4
KIR iLg1 15 02 04.9
UDD iPn 14 57 05.7
iSn 14 57 44.0
iSg1 14 58 07.1
DEL iSn 14 57 46.3
iSg1 14 58 05.8
MYV iSg1 14 59 13.4
Off coast of southern Norway, near 68°N, 7°E.
Origin time = 14 56 02.
M_L(UPP) = 3.3 1.

" 28 UPP i(PKP) 16 45 30.4
iSKP1 16 48 24.5
KIR iPKP 16 45 27.5
iSKP1 16 47 58.8
Fiji Islands region (h = 560 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
May 29 KIR eP 12 05 16
Mindanao, Philippine Islands
(h = 250 km).

" 30 KIR iP 00 34 12.6
Southern Iran (h = 35 km).

" 30 UPP iP 10 56 37.5
KIR iP 10 55 58.6
Near east coast of Honshu, Japan
(h = 60 km).

" 30 KIR iPKP 11 29 16.8
Vanuatu Islands (h = 140 km).

" 30 UPP Mx 17 00
micr sec
Mx Z 1.0 11
Aegean Sea (h = 10 km).

" 30 UPP eP 18 10 08
Tibet (h = 55 km).

" 30 UPP iSg1 18 40 28.9
UDD iSn 18 39 22.2
iSg1 18 39 30.6
DEL iSg1 18 40 58.2
Southern Norway, near 61 3/4°N,
7 1/2°E.
Origin time = 18 37 40.
M_L(UPP) = 2.4 1.
By combination with Norwegian
station readings.

" 30 UPP iPdiff 21 25 16.5
e(PP) 21 28 23
i(PP) 21 29 17.0
iPP 21 29 46.2
micr sec
Mx Z 19 26
KIR iPdiff 21 25 02.3
i(PP) 21 28 17.4
iPP 21 29 21.3
micr sec
Pdiff Z 1.1 1.6
Mx Z 13 24
Banda Sea (h = 90 km).
M = 6.4 (UPP,KIR).
(PP) denotes early PP arrials, cf.
Meyer, Seismological Inst. Uppsala,
Report 3-79.

1988
May 30 UPP micr sec
Mx Z 7.3 20
KIR iPKP 21 40 49.5
micr sec
Mx Z 8.9 21
San Juan Province, Argentian
(h = 90 km).
M = 6.3 (UPP,KIR).

December 22, 1989

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

NOTE: Due to technical failure there are no short-periods records at Umeå (UME).

JUNE 1 - 30, 1988

1988					
June	2	KIR	iP	06 21 41.5	
		Sichuan Province, China			
		(h = 10 km).			
"	2	UPP	iP	10 40 15.4	
		KIR	iP	10 41 30.3	
		Greece (h = 10 km).			
"	2	UPP	iSn	11 39 27.5	
			iSg1	11 39 53.7	
		KIR	iSn	11 40 11.8	
		UDD	iPn	11 37 24.4	
			iSn	11 38 26.3	
			iSg1	11 38 54.7	
		DEL	iSn	11 39 15.9	
			iSg1	11 39 54.4	
		MYV	ePn	11 37 28	
			eSn	11 38 35	
		Norwegian Sea, near 61 1/4°N, 2°E.			
		Origin time = 11 35 56.			
		M_L(UPP) = 3.2 (0.11) 3.			
"	2	UPP	iPKP1	12 18 41.4	
		KIR	iPKP1	12 18 23.2	C
			i	12 18 27.2	
		Off e. coast of N. Island, N.Z.			
		(h = 90 km).			
"	2	UPP	iP	13 11 48.5	
		KIR	iP	13 11 14.5	
		Southern Nevada.			
		Underground explosion.			

1988					
June	2	UPP	iP	13 59 17.9	
		KIR	iP	13 58 24.0	
		Fox Islands, Aleutian Islands			
		(h = N).			
"	3	UPP	iP	05 57 36.1	
				micr	sec
			P	Z' 0.1	0.8
		KIR	iP	05 57 43.4	
		Afghanistan-USSR border region			
		(h = 90 km).			
"	3	UPP	iP	15 50 00.2	
				micr	sec
			P	Z' 0.1	1.0
		KIR	iP	15 49 06.4	C
			ipP	15 49 44.4	
				micr	sec
			P	Z' 0.5	0.8
		Fox Islands, Aleutian Islands.			
		h = 160 km (KIR).			
		m = 6.0 (UPP,KIR).			
"	3	KIR	iP	12 31 32.3	
		Southern Honshu, Japan			
		(h = 370 km).			
"	3	KIR	iP	12 21 51.0	
"	3	UPP	iP	18 33 39.2	
		KIR	iP	18 33 47.6	C
				micr	sec
			P	Z' 0.2	1.7
		Hindu Kush region (h = 130 km).			

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 June 3 KIR eSg1 19 31 15

" 3 UPP ePKP1 23 47 34
iPKP2 23 47 49.9
micr sec
Mx Z' 20 26
KIR iPKP 23 47 11.9
iPKP1 23 47 18.8
micr sec
Mx Z' 7.8 29
South Island, New Zealand
(h = 80 km).
M = 6.5 (UPP,KIR).

" 4 UPP iP 00 08 24.6
KIR iP 00 08 31.4
Afghanistan-USSR border region
(h = 100 km).

" 4 KIR iP 03 15 42.7 C
micr sec
P Z' 0.1 0.8
Iran-Iraq border region (h = N).

" 4 UPP iP 07 32 51.4
East of Lake Baikal (h = N).

" 4 UPP iLg1 23 10 34.6
KIR iPn 23 06 21.0
iPg1 23 06 34.9
iSn 23 07 18.9
iSg1 23 07 43.5
UDD iLg1 23 11 04.4
DEL iLg1 23 12 31.5
Northwestern USSR, 67.6°N,
33.5°E.
Origin time = 23 05 07.
M_L(UPP) = 3.1 (0.08) 4.

" 5 UPP ePKP1 02 00 04
KIR iPKP 01 59 55.5
Fiji Islands region (h = 440 km).

" 5 UPP eP 08 30 05
Vancouver Island region
(h = 10 km).

" 5 UPP iP 09 07 28.2
KIR iP 09 06 46.8
Near east coast of Honshu, Japan
(h = 50 km).

1988 June 5 UPP iPKP1 17 49 10.7
Kermadec Islands region
(h = 70 km).

" 5 KIR iP 18 34 40.1
Arab Republic of Egypt
(h = 10 km).

" 5 UPP iPKP 18 41 45.8
iSKP1 18 44 58.9
micr sec
PKP Z' 0.4 1.5
Mx Z 3.6 26
KIR iPKP 18 41 32.6
micr sec
PKP Z' 0.3 1.0
Mx Z 1.9 20
Vanuatu Islands (h = 110 km).
M = 5.8 (UPP,KIR).

" 5 UPP iP 21 59 22.9
KIR iP 21 58 51.1
Volcano Islands region (h = 45 km).

" 6 KIR iP 05 29 57.4

" 6 UPP iP 06 02 31.5
micr sec
P Z' 0.1 0.9
KIR iP 06 03 46.4
Greece (h = 10 km).

" 6 UPP iP 08 49 12.8
KIR iP 08 49 51.9
Southern Iran (h = 35 km).

" 6 UPP iSg1 09 54 51.8
KIR eSg1 09 56 23
UDD iPg1 09 53 12.1
iSg1 09 53 58.6
DEL iSg1 09 55 19.7
MYV ePg1 09 53 07
eSg1 09 53 51
Southern Norway, near 62°N,
7 1/2°E.
Origin time = 09 52 09.
M_L(UPP) = 2.4 1.

" 6 UPP Mx 10 11
micr sec
Mx Z 1.0 18
North Atlantic Ocean (h = 10 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
June 6 KIR iP 15 10 39.7
Southeastern Alaska (h = 10 km).

" 6 UDD iSg1 16 50 26.5
Near coast of southern Norway, 58.1°N, 6.3°E.
Origin time = 16 48 17.
Solution from Norwegian station readings.

" 7 KIR iPn 20 50 27.3
iSg1 20 51 29.2
Central Finland, 65.8°N, 29.9°E.
Origin time = 20 49 13.
M_L(UPP) = 2.6 (0.41) 2.
Felt.
By combination with Finnish station readings.

" 8 KIR iPg1 02 04 17.8
iSg1 02 04 52.5
MYV iSn 02 05 18.6
Northern Norway, 66.6°N, 16.0°E.
Origin time = 02 03 32.
M_L(UPP) = 2.4 1.
Solution from Norwegian station readings.

" 9 KIR iP 00 18 04.6
Southern Iran (h = 25 km).

" 9 UPP iP 02 24 19.0
KIR iP 02 25 24.6
Eastern Mediterranean Sea (h = 10 km).

" 10 KIR iPKP 03 29 01.1
Santa Cruz Islands (h = 110 km).

" 10 UPP iP 05 16 01.5
KIR iP 05 16 39.4
Eastern Gulf of Aden (h = 10 km).

" 10 UPP iP 11 43 57.2
i 11 44 02.0
micr sec
i Z' 0.1 1.0
Mx Z 1.7 21
KIR iP 11 44 17.2
i 11 44 22.8
micr sec
i Z' 0.5 1.0
Mx Z 1.0 17
(cont.)

1988
June 10 (cont.)
Chagos Archipelago region (h = 20 km).
m = 6.2, M = 5.3 (UPP,KIR).

" 10 KIR iP 21 18 47.3
Tajik SSR (h = 35 km).

" 10 UPP iP 21 18 49.2
Southern California (h = 5 km).

" 11 UPP iP 10 41 32.2
Southern Greece (h = 55 km).

" 11 UPP micr sec
Mx Z 6.2 26
KIR iPKP 12 36 27.6
micr sec
Mx Z 2.1 24
Samoa Islands region (h = 35 km).
M = 5.9 (UPP,KIR).

" 12 KIR iP 01 14 07.0
Fox Islands, Aleutian Islands (h = N).

" 12 UPP iP 10 25 03.5
KIR iP 10 25 05.6
Nepal (h = N).

" 12 UPP iPKP 13 58 38.5
micr sec
Mx Z 22 25
KIR iPKP 13 58 24.9
micr sec
Mx Z 9.6 23
Santa Cruz Islands (h = 15 km).
M = 6.5 (UPP,KIR).

" 12 KIR eP 22 12 48
South of Alaska (h = N).

" 13 UPP eP 01 57 37
KIR eP 01 57 02
Central California (h = 5 km).

" 14 UPP iP 02 34 04.1
micr sec
P Z' 0.1 1.0
KIR iP 02 33 47.6
micr sec
P Z' 0.1 0.8
Eastern Kazakh SSR.
m = 5.6 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
June 14 UDD iSg1 14 01 15.3
MYV iSg1 14 01 14.0
Southern Norway, 61.7°N, 7.5°E.
Origin time = 13 59 32.
M_L(UPP) = 2.4 1.
Solution from Norwegian station readings.

" 15 UPP iP 12 12 57.4
KIR iP 12 12 29.6
micr sec
P Z' 0.1 0.7
Mariana Islands region
(h = 300 km).

" 15 UPP iP 19 27 59.0
KIR iP 19 27 58.8
Southern Sumatera (h = 110 km).

" 16 UPP iP 03 16 55.1
Greece (h = 30 km).

" 17 UPP iP 02 35 19.1
Mindoro, Philippine Islands
(h = 60 km).

" 17 UPP iP 13 38 13.2
i 13 38 24.9
iS 13 44 21
micr sec
P Z' 0.1 1.0
Mx Z 7.0 15
KIR iP 13 38 07.3
ipP 13 38 13.5
micr sec
P Z' 0.2 0.8
Mx Z 23 12
Alma-Ata region (h = 25 km).
m = 5.7, M = 5.9 (UPP,KIR).

" 17 UPP Mx 14 04
micr sec
Mx Z 2.7 20
Santa Cruz Islands (h = 50 km).

" 18 UPP iP 16 26 49.9
micr sec
P Z' 0.1 0.9
KIR iP 16 25 57.3
Andreanof Islands, Aleutian Is.
(h = N).

1988
June 18 UPP eP 18 54 45
iS 19 05 22
micr sec
Mx Z 3.7 21
KIR iP 18 54 35.9
micr sec
P Z' 0.1 1.4
Mx Z 4.6 22
Near coast of Guatemala
(h = 60 km).
M = 5.7 (UPP,KIR).

" 18 UPP iP 22 03 23.9
KIR iP 22 02 50.4
Bonin Islands region (h = 30 km).

" 18 UPP iP 23 02 13.9
iPP 23 05 25.4
iSKS 23 12 34
iS 23 12 44
micr sec
P Z' 1.6 2.5
Mx Z 52 19
KIR iP 23 01 48.2
micr sec
P Z' 1.0 2.4
Gulf of California (h = 10 km)
m = 6.6 (UPP,KIR).

" 19 UPP iP 02 33 39.2
Southern Greece (h = 70 km).

" 19 UPP iPKP1 12 33 29.5
iPKP2 12 33 35.4
Kermadec Islands (h = N).

" 19 UPP iP 20 32 32.9
iS 20 43 02
micr sec
P Z' 0.2 1.4
Mx Z 19 17
KIR iP 20 32 15.4
i 20 32 19.7
micr sec
i Z' 0.2 1.3
Mx Z 26 17
Mindoro, Philippine Islands
(h = 15 km).
m = 6.1, M = 6.6 (UPP,KIR).

" 19 UPP iP 20 36 53.3
KIR iP 20 36 34.8
Mindoro, Philippine Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 June 19
KIR iP 22 28 36.0
Tajik-Xinjiang border region (h = 130 km).

" 20
UPP iP 13 48 24.9
micr sec
Mx Z 2.3 17
KIR iP 13 48 06.1
micr sec
Mx Z 1.6 15
Mindoro, Philippine Islands (h = N).
M = 5.5 (UPP,KIR).

" 20
UPP iP 23 29 50.6

" 21
UPP iP 06 35 50.0
ipP 06 35 57.6
micr sec
P Z' 0.2 1.7
pP Z' 0.3 1.6
Mx Z 1.3 19
KIR iP 06 36 10.9
ipP 06 36 17.8
micr sec
P Z' 0.3 1.5
pP Z' 0.5 1.5
North Atlantic Ridge.
h = 25 km (UPP,KIR).
m = 6.2 (UPP,KIR).

" 21
UDD iSg1 13 00 15.3
Norwegian Sea, 58.5°N, 5.0°E.
Origin time = 12 57 57.
Solution from Norwegian station readings.

" 21
KIR iPKP 21 39 00.1
South Sandwich Islands region (h = N).

" 21
KIR iPKP1 19 27 09.5
South Pacific Ocean (h = 10 km).

" 21
UPP iP 21 49 51.3
micr sec
P Z' 0.1 1.1
KIR iP 21 49 07.1
Kuril Islands (h = 50 km).

" 22
UPP iP 13 44 14.4
KIR iP 13 43 20.6
Alaska Peninsula (h = N).

1988 June 22
UPP iPKP 22 12 16.3
KIR iPKP 22 12 02.2
micr sec
PKP Z' 0.1 1.0
Vanuatu Islands (h = 25 km).

" 22
UPP iP 22 51 25.0
KIR iP 22 50 53.1
Bonin Islands region (h = 380 km).

" 23
UPP iP 01 38 56.9
Iran (h = N).

" 23
KIR iP 01 55 26.5
Southern Xinjiang, China (h = 90 km).

" 23
UPP iP 04 24 39.5
KIR iP 04 24 21.7
Molucca Passage (h = 70 km).

" 23
UPP iP 05 26 16.4
KIR iP 05 26 42.2
Carlsberg Ridge (h = 10 km).

" 23
UDD iSg1 11 38 52.2
Southern Norway, 60.9°N, 10.1°E.
Origin time = 11 37 51.
M_L(UPP) = 2.0 1.
Solution from Norwegian station readings.

" 24
UPP iP 02 18 33.6 C
micr sec
P Z' 0.1 1.2
KIR iP 02 18 14.0 C
Luzon, Philippine Islands (h = 55 km).

" 24
UPP iSg1 08 35 08.0
UDD iPg1 08 33 24.4
iSg1 08 34 09.2
MYV iSg1 08 34 08.4
Southern Norway, near 61 3/4°N, 7 1/2°E.
Origin time = 08 32 24.
M_L(UPP) = 2.3 1.

" 24
UPP iP 09 09 33.9
iS 09 19 09
micr sec
P Z' 0.3 1.4
Mx Z 1.9 20
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
June 24 (cont.)

KIR	iP		09 09 45.3	
			micr	sec
	P	Z'	0.4	1.5

Trinidad (h = 40 km).
m = 6.1 (UPP,KIR).

" 24

UPP	iPKP1		13 15 39.9
	iPKP2		13 15 51.2
KIR	iPKP1		13 15 22.1

North of New Zealand
(h = 520 km).

" 24

UPP	iP		15 47 21.3
KIR	iP		15 46 29.8
		micr	sec
	P	Z' 0.1	0.8

Northwest Territories, Canada
(h = 10 km).

" 24

UPP	iP		22 17 49.3
KIR	iP		22 17 11.7

Near west coast of Honshu, Japan
(h = 220 km).

" 25

UPP	iPKP1		06 44 09.6
KIR	iPKP1		06 43 49.6

South of Kermadec Islands
(h = 55 km).

" 25

UPP	iPKP2		12 55 12.7

South of Kermadec Islands (h = N).

" 25

UPP	iP		14 05 56.9

Near east coast of Honshu, Japan
(h = 50 km).

" 25

UPP	iP		14 25 46.6

Rat Islands, Aleutian Islands
(h = N).

" 25

KIR	iP		16 10 08.2
	ipP		16 10 17.2

South of Java (h = 30 km).

" 25

UPP	iP		16 21 13.6
	i		16 21 18.0
	iS		16 25 52
		micr	sec
	i	Z' 0.3	1.5
	Mx	Z 1.8	15

(cont.)

1988
June 25 (cont.)

KIR	iP		16 22 00.5	
	i		16 22 03.9	
			micr	sec
	P	Z'	0.1	1.1
	i	Z'	0.3	1.5
	Mx	Z	2.2	10

Turkey (h = 50 km).
m = 5.7, M = 4.9 (UPP,KIR).

" 25

KIR	iP	17 15 56.5

" 25

UPP	iPKP1	17 43 34.2
	iPKP2	17 43 41.7
KIR	iPKP1	17 43 13.2

" 25

UPP	iP	18 27 35.0

Uzbek, SSR (h = N).

" 25

UPP	iSKP1	18 43 25.9

Vanuatu Islands (h = 25 km).

" 26

UPP	iP	22 55 26.5
KIR	iP	22 55 07.1

Luzon, Philippine Islands (h = N).

" 26

UPP	iP	01 14 56.9
KIR	iP	01 14 15.9

Off east coast of Honshu, Japan
(h = 45 km).

" 26

UPP	iP	04 28 37.7
KIR	iP	04 28 37.2

North Atlantic Ocean (h = 10 km).

" 26

UPP	iP	06 09 49.3

Greece (h = 35 km).

" 26

UPP	iP	07 15 02.9
	ipP	07 15 16.8
KIR	eP	07 15 15

Trinidad (h = 60 km).

" 26

UPP	iP	09 33 08.1
KIR	iP	09 32 24.8

Sea of Okhotsk (h = 330 km).

" 27

UPP	iP	03 48 17.2

Greece (h = 10 km).

" 27

UPP	iP	05 39 50.8

Romania (h = 100 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
June 27 UPP iPKP 06 27 04.9
iSKP1 06 30 27.1
i 06 30 33.6
micr sec
Mx Z 3.2 28
KIR iPKP 06 26 49.7
iSKP1 06 30 05.3
micr sec
PKP Z' 0.1 1.0
Vanuatu Islands (h = 70 km).

" 27 UPP i 07 56 21.5
iSg1 07 57 32.8
UDD iPn 07 56 02.7
iPg1 07 56 09.8
iSn 07 56 35.0
iSg1 07 56 44.5
DEL iPg1 07 56 05.1
iSg1 07 56 36.5
MYV iSg1 07 58 00.0
Skagerak, near 58°N, 10 1/2°E.
Origin time = 07 55 23.
M_L(UPP) = 3.2 (0.66) 2.

" 27 UPP iP 08 24 46.0
Kuril Islands (h = N).

" 27 KIR iP 08 26 45.3
Iran-Iraq border region (h = N).

" 27 UPP iPKP1 16 06 26.8
iPKP2 16 06 32.2
Kermadec Islands region
(h = 510 km).

" 27 UPP iPKP 16 34 07.3
KIR iP 16 33 59.0
Fiji Islands region (h = 540 km).

" 28 UPP iP 02 40 58.2
KIR iP 02 40 53.4
Burma (h = 100 km).

" 28 UPP iPKP1 17 00 17.2
iPKP2 17 30 30.8
micr sec
Mx Z 1.4 20
KIR iPKP1 17 00 17.0
iPKP2 17 30 29.4
micr sec
Mx Z 1.3 23
West of Macquarie Island
(h = 10 km).
M = 5.7 (UPP,KIR).

1988
June 28 UPP iP 17 09 43.0

" 28 UPP iP 18 56 11.6
KIR iP 18 56 25.1
Pakistan (h = 50 km).

" 28 UPP iP 21 03 08..7
Burma-India border region
(h = 140 km).

" 29 UPP iP 02 29 02.8

" 29 UPP iP 02 37 15.8
KIR iP 02 38 04.5
Puerto Rico region (h = 10 km).

" 29 UPP iP 03 14 48.4
KIR iP 03 14 05.1
Hokkaido, Japan region (h = 55 km).

" 29 UPP iP 09 22 51.2
Greece (h = 10 km).

" 30 UPP iP 09 38 30.6
Volcano Islands region (h = N).

" 30 UPP iP 15 32 57.0
micr sec
Mx Z 0.9 11
KIR micr sec
Mx Z 1.0 12
USSR-Mongolia border region
(h = N).
M = 4.8 (UPP,KIR).

November 9, 1989

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

JULY 1 - 31, 1988

1988					
Jul.	1	UPP	iP	12 59 00.5	
				micr	sec
			Mx Z	1.0	19
			Fox Islands, Aleutian Islands (h = N).		
"	1	UPP	iP	15 24 56.0	
			Near east coast of Honshu, Japan (h = 55 km). Early arrival when compared with the NEIC solution.		
"	1	UDD	iSn	18 53 43.6	
		MYV	iSn	18 53 39.0	
			Southwestern Norway, 61.9°N, 7.2°E. Origin time = 18 52 03. Solution from Norwegian station readings.		
"	2	UPP	iP	03 42 16.2	C
			South of Honshu, Japan (h = 60 km).		
"	2	UPP	iPKP	10 20 19.8	
			iSKP1	10 23 30.7	
				micr	sec
			PKP Z'	0.2	1.3
			Mx Z	1.7	25
			Vanuatu Islands (h = 140 km).		
"	2	UPP	iP	11 06 46.5	
				micr	sec
			P Z'	0.1	1.0
			Mx Z	2.6	13
			(cont.)		

1988					
Jul.	2	(cont.)			
			Ryukyu Islands (h = 30 km). m = 5.8 (UPP,KIR).		
"	3	UPP	IPKP	05 28 11.7	D
			ISKP	05 31 04.0	
				micr	sec
			PKP	0.2	0.9
			South of Fiji Islands (h = 540 km).		
"	3	UPP	iP	08 29 47.6	
				micr	sec
			P Z'	0.2	0.9
			Burma (h = 90 km). m = 6.0 (UPP,KIR).		
"	3	UPP	eP	11 56 39	
			iSKS	12 07 06	
			i	12 09 16	
			i	12 09 36	
				micr	sec
			Mx Z	32	17
			West Caroline Islands (h = 15 km).		
"	4	UPP	i(PKP)	08 46 32.5	
			iPKP	08 46 39.2	
			Fiji Islands region (h = 600 km).		
"	4	UPP	iP	09 45 44.1	

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jul. 4 UPP iP 14 52 29.8
i 14 52 45.3
Halmahera (h = 40 km).

4 UPP Mx 14 55
micr sec
Mx Z 2.6 19
Near coast of Peru
(h = 20 km).

" 5 UPP iPKP1 00 46 58.5
iPKP2 00 47 03.1
Kermadec Islands region
(h = 410 km).

" 5 UPP eP 03 50 17
i 03 50 33.1
N.W. Iran-USSR border region
(h = 55 km).

" 5 UPP iP 07 46 13.4
Tibet (h = 60 km).

" 5 UPP iP 08 19 36.2
Mindanao, Philippine Islands
(h = 180 km).

" 5 UPP iP 11 14 26.0

" 5 UPP iP 14 29 55.9

" 5 UPP iP 20 39 43.7 C
Greece (h = 30 km).

" 5 UPP iPKP 20 50 37.9
i 21 01 34
micr sec
Mx Z 17 8
KIR micr sec
Mx Z 11 19
New Britain region (h = 55 km).
M = 6.5 (UPP,KIR).

" 5 UPP iP 21 01 02.1
i 21 01 19.7

" 6 UPP i(PKP) 01 29 00.5
iSKP1 01 31 55.0
Fiji Islands region (h = 550 km).

" 6 UPP iP 02 18 19.6
Southern Iran (h = 20 km).

1988
Jul. 6 UPP iP 03 43 19.7
Greece-Albania border region
(h = 10 km).

" 6 UPP iPKP 06 05 50.6
South of Kermadec Islands (h = N).

" 6 UPP iP 16 05 25.5 C
iS 16 14 30
micr sec
P Z' 0.6 1.3
Mx Z 27 17
KIR micr sec
Mx Z 32 16
UME iP 16 05 01.8 C
Hokkaido, Japan region (h = 30 km).
M = 6.5 (UPP,KIR).

" 6 UPP iP 16 42 39.3
UME iP 16 42 12.5
Hokkaido, Japan region (h = 40 km).

" 6 UPP iP 17 06 27.2
ipP 17 06 36.8
micr sec
P Z' 0.1 1.1
Mx Z 2.8 16
KIR micr sec
Mx Z 2.5 15
UME iP 17 06 02.4
ipP 17 06 12.5
Hokkaido, Japan region.
h = 35 km (UPP,KIR).
m = 6.1, M = 5.5 (UPP,KIR).

" 6 UPP iP 20 00 23.4
micr sec
P Z' 0.1 0.9
UME iP 20 00 31.6
Windward Islands (h = 120 km).

" 6 MYV iSg1 21 57 23.6
Southern Norway, 61.8°N, 7.4°E.
Origin time = 21 55 40.
Solution from Norwegian station
readings.

" 7 UPP iP 03 10 12.2
Greece-Albania border region
(h = 10 km).

" 7 UPP iP 13 32 11.2

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jul. 7 UPP iP 15 17 18.3 C
UME iP 15 17 02.9 C
Southern Nevada (h = 0).
Underground explosion.

" 7 UPP iP 15 43 33.7
Greece-Albania border region
(h = 10 km).

" 8 UME iP 03 28 38.3

" 8 UPP iP 04 32 52.5
UME iP 04 32 50.5 C
Hindu Kush region (h = 210 km).

" 8 UPP iP 05 03 43.2
Greece-Albania border region
(h = 10 km).

" 8 UPP iPKP 16 54 12.2
UME iPKP 16 54 05.8
Solomon Islands (h = 70 km).

" 8 UPP iP 17 02 23.4
UME iP 17 02 41.3 C
Iran-Iraq border region (h = 70 km).

" 9 UPP iP 00 19 36.9
Eastern Siberia (h = 10 km).

" 9 UME iPKP 03 58 30.4
New Britain region (h = 100 km).

" 9 UME iP 05 56 59.0
ipP 05 57 35.1
El Salvador (h = 140 km).

" 9 UME iP 12 09 27.2
i 12 09 41.5

" 9 UPP iPKP1 15 30 10.9
iPKP2 15 30 14.7
UME iPKP1 15 29 59.0
iSKP1 15 33 15.1
Kermadec Islands (h = 260 km).

" 10 UPP iP 02 52 29.5 C
UME iP 02 52 43.0 C
Arabian Sea (h = 10 km).

" 10 UPP iP 03 41 42.0
i 03 49 59.8
(cont.)

1988
Jul. 10 (cont.)

			micr	sec
	P	Z'	0.1	0.5

UME iP 03 41 34.4
Burma-India border region
(h = 130 km).

" 10 UPP iP 04 44 02.1
Mindoro, Philippine Islands
(h = 55 km).

" 10 UPP iP 05 42 41.4
i 05 42 48.0
UME iP 05 42 30.0

" 10 UPP iP 06 47 36.3
UME iP 06 47 32.7
Andaman Islands region (h = N).

" 10 UPP iP 13 33 54.6
UME iP 13 33 36.0
South of Honshu (h = 510 km).

" 11 UPP iP 00 25 49.4
iSKS 00 36 16
iS 00 36 51

			micr	sec
	P	Z'	0.1	1.0
	Mx	Z	1.5	22

UME iP 00 25 38.7
iSKS 00 36 03
iS 00 36 35
Mindanao, Philippine Islands
(h = 70 km).

" 11 UPP iP 07 59 02.5

" 12 UPP iP 02 31 42.3
UME ipP 02 32 23.1
Greece (h = 25 km).

" 12 UPP iP 08 54 04.6
UME iP 08 53 47.3 C
Bonin Islands region (h = 55 km).

" 12 UPP iP 10 08 07.0
ipP 10 08 14.6

			micr	sec
	P	Z'	0.1	0.9

UME iP 10 08 12.8
ipP 10 05 20.0
Lake Maracaibo.
h = 25 km (UPP,UME).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jul. 12 UPP iPKP1 10 14 24.4
iPKP2 10 14 30.5
micr sec
PKP1 Z' 0.2 0.9
UME iPKP1 10 14 13.4 D
Kermadec Islands region
(h = 420 km)

" 12 UME iP 17 13 02.5
Mindanao, Philippine Islands
(h = 50 km).

" 12 UPP iP 18 11 03.6
micr sec
P Z' 0.1 1.3
UME iP 18 11 11.6
Near coast of Venuzuela (h = 5 km).

" 12 UPP iP 23 34 34.3
Southwestern Ryukyu (h = 140 km).

" 13 UME iP 01 56 31.0
Iran-Iraq border region (h = 80 km).

" 13 UPP iP 03 17 22.7
UME iP 03 17 10.6

" 13 UPP iP 12 38 14.7
i 12 38 19.3
UME iP 12 38 03.8 D

" 13 UPP iP 14 52 28.5
UME iP 14 52 03.6
i 14 52 05.0
Hokkaido, Japan region
(h = 100 km).

" 13 UME iP 22 31 26.9

" 14 UPP iP 08 20 34.9
UME iP 08 20 19.3
Northwest of Taiwan (h = 180 km).

" 14 UPP iP 12 10 45.1
UME iP 12 11 19.7
Greece (h = 15 km).

" 14 UPP iP 17 42 38.1
UME iP 17 42 22.0
Western Idaho (h = 5 km).

" 14 UME iPKP 18 32 47.5
South Sandwich Islands region
(h = N).

1988
Jul. 14 UME iP 21 50 27.9
Leeward Islands (h = 50 km).
Late arrival when compared with the
NEIC solution.

" 15 UME iP 13 44 46.8
Tajik SSR (h = N).

" 16 UPP iP 01 59 25.2
i 01 59 26.7
UME iP 02 00 03.6
Southern Greece (h = 80 km).

" 16 UPP iP 06 18 29.6
micr sec
Mx Z 1.0 18
UME iP 06 18 18.4
Talaud Islands (h = 30 km).

" 16 UPP iP 08 47 26.8
UME iP 08 44 19.4
Flores Sea (h = 420 km).

" 16 UPP iP 08 51 14.3
iS 08 58 40
micr sec
P Z' 0.2 1.3
Mx Z 2.3 16
UME iP 08 51 30.9 C
Eastern Gulf of Aden (h = 10 km).
m = 6.1 (UPP,KIR).

" 16 UPP eP 14 46 43
UME iP 14 46 57.1
Eastern Gulf of Aden (h = 10 km).

" 16 UPP iPKP 17 14 35.6 C
micr sec
PKP Z' 0.3 1.5
UME i(PKP) 17 14 23.9
iPKP 17 14 29.0
Kermadec Islands region
(h = 30 km).

" 16 UPP iP 20 05 33.1
i 20 05 34.4
iS 20 15 34
micr sec
i Z' 0.1 0.9
Mx Z 1.5 13
UME iP 20 05 19.9
Philippine Islands region (h = N).
m = 6.0 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jul. 16 UPP iP 20 57 50.3
micr sec
P Z' 0.1 1.0
UME iP 20 57 23.1
Fox Islands, Aleutian Islands
(h = N).
m = 6.1 (UPP,KIR).

" 16 UPP iPKP 21 34 01.0
UME iPKP 21 33 53.6
Vanuatu Islands (h = 180 km).

" 17 UPP iP 03 35 13.6
i 03 35 18.5
iS 03 45 12
micr sec
i Z' 0.2 0.9
Mx Z 4.4 14
UME iP 03 34 59.6
i 03 35 06.1
iS 03 44 46
Philippine Island region
(h = 10 km).
m = 6.1 (UPP,KIR).

" 17 UPP iSg1 12 54 57.0
Skagerrak, 58.9°N, 7.7°E.
Origin time = 12 51 48.
Solution from Norwegian station
readings.

" 17 UME iPKP 13 31 15.7
Vanuatu Islands (h = N).

" 17 UPP iP 15 17 26.5
iS 15 26 51
micr sec
Mx Z 3.0 16
UME iP 15 17 04.5 C
Off east coast of Honshu, Japan
(h = 30 km).

" 17 UPP iP 21 26 12.5
UME iP 21 26 30.6
Azores Islands region (h = 10 km).

" 17 UPP iSKP1 23 43 57.0
Vanuatu Islands (h = 190 km).

" 18 UPP iP 03 15 25.6
UME iP 03 15 11.9
Sichuan Province, China (h = N).

1988 Jul. 18 UPP iP 08 54 11.8
UME iP 08 54 08.5 C
Southern Sumatera (h = 80 km).

" 18 UPP iP 13 32 39.6
iS 13 41 09
micr sec
Mx Z 3.4 18
UME iP 13 32 12.0
Komandorsky Islands region
(h = 25 km).

" 18 UME iP 14 57 54.4
Philippine Islands region
(h = 20 km).

" 18 UPP iP 15 01 00.5
micr sec
Mx Z 1.2 15
UME iP 15 00 47.5
Philippine Islands region
(h = 15 km).

" 19 UPP i(PKP) 01 19 18.1
iPKP 01 19 26.8
i 01 22 17.2
micr sec
Mx Z 1.5 22
UME i(PKP) 01 19 10.2
iPKP 01 19 22.6
Tonga Islands (h = 140 km).

" 19 UME iPKP1 03 17 59.5
South Island, New Zealand
(h = 140 km).

" 19 UPP iP 11 05 36.5
micr sec
Mx Z 1.7 18
UME iP 11 05 12.2
Vancouver Island region
(h = 10 km).

" 19 UME iP 15 31 14.4
Azores Islands region (h = 10 km).

" 19 UPP iPKP 16 49 52.6
South Sandwich Islands region
(h = 20 km).

" 20 UME iPKP 00 16 31.2
South Sandwich Islands region
(h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jul. 20 UPP iP 06 28 36.8
IPP 06 30 10.4
micr sec
PP Z' 0.2 1.1
Mx Z 3.8 15
UME iP 06 28 33.2 D
Tajik SSR (h = 40 km).
m = 5.9 (UPP,KIR).

" 20 UME iP 15 01 41.0
Fox Islands, Aleutian Islands
(h = N).

" 20 UME ipP 20 47 03.2
Near east coast of Honshu, Japan
(h = 45 km).

" 20 UPP iP 23 27 20.1
iS 23 37 00
micr sec
P Z' 0.2 1.1
Mx 17 17
UME iP 23 27 05.6 D
iS 23 36 30
Taiwan (h = 50 km).
m = 6.1 (UPP,KIR).

" 21 UPP iP 07 04 32.3
Burma (h = 60 km).

" 21 UPP iP 18 51 23.5
micr sec
Mx Z 0.7 14
Taiwan region (h = 35 km).

" 22 UPP iP 01 06 52.3
Kuril Islands (h = 120 km).

" 22 UME iPKP 04 48 06.2
Vanuatu Islands (h = 220 km).

" 22 UME iPKP 14 43 56.1
Vanuatu Islands (h = 180 km).

" 22 UPP i(PKP) 18 29 48.1
iPKP 18 29 51.0
UME i(PKP) 18 29 42.2
South of Fiji Islands (h = 590 km).

" 22 UPP iP 19 22 01.6 C
UME iP 19 22 00.7
Hindu Kush region (h = 180 km).

1988 Jul. 22 UPP iP 21 23 01.5
iS 21 28 34
micr sec
Mx Z 2.9 18
KIR micr sec
Mx Z 1.0 17
UME iP 21 23 19.9 C
iS 21 29 05
Azores Islands (h = 10 km).
M = 4.8 (UPP,KIR).

" 23 UPP iP 04 21 18.3
Andreanof Islands, Aleutian Is.
(h = 25 km).

" 23 UPP iP 07 45 59.2
ipP 07 46 05.7
iS 07 52 15
micr sec
P Z' 0.3 1.5
Mx Z 23 14
KIR micr sec
Mx Z 16 10
UME iP 07 45 42.1 C
ipP 07 45 47.3
iS 07 51 40
Mongolia.
h = 20 km (UPP,UME).
m = 5.7, M = 6.1 (UPP,KIR).

" 23 UPP iP 09 24 52.4
Southern Greece (h = 55 km).

" 23 UPP ePKP 14 45 02
micr sec
Mx Z 4.4 18
UME iPKP 14 44 53.5
Loyalty Islands (h = 20 km).

" 23 UPP iPdiff 15 32 11.4
iPKP 15 35 50.1
i(PP) 15 36 46.5
iPP 15 36 59.4
iPKKP 15 46 18.8
micr sec
Mx Z 17 22
KIR micr sec
Mx Z 8.3 23
UME iPdiff 15 31 50.5
iPKP 15 35 46.1
iPKKP 15 46 29.8
New Britain region (h = 15 km).
M = 6.4 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jul. 23 UPP iP 15 55 23.3

" 23 UPP iP 19 17 03.1
Iran (h = 40 km).

" 24 UPP i(PKP) 00 48 52.0
UME iPKP 00 48 50.8
South of Fiji Islands (h = 220 km).

" 24 UPP iPKP 04 38 20.1
South of Fiji Islands (h = 480 km).

" 24 UPP iP 05 18 02.6
UME iP 05 17 46.0
West Caroline Islands (h = 30 km).

" 24 UPP iP 05 59 30.2
ipP 05 59 39.5
i 05 59 43.8
UME iP 05 59 14.7
Luzon, Philippine Islands (h = N).

" 24 UME iPKP 09 17 43.2
Loyalty Islands region (h = 25 km).

" 24 UPP iP 12 43 54.2

" 24 UPP iP 18 58 13.7
Philippine Islands region
(h = 60 km).

" 24 UPP iP 22 35 48.7
UME eP 22 35 33
Mariana Islands (h = 90 km).

" 25 UPP iPdiff 07 00 26.5
i(PP) 07 03 56.0
iPKP 07 04 32.1
iPP 07 05 03
iPKKP 07 15 46.3
micr sec
Pdiff Z' 0.1 1.2
Mx Z 23 20
KIR micr sec
Mx Z 20.5 17
UME iPdiff 07 00 13.2
i(PP) 07 03 38.3
iPP 07 04 47.6
Aroe Islands region (h = 30 km).
m = 7.0, M = 6.7 (UPP,KIR).
(PP) denotes early PP arrivals.

1988
Jul. 25 UPP iP 09 56 18.1 C
UME iP 09 55 51.1 C
Kuril Islands (h = N).

" 25 UPP iP 10 38 48.7
Kamchatka (h = 170 km).

" 25 UPP iP 14 38 11.2
Andreanof Islands, Aleutian Is.
(h = N).

" 25 UPP iP 19 35 32.2
Andreanof Islands, Aleutian Is.
(h = 40 km).

" 25 UPP iP 20 34 11.1
South of Honshu, Japan
(h = 500 km).

" 25 UPP iP 23 53 05.5
i 23 53 06.2
micr sec
i Z' 0.2 1.1
UME iP 23 52 37.4 C
Kuril Islands (h = 90 km).
m = 6.0 (UPP,KIR).

" 26 UPP iP 00 41 56.6
i 00 42 09.1
micr sec
i Z' 0.1 1.3
UME i 00 41 30.3
Komandorsky Islands region (h = N).
m = 5.8 (UPP,KIR).

" 26 UPP iP 03 06 44.9
Andreanof Islands, Aleutian Is.
(h = N).

" 26 UPP iP 16 24 57.7
i 16 25 14.6
UME iP 16 24 36.8
i 16 24 53.7
Off east coast of Honshu, Japan
(h = 40 km).

" 26 UPP iPKP 16 54 02.6
South of Fiji Islands (h = 540 km).

" 26 UPP iP 19 16 51.9
Luzon, Philippine Islands
(h = 45 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Jul. 26 UPP iP 21 42 01.4 C
UME iP 21 41 57.4
Andaman Islands region
(h = 35 km).

" 27 UPP iP 05 05 25.8
UME iP 05 05 59.1
Crete (h = 45 km).

" 27 UPP ipP 07 16 33.0
Tibet-India border region (h = N).

" 27 UPP iP 12 29 08.3
KIR iP 12 29 19.7
i 12 29 31.1
UME iP 12 29 05.5

" 27 UPP iPKP 13 03 20.3
South of Fiji Islands (h = 520 km).

" 27 UPP iP 17 10 54.9
i 17 10 56.3
KIR iP 17 10 27.5
micr sec
P Z' 0.1 0.9
Mariana Islands (h = 220 km).

" 27 UPP iP 20 30 51.1
KIR iP 20 30 37.9
UME iP 20 30 48.3
i 20 30 59.6
Near coast of Chiapas, Mexico
(h = 30 km).

" 27 UPP iP 21 39 56.9
KIR iP 21 39 44.8
UME iP 21 39 53.4
i 21 40 05.0
Near coast of Chiapas, Mexico
(h = 25 km).

" 27 UPP iPKP 22 13 55.7
iSKP1 22 17 00.8
micr sec
PKP Z' 0.2 0.9
Mx Z 5.1 22
KIR iPKP 22 13 41.8
micr sec
PKP Z' 0.6 1.0
Mx Z 2.7 18
UME iPKP 22 13 47.8 C
Vanuatu Islands (h = 170 km).
M = 6.0 (UPP,KIR).
M uncorrected for focal depth.

1988
Jul. 27 UPP iP 23 00 40.9

" 27 UPP iPKP 23 03 19.6
iSKP1 23 06 25.7
micr sec
PKP Z' 0.2 1.7
KIR iPKP 23 03 06.1
i 23 06 26.3
micr sec
PKP Z' 0.1 1.1
UME iPKP 23 03 12.5
i 23 06 33.4
Vanuatu Islands (h = 180 km).

" 28 UPP iP 04 08 42.7
KIR iP 04 07 51.7
UME iP 04 08 15.5
Kamchatka (h = 120 km).

" 28 UPP eP 04 15 56
KIR eP 04 15 02
Andreanof Islands, Aleutian Is.
(h = N).

" 28 UPP iP 13 28 30.8
KIR iP 13 28 02.1
UME iP 13 28 14.7
Mariana Islands (h = 70 km).

" 28 KIR iP 14 50 29.7
UME iP 14 50 25.1
Northern Sumatera (h = N).

" 28 KIR iP 17 41 37.2
i 17 41 49.8

" 28 KIR iP 22 32 45.8
UME iP 22 33 05.1
Hokkaido, Japan region (h = 70 km).

" 28 UPP iP 22 48 32.3
iS 22 58 34
KIR iP 22 47 58.4
UME iP 22 48 11.7
South of Honshu, Japan
(h = 40 km).

" 29 UPP iP 02 08 38.8
iS 02 12 54
micr sec
P Z' 0.1 1.5
KIR iP 02 09 19.8
UME iP 02 09 05.6
North Atlantic Ocean (h = 10 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Jul. 29 UPP iP 10 10 54.7
i 10 11 07.6
Shikoku, Japan (h = 45 km).

" 29 UPP iP 18 00 06.5
KIR iP 18 00 19.1

" 29 KIR iP 19 22 20.0
Molucca Passage (h = 45 km).

" 30 UPP iP 01 46 20.5
KIR iP 01 46 01.5
Luzon, Philippine Islands (h = N).

" 30 KIR iP 03 35 59.9
Mindanao, Philippine Islands
(h = 70 km).

" 30 KIR iP 06 01 06.6
micr sec
P Z' 0.2 1.7
North Atlantic Ridge (h = 20 km).

" 30 KIR iP 10 18 31.0
Near coast of Jalisco, Mexico
(h = N).

" 30 UPP iP 21 18 17.4
i 21 18 42.9
iS 21 27 12.4
i 21 28 14.6
micr sec
P Z' 0.5 0.8
Mx Z 3.1 25
KIR iP 21 17 30.8 C
iS 21 25 45.5
micr sec
P Z' 0.4 0.9
Mx Z 2.3 22
UME iP 21 17 52.6 C
Kuril Islands (h = 60 km).
m = 6.5, M = 5.3 (UPP,KIR).
M uncorrected for focal depth.

" 30 KIR iP 23 26 14.0
UME iP 23 26 29.9
Near s. coast of Honshu, Japan
(h = 10 km).

" 30 UPP iP 23 52 18.1
KIR iP 23 51 39.9
UME iP 23 51 54.5
Near s. coast of Honshu, Japan
(h = 10 km).

1988 Jul. 31 KIR iP 02 53 23.1
Afghanistan-USSR border region
(h = N).

" 31 KIR iP 04 42 19.1
Near s. coast of Honshu, Japan
(h = 10 km).

" 31 UPP iSg1 09 12 06.2
KIR eSn 09 12 08
i 09 12 24.4
UME iSn 09 11 35.5
iSg1 09 12 11.0
UDD iPn 09 09 33.4
iSn 09 10 33.8
iSg1 09 10 53.5
MYV iSg1 09 10 47.4
Off coast of southwestern Norway,
near 62°N, 3 1/2°E.
Origin time = 09 08 14.
M_L(UPP) = 2.8 1.

" 31 UPP iPKP 13 09 21.7
iSKP1 13 12 54.3
micr sec
Mx Z 15 23
KIR i(PKP) 13 09 08.6
iPKP 13 09 11.6
i 13 09 41.2
iSKP1 13 12 30.2
micr sec
Mx Z 5.2 21
UME iPKP 13 09 16.8
iSKP1 13 12 42.8
Loyalty Islands region (h = 55 km).
M = 6.4 (UPP,KIR).

" 31 UPP iSKS 15 46 57
micr sec
Mx Z 5.1 21
KIR iP 15 36 50.9
micr sec
Mx Z 1.7 19
Atlantic-Indian Rise (h = 10 km).
M = 5.7 (UPP,KIR).

" 31 UPP eP 21 08 16
KIR iP 21 07 22.4
Andreanof Islands, Aleutian Is.
(h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988

Jul.	31	UPP	iP	21 17 20.2
		KIR	iP	21 16 25.9
		Andreanof Islands, Aleutian Is. (h = N).		
"	31	KIR	eP	22 41 08
		Afhganistan-USSR border region (h = 80 km). Early arrival when compared with the NEIC solution.		

January 10, 1990

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

AUGUST 1 - 31, 1988

1988 Aug.	1	UPP	eP	01 50 58					
		KIR	eP	01 50 21					
		Near s. coast of Honshu, Japan (h = 10 km).							
"	1	KIR	iP	06 57 51.8					
		Unimak Island region (h = N).							
"	2	KIR	iP	01 07 53.1					
		Volcano Islands region (h = N).							
"	2	UPP	iP	11 27 39.7					
		UME	iP	11 27 18.4 D					
		Near s. coast of Honshu, Japan (h = 10 km).							
"	2	UPP	iP	15 04 05.3					
		UME	iP	15 03 48.8					
			ipP	15 03 58.6					
		Mariana Islands region (h = 35 km).							
"	2	UDD	iSg1	16 21 29.5					
		MYV	iSg1	16 21 29.2					
		Southern Norway, 61.8°N, 7.4°E.							
		Origin time = 16 19 43.							
		Solution from Norwegian station readings.							
"	2	UPP	iP	19 27 23.4					
		UME	eP	19 27 04					
"	2	UPP	iPKP	22 27 23.1					
				micr	sec				
			Mx	Z 1.1	21				
		UME	ePKP	22 27 32					
		South Sandwich Islands region (h = 25 km).							
1988 Aug.	3	UPP	iP	05 50 39.7 C					
			ipP	05 51 23.0					
			iS	05 56 38					
				micr	sec				
			P	Z' 0.4	1.0				
			Mx	Z 1.0	11				
		UME	iP	05 50 37.6 C					
			ipP	05 51 21.3					
		Hindu Kush region.							
		h = 210 km (UPP,UME).							
"	3	UPP	iP	12 11 40.8 C					
				micr	sec				
			P	Z' 0.1	1.0				
		KIR	iP	12 11 50.4 C					
				micr	sec				
			P	Z' 0.1	1.0				
		UME	iP	12 11 39.5 C					
		Hindu Kush region (h = 210 km).							
		m = 5.2 (UPP,KIR).							
"	3	UPP	Mx	18 24					
				micr	sec				
			Mx	Z 1.0	15				
		KIR	Mx	18 21					
				micr	sec				
			Mx	Z 1.2	14				
		Off coast of Jalisco, Mexico (h = N).							
		M = 5.4 (UPP,KIR).							
"	3	KIR	iP	19 30 55.9					
		Chagos Archipelago region (h = 10 km).							
"	3	UPP	iP	20 48 08.6					
		KIR	eP	20 49 06					
		(cont.)							

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Aug. 3 (cont.)
UME eP 20 48 34
Jordan-Syria region (h = 45 km).

" 4 UPP iP 04 01 38.1
KIR eP 04 02 52
Tyrrhenian Sea (h = 390 km).

" 4 KIR ePKP 06 38 02
West Chile Rise (h = 5 km).

" 4 UPP iP 10 24 31.6
ipP 10 24 41.6
KIR iP 10 24 34.4
ipP 10 24 44.8
Nicobar Island region.
h = 35 km (UPP,KIR).

" 4 UPP iP 11 49 52.6
KIR iP 11 49 52.7
UME eP 11 49 49
Northern Sumatera (h = 80 km).

" 4 UPP iPg1 13 44 22.2
iSg1 13 44 26.5
iRg 13 44 27.5
UDD iSg1 13 45 31.0
Dannemora, Uppland, Sweden,
60.2°N, 17.8°E.
Rockburst at the iron ore mine.

" 4 UPP iPKP1 17 36 38.2
KIR ePKP1 17 36 19
UME ePKP1 17 36 27
South of Kermadec Island
(h = 10 km).

" 4 KIR ePKP 21 46 09
South of Fiji Islands (h = 520 km).

" 5 UME ePKP1 04 47 14
Off coast of central Chile
(h = 20 km).

" 5 UPP eP 13 48 14
Off coast of Chiapas, Mexico
(h = 20 km).

" 5 UPP iP 17 46 01.2
KIR iP 17 46 01.3
UME iP 17 45 56.4
Andaman Islands region
(h = 40 km).

1988 Aug. 6 UPP iP 00 46 38.8 C
iS 00 54 58
micr sec
P Z' 1.8 0.5
Mx Z 397 19
KIR iP 00 46 31.8 C
micr sec
P Z' 2.5 0.5
Mx Z 172 18
UME iP 00 46 31.2 C
eS 00 54 39
Burma-India border region
(h = 90 km).
m = 7.5, M = 7.4 (UPP,KIR).
M uncorrected for focal depth.

" 6 UPP iPKP 06 45 48.1
micr sec
Mx Z 3.5 20
KIR ePKP 06 45 27
micr sec
PKP Z' 0.1 1.0
Mx Z 2.8 24
UME iPKP 06 45 32.5
i 06 45 41.5
i 06 45 48.2
New Britain region (h = 25 km).
M = 5.8 (UPP,KIR).

" 6 UPP iP 09 10 48.0 D
ipP 09 11 29.0
e 09 12 21
iS 09 16 46
micr sec
P Z' 4.6 1.5
KIR iP 09 10 56.1 D
ipP 09 11 35.3
micr sec
P Z' 3.6 1.5
UME iP 09 10 46.0 D
iS 09 16 45
Afghanistan-USSR border region.
h = 190 km (UPP,KIR).
m = 6.8 (UPP,KIR).

" 6 KIR iP 09 42 32.3 C
micr sec
P Z' 0.1 1.0
Eastern Gulf of Aden (h = 10 km).

" 6 KIR iP 15 02 59.7
South of Alaska (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 7 KIR eP 04 20 35
Kirghiz-Xinjiang border region
(h = 60 km).

" 7 KIR eP 05 41 53
Kirghiz SSR. (h = N).

" 7 UPP iP 06 36 18.2
KIR eP 06 36 02
Luzon Philippine Islands
(h = 40 km).

" 7 UPP iP 13 00 11.7
UME eP 12 59 55
Ryukyu Islands region (h = N).

" 7 KIR iP 15 23 28.6
UME eP 15 23 03
Iran (h = 40 km).

" 7 KIR iP 15 47 48.9
UME iP 15 47 54.1
Banda Sea (h = 170 km).

" 7 UPP eP 19 37 32
KIR iP 19 37 13.6 C
UME iP 19 37 19.5 C
Leyte Philippine Islands
(h = 140 km).

" 7 UME i 21 36 24.4
Gulf of Bothnia, 64.5°N, 21.8°E.
Origin time = 21 36 13.
By combination with Finnish station readings.

" 7 UPP eP 22 37 55
KIR iP 22 37 21.8
UME iP 22 37 36.4
South of Honshu, Japan
(h = 430 km).

" 8 UPP eP 01 22 52
KIR eP 01 22 53
UME eP 01 22 50
Northern Sumatera (h = 45 km).

" 8 UPP iP 05 16 51.4
ipP 05 17 12.7
KIR iP 05 16 33.6 C
micr sec
P Z' 0.1 0.9
(cont.)

1988
Aug. 8 (cont.)
UME iP 05 16 39.1 C
ipP 05 17 01.5
Mindoro, Philippine Islands.
h = 80 km (UPP,UME).
m = 5.9 (UPP,KIR).

" 8 UDD iPg1 08 10 00.4
iSg1 08 10 23.7
iRg 08 10 39.3
Local near-surface event.

" 8 UPP iP 09 20 43.0
KIR iP 09 20 07.4
UME iP 09 20 22.2
Near s. coast of Honshu, Japan
(h = 350 km).

" 8 UPP iP 12 05 13.1
Burma-India border region
(h = 140 km).

" 8 UPP iP 13 48 06.2
KIR iP 13 47 11.8
UME iP 13 47 40.0
Kodiak Island region (h = 15 km).

" 8 UPP eP 16 24 36
Burma-India border region
(h = 100 km).

" 8 UPP iP 20 01 28.8 D
i 20 01 30.2
iS 20 02 59
KIR iP 20 01 34.0
i 20 01 34.8
UME iP 20 01 25.6 D
UDD iP 20 01 05.3
i 20 01 05.9
MYV iP 20 00 52.2
Norwegian Sea, near 63 3/4°N,
2 1/2°E.
Origin time = 19 59 34.
By combination with Norwegian station readings. Felt in large parts of Norway and in Jämtland, Sweden.

" 9 UDD iSg1 07 17 25.9
Off coast of southwestern Norway,
61.6°N, 4.5°E.
Origin time = 07 15 04.
Solution from Norwegian station readings.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 9 UPP eP 14 47 23 C
KIR iP 14 47 22.6 C
micr sec
P Z' 0.1 1.0
UME iP 14 47 19.7 C
Southern Sumatera (h = 100 km).

" 9 UPP iP 17 03 20.9
KIR iP 17 02 56.6
micr sec
P Z' 0.1 1.0
UME iP 17 03 05.3
Taiwan region (h = 50 km).

" 9 UDD iSg1 17 36 26.2
Southern Norway, 61.3°N, 10.3°E.
Origin time = 17 35 43.
Solution from Norwegian station readings.

" 10 UPP iP 02 15 04.9 C
micr sec
P Z' 0.1 0.8
KIR iP 02 14 16.4 C
micr sec
P Z' 0.1 0.5
UME iP 02 14 38.9 C
Kuril Islands (h = 120 km).
m = 5.9 (UPP,KIR).

" 10 UPP ePKP 04 57 22
i 04 57 30.6
ePP 04 59 08
micr sec
Mx Z 86 21
KIR ePKP 04 57 11
ePP 04 58 18
micr sec
Mx Z 71 19
UME iPKP 04 57 17.2
Solomon Islands (h = 30 km).
M = 7.3 (UPP,KIR).

" 10 KIR eP 05 15 50

" 10 UPP Mx 07 52
micr sec
Mx Z 7.2 22
KIR Mx 07 50
micr sec
Mx Z 7.6 19
Solomon Islands (h = 40 km).
M = 6.3 (UPP,KIR).

1988
Aug. 10 UPP ePKP 09 49 29
South of Fiji Islands (h = 510 km).

" 10 UPP iP 11 06 36.9
ipP 11 07 04.3
KIR iP 11 06 44.2
ipP 11 07 12.4
UME iP 11 06 31.8
Afghanistan-USSR border region.
h = 130 km (UPP,KIR).

" 10 UPP Mx 11 47
micr sec
Mx Z 1.4 20
KIR Mx 11 50
micr sec
Mx Z 1.1 18
Solomon Islands (h = 35 km).
M = 5.5 (UPP,KIR).

" 10 UPP
micr sec
Mx Z 2.3 17
KIR ePKP 12 06 00
micr sec
Mx Z 1.5 16
UME ePKP 12 06 05
Easter Island region (h = 10 km).
M = 5.8 (UPP,KIR).

" 10 UPP i(PKP) 13 30 13.3
iPKP 13 30 14.7
iPP 13 32 58
iSKP1 13 33 24.9
iSKKP 13 42 39.2
micr sec
(PKP) Z' 0.1 0.9
Mx Z 9.5 23
KIR i(PKP) 13 29 57.1
iPKP 13 30 00.6
micr sec
(PKP) Z' 0.5 0.7
Mx Z 3.0 19
UME i(PKP) 13 29 57.3
iPKP 13 30 06.9
Vanuatu Islands (h = 130 km).
M = 6.1 (UPP,KIR).
M uncorrected for focal depth.

" 10 KIR iPKP 16 11 45.3
micr sec
PKP Z' 0.1 1.9
Weste Chile Rise (h = 10 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 10 UPP eP 20 37 27
KIR eP 20 37 35
Afghanistan-USSR border region
(h = 100 km).

" 10 UPP Mx 22 31
micr sec
Mx Z 1.0 18
Solomon Islands (h = 40 km).

" 11 UPP iP 03 11 33.8
ipP 03 11 37.8
iS 03 16 18
micr sec
P Z' 0.1 1.1
Mx Z 2.8 15
KIR iP 03 11 54.3
ipP 03 11 59.1
micr sec
P Z' 0.1 1.0
Mx Z 0.9 16
UME iP 03 11 49.1
ipP 03 11 53.6
North Atlantic Ridge.
h = 15 km (UPP,KIR,UME).
m = 5.3, M = 4.7 (UPP,KIR).

" 11 UPP iP 03 52 52.3
micr sec
P Z' 0.1 1.2
KIR iP 03 52 30.2
micr sec
P Z' 0.1 0.9
Taiwan region (h = 40 km).
m = 5.7 (UPP,KIR).

" 11 KIR iP 05 07 49.5
UME eP 05 07 38
Afghanistan-USSR border region
(h = 80 km).

" 11 UPP iP 08 12 27.5
Off coast of Oregon (h = 10 km).

" 11 UPP eP 13 42 06
iS 13 52 41
micr sec
Mx Z 2.3 19
KIR micr sec
Mx Z 1.5 16
UME iS 13 53 01
Mascarene Islands region
(h = 10 km).
M = 5.5 (UPP,KIR).

1988
Aug. 11 UPP iP 16 07 18.6
iPP 16 08 49.6
iS 16 13 08
micr sec
P Z' 0.1 1.0
KIR iP 16 07 57.6
ipP 16 08 04.7
micr sec
P Z' 0.1 0.5
UME iP 16 07 33.9
ipP 16 07 40.5
Southern Iran.
h = 25 km (KIR,UME).
m = 5.7 (UPP,KIR).

" 11 UPP iP 16 11 58.0
iPP 16 13 28.4
eS 16 17 44
micr sec
P Z' 0.1 0.6
Mx Z 9.6 16
KIR iP 16 12 35.3
ipP 16 12 41.0
micr sec
P Z' 0.4 0.9
Mx Z 12 18
UME iP 16 12 12.1
Southern Iran (h = N).
m = 6.0, M = 5.7 (UPP,KIR).

" 11 KIR iP 17 05 18.4
Southern Iran (h = N).

" 11 KIR eP 22 00 09
Southern Iran (h = N).

" 12 UPP iP 05 26 23.6
KIR iP 05 25 46.3
epP 05 26 03
UME iP 05 26 02.2
ipP 05 26 19.4
Near s. coast of Honshu.
h = 60 km (KIR,UME).

" 12 UDD iSg1 11 40 04.9
Southern Norway, 62.2°N, 7.5°E.
Origin time = 11 38 15.
M_L(UPP) = 2.2 1.
Solution from Norwegian station
readings.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Aug. 12 UDD iSg1 17 00 21.5
Southern Norway, 61.1°N, 9.4°E.
Origin time = 16 59 15.
Solution from Norwegian station readings.

" 12 UPP iP 19 06 08.1
KIR iP 19 06 10.0
UME iP 19 06 02.9
Southern Xinjiang China (h = N).

" 12 UPP iP 19 06 23.5
micr sec
P Z' 0.2 1.3
Mx Z 2.2 12
KIR iP 19 06 25.2
micr sec
P Z' 0.2 0.9
Mx Z 3.3 12
UME iP 19 06 18.1
iS 19 12 18
Southern Xinjiang, China (h = N).
m = 5.8, M = 5.3 (UPP,KIR).

" 12 UPP eP 19 53 33
KIR iP 19 52 39.3
Off east coast of Kamchatka (h = N).

" 12 UPP eP 22 07 56
Hokkaido, Japan region (h = 50 km).

" 13 UPP eP 05 59 22
KIR iP 05 59 04.8
UME eP 05 59 11
Talaud Islands (h = 140 km).

" 13 UPP micr sec
Mx Z 1.5 11
UME eP 07 31 32
e 07 31 37
Aegean Sea (h = 25 km).

" 13 KIR iP 16 54 27.1
Southern Iran (h = 20 km).

" 13 KIR iP 18 52 59.5
Southern Alaska (h = 15 km).

" 13 UPP iP 20 10 04.4 C
micr sec
P Z' 0.1 0.6
KIR iP 20 09 57.6 C
(cont.)

1988 Aug. 13 (cont.)
UME iP 20 09 56.9 C
Burma-India border region (h = 90 km).

" 14 UPP iP 11 06 06.9 D
ipP 11 08 10.1
micr sec
P Z' 0.4 1.1
KIR iP 11 05 15.8 D
ipP 11 07 14.8
micr sec
P Z' 0.5 1.0
UME iP 11 05 38.7 D
ipP 11 07 36.7
Sea of Okhotsk.
h = 660 km (UPP,KIR,UME).
m = 5.7 (UPP,KIR).

" 14 UPP iP 18 01 42.3
KIR eP 18 01 31
UME eP 18 01 34
Burma-China border region (h = N).

" 14 UPP iSKS 18 19 35
iS 18 20 08
micr sec
Mx Z 14 21
KIR ePKP 18 11 49
i 18 12 01.6
micr sec
Mx Z 8.5 19
UME iPKP 18 11 46.7
i 18 12 01.9
i 18 12 46.2
Near coast of northern Chile (h = N).
M = 6.4 (UPP,KIR).

" 14 KIR iP 18 22 23.0
UME iP 18 22 25.1
West Iran region (h = N).

" 14 UPP iP 20 14 31.0
micr sec
P Z' 0.1 1.4
KIR iP 20 13 57.5
micr sec
P Z' 0.1 1.5
UME iP 20 14 16.2
Utah (h = 10 km).
m = 5.8 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 15 KIR iP 02 13 04.6
Mindanao, Philippine Islands
(h = 80 km).

" 15 UPP iP 04 23 20.8
KIR iP 04 22 37.0
UME iP 04 22 56.7
Hokkaido, Japan region (h = 90 km).

" 15 UPP eP 09 51 41
Central Mid-Atlantic Ridge
(h = 10 km).

" 15 UPP iP 10 12 25.0
ipP 10 12 40.2
iS 10 23 12
micr sec
Mx Z 5.2 21
KIR iP 10 12 07.3
ipP 10 12 21.1
i 10 12 50.4
micr sec
P Z' 0.1 1.4
Mx Z 3.0 19
UME iP 10 12 12.8
ipP 10 12 27.4
iS 10 22 56
Mindanao, Philippine Islands.
h = 50 km (UPP,KIR,UME).
M = 5.8 (UPP,KIR).

" 15 UPP iPKP 16 01 02.9

" 15 UME iP 18 29 33.9
i 18 29 48.2

" 16 UPP iPg1 03 00 09.1
iSg1 03 00 13.7
iRg 03 00 14.5
Dannemora, Uppland, Sweden,
60.2°N, 17.8°E.
Rockburst of the iron ore mine.

" 16 UPP iP 10 12 08.6
micr sec
P Z' 0.1 0.9
KIR iP 10 11 15.4
Andreanof Islands, Aleutian Is.
(h = N).

" 16 UME iPKP1 14 38 09.8
South of Kermadec Islands
(h = 40 km).

1988
Aug. 16 KIR iSg1 18 39 22.6
Northern Norway, 69.6°N, 23.8°E.
Origin time = 18 38 18.
M_L(UPP) = 2.6 1.
By combination with Finnish station readings.

" 16 UME iP 21 39 23.3
Aegean Sea (h = 10 km).

" 17 UPP iP 02 12 33.9 C
iSKS 02 23 05
micr sec
P Z' 0.3 1.4
Mx Z 4.2 25
KIR iP 02 12 32.2 C
micr sec
P Z' 1.0 1.2
Mx Z 3.4 16
UME iP 02 12 30.6 C
iSKS 02 23 00
Java (h = 30 km).
m = 6.9, M = 5.8 (UPP,KIR).

" 17 UPP i 11 53 39.7
micr sec
Mx Z 3.5 20
KIR micr sec
Mx Z 1.5 18
Near coast of northern Chile
(h = 40 km).
M = 5.7 (UPP,KIR).

" 17 UPP eP 15 04 00
KIR iP 15 04 04.9
UME iP 15 03 56.7
Kirghiz SSR (h = 60 km).

" 17 UPP iP 17 11 48.0
micr sec
P Z' 0.1 1.0
KIR iP 17 11 14.2
micr sec
P Z' 0.1 1.0
UME iP 17 11 31.9
Southern Nevada.
m = 5.9 (UPP,KIR).
Underground explosion.

" 17 UPP eP 19 57 35
KIR iP 19 57 11.8
Philippine Islands region
(h = 30 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 18 UPP ePKP 10 10 21
UME ePKP 10 10 33
Near coast of northern Chile
(h = 30 km).

" 18 UPP iP 21 45 19.3
KIR iP 21 44 31.3
UME iP 21 44 53.4
Kuril Islands (h = N).

" 19 UPP iP 09 11 12.0

" 19 KIR iP 16 20 23.4
Southern Xinjiang, China (h = N).

" 19 UPP iP 18 21 45.5
ipP 18 22 11.7
micr sec
P Z' 0.1 1.0
KIR iP 18 21 21.3
ipP 18 21 47.1
micr sec
P Z' 0.1 1.0
UME iP 18 21 29.0
ipP 18 21 55.0
Taiwan region.
h = 100 km (UPP,KIR,UME).
m = 5.6 (UPP,KIR).

" 19 UPP iPKP 18 47 16.0
KIR iPKP 18 47 32.7
UME iPKP 18 47 24.6
South Sandwich Islands region
(h = 15 km).

" 20 UPP iSKP1 08 42 15.8
micr sec
Mx Z 3.6 22
KIR iPKP 08 38 33.9
micr sec
Mx Z 1.4 20
Vanuatu Islands (h = 20 km).
M = 5.8 (UPP,KIR).

" 20 KIR iP 20 38 21.7
Southern Xinjiang, China (h = N).

" 20 UPP iPKP1 22 40 08.0
UME iPKP1 22 39 55.6
South of Kermadec Islands (h = N).

1988
Aug. 20 UPP iP 23 18 48.0 C
iS 23 26 36
micr sec
P Z' 2.0 0.9
Mx Z 120 22
KIR iP 23 18 47.3 C
epP 23 19 02
micr sec
P Z' 1.6 0.6
Mx Z 33 16
UME iP 23 18 43.2
epP 23 18 57
iS 23 26 23
Nepal-India border region.
h = 55 km (KIR,UME).
m = 7.2, M = 6.7 (UPP,KIR).

" 21 UPP micr sec
Mx Z 2.0 17
KIR eP 11 28 07
ipP 11 28 11.2
micr sec
Mx Z 2.0 14
UME iP 11 28 26.1
Gulf of California (h = 10 km).
M = 5.6 (UPP,KIR).

" 21 UPP iP 11 55 21.7
Kuril Islands (h = 50 km).

" 21 UPP iP 13 26 43.7
KIR iP 13 26 36.2
Burma-India border region
(h = 80 km).

" 21 KIR iPKP 14 11 01.4
micr sec
PKP Z' 0.1 1.5
West Chile Rise (h = 10 km).

" 21 UPP iSg1 14 55 31.5
KIR iPn 14 52 55.7
iSn 14 53 35.0
UME iSn 14 53 46.1
iSg1 14 54 04.0
MYV iPn 14 52 57.2
iSg1 14 53 47.4
Coast of central Norway, near
66 1/4°N, 13°E.
Origin time = 14 52 03.
M_L(UPP) = 3.0 (0.14) 3.

" 21 KIR iP 15 14 41.3
Samar, Philippine Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 21 UPP iP 23 38 00.0
KIR iP 23 37 42.4
Philippine Islands region (h = N).

" 22 KIR iPKP 02 54 40.3
Vanuatu Islands (h = 10 km).

" 22 KIR iP 04 57 51.6
Southern Xinjiang, China (h = N).

" 22 UPP iP 05 37 32.3
KIR iP 05 36 22.1
UME iP 05 36 48.6
Fox Island, Aleutian Islands
(h = N).

" 22 UPP iPKP 11 32 01.0
KIR ePKP 11 31 52
UME iPKP 11 31 58.5
South of Fiji Islands (h = 100 km).

" 22 UPP iP 16 25 44.7
micr sec
P Z' 0.2 0.7
KIR iP 16 24 54.2
micr sec
P Z' 0.8 0.6
UME iP 16 25 14.0
Western Siberia.
m = 6.1 (UPP,KIR).
Underground explosion.

" 22 UME eP 21 04 39
Ascension Island region
(h = 10 km).

" 22 UPP eP 21 30 14
eS 21 35 32
micr sec
P Z' 0.1 1.3
Mx Z 1.9 16
KIR iP 21 30 48.9
micr sec
Mx Z 2.0 12
UME iP 21 30 25.5
iS 21 35 52
Iran (h = 10 km).
M = 5.0 (UPP,KIR).

" 23 KIR iP 02 25 26.0
UME iP 02 26 18.3
Norwegian Sea (h = 10 km).

1988
Aug. 23 KIR iP 04 20 57.3
Dodecanese Islands (h = N).

" 23 UPP iP 05 37 26.1
iPP 05 38 39.2
micr sec
P Z' 0.1 1.1
KIR eP 05 38 01
iPP 05 39 24.2
micr sec
P Z' 0.1 1.1
UME eP 05 37 37
Iran (h = 10 km).
m = 5.6 (UPP,KIR).

" 23 UPP eP 11 04 47.8
UME eP 11 04 59
Iran (h = 10 km).

" 23 UPP eP 17 42 37
micr sec
Mx Z 1.3 9
KIR iP 17 44 05.4
ipP 17 44 08.5
micr sec
Mx Z 0.6 12
UME iP 17 43 24.0
ipP 17 43 27.6
Yugoslavia.
h = 10 km (KIR,UME).

" 23 UPP micr sec
Mx Z 2.4 20
KIR eP 20 07 32
micr sec
Mx Z 1.9 23
UME iP 20 07 39.0
West Irian (h = 50 km).
M = 5.6 (UPP,KIR).

" 24 UPP iP 08 54 34.1
UME iP 08 54 14.3
South of Honshu, Japan
(h = 290 km).

" 24 KIR iP 10 05 13.9
Nepal-India border region (h = N).

" 26 UPP iP 08 55 18.2
KIR iP 08 55 02.8
micr sec
P Z' 0.1 0.9
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Aug. 26 (cont.)
UME iP 08 55 07.2
Panay, Philippine Islands
(h = 50 km).

" 26 UME iP 09 40 21.3
Banda Sea (h = 120 km).

" 26 UPP iP 09 56 48.7
KIR iP 09 57 24.7
UME eP 09 57 02
Southern Iran (h = 10 km).

" 27 UPP eP 01 38 40
micr sec
Mx Z 4.3 17
KIR iP 01 38 15.3
micr sec
Mx Z 3.4 18
UME iP 01 38 23.6
West Caroline Islands (h = N).
M = 5.9 (UPP,KIR).

" 27 UPP eP 03 15 04
KIR iP 03 14 26.8
UME iP 03 14 43.5
Off east coast of Honshu, Japan
(h = 45 km).

" 27 UPP ePKP 05 44 31
KIR iPKP1 05 44 11.3
UME iPKP 05 44 20.8
Off e. coast of N. Island, N.Z.
(h = 130 km).

" 27 UPP iP 07 14 46.1
KIR iP 07 14 45.1
micr sec
P Z' 0.1 1.1
UME iP 07 14 49.3
North Atlantic Ocean (h = 10 km).

" 27 UPP Mx 11 32
micr sec
Mx Z 2.1 22
KIR Mx 11 27
micr sec
Mx Z 1.7 22
Fiji Islands region (h = 35 km).
M = 5.7 (UPP,KIR).

1988
Aug. 27 KIR iPKP 16 49 18.6
UME iPKP 16 49 25.8
i 16 49 35.8
Samoa Islands region (h = 30 km).

" 27 UME eP 17 03 43
Central Mid-Atlantic Ridge
(h = 10 km).

" 28 KIR iP 10 20 30.1
UME iP 10 20 06.3
Iran (h = 10 km).

" 28 UPP iP 15 46 39.1
i 15 46 40.6
micr sec
Mx Z 1.9 18
KIR eP 15 46 16
micr sec
Mx Z 1.4 20
UME iP 15 46 23.8
Taiwan region (h = 45 km).
M = 5.3 (UPP,KIR).

" 28 UPP eP 19 59 04
KIR iP 19 59 38.3
UME iP 19 59 10.0
Southern Iran (h = 30 km).

" 28 UPP eP 03 02 02
KIR eP 03 02 37
UME iP 03 02 16.8
Carlsberg Ridge (h = 10 km).

" 29 UDD iSg1 13 17 07.4
Coast of southern Norway, 58.1°N,
6.3°E.
Origin time = 13 14 57.
M_L(UPP) = 2.5 1.
Solution from Norwegian station
readings.

" 29 UPP iP 16 27 08.5
UME iP 16 26 50.0

" 30 UPP iP 12 59 29.0
KIR iP 12 59 11.3
micr sec
P Z' 0.1 1.0
UME iP 12 59 16.9
Mindanao Philippine Islands
(h = 80 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988

Aug.	30	UPP	iP	17 37 37.0
		KIR	iP	17 38 14.7
		Southern Iran (h = 10 km).		
"	30	UPP	iP	18 11 48.9
		KIR	iP	18 11 15.2
		UME	iP	18 11 34.4
		Southern Nevada.		
		Underground explosion.		
"	31	KIR	iPg1	00 48 26.0
			iSg1	00 48 46.8
		Northern Norway, near 68 1/2°N, 17°E.		
		Origin time = 00 47 59.		
		By combination with Norwegian station readings.		
"	31	UPP	iP	06 09 06.1
		KIR	iP	06 09 14.6
		Afghanistan-USSR border region (h = 70 km).		
"	31	UDD	iSg1	11 37 54.3
		MYV	iPg1	11 37 07.4
			iSg1	11 37 52.6
		Southwestern Norway, 61.9°N, 7.4°E.		
		Origin time = 11 36 06.		
		M_L(UPP) = 2.6 1.		
		By combination with Norwegian station readings.		
"	31	UPP	iPKP	20 05 06.5

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

SEPTEMBER 1 - 30, 1988

1988						
Sep.	1	KIR	iP		04 05 11.7	
		UME	iP		04 05 02.3	
		Tajik SSR (h = N).				
"	1	UDD	iSg1		11 24 01.6	
		MYV	iSg1		11 24 33.4	
		Southern Norway, 60.6°N, 9.1°E.				
		Origin time = 11 22 48.				
		M_L(UPP) = 2.1 1.				
		Solution from Norwegian station readings.				
"	2	UPP	iP		10 38 10.4	
			i		10 38 25.7	
					micr	sec
			Mx	Z	1.4	20
		KIR	iP		10 37 16.5	
			i		10 38 40.8	
					micr	sec
			Mx	Z	0.7	14
		UME	iP		10 37 41.4	
		Off east coast of Kamchatka (h = 50 km).				
		M = 5.0 (UPP,KIR).				
"	2	UPP	iP		21 00 29.9	D
		KIR	iP		20 59 58.2	D
		UME	iP		21 00 11.9	D
		Bonin Islands region (h = 190 km).				
"	3	UME	iSKP1		00 50 49.9	
		South of Fiji Islands (h = 530 km).				
"	3	UPP	iP		13 02 48.8	
		KIR	iP		13 02 36.4	
		Tibet (h = N).				

1988						
Sep.	4	UPP	iP		00 44 35.9	
		KIR	iP		00 44 06.6	
					micr	sec
			P	Z'	0.1	1.0
		UME	iP		00 44 19.2	
		Mariana Islands region (h = 250 km).				
"	4	UPP	iP		16 00 49.7	
			i		16 00 58.5	
					micr	sec
			P	Z'	0.1	1.0
			Mx	Z	1.0	24
		KIR	iP		16 00 12.4	
			i		16 00 20.9	
					micr	sec
			P	Z'	0.1	1.0
			Mx	Z	1.7	19
		UME	iP		16 00 28.7	
		Honshu, Japan (h = 50 km).				
		m = 5.8, M = 5.1 (UPP,KIR).				
"	4	UPP	iPKP1		20 46 48.2	
		UME	iPKP1		20 46 37.2	
		South of Kermadec Islands (h = N).				
"	5	UPP	iP		06 24 47.7	
					micr	sec
			Mx	Z	1.0	19
		KIR	iP		06 24 48.6	
					micr	sec
			P	Z'	0.1	1.2
			Mx	Z	0.9	16
		UME	iP		06 24 51.5	
		Dominican Republic region (h = 30 km).				
		M = 5.1 (UPP,KIR).				

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Sep. 5
UDD iSg1 11 51 00.8
MYV i 11 50 15.6
iSg1 11 50 33.2
Off coast of southwestern Norway, 63.0°N, 6.6°E.
Origin time = 11 48 43.
M_L(UPP) = 2.5 1.
Solution from Norwegian station readings.

" 5
UPP iP 11 51 53.7

" 5
UPP iSg1 18 29 21.3
UME iSg1 18 29 49.2
UDD iPg1 18 27 37.2
iSg1 18 28 23.0
MYV iSg1 18 28 23.2
Southern Norway, near 61 3/4°N, 7 1/2°E.
Origin time = 18 26 35.
M_L(UPP) = 2.4 1.

" 5
UPP iP 20 08 59.3
i 20 09 00.0
iS 20 13 25
micr sec
i Z' 0.1 0.9
Mx Z 2.9 13
KIR iP 20 10 05.9
i 20 10 07.1
micr sec
i Z' 0.1 1.0
Mx Z 2.5 15
UME iP 20 09 31.1
iS 20 14 23
Crete (h = 10 km).
m = 5.6, M = 5.0 (UPP,KIR).

" 6
UPP iP 16 23 25.4
iS 16 26 04.6
KIR iP 16 23 06.4
i 16 25 29.3
micr sec
P Z' 0.2 0.5
UME iP 16 23 00.8
European USSR (h = 10 km).

" 6
UPP iP 19 21 46.1
iS 19 25 55
micr sec
P Z' 0.2 1.5
Mx Z 1.4 15
(cont.)

1988 Sep. 6
(cont.)
KIR eP 19 22 32
i 19 22 37.7
micr sec
Mx Z 2.0 13
UME iP 19 22 03.7
iS 19 26 29
Western Caucasus (h = 10 km).
M = 4.7 (UPP,KIR).

" 7
UPP iP 01 06 25.3
KIR iP 01 06 12.6
UME iP 01 06 21.2
Chiapas, Mexico (h = 160 km).

" 7
UPP iP 04 29 19.0
KIR iP 04 28 36.4
UME iP 04 28 55.2
Hokkaido, Japan region (h = 70 km).

" 7
UPP iP 12 04 28.4 C
ipP 12 06 22.0
iPP 12 07 32
iS 12 13 34
micr sec
P Z' 1.2 1.0
Mx Z 4.3 14
KIR iP 12 03 55.7 C
iP'P' 12 31 38.5
micr sec
P Z' 1.3 1.3
Mx Z 5.2 15
UME iP 12 04 09.1 C
iS 12 12 53
South of Honshu (h = 490 km).
m = 6.3, M = 5.9 (UPP,KIR).
M uncorrected for focal depth.

" 8
UPP Mx 12 40
micr sec
Mx Z 1.4 21
KIR Mx 12 43
micr sec
Mx Z 1.7 22
West of Macquarie Island (h = 10 km).
M = 5.8 (UPP,KIR).

" 8
UPP iPKP1 13 08 08.8 D
i 13 08 21.0
UME iPKP1 13 07 57.2
South of Tonga Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Sep. 8 UPP iPKP1 22 47 38.8
KIR iPKP1 22 47 19.5 D
micr sec
PKP1 Z' 0.3 1.0
UME iPKP1 22 47 29.1 D
iPKP2 22 47 38.3
Off e. coast of N. Island, N.Z.
(h = 90 km).

" 8 UPP iP 23 54 28.4
KIR eP 23 54 51
UME iP 23 54 35.0
Near coast of Pakistan (h = 10 km).

" 9 UPP iP 09 43 34.7
KIR iP 09 43 14.3
Philippine Islands region
(h = 40 km).

" 9 KIR iP 14 44 15.8
Iceland region (h = 25 km).

" 9 UPP iP 21 20 12.5
i 21 20 52.8
micr sec
P Z' 0.2 1.0
KIR iP 21 20 21.1
micr sec
P Z' 0.2 1.2
UME iP 21 20 11.3
Afghanistan-USSR border region
(h = 70 km).
m = 5.9 (UPP,KIR).

" 9 UPP iP 21 27 02.4
UME iP 21 27 00.5
Afghanistan-USSR border region
(h = 100 km).

" 10 UPP iPKP1 05 52 48.3
KIR iPKP1 05 52 28.8
UME iPKP1 05 52 38.9 C
South of Kermadec Islands (h = N).

" 10 UPP Mx 23 12
micr sec
Mx Z 1.9 20
South Pacific Cordillera
(h = 10 km).

" 11 UPP iP 01 18 12.7
iS 01 28 38
(cont.)

1988
Sep. 11 (cont.)
micr sec
Mx Z 2.0 21
KIR iP 01 18 01.8
micr sec
Mx Z 1.9 23
UME iP 01 18 10.1
iS 01 28 34
Near coast of Chiapas, Mexico
(h = 80 km).
M = 5.4 (UPP,KIR)
M uncorrected for focal depth.

" 11 UPP iP 04 28 37.2
KIR iP 04 28 46.4
UME iP 04 28 35.6
Hindu Kush region (h = 200 km).

" 11 UPP iPKP1 06 36 15.9
KIR i(PKP) 06 35 54.8
UME i(PKP) 06 36 04.6
iPKP 06 36 12.1
iSKP1 06 38 58.8
South of Fiji Islands (h = 510 km).

" 11 UPP iP 11 49 34.0
i 11 50 11.8
KIR iP 11 49 05.5
i 11 49 49.7
UME iP 11 49 17.4
i 11 50 02.4
Mariana Islands.
h = 180 km (UPP,KIR,UME).

" 11 UPP iP 21 50 17.3
UME iP 21 50 53.8
Greece (h = 20 km).

" 12 UPP iP 03 56 40.6
KIR eP 03 56 35
UME iP 03 56 37.6
Burma (h = 30 km).

" 12 UPP micr sec
Mx Z 0.9 10
KIR iP 20 22 45.8
micr sec
P Z' 0.1 1.0
UME iP 20 23 02.8
Iceland region (h = 10 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Sep. 13

UPP	iP		01 09 59.0	D
	iS		01 19 12.5	
			micr sec	
	P	Z'	0.3 0.6	
KIR	iP		01 09 26.2	D
			micr sec	
	P	Z'	0.1 0.9	
UME	iP		01 09 40.3	D

South of Honshu (h = 450 km).
m = 5.8 (UPP,KIR).

" 13

UPP	iSg1		13 37 35.2
UME	iSg1		13 37 55.0
UDD	iPg1		13 35 51.5
	iSg1		13 36 36.6
DEL	iSg1		13 38 10.6
MYV	iSg1		13 36 35.8

Southern Norway, near 62 1/4°N, 7 1/2°E.
Origin time = 13 34 50.
M_L(UPP) = 2.7 1.

" 14

UPP	iP		04 06 55.3	C
	iPn		04 08 00.0	
	iPP		04 08 13.9	
			micr sec	
	P	Z'	1.6 0.8	
	Mx	Z	1.8 10	
KIR	iP		04 06 38.7	C
			micr sec	
	P	Z'	2.1 0.8	
UME	iP		04 06 39.8	C

Eastern Kazakh SSR.
m = 7.0 (UPP,KIR).
Underground explosion.

" 14

UPP	iP		13 24 50.8
	ipP		13 25 03.4
			micr sec
	P	Z'	0.1 1.0
KIR	iP		13 23 58.1
	ipP		13 24 10.8
			micr sec
	P	Z'	0.1 1.0
UME	iP		13 24 24.3
	ipP		13 24 37.5

Fox Islands, Aleutian Islands.
h = 45 km (UPP,KIR,UME).
m = 5.9 (UPP,KIR).

1988 Sep. 14

UPP	Mx		23 10	
			micr sec	
	Mx	Z	2.4 25	

Chile-Argentina border region (h = 120 km).

" 15

UPP	iP		19 00 00.7	
KIR	iP		19 01 03.0	C
			micr sec	
	P	Z'	0.1 1.0	
UME	iP		19 01 04.3	C

Ecuador (h = 170 km).

" 16

UPP	iPKP1		02 34 33.7

Fiji Islands region (h = 550 km).

" 17

UPP	iP		02 56 38.0	
			micr sec	
	P	Z'	0.1 0.9	
KIR	iP		02 55 45.3	
UME	iP		02 56 11.3	

Andreanof Islands, Aleutian Is. (h = N).

" 17

UPP	iSn		09 53 23.9
UME	iSn		09 53 31.1
UDD	iPn		09 51 14.6
	iSn		09 52 19.1
DEL	eSn		09 53 19
MYV	iPn		09 51 24.2
	iSn		09 52 33.6

Norwegian Sea, near 61 1/2°N, 1 1/2°E.
Origin time = 09 49 47.

" 17

UPP	iP		15 34 57.5	
			micr sec	
	P	Z'	0.1 1.0	
UME	iP		15 34 32.1	

Kuril Islands region (h = 40 km).

" 18

UPP	iP		15 50 05.3	
			micr sec	
	P	Z'	0.1 1.0	
KIR	iP		15 49 40.0	
			micr sec	
	P	Z'	0.1 1.0	
UME	iP		15 49 49.9	

Taiwan region (h = 80 km).
m = 5.7 (UPP,KIR).

" 19

UME	iP		00 30 10.6

South of Honshu, Japan (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Sep. 19
UPP iP 01 15 36.7
KIR iP 01 15 18.2
UME iP 01 15 23.2
Luzon, Philippine Islands
(h = 40 km).

" 19
UME iSg1 09 25 05.2
UDD iPn 09 22 49.1
iSn 09 23 30.3
MYV iPn 09 22 52.6
iSn 09 23 37.4
Southern Norway, near 61 1/2°N, 7 1/2°E.
Origin time = 09 21 53.

" 19
UPP iP 13 03 11.2
KIR iP 13 02 17.6
Rat Islands, Aleutian Islands
(h = 70 km).

" 20
UPP iP 00 35 24.8
KIR iP 00 34 33.4
Sea of Okhotsk (h = 480 km).

" 20
UPP iPKP1 15 03 47.8
iPKP2 15 03 54.3
KIR iPKP1 15 03 30.6
UME iPKP1 15 03 36.3
Kermadec Islands region
(h = 190 km).

" 20
UPP iP 17 52 09.1
KIR iP 17 50 22.6
i 17 50 26.9
iS 17 52 15.3
UME iP 17 51 17.8
i 17 51 29.8
Svalbard region (h = 10 km).

" 20
UPP iP 22 54 31.7
i 22 54 42.5
KIR iP 22 53 47.5
UME iP 22 54 06.8 C
Hokkaido, Japan region (h = 40 km).

" 21
UPP iP 10 09 47.8 C
micr sec
P Z' 0.4 1.3
Mx Z 3.3 26
KIR iP 10 08 59.4
i 19 09 19.8
(cont.)

1988 Sep. 21
(cont.)
micr sec
P Z' 0.5 1.5
Mx Z 1.3 19
UME iP 10 09 21.7 C
Kuril Islands (h = 50 km).
m = 6.3, M = 5.2 (UPP,KIR).

" 21
UPP iP 14 00 39.8
Nepal (h = 55 km).

" 21
UPP iP 16 50 05.4
KIR iP 16 50 43.5
UME iP 16 50 19.2
Iran (h = 10 km).

" 21
KIR iP 19 12 08.1
i 19 12 16.6
Jan Mayen Island region
(h = 10 km).

" 21
UPP iP 23 04 09.6
UME iP 23 03 56.8
Luzon, Philippine Islands
(h = 35 km).

" 22
UPP iP 02 08 55.5
KIR iP 02 09 12.6
UME iP 02 08 58.7
Pakistan (h = N).

" 22
KIR iP 07 34 40.6
North Atlantic Ridge (h = 10 km).

" 22
KIR iP 07 42 31.8
North Atlantic Ridge (h = 10 km).

" 22
UPP eP 08 01 23
micr sec
Mx Z 2.6 19
KIR iP 08 01 44.2
UME iP 08 01 37.2
North Atlantic Ridge (h = 10 km).

" 22
UPP iP 12 10 32.4 C
micr sec
P Z' 0.2 1.0
KIR iP 12 11 46.5
micr sec
P Z' 0.1 1.1
UME iP 12 11 12.0
Greece (h = 30 km).
m = 5.5 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Sep. 22 UPP iP 22 42 14.0
KIR iP 22 41 34.2
Hawaii region (h = 20 km).

" 23 KIR iP 03 52 35.3
Southern Sumatera (h = 70 km).

" 23 UPP iP 04 54 16.9
micr sec
P Z' 0.1 1.1
Mx Z 1.7 11
KIR iP 04 54 18.0 D
micr sec
P Z' 0.2 1.1
Mx Z 2.4 17
UME iP 04 54 11.9
Southern Xinjiang, China (h = N).
m = 5.6, M = 5.1 (UPP,KIR).

" 23 UPP iP 08 29 07.4
Greece (h = 10 km).

" 24 UPP iP 08 21 44.8
micr sec
P Z' 0.1 1.0
KIR iP 08 20 52.7 C
i 08 21 05.2
micr sec
P Z' 0.1 0.9
UME iP 08 21 19.3 C
i 08 21 32.2
Fox Islands, Aleutian Islands
(h = N).
m = 5.9 (UPP,KIR).

" 25 KIR iPKP 01 23 41.4
West Chile Rise (h = 10 km).

" 25 UPP iP 19 48 40.6
KIR iP 19 48 49.7
UME iP 19 48 38.4
Hindu Kush region (h = 150 km).

" 25 UPP iP 20 59 58.4
iS 21 06 12
micr sec
P Z' 0.1 0.8
Mx Z 2.4 13
KIR iP 21 00 04.8
micr sec
P Z' 0.1 1.0
Mx Z 3.7 13
(cont.)

1988
Sep. 25 (cont.)
UME iP 20 59 56.5
Afghanistan-USSR border region
(h = 10 km).
m = 5.5, M = 5.3 (UPP,KIR).

" 25 UPP iP 21 35 28.1 C
iS 21 41 22
micr sec
P Z' 0.2 0.5
KIR iP 21 35 36.9 C
micr sec
P Z' 0.6 0.9
UME iP 21 35 26.7 C
iS 21 41 22
Hindu Kush region (h = 210 km).
m = 6.0 (UPP,KIR).

" 26 UPP iP 01 41 29.6 C
micr sec
P Z' 0.2 0.7
KIR iP 01 41 02.8 C
micr sec
P Z' 0.1 1.0
UME iP 01 41 12.7 C
Ryukyu Islands region (h = 15 km).
m = 6.0 (UPP,KIR).

" 26 UPP iP 07 24 36.7 C
micr sec
P Z' 0.4 1.2
KIR iP 07 24 45.0 C
micr sec
P Z' 0.2 1.0
UME iP 07 24 34.9 C
Afghanistan-USSR border region
(h = 110 km).
m = 6.0 (UPP,KIR).

" 26 UPP iP 08 34 54.1 C
micr sec
P Z' 0.2 1.0
Mx Z 5.7 21
KIR iP 08 34 16.0 C
micr sec
P Z' 0.1 1.0
Mx Z 6.2 17
UME iP 08 34 32.8 C
Near east coast of Honshu, Japan
(h = 30 km).
m = 6.0, M = 5.8 (UPP,KIR).

" 26 UPP iPKP1 21 26 51.7
South of Fiji Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988

Sep.	27	UDD	iSg1	13 10 08.0	
		Southern Norway, 61.9°N, 7.6°E.			
		Origin time = 13 08 26.			
		M_L(UPP) = 2.2 1.			
		Solution from Norwegian station readings.			
"	27	UPP	iP	19 19 56.4	
		KIR	iP	19 19 54.3	
		Sikkim (h = N).			
"	28	UPP	iSg1	09 21 22.6	
		KIR	iPn	09 17 43.1	
			iSg1	09 18 39.9	
			i	09 18 43.8	
			i	09 18 49.1	
		UME	iPn	09 18 12.9	
			i	09 18 18.3	
			i	09 18 21.7	
			iSn	09 19 16.5	
			iSg1	09 19 46.9	
		UDD	iPn	09 18 46.6	
			iSn	09 20 14.6	
		MYV	iPn	09 18 03.0	
			i	09 18 06.0	
			iSg1	09 19 24.4	
		Norwegian Sea, near 68°N, 10 1/2°E.			
		Origin time = 09 16 44.			
		M_L(UPP) = 3.7 (0.25) 4.			
"	30	KIR	eP	04 58 56	
		Southern Alaska (h = 90 km).			
"	30	UPP	iP	13 07 52.6	
				micr sec	
			P Z'	0.1 0.9	
		Southern Greece (h = 45 km).			
"	30	UPP	iPKP1	22 03 14.2	
				micr sec	
			PKP1 Z'	0.1 0.9	
		KIR	iPKP	22 03 04.3	
			iSKP1	22 05 37.2	
		UME	iPKP	22 03 15.5	
		Fiji Islands region (h = 550 km).			

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E; h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E; h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E; h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E; h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E; h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E; h = 345 m

OCTOBER 1 - 31, 1988

1988
Oct. 3 UPP eP 00 32 17
Afghanistan - USSR border region
(h = 40 km).

" 4 UPP Mx 16 45
micr sec
Mx Z 11 20
KIR Mx 16 46
micr sec
Mx Z 3.0 19
New Ireland region (h = 30 km).
M = 6.1 (UPP).

" 5 UPP iSKP1 01 22 09.7
Vanuatu Islands (h = 150 km).

" 5 KIR eP 19 00 10
UME eP 19 00 14
Samar, Philippine Islands
(h = 45 km).

" 6 KIR eP 13 18 31
Southern Xinjiang, China
(h = N).

" 6 UDD iSg1 14 18 37.8
Near coast of southern Norway,
58.1°N, 6.3°E.
Origin time = 14 16 28.
Solution from Norwegian station
readings.

" 6 UPP Mx 15 05
micr sec
Mx Z 2.4 22
(cont.)

1988
Oct. 6 (cont.)
KIR Mx 15 02
micr sec
Mx Z 2.8 20
Northern Easter J. Cordillera
(h = 10 km).
M = 5.7 (UPP,KIR).

" 6 KIR eP 18 30 33
Southern Xinjiang, China
(h = N).

" 8 KIR eP 02 29 32
Unimak Island region (h = N).

" 8 UPP i(PKP) 05 05 34.5
iPKP 05 05 44.9
micr sec
PKP Z' 0.1 1.0
Mx Z 21 21
KIR e(PKP) 05 05 22
ePKP 05 05 30
micr sec
PKP Z' 1.9 2.1
UME i(PKP) 05 05 27.6
iPKP 05 05 38.1
Tonga Islands region (h = 35 km).

" 8 UPP iP 14 51 34.3
KIR eP 14 51 01
Ryukyu Islands (h = 50 km).

" 8 UPP iP 21 45 26.8
KIR eP 21 45 09
Talaud Islands (h = 30 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Oct. 8
UPP iP 22 17 48.5
KIR eP 22 17 13
UME iP 22 17 28.2
South of Honshu, Japan (h = 200 km).

" 9
UPP iP 00 41 05.3 D
micr sec
P Z' 0.1 1.0
KIR eP 00 40 31 D
micr sec
P Z' 0.2 1.1
UME iP 00 40 45.1 D
South of Honshu, Japan (h = 490 km).
m = 5.4 (UPP,KIR).

" 9
UPP iP 04 30 17.4
KIR eP 04 30 02
Talaud Islands (h = 50 km).

" 10
UPP iP 06 03 09.7
ipP 06 03 25.5
micr sec
P Z' 0.7 1.3
KIR eP 06 02 25
epP 06 02 42
micr sec
P Z' 1.2 2.0
UME iP 06 02 45.1
Hokkaido, Japan region.
h = 60 (UPP,KIR).
m = 6.5 (UPP,KIR).

" 10
UPP iPKP 18 40 02.4
iPKP1 18 40 05.0
micr sec
Mx Z 5.0 24
KIR ePKP1 18 39 40
ePKP 18 39 48
micr sec
Mx Z 3.8 23
UME iPKP1 18 39 51.9
Kermadec Islands region (h = 30 km).
M = 6.1 (UPP,KIR).

" 10
UPP iP 19 39 50.7
KIR eP 19 39 50
UME iP 19 39 48.2
Southern Sumatera (h = 35 km).

" 11
UPP iPKP 02 11 47.5
South of Fiji Islands (h = 540 km).

1988 Oct. 11
UPP iP 04 24 57.5
Ionian Sea (h = 50 km).

" 11
UPP iPKP1 06 43 56.9
South of Fiji Islands (h = 600 km).

" 12
UPP iP 03 37 59.2 C
micr sec
P Z' 0.1 0.8
KIR eP 03 37 13 C
micr sec
P Z' 0.1 1.0
UME iP 03 37 34.2 C
Kuril Islands region (h = 70 km).
m = 5.7 (UPP,KIR).

" 12
UDD iSg1 10 32 06.7
MYV iSg1 10 32 07.2
Southern Norway, 61.8°N, 7.2°E.
Origin time = 10 30 22.
M_L(UPP) = 2.6 1.
Solution from Norwegian station readings.

" 12
UPP iP 18 15 03.6
KIR iP 18 14 09.0
UME iP 18 14 35.0
Near east coast of Kamchatka (h = 30 km).

" 13
UPP iP 00 41 53.8
micr sec
P Z' 0.6 1.9
Mx Z 3.4 18
KIR iP 00 40 54.9
micr sec
P Z' 0.6 2.0
Mx Z 2.6 13
UME iP 00 41 23.2
iS 00 48 53
Eastern Siberia (h = N).
m = 6.2, M = 5.4 (UPP,KIR).

" 13
UPP iPg1 12 11 05.4
iSg1 12 11 10.0
iRg 12 11 11.0
UDD iSg1 12 12 08.6
Dannemora, Uppland, Sweden 60.2°N, 17.8°E. Rockburst at the iron ore mine.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Oct. 13 UPP iP 14 11 48.7 C
micr sec
P Z' 0.4 1.3
KIR iP 14 11 14.7 C
micr sec
P Z' 0.5 1.6
UME iP 14 11 24.0 C
Southern Nevada.
m = 6.4 (UPP,KIR).
Underground explosion.

" 14 UDD iSg1 15 42 23.7
MYV eSg1 15 41 22
Central Norway, 63.3°N, 10.6°E.
Origin time = 15 40 30.
M_L(UPP) = 2.4 1.
Solution from Norwegian station readings.

" 14 UPP iP 16 16 51.8
KIR iP 16 18 08.3
UME iP 16 17 31.7
Albania (h = 50 km).

" 14 UPP iSg1 21 04 37.8
KIR eSg1 21 05 24
UME iPg1 21 03 24.2
iSg1 21 03 53.6
UDD iSg1 21 04 28.6
MYV iPg1 21 02 55.2
iSg1 21 03 03.4
Jämtland, Sweden, 63.4°N, 15.4°E.
Origin time = 21 02 44.
M_L(UPP) = 2.5 (0.24) 2.
Felt.

" 15 UPP iP 07 05 40.0
i 07 05 44.9
KIR eP 07 06 53
UME iP 07 06 17.1
i 07 06 23.9
Southern Greece (h = 50 km).

" 15 KIR iPg1 09 04 31.3
iSg1 09 05 06.2
UME iSg1 09 06 40.7
Off coast of northwestern Norway, 69.1°N, 12.8°E.
Origin time = 09 03 38.
M_L(UPP) = 3.5 (0.52) 2.
Solution from Norwegian station readings.

1988
Oct. 16 UPP iP 06 22 26.3
micr sec
Mx Z 2.9 13
KIR iP 06 22 59.7
micr sec
P Z' 0.1 1.0
Mx Z 1.5 18
UME iP 06 22 48.1
Azores Islands (h = 10 km).
M = 5.0 (UPP,KIR).

" 16 UPP iP 09 53 47.6
KIR iP 09 53 21.6
UME iP 09 53 31.9
South of Mariana Islands (h = 15 km).

" 16 UPP iP 12 21 23.4
iS 12 31 16
micr sec
P Z' 0.1 1.0
KIR iP 12 21 02.3
micr sec
P Z' 0.1 1.0
UME iP 12 21 08.2
iS 12 30 44
Taiwan region (h = N).
m = 5.8 (UPP,KIR).

" 16 UPP iP 12 26 16.8
KIR eP 12 25 55
UME iP 12 26 03.6
Taiwan region (h = 45 km).

" 16 UPP iP 12 38 58.3
i 12 39 03.1
iS 12 43 05
micr sec
P Z' 0.1 1.0
i Z' 0.7 1.0
Mx Z 17 10
KIR iP 12 40 12.6
i 12 40 16.8
micr sec
i Z' 0.5 1.0
Mx Z 9.8 12
UME iP 12 39 38.1 D
i 12 39 42.1
Ionian Sea.
h = 15 km (UPP,KIR,UME).
m = 6.2, M = 5.7 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Oct. 16 UPP iP 12 48 55.2
UME iP 12 48 43.6
Taiwan region (h = N).

" 16 UPP iP 16 50 05.1
Ionian Sea (h = 10 km).

" 17 UPP iP 06 07 30.6 C
i 06 07 41.5
micr sec
P Z' 0.5 1.2
i Z' 0.6 1.3
KIR iP 06 06 39.1
i Z' 06 06 49.1
micr sec
P Z' 0.3 1.0
UME iP 06 07 03.8 C
i 06 07 13.9
Off east coast of Kamchatka.
h = 40 km (UPP,KIR,UME).
m = 6.3 (UPP,KIR).

" 17 UPP iP 06 17 49.6
i 06 18 00.0
micr sec
P Z' 0.1 1.0
KIR iP 06 16 57.1
i 06 17 07.7
micr sec
i Z' 0.1 1.0
UME iP 06 17 22.1
i 06 17 32.6
Off east coast of Kamchatka.
h = 40 km (UPP,KIR,UME).
m = 5.8 (UPP,KIR).

" 18 UPP iP 02 36 49.3
KIR iP 02 37 21.5
UME iP 02 37 08.5
Central Mid - Atlantic Ridge
(h = 10 km).

" 18 UPP iP 09 52 55.7
UME iP 09 52 43.8
Samar, Philippine Islands
(h = 140 km).

" 18 UPP iP 12 41 18.3

" 19 UPP iP 00 20 06.9 C
micr sec
P Z' 0.3 1.1
Mx Z 2.8 19
(cont.)

1988
Oct. 19 (cont.)
KIR iP 00 19 27.4 C
micr sec
P Z' 0.2 1.1
Mx Z 3.4 19
UME iP 00 19 44.8 C
iS 00 28 56
Near east coast of Honshu, Japan
(h = 50 km)
m = 6.0, M = 5.5 (UPP,KIR)

" 19 UPP iP 12 28 12.2
Greece-Albania border region
(h = N).

" 19 UPP iP 14 29 23.4
UME iP 14 29 13.6
Tibet (h = N).

" 19 UPP iP 20 02 06.1
KIR iP 20 01 18.5
UME iP 20 01 39.9 D
Kuril Islands (h = 190 km).

" 20 UPP iP 14 05 26.2
KIR iP 14 06 43.3
UME iP 14 06 06.0
Greece (h = 30 km).

" 20 UPP iPg1 21 45 27.4
iSg1 21 46 43.6
KIR iSg1 21 49 05.0
UME iSg1 21 47 42.1
i 21 47 47.1
UDD iPn 21 44 43.9
iPg1 21 44 53.4
iSg1 21 45 41.4
DEL iSg1 21 46 26.8
MYV e 21 45 06
iSg1 21 46 15.8
Southwestern Norway, near 60°N,
6°E.
Origin time = 21 43 44.
M_L(UPP) = 3.7 (0.26) 6.
Felt.

" 22 UPP iRg 00 20 19.8
UDD iSg1 00 21 22.6
eRg 00 21 33
Dannemora, Uppland, Sweden,
60.2°N, 17.8°E.
Origin time = 00 20 06.
Rockburst at the iron ore mine.
Felt.

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Oct. 22 UPP iRg 00 26 54.4
UDD iSg1 00 27 56.9
eRg 00 28 09
Dannemora rockburst.
Origin time = 00 26 40.
Felt.

" 22 UPP iRg 00 36 33.2
Dannemora rockburst.
Origin time = 00 36 19.
One order of magnitude smaller than the two previous events.

" 22 UPP iP 08 58 01.8
Ionian Sea (h = 50 km).

" 22 UPP iP 09 39 30.0
UME iP 09 40 10.1
Ionian Sea (h = 50 km).

" 22 UDD iPg1 10 40 04.5
iSn 10 40 38.6
iSg1 10 40 49.8
Southern Norway, 61.9°N, 7.3°E.
Origin time = 10 39 05.
Solution from Norwegian station readings.

" 22 UPP iP 15 03 09.2
i 15 03 12.2
Southern Greece (h = 60 km).

" 22 UPP iP 16 14 56.0
micr sec
P Z' 0.1 1.0
Mx Z 3.9 17
KIR iP 16 14 05.3
micr sec
Mx Z 2.4 16
UME iP 16 14 29.3
Kuril Islands (h = 50 km).
M = 5.5 (UPP,KIR).

" 23 UPP iP 03 50 58.3
KIR iP 03 50 46.4
Tibet (h = N).

" 23 UPP iP 06 48 29.7
micr sec
P Z' 0.1 1.0
Mx Z 13 16
(cont.)

1988
Oct. 23 (cont.)
KIR iP 06 47 38.6
micr sec
Mx Z 3.6 15
UME iP 06 48 02.7
Kuril Islands (h = 30 km).
M = 5.9 (UPP,KIR).

" 23 UPP iP 11 53 49.9
ipP 11 54 10.2
KIR iP 11 53 45.6
ipP 11 54 05.2
Burma.
h = 80 km (UPP,KIR).

" 23 UPP iP 13 48 55.9
micr sec
Mx Z 6.8 17
KIR iP 13 48 04.6
micr sec
Mx Z 3.1 17
Kuril Islands (h = 25 km).
M = 5.7 (UPP,KIR).

" 23 UPP iP 14 00 04.3
Off coast of Oregon (h = 10 km).

" 24 UPP iP 11 59 33.2
micr sec
P Z' 0.1 1.0
Mx Z 5.3 16
KIR micr sec
Mx Z 1.9 15
Kuril Islands (h = 50 km).
M = 5.5 (UPP,KIR).

" 24 KIR eP 17 09 13
Iran (h = N).

" 26 UPP iP 02 22 35.6
ipP 02 23 23.0
micr sec
P Z' 0.2 1.0
KIR iP 02 22 44.3
micr sec
P Z' 0.2 0.8
UME iP 02 22 34.1
Hindu Kush region (h = 220 km).
m = 5.5 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Oct. 27 UPP iP 00 38 58.6
KIR iP 00 39 26.6
micr sec
P Z' 0.1 1.0
UME iP 00 39 16.8
North Atlantic Ridge (h = 10 km).

" 27 KIR iPdiff 15 20 02.1
Flores Sea (h = 600 km).

" 27 UPP iPn 14 24 10.2
iSn 14 25 33.2
iSg1 14 26 05.2
KIR iPn 14 23 22.3
i 14 23 23.6
iPg1 14 23 34.1
iSn 14 24 11.5
iSg1 14 24 26.4
UME iPn 14 23 37.8
i 14 23 38.6
i 14 24 37.8
iSn 14 24 39.4
iSg1 14 25 02.1
UDD iPn 11 24 58.9
iSn 11 25 13.7
DEL iSn 14 26 36.0
iSg1 14 27 32.0
MYV iPn 14 23 22.4
Norwegian Sea, near 66 3/4°N, 9 1/2°E.
Origin time = 14 22 16.
M_L(UPP) = 4.0 (0.18) 4.
Felt.

" 27 KIR iSn 22 49 24.3
iSg1 22 49 41.5
UME iSn 22 49 50.2
iSg1 22 50 17.3
MYV iPn 22 48 36.0
iPg1 22 48 44.0
iSn 22 49 28.0
Norwegian Sea, near 67°N, 9°E.
Origin time = 22 47 25.
M_L(UPP) = 2.7 1.

" 28 UME iP 06 24 54.1
Near east coast of Honshu, Japan (h = 80 km).

" 28 KIR eP 10 51 16
Minahassa Peninsula (h = 15 km).

1988 Oct. 29 KIR iPg1 03 38 23.3
iSg1 03 38 26.2
Lappland, Sweden, 68.0°N, 20.0°E.
Origin time = 03 38 19.
By combination with Norwegian station readings.

" 29 UPP iP 09 20 27.2 C
micr sec
P Z' 0.2 1.0
KIR iP 09 20 25.8
micr sec
P Z' 0.1 0.9
Nepal (h = 20 km).
m = 6.0 (UPP,KIR).

" 29 UPP iPKP1 20 15 45.9
Kermadec Islands region (h = 40 km).

" 29 KIR iSg1 22 00 43.1
UME iSn 22 00 54.4
iSg1 22 01 15.2
MYV iPg1 22 00 07.8
i 22 00 52.8
iSg1 22 00 56.8
Off coast of northern Norway, near 66 3/4°N, 12 1/2°E.
Origin time = 21 59 01.
M_L(UPP) = 2.7 (0.02) 3.

" 30 KIR iP 09 41 41.4
Southern Alaska (h = 90 km).

" 30 UPP iP 23 28 28.5
KIR iP 23 27 41.2
UME iP 23 28 02.9
Kuril Islands (h = 140 km).

" 31 UPP iP 00 22 33.3
KIR iP 00 21 45.7
UME iP 00 22 07.8
Kuril Islands region (h = N).

" 31 UPP iP 03 04 43.8
Ionian Sea (h = 45 km).

" 31 UPP iP 10 18 25.2
i 10 18 30.0
iS 10 22 48
micr sec
i Z' 0.1 1.1
Mx Z 5.0 13
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988							
Oct.	31	(cont.)					
		KIR	iP		10	19	34.1
					micr		sec
			Mx	Z	5.3		11
	31	UME	iP		10	19	03.6
			iS		10	23	51

Algeria (h = 10 km).
M = 5.3 (UPP,KIR).

April 4, 1990

Conny Holmqvist
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SEISMOLOGICAL DEPARTMENT
BOX 12019
S-750 12 UPPSALA
SWEDEN

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SWEDEN

SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

NOVEMBER 1 - 30, 1988

1988						
Nov.	1	UPP	iP		09 54 56.3	
		KIR	iP		09 54 11.0	
		Kuril Islands (h = 90 km).				
"	1	KIR	iP		13 49 21.8	
		Mindanao, Philippine Islands (h = 70 km).				
"	1	UPP	iP		15 49 24.0	
		Bonin Islands region (h = 490 km).				
"	1	UPP	iPKP		22 49 59.3	
					micr	sec
			Mx	Z	6.6	22
		KIR	iPKP		22 50 13.8	
			i		22 50 23.8	
					micr	sec
			PKP	Z'	0.1	1.0
			Mx	Z	3.3	20
		UME	iPKP		22 50 07.6	
		South Sandwich Islands region (h = N).				
"	2	KIR	iPKP1		00 39 16.0	
		West of Macquarie Island (h = 10 km).				
"	2	KIR	ePn		04 51 08	
			iSn		04 52 54.8	
		Barents Sea, 77.5°N, 22.5°E. Origin time = 04 48 42. By combination with Finnish station readings.				
"	2	UPP	iP		21 07 26.0	
		Ionian Sea (h = 40 km).				

1988						
Nov.	3	UPP	iP		05 37 59.6	
			i		05 38 33.3	
		KIR	iP		05 37 41.8	
		UME	iP		05 37 47.3	
		Mindoro, Philippine Islands (h = 140 km).				
"	3	UPP	iP		12 56 31.6	
		Molucca Passage (h = 70 km).				
"	3	UPP	iP		14 59 49.2	
			iPP		15 03 08	
			iS		15 10 12	
					micr	sec
			Mx	Z	31	24
		KIR	iP		14 59 39.2	
			ipP		14 59 59.1	
					micr	sec
			P	Z'	0.2	1.5
			pP	Z'	0.8	1.7
			Mx	Z	40	24
		UME	iP		14 59 46.4	
			ipP		15 00 08.2	
			iS		15 10 07	
		Near coast of Guatemala. h = 70 km (KIR,UME). M = 6.6 M uncorrected for focal depth.				
"	3	UPP	iP		16 00 14.7	
		Romania (h = 110 km).				
"	3	UPP	iP		19 53 35.6	
			iS		20 02 44	
					micr	sec
			Mx	Z	6.0	21

(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Nov. 3 (cont.)

KIR	iP		19 53 38.3	
			micr	sec
	Mx	Z	2.4	20
UME	iP		19 53 41.1	
	iS		20 02 59	

Mona Passage (h = 35 km).
M = 5.6 (UPP,KIR).

" 4 UPP iP 02 55 51.0
Near coast of Guatemala
(h = 70 km).

" 4 KIR ePKP 03 14 10
South Sandwich Islands region
(h = N).

" 4 UPP iP 18 42 21.8
Kuril Islands (h = 45 km).

" 5

UPP	iP		02 23 50.5	
	iS		02 31 26.4	
			micr	sec
	P	Z'	0.3	1.1
	Mx	Z	36	11
KIR	iP		02 23 39.0	
			micr	sec
	P	Z'	0.7	1.9
	Mx	Z	35	11
UME	iP		02 23 39.1	
	iS		02 31 05	

Qinghai Province, China
(h = 10 km).
m = 6.3, M = 6.6 (UPP,KIR).

" 5

UPP	iP		03 02 18.2	
			micr	sec
	P	Z'	0.1	1.0
KIR	iP		03 01 40.7	
			micr	sec
	P	Z'	0.2	0.8
UME	iP		03 01 56.3	

Sea of Japan (h = 340 km).
m = 5.7 (UPP,KIR).

" 5

UPP	Mx		13 26	
			micr	sec
	Mx	Z	6.9	21
KIR	Mx		13 42	
			micr	sec
	Mx	Z	2.3	18

Loyalty Islands region
(h = 40 km).
M = 6.1 (UPP,KIR).

1988
Nov. 6

UPP	iP		08 31 55.4	
KIR	iP		08 31 03.9	

Andreanof Islands, Aleutian Is.
(h = N).

" 6

UPP	iP		13 14 07.8	
	i		13 14 11.0	
	iS		13 23 06	
			micr	sec
	P	Z'	1.0	1.0
	Mx	Z	348	23
KIR	iP		13 13 59.1	
	i		13 14 01.5	
			micr	sec
	i	Z'	1.1	0.9
	Mx	Z	134	15
UME	iP		13 14 00.2	
	i		13 14 01.8	

Burma-China border region
(h = 20 km).
m = 6.9, M = 7.3 (UPP,KIR).

" 6

UPP	iP		13 26 32.6	C
	iS		13 35 24	
			micr	sec
	P	Z'	2.6	1.6
KIR	iP		13 26 22.5	C
			micr	sec
	P	Z'	2.9	1.9
UME	iP		13 26 22.9	C

Burma-China border region
(h = 10 km).
m = 7.1 (UPP,KIR).

" 6

UPP	iP		13 31 55.9	
			micr	sec
	P	Z'	0.2	0.9
KIR	iP		13 31 45.7	
			micr	sec
	P	Z'	0.5	1.0

Burma-China border region
(h = 10 km).
m = 6.4 (UPP,KIR).

" 6 UPP iP 13 50 39.3
Burma-China border region
(h = 10 km).

" 6

UPP	iP		14 24 13.2	
KIR	iP		14 24 02.3	
	i		14 24 06.4	
			micr	sec
	i	Z'	0.1	1.0

(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Nov. 6 (cont.)
Burma-China border region
(h = 10 km).

" 6 UPP iP 14 40 34.7
Burma-China border region
(h = 10 km).

" 6 UPP iP 16 11 19.8
micr sec
P Z' 0.1 1.0
KIR iP 16 11 09.1
micr sec
P Z' 0.2 1.3
UME iP 16 11 10.3
Burma-China border region
(h = 10 km).
m = 5.9 (UPP,KIR).

" 6 UPP iP 16 47 37.1
KIR iP 16 47 08.8
micr sec
P Z' 0.1 1.0
Mariana Islands (h = 80 km).

" 6 UPP iP 20 35 15.2
micr sec
P Z' 0.1 0.9
KIR iP 20 35 05.4
micr sec
P Z' 0.1 1.0
UME iP 20 35 06.7
Burma-China border region
(h = 10 km).
m = 5.9 (UPP,KIR).

" 6 UPP iP 20 46 17.5
Burma-China border region
(h = 10 km).

" 7 UPP iP 02 50 44.7
KIR eP 02 50 32
Burma-China border region
(h = 10 km).

" 7 UPP iP 03 36 05.5
ipP 03 36 38.6
micr sec
P Z' 0.2 1.0
KIR iP 03 35 37.5
ipP 03 36 11.0
micr sec
P Z' 0.2 1.3
(cont.)

1988 Nov. 7 (cont.)
UME iP 03 35 48.9
ipP 03 36 21.5
Ryukyu Islands.
h = 130 km (UPP,KIR,UME).
m = 5.7 (UPP,KIR).

" 7 UPP micr sec
Mx Z 18 23
KIR iPKP 04 09 10.4
i 04 09 25.6
micr sec
Mx Z 7.7 23
South of Fiji Islands (h = 20 km).
M = 6.5 (UPP,KIR).

" 7 KIR iP 04 51 29.8
Northeast of Taiwan (h = 160 km).

" 7 KIR iP 07 51 57.3
Panay, Philippine Islands
(h = 25 km).

" 7 UPP iPKP1 17 44 33.3
Kermadec Islands (h = 55 km).

" 7 KIR iSg1 19 51 24.1
Northern Finland, 67.7°N, 27.1°E.
Origin time = 19 50 04.
By combination with Finnish station
readings.

" 7 UPP iP 23 29 10.7
iSKS 23 39 42
micr sec
P Z' 0.1 1.0
Mx Z 3.6 26
KIR iP 23 28 54.2 C
micr sec
P Z' 0.7 1.3
UME iP 23 28 59.5 C
iSKS 23 39 31
Molucca Passage (h = 70 km).
m = 6.9 (UPP,KIR).

" 8 UPP iP 08 22 58.4
i 08 23 28.5
i 08 27 07.0
micr sec
P Z' 0.2 0.9
KIR iP 08 24 10.5
UME iP 08 23 34.1
Southern Greece (h = 55 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Nov. 9
UPP iP 23 33 29.1
KIR iP 23 33 04.4
Volcano Islands region (h = 40 km).

" 9
UPP iP 23 40 54.4
KIR iP 23 40 07.5
Kuril Islands (h = 35 km).

" 10
UPP iP 03 49 44.8

" 10
UPP iP 17 56 43.7
KIR iP 17 56 05.5
Near east coast of Honshu, Japan
(h = 10 km).

" 11
UPP iP 17 57 43.4
i 17 57 57.6
Greece (h = 45 km).

" 12
UPP iP 03 37 01.5 C
micr sec
P Z' 0.2 0.9
KIR iP 03 36 44.5 C
micr sec
P Z' 0.3 0.8
UME iP 03 36 45.8 C
Eastern Kazakh SSR.
m = 6.1 (UPP,KIR).
Underground explosion.

" 12
UPP iP 03 46 40.6
ipP 03 46 45.4
KIR iP 03 46 37.1
UME iP 03 46 41.2 C
ipP 03 46 46.2
Jamaica region.
h = 15 km (UPP,UME).

" 13
UPP ipP 02 51 05.6
iPP 02 55 12.7
Minahassa Peninsula (h = 104 km).

" 13
UPP iP 06 37 54.1
Andreanof Islands, Aleutian Is.
(h = 50 km).

" 13
UPP i(P) 22 54 12.8

" 14
UPP iPP 02 35 18.0
micr sec
Mx Z 12 21
(cont.)

1988 Nov. 14
(cont.)
KIR iPP 02 34 17.9
micr sec
Mx Z 26 26
UME iPP 02 34 23.4
New Ireland region (h = N).
M = 6.6 (UPP,KIR).

" 14
KIR eP 10 58 23
Fox Islands, Aleutian Islands
(h = N).

" 14
KIR iP 23 28 44.8
Mindanao, Philippine Islands
(h = 230 km).

" 15
KIR iPKP1 05 43 48.4
UME iPKP1 05 43 57.9
Off e. coast of N. Island, N.Z.
(h = 140 km).

" 15
UPP iP 08 52 41.8
micr sec
P Z' 0.2 1.1
Mx Z 3.9 22
KIR iP 08 51 47.6
micr sec
P Z' 0.2 1.1
Mx Z 2.8 20
UME iP 08 52 14.3
Fox Islands, Aleutian Islands
(h = 25 km).
m = 6.1, M = 5.4 (UPP,KIR).

" 15
UPP iP 10 39 04.7
micr sec
P Z' 0.1 1.0
KIR iP 10 38 53.8
micr sec
P Z' 0.1 1.0
UME iP 10 38 54.3
Burma-China border region
(h = 20 km).
m = 5.9 (UPP,KIR).

" 15
UPP iP 17 05 13.2
KIR iP 17 04 56.9
UME iP 17 04 58.8
Northern Xinjiang, China
(h = 35 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Nov. 16
UPP iPKP1 05 29 58.0
iPKP2 05 30 03.2
KIR iPKP1 05 29 35.8
UME iPKP 05 29 45.4
iPKP1 05 29 46.6
Kermadec Islands region
(h = 210 km).

" 16 KIR iP 05 41 27.3

" 16 UPP i(PKP) 06 11 34.9
iSKP1 06 14 22.9
KIR iSKP1 06 13 59.8
UME i(PKP) 06 11 21.9
iPKP 06 11 35.6
iSKP1 06 14 11.1
Fiji Islands region (h = 580 km).

" 16 KIR iP 11 03 02.1
Talaud Islands (h = N).

" 17 UPP iP 01 10 04.6 C
micr sec
P Z' 0.3 1.0
KIR iP 01 09 09.4
micr sec
P Z' 0.2 0.8
UME iP 01 09 35.1 C
Near east coast of Kamchatka
(h = 35 km).
m = 6.3 (UPP,KIR).

" 17 UPP iP 01 17 13.2
Near east coast of Kamchatka
(h = N).

" 17 UPP iP 07 08 32.6
ipP 07 08 36.7
micr sec
pP Z' 0.3 0.8
Mx Z 27 22
KIR iP 07 08 14.5
ipP 07 08 17.2
micr sec
pP Z' 0.6 1.1
UME iP 07 08 20.0
ipP 07 08 22.9
Samar, Philippine Islands.
h = 15 km (UPP,KIR,UME).
m = 6.7 (UPP,KIR).

" 17 UPP iP 13 25 35.2
Burma-China border region
(h = 10 km).

1988 Nov. 17
UPP iP 22 56 55.9
Mindanao, Philippine Islands
(h = 100 km).

" 18 UPP iP 18 32 36.0
KIR iP 18 32 24.6
UME iP 18 32 24.7
Burma-China border region
(h = 10 km).

" 18 UPP micr sec
Mx Z 33 23
KIR micr sec
Mx Z 9.9 24
UME iPP 19 58 11.9
New Britain region (h = 60 km).
M = 6.5 (UPP,KIR).

" 19 UPP iP 01 48 02.1
KIR iP 01 47 52.2
UME iP 01 47 53.2
Burma-China border region (h = N).

" 19 UPP iP 15 03 57.5
micr sec
P Z' 0.1 0.8
KIR iP 15 03 25.6
micr sec
P Z' 0.2 0.5
UME iP 15 03 39.0
Bonin Islands region (h = 350 km).
m = 5.9 (UPP,KIR).

" 20 UPP iPKP1 08 22 59.2
UME iPKP1 08 22 48.3
South of Kermadec Islands
(h = 150 km).

" 20 UPP Mx 10 18
micr sec
Mx Z 5.7 20
Southeast Indian Rise (h = 10 km).

" 20 UPP iP 21 06 37.2
i 21 06 44.2
micr sec
Mx Z 5.0 17
KIR iP 21 07 40.4
i 21 07 54.1
micr sec
i Z' 0.3 1.0
UME iP 21 07 05.8
Eastern Mediterranean Sea
(h = 10 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Nov. 20
KIR iP 23 16 02.2
Iran (h = 45 km).

" 21
KIR eP 15 45 52
Molucca Passage (h = 55 km).

" 21
UPP eP 17 02 48
i 17 02 50.2
iS 17 08 24
micr sec
i Z' 0.4 1.1
Mx Z 4.4 11
KIR iP 17 03 23.9
i 17 03 31.5
micr sec
P Z' 0.3 1.4
i Z' 1.1 1.3
Mx Z 6.5 18
UME iP 17 03 10.0
i 17 03 12.4
iS 17 09 08
Azores Islands (h = 10 km).
m = 6.3, M = 5.4 (UPP,KIR).

" 21
UPP iP 17 55 23.7
i 17 55 28.4
KIR iP 17 55 06.2
UME iP 17 55 11.9
Qinghai Province, China (h = N).

" 21
UPP iP 21 51 08.6 C
micr sec
P Z' 0.1 1.0
KIR iP 21 50 20.6 C
UME iP 21 50 42.6 C
Kuril Islands (h = 45 km).

" 22
UPP iPg1 11 46 04.5
iSg1 11 46 09.0
iRg 11 46 09.6
Dannemora, Uppland, Sweden,
60.2°, 17.8°E.
Rockburst at the iron ore mine.

" 22
UDD iSg1 12 05 16.8
Southern Norway, 59.1°N, 10.4°E.
Origin time = 12 04 19.
M_L(UPP) = 1.7 1.
Solution from Norwegian station readings.

1988 Nov. 22
KIR iP 16 20 30.2
UME iP 16 20 57.3
Fox Islands, Aleutian Islands
(h = N).

" 23
UPP iP 03 16 12.6
micr sec
Mx Z 1.6 17
KIR iP 03 15 38.5
micr sec
Mx Z 1.2 16
UME iP 03 15 52.4
iS 03 25 26
South of Honshu, Japan (h = 40 km).
M = 5.3 (UPP,KIR).

" 23
UPP iP 04 04 01.9
iPP 04 05 07.6
micr sec
P Z' 0.1 1.0
KIR iP 04 03 46.3 C
micr sec
P Z' 0.2 0.5
UME iP 04 03 46.7
Eastern Kazakh SSR.
m = 6.0 (UPP,KIR).
Underground explosion.

" 23
UPP iPKP 09 45 15.9
KIR iPKP 09 45 10.8
iSKP1 09 47 42.3
UME iPKP 09 45 10.7
iSKP1 09 47 54.8
Fiji Islands region (h = 600 km).

" 24
UPP iP 04 38 44.4
KIR iP 04 38 23.9
Samar, Philippine Islands (h = N).

" 24
KIR iSg1 12 18 24.8
UME iSg1 12 17 50.9
Gulf of Bothnia, 65.2°N, 22.6°E.
Origin time = 12 16 57.
M_L(UPP) = 2.2 (0.15) 2.
By combination with Finnish station readings.

" 24
UPP iPKP1 23 49 03.7
South of Fiji Islands (h = 570 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Nov. 25 UPP Mx 09 45
micr sec
Mx Z 9.1 26
KIR Mx 09 49
micr sec
Mx Z 7.2 19
Southeast Indian Rise (h = 10 km).
M = 6.3 (UPP,KIR).

" 25 UPP iP 14 09 14.7 C
Taiwan region (h = 80 km).

" 25 UPP Mx 23 03
micr sec
Mx Z 7.7 10
Qinghai Province, China
(h = 25 km).

" 25 UPP iP 23 54 54.2 D
iS 24 01 59
micr sec
P Z' 0.3 1.0
Mx Z 7.7 17
KIR iP 23 54 35.6
micr sec
P Z' 0.3 1.0
Mx Z 11 17
UME iP 23 54 48.1
Southern Quebec (h = 30 km).
m = 6.3, M = 5.8 (UPP,KIR).

" 26 KIR iP 18 52 59.2
micr sec
P Z' 0.2 1.4
UME iP 18 53 02.7
Near west coast of Colombia
(h = 5 km).

" 27 UPP
micr sec
Mx Z 1.7 21
KIR eP 00 46 28
Vancouver Island region
(h = 10 km).

" 27 UME iP 01 23 57.4
Hindu Kush region (h = 90 km).

" 27 UPP iP 04 28 49.0
KIR eP 04 28 39
Burma-China border region
(h = 15 km).

1988
Nov. 28 UPP iP 03 48 59.5
KIR iP 03 48 49.0
UME iP 03 48 50.9
Burma-China border region
(h = 25 km).

" 28 UPP iP 05 27 12.0
KIR iP 05 27 33.7
UME iP 05 27 16.9
Pakistan (h = 70 km).

" 28 UPP iP 17 00 43.4
KIR eP 17 00 17
Ryukyu Islands (h = 30 km).

" 28 KIR iP 21 07 52.2
Hindu Kush region (h = 190 km).

" 29 UPP iP 11 36 19.2
micr sec
P Z' 0.2 1.1
KIR iP 11 36 20.3
i 11 36 49.0
micr sec
P Z' 0.1 1.0
UME iP 11 36 22.2
Colombia (h = 90 km).
m = 5.9 (UPP,KIR).

" 30 UPP iPKP1 06 06 20.2
South of Fiji Islands (h = 600 km).

" 30 UPP iP 08 24 21.7
iS 08 33 14
micr sec
P Z' 0.1 1.1
Mx Z 13 15
KIR iP 08 24 11.6
micr sec
P Z' 0.4 2.1
UME iP 08 24 12.3
iS 08 32 53
Burma-China border region
(h = 15 km).
m = 6.0 (UPP,KIR).

" 30 UPP iP 09 05 15.2
micr sec
P Z' 0.1 0.8
KIR iP 09 04 28.3
i 09 04 49.6
i 09 05 33.0
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988

Nov.	30	(cont.)					
						micr	sec
			P		Z'	0.3	1.0
		UME	iP			09	04 46.6
			i			09	05 47.5
		Southern Alaska (h = 140 km).					
		m = 5.8 (UPP,KIR).					
"	30	UME	iP			09	09 32.1

May 9, 1990

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SEISMOLOGICAL BULLETIN

UPPSALA, KIRUNA, UMEÅ, UDDEHOLM

DELARY and MYRVIKEN

Uppsala	(UPP)	59°51.5'N,	17°37.6'E;	h = 14 m
Kiruna	(KIR)	67°50.4'N,	20°25.0'E;	h = 390 m
Umeå	(UME)	63°48.9'N,	20°14.2'E;	h = 16 m
Uddeholm	(UDD)	60°05.4'N,	13°36.4'E;	h = 240 m
Delary	(DEL)	56°28.2'N,	12°52.2'E;	h = 150 m
Myrviken	(MYV)	62°56.5'N,	14°20.8'E;	h = 345 m

DECEMBER 1 - 31, 1988

1988 Dec. 1
UPP iSg1 14 18 24.5
UDD i 14 17 18.8
iSg1 14 17 22.7
Southern Norway, 58.3°N, 6.4°E.
Origin time = 14 15 17.
M_L(UPP) = 2.5 1.
Solution from Norwegian station readings.

" 1
UPP eP 21 57 32.8
Crete (h = N).

" 3
UPP iP 03 25 49.7
ipP 03 26 18.8
KIR iP 03 25 16.7
micr sec
P Z' 0.1 1.0
UME iP 03 25 30.7
ipP 03 25 58.9
Bonin Islands region.
h = 120 km (UPP,UME).

" 3
UPP iP 08 54 53.3
KIR iP 08 54 07.7
UME iP 08 54 28.5
New Ireland region (h = 60 km).

" 3
KIR iP 16 53 47.2
Luzon Philippine Islands
(h = 60 km).

" 4
UPP iP 05 24 21.2 C
micr sec
P Z' 0.8 0.7
Mx Z 2.5 8
(cont.)

1988 Dec. 4
(cont.)
KIR iP 05 22 50.8 C
micr sec
P Z' 1.1 0.8
UME iP 05 23 28.7 C
Novaya Zemlya.
m = 6.6 (UPP,KIR).
Underground explosion.

" 4
UPP iP 06 26 19.8
iS 06 36 20
micr sec
P Z' 0.2 1.0
Mx Z 9.6 15
KIR iP 06 25 56.5
micr sec
P Z' 0.2 1.0
Mx Z 9.6 15
UME eP 06 25 39
iS 06 35 57
micr sec
Mx Z 2.5 12
Philippine Islands region
(h = 10 km).
m = 6.2, M = 6.0 (UPP,KIR).

" 4
KIR eP 06 32 33
Philippine Islands region
(h = 40 km).

" 4
UPP eP 06 45 27
KIR iP 06 45 04.1
Philippine Islands region
(h = 20 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Dec. 4 UPP iP 13 51 04.6
micr sec
P Z' 0.1 0.9
KIR iP 13 50 35.8
micr sec
P Z' 0.6 1.1
UME iP 13 50 47.7
Mariana Islands (h = 80 km).
m = 6.4 (UPP,KIR).

" 5 KIR eP 11 34 51
Banda Sea (h = 630 km).

" 5 KIR iP 11 35 05.0
Banda Sea (h = 630 km).

" 5 UPP micr sec
Mx Z 6.5 20
KIR iPKP 16 24 32.3
i 16 24 55.9
micr sec
PKP Z' 1.0 1.1
Mx Z 3.3 20
UME iPKP 16 24 40.0
i 16 25 03.3
Tonga Islands (h = 40 km).
M = 6.1 (UPP,KIR).

" 5 KIR ePKP 16 53 46
UME iPKP 16 53 51.3
South of Fiji Islands (h = 570 km).

" 5 KIR iSg1 19 39 07.1
Northwestern USSR, 66.7°N, 29.7°E.
Origin time = 19 37 10.
By combination with Finnish station readings.

" 6 UPP iP 13 27 55.6
ipP 13 28 00.5
iS 13 33 44
micr sec
P Z' 0.1 0.9
Mx Z 6.9 19
KIR iP 13 28 33.9
ipP 13 28 39.3
micr sec
P Z' 0.2 0.9
Mx Z 5.9 14
UME iP 13 28 09.9
ipP 13 28 13.9
i 13 28 51.9
iS 13 34 09
(cont.)

1988
Dec. 6 (cont.)
Southern Iran.
h = 15 km (UPP,KIR,UME).
m = 5.7, M = 5.5 (UPP,KIR).

" 6 UPP iP 16 25 39.3
KIR iP 16 23 53.8
iS 16 25 36.1
UME iP 16 24 47.3
iS 16 27 11.1
iLg 16 28 47.1
UDD iP 16 26 04.4
DEL iP 16 26 22.2
MYV iP 16 25 04.2
iS 16 27 44.4
Barents Sea, 77.0°N, 26.1°E.
Origin time = 16 21 42.
By combination with Finnish station readings.

" 6 UPP eP 19 53 21
ipP 19 53 24.3
micr sec
P Z' 0.1 1.0
Mx Z 1.2 19
KIR eP 19 54 06
UME iP 19 53 46.0
iS 20 02 56
North of Ascension Island
(h = 10 km).

" 7 UPP iP 07 46 49.8 C
ipP 07 46 52.3
iS 07 51 12.3
micr sec
P Z' 1.5 1.0
Mx E 339 14
N 254 18
KIR iP 07 47 25.3 C
iPP 07 48 19.2
micr sec
P Z' 1.0 1.0
UME iP 07 47 06.1 C
Turkey-USSR border region
(h = 5 km).
m = 6.7 (UPP,KIR).
M = 7.0 (UPP).
M computed from Wiechert records.

" 7 UPP iP 07 51 10.2
micr sec
P Z' 2.6 1.2
KIR iP 07 51 44.9
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Dec. 7 (cont.)
UME iP 07 51 26.0
Turkey-USSR border region
(h = 10 km).

" 7 UPP eP 09 40 02
UME iP 09 40 15.0
ipP 09 40 19.5
Turkey-USSR border region
(h = 10 km).

" 8 UME iP 00 15 29.6

" 8 UPP iP 13 11 56.4
iS 13 22 44
micr sec
Mx Z 8.6 30
KIR micr sec
Mx Z 4.3 20
South of Panama (h = 10 km).
M = 5.9 (UPP,KIR).

" 8 UPP iP 15 43 35.8
Burma-China border region
(h = 10 km).

" 8 UPP eP 20 37 30
Western Caucasus (h = 10 km).

" 10 UPP iP 12 35 53.1
Rat Islands, Aleutian Islands
(h = N).

" 10 UPP iP 13 20 04.0
Fox Islands, Aleutian Islands
(h = N).

" 10 UPP iP 17 41 50.7
ipP 17 41 52.2
micr sec
P Z' 0.1 1.0
KIR iP 17 42 02.3
ipP 17 42 03.8
micr sec
P Z' 0.1 1.0
UME iP 17 42 13.5
Red Sea.
h = 5 km (UPP,KIR).
m = 5.8 (UPP,KIR).

" 11 UPP iP 05 29 10.7
UME iP 05 28 44.2
Fox Islands, Aleutian Islands
(h = 70 km).

1988
Dec. 11 UPP iP 10 00 41.0
KIR iP 09 59 35.6
UME iP 10 00 23.6
Southwestern Ryukyu Islands
(h = 130 km).

" 11 UPP eP 18 17 06
UME iP 18 17 09.2
Panama-Colombia border region
(h = 70 km).

" 12 UPP iP 05 03 01.6
KIR iP 05 01 54.1
UME iP 05 02 43.7
Ryukyu Islands (h = 60 km).

" 12 UME eP 13 45 27
South of Panama (h = 10 km).

" 12 UPP iP 15 57 01.5
KIR iP 15 56 41.7
Luzon, Philippine Islands
(h = 40 km).

" 13 UPP iP 04 05 13.0
iS 04 07 54.5
micr sec
Mx Z 33 19
KIR iP 04 04 05.5
micr sec
P Z' 1.5 0.8
Mx Z 19 13
UME iP 04 04 41.8
i 04 04 42.5
iS 04 06 58.5
i 04 06 24.4
Jan Mayen Island region
(h = 10 km).

" 13 KIR eP 07 02 57
Andreanof Islands, Aleutian Is.
(h = 50 km).

" 13 UPP iP 17 07 18.5
micr sec
P Z' 0.4 1.6
KIR iP 17 06 44.0
micr sec
P Z' 0.1 1.5
UME iP 17 06 58.9
Bonin Islands region (h = 50 km).
m = 6.0 (UPP,KIR).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Dec. 14 UPP iP 09 49 38.4
micr sec
P Z' 0.1 1.0
Greece-Albania border region
(h = 50 km).

" 14 UPP iP 11 53 29.6 C
micr sec
P Z' 0.1 0.9
KIR iP 11 53 31.4
micr sec
P Z' 0.2 0.9
Tajik SSR (h = 60 km).
m = 5.7 (UPP,KIR).

" 15 KIR iP 06 48 47.2
UME iP 06 48 53.1
Mongolia (h = 25 km).

" 15 UPP iP 20 28 26.8
KIR iP 20 28 34.1
Near coast of Venezuela
(h = 90 km).

" 16 UME iP 02 31 07.4
Mona Passage (h = 120 km).

" 16 UPP iP 08 11 53.8
KIR iP 08 10 59.1
micr sec
P Z' 0.1 0.7
UME iP 08 11 27.2
Kodiak Island region (h = N).

" 16 UPP iPKP 10 16 55.1 C
iPKP1 10 16 58.8
i 10 39 52
micr sec
PKP Z' 1.1 0.9
Mx Z 8.4 25
KIR iPKP 10 16 36.8
micr sec
PKP Z' 0.2 0.9
UME iPKP1 10 16 45.7
Kermadec Islands (h = 30 km).

" 16 UPP iP 19 41 14.2
micr sec
P Z' 0.1 1.0
KIR iP 19 40 39.4
micr sec
P Z' 0.1 0.9
UME iP 19 40 54.7
(cont.)

1988
Dec. 16 (cont.)
South of Honshu, Japan
(h = 10 km).
m = 5.8 (UPP,KIR).

" 17 UPP iP 04 25 05.1 C
micr sec
P Z' 0.9 0.8
KIR iP 04 24 48.4 C
micr sec
P Z' 1.1 0.8
UME iP 04 24 49.6 C
Eastern Kazakh SSR.
m = 6.7 (UPP,KIR).
Underground explosion.

" 17 UPP iP 20 41 17.0

" 18 UPP iP 19 32 46.9
micr sec
P Z' 0.3 1.0
KIR iP 19 31 57.7
micr sec
P Z' 0.8 2.5
UME iP 19 32 21.0
Kuril Islands (h = N).
m = 6.3 (UPP,KIR).

" 18 UME iP 23 31 50.4
Kuril Islands (h = N).

" 19 UPP iP 02 37 49.5
micr sec
P Z' 0.1 1.0
KIR eP 02 37 00
UME iP 02 37 23.5
Kuril Islands (h = N).

" 19 UPP iP 02 39 46.6
micr sec
P Z' 0.1 0.9
KIR iP 02 38 57.3
UME iP 02 39 20.5
Kuril Islands (h = N).

" 19 KIR iP 11 17 31.4
UME iP 11 17 33.1
Burma-China border region
(h = N).

" 20 UPP iP 03 47 41.4
micr sec
P Z' 0.1 1.0
(cont.)

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988 Dec. 29 (cont.)

KIR	iPKP	03 47 41.9	
		micr	sec
	PKP Z'	0.2	1.0
UME	iPKP	03 47 38.6	

Northern Sumatera (h = 40 km).

" 20

UPP	iP	09 55 36.7
UME	iP	09 55 28.8

Bhutan (h = 35 km).

" 20

UPP	iP	10 29 26.6
KIR	eP	10 28 41
UME	iP	10 29 00.9

Kuril Islands (h = 110 km).

" 20

UPP	iPKP	14 47 37.1	
		micr	sec
	PKP Z'	0.1	1.0
UME	iPKP	14 47 31.2	

Kermadec Islands region (h = 35 km).

" 21

UPP	iP	02 48 03.8
KIR	iP	02 47 09.9

Rat Islands, Aleutian Islands (h = N).

" 21

UPP	iP	04 19 53.3
UME	iP	04 19 25.2

Near east coast of Kamchatka (h = N).

" 21

UPP	iP	04 45 31.2

Near east coast of Kamchatka (h = N).

" 21

UPP	iP	08 28 21.0	
	i	08 29 45.7	
		micr	sec
	P Z'	0.1	0.8
KIR	iP	08 28 22.8	
		micr	sec
	P Z'	0.3	0.7
UME	iP	08 28 14.8	

Kirghiz SSR (h = N).
m = 5.9 (UPP,KIR).

" 21

UPP	iP	11 04 27.3	C
		micr	sec
	P Z'	0.1	0.9
KIR	iP	11 03 43.4	
UME	iP	11 04 03.4	

Hokkaido, Japan region (h = 70 km).

1988 Dec. 21

UPP	iP	12 04 07.2
KIR	iP	12 05 10.8

Dodecanes Islands (h = 40 km).

" 22

UPP	iP	10 01 37.5	
		micr	sec
	P Z'	0.1	1.5
UME	iP	10 02 16.3	

Greece (h = 35 km).

" 22

UPP	iP	10 52 54.9	
KIR	iP	10 52 00.8	
		micr	sec
	P Z'	0.1	1.0
UME	iP	10 52 27.8	

Fox Islands, Aleutian Islands (h = 80 km).

" 23

UPP	iP	22 00 16.2	
KIR	iP	22 00 53.6	
		micr	sec
	P Z'	0.2	1.6
UME	iP	22 00 36.9	

Central Mid-Atlantic Ridge (h = 10 km).

" 24

UPP	iP	04 56 29.2
KIR	iP	04 56 04.5
	i	04 56 14.8
UME	iP	04 56 18.3

" 24

UME	iPKP	10 57 08.4

Santiago Del Eestero Prov., Arg. (h = 580 km).

" 24

KIR	iP	13 23 23.2
UME	iPKP	13 27 30.4

New Britain region (h = 370 km).

" 24

KIR	iPg1	21 31 45.1
	iSg1	21 32 24.2
UME	iSn	21 33 15.0
	i	21 33 41.0
	iSg1	21 33 48.5

Norwegian Sea, 68.5°N, 12.8°E.
Origin time = 21 30 52.
By combination with Norwegian and Finnish station readings.

" 25

UPP	iP	13 19 27.9
UME	iP	13 19 25.5

Hindu Kush region (h = 230 km).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988
Dec. 26 UPP iP 07 55 22.6
KIR iP 07 55 00.6
micr sec
P Z' 0.4 2.2
UME iP 07 55 07.2
Gansu Province, China (h = 10 km).

" 26 UME iP 09 20 38.6
Near coast of Guatemala
(h = 55 km).

" 27 UME iP 03 05 32.6
Nepal (h = 70 km).

" 27 UPP iP 14 02 43.1
ipP 14 02 58.1
micr sec
P Z' 0.1 0.9
pP Z' 0.2 1.0
KIR iP 14 02 44.5
ipP 14 02 59.9
micr sec
P Z' 0.1 0.9
UME iP 14 02 40.2
ipP 14 02 55.7
Northern Sumatera.
h = 55 km (UPP,KIR,UME).
m = 5.8 (UPP,KIR).

" 27 UPP iP 18 26 12.7
KIR iP 18 26 06.9
UME iP 18 26 06.3
Central Italy (h = 10 km).

" 27 UPP iP 23 22 38.8
KIR iP 23 23 32.4
UME iP 23 22 30.2
Southern Xinjiang, China (h = N).

" 28 UPP iP 02 16 17.0
KIR iP 02 15 40.5
UME iP 02 15 56.3
South of Honshu, Japan
(h = 220 km).

" 28 UME iP 05 30 33.3
Off east coast of Honshu, Japan
(h = N).

" 28 UPP eP 06 06 17.9
i 06 06 23.1
KIR iP 06 05 59.5
(cont.)

1988
Dec. 26 (cont.)
UME iP 06 06 06.2
i 06 06 11.7
Samar, Philippine Islands (h = N).

" 28 KIR iP 12 55 03.1

" 29 UPP iP 19 21 21.0
UME iP 19 20 59.4
Near east coast of Honshu, Japan
(h = 60 km).

" 29 UPP iP 19 40 58.4
micr sec
P Z' 0.1 0.9
UME iP 19 40 33.2
Kuril Islands (h = N).

" 29 UPP iSG1 21 42 10.5
UME i 21 42 23.0
iSG1 21 42 28.8
UDD iSg1 21 41 11.6
MYV iSG1 21 40 56.0
Southern Norway, near 62 1/4°N, 7°E.
Origin time = 21 39 10.
M_L(UPP) = 2.5 1.
By combination with Norwegian station readings.

" 30 UME iP 01 27 57.9
Jan Mayen Islands region
(h = 10 km).

" 30 KIR iP 02 06 55.5
Near n. coast of Papua New Guinea
(h = N).

" 30 UME iP 11 00 44.5

" 31 UPP iP 04 12 36.7
Turkey-USSR border region
(h = 10 km).

" 31 UDD iSG1 13 51 50.1
Norwegian Sea, 60.2°N, 1.9°E.
Origin time = 13 48 51.
Solution from Norwegian station readings.

" 31 UME iP 20 07 45.4
Kuril Islands (h = N).

UPP = Uppsala, KIR = Kiruna, UME = Umeå, UDD = Uddeholm, DEL = Delary, MYV = Myrviken

1988							
Dec.	31	KIR	iP		21	14	02.5
					micr		sec
			P	Z'	0.1		1.5

South of Australia (h = 10 km).

June 15, 1990

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