

MONTHLY TELESEISMIC BULLETIN of SZGRF-ERLANGEN - August 1998  
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H. Aichele, K. Klinge, D. Seidl, R. Hohl, U. Mundl

date	station	time	distance	phase	backazimut	comp	per[s]	ampl[nm]	magn
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SZGRF or NEIC-QED LOCATION									

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1998-08-01 D 83.6 AZ201  
 GRA1 09:22:32.0 e P Z T1.0 A12 mb5.1  
 SZGRF: OT 09:10:04.9 31.4S 13.0W dep 33km  
 SOUTH ATLANTIC RIDGE

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1998-08-01  
 GRA1 21:34:54.6 e PKP Z

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1998-08-01 D 56.4 AZ 72  
 GRA1 22:05:21.3 e P Z T0.8 A5 mb4.6  
 GRA1 22:05:25.4 e pP Z  
 NEIC: OT 21:56:40.3 41.0N 81.1E dep 33km mb4.6  
 SOUTHERN XINJIANG, CHINA

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1998-08-01 D 39.7 AZ105  
 GRA1 23:46:12.8 i P Z T1.1 A62 mb5.2  
 GRA1 00:07:23.0 e L Z T18.6 A584 MS4.5  
 SZGRF: OT 23:38:43.5 28.7N 55.9E dep 33km  
 SOUTHERN IRAN

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1998-08-02 D 47.3 AZ 76  
 GRA1 04:49:09.4 i P d Z T1.4 A180 mb6.0  
 GRA1 04:50:59.8 e PP Z  
 GRA1 04:55:55.8 e S T  
 GRA1 04:56:19.4 e SV R  
 GRA1 04:59:35.9 e SS R  
 GRA1 05:10:09.6 e L Z T14.1 A26390 MS6.4  
 SZGRF: OT 04:40:40.0 39.6N 78.3E dep 33km  
 SOUTHERN SINKIANG PROV., CHINA

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1998-08-02  
 GRA1 05:57:08.6 e (P) Z

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1998-08-02 D 77.8 AZ 24  
GRA1 08:26:26.8 i P Z T0.7 A12 mb5.1  
SZGRF: OT 08:14:34.3 48.1N 155.3E dep 33km  
KURIL ISLANDS

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1998-08-02 D 74.8 AZ 19  
GRA1 14:49:27.7 i P Z T1.3 A26 mb5.1  
SZGRF: OT 14:37:52.6 52.6N 160.4E dep 33km  
OFF EAST COAST OF KAMCHATKA

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1998-08-02 D 3.7 414km  
GRA1 22:00:09.9 e Pn Z M13.6  
GRA1 22:01:09.9 e Sg N  
SZGRF: OT 21:59:11.0 51.5N 16.3E dep 1km  
POLAND

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1998-08-03 D152.9  
GRA1 05:36:52.7 e PKPdf Z  
GRA1 05:36:59.9 e PKPbc Z  
GRA1 05:37:09.5 e PKPab Z  
GRA1 05:37:15.6 e Z  
GRA1 06:40:38.2 e L E T20.6 A347 MS5.2  
NEIC: OT 05:17:01.1 27.4S 148.8W dep 10km mb5.5  
SOUTH PACIFIC OCEAN

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1998-08-03 D 83.7 AZ 38  
GRA1 11:21:56.0 e P Z T2.5 A313 mb6.1  
GRA1 12:02:15.8 e L Z T19.8 A238 MS4.6  
SZGRF: OT 11:09:31.5 36.5N 141.9E dep 33km  
NEAR EAST COAST OF HONSHU, JAPAN

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1998-08-03 D 56.1 AZ 74  
GRA1 15:23:51.1 e P Z T0.8 A14 mb5.0  
GRA1 15:31:52.7 e S E  
GRA1 15:44:57.8 e L Z T15.2 A1308 MS5.1  
NEIC: OT 15:15:23.8 39.7N 77.1E dep 33km mb4.8  
SOUTHERN XINJIANG, CHINA

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1998-08-03  
GRA1 15:29:50.4 e P Z T1.4 A14

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1998-08-03 D 76.2 AZ357  
GRA1 15:51:00.0 e P Z T0.9 A16 mb5.1  
SZGRF: OT 15:39:17.5 54.3N 163.1W dep 33km  
UNIMAK ISLAND REGION

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1998-08-03 D 63.8 AZ229  
GRA1 21:41:12.0 e P Z T1.6 A27 mb5.2  
SZGRF: OT 21:30:41.8 2.8S 31.2W dep 33km  
SOUTH ATLANTIC OCEAN

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1998-08-03  
GRA1 22:04:42.8 e P Z  
NEIC: OT 21:59:47.3 34.7N 33.8E dep 33km mb4.1  
CYPRUS REGION

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1998-08-03 D 2.6 286km  
GRA1 21:41:50.5 e Sg N  
SZGRF: OT 21:40:28.9 49.8N 7.3E dep 10km  
Idar-Oberstein

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1998-08-04  
GRA1 06:05:42.0 e PKP Z  
GRA1 06:05:49.5 e Z  
NEIC: OT 05:46:48.4 20.6S 178.1W dep500km mb4.6  
FIJI ISLANDS REGION

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1998-08-04  
GRB5 06:41:49.2 e PKP Z  
NEIC: OT 06:23:11.4 17.1S 179.5W dep600km mb4.3  
FIJI ISLANDS REGION

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1998-08-04 D 27.9  
GRB1 11:48:48.3 e P Z  
GRA1 11:48:51.3 e (P) Z  
NEIC: OT 11:41:58.3 37.3N 57.3E dep 33km mb5.0  
TURKMENISTAN-IRAN BORDER REGION

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1998-08-04 D 49.5  
GRA1 12:46:48.4 e P Z T1.6 A38 mb5.1  
SZGRF: OT 12:37:59.1 .2N 17.2E dep 33km  
CONGO REPUBLIC

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1998-08-04  
GRA1 16:11:01.9 e PKP Z

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1998-08-04 D 21.1  
GRA1 17:36:17.8 e P Z T1.0 A14 mb4.3  
SZGRF: OT 17:31:36.1 36.0N 33.3E dep 33km  
TURKEY

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1998-08-04 D 91.8 AZ271  
GRA1 17:48:09.5 e P Z T1.7 A48 mb5.5  
GRA1 17:48:36.7 e Z

GRA1 17:58:33.9 e S E  
SZGRF: OT 17:35:04.4 .0S 80.5W dep 33km  
NEAR COAST OF ECUADOR

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1998-08-04 D 50.1  
GRA1 18:06:34.0 e P Z T1.8 A63 mb5.2  
GRA1 18:07:07.0 e Z  
SZGRF: OT 17:57:40.4 .4S 16.2E dep 33km  
CONGO REPUBLIC

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1998-08-04 D 87.8  
GRA1 19:12:25.1 e P Z T2.7 A1104 mb6.7  
GRA1 19:16:03.0 e PP Z  
GRA1 19:22:10.6 e SKS E  
GRA1 19:23:10.3 e S N  
GRA1 19:50:09.2 e L E T22.1 A82244 MS7.1  
SZGRF: OT 18:59:39.1 2.0N 77.7W dep 33km  
NEAR WEST COAST OF COLOMBIA

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1998-08-04  
GRB3 19:29:52.1 e (P) Z

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1998-08-04  
GRA1 19:37:55.7 e PKP Z  
GRA1 19:38:11.0 e Z

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1998-08-05 D 46.8 AZ 94  
GRA1 03:25:13.0 e P Z T0.9 A23 mb5.3  
GRA1 03:32:07.7 e S N  
GRA1 03:50:23.0 e L Z T15.3 A3000 MS5.4  
SZGRF: OT 03:16:47.0 29.1N 67.4E dep 33km  
PAKISTAN

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1998-08-05  
GRA1 04:15:31.5 e PKP Z  
GRA1 04:15:41.3 e Z  
NEIC: OT 03:56:37.3 21.5S 178.8W dep500km mb4.4  
FIJI ISLANDS REGION

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1998-08-05 D 58.5 AZ235  
GRA1 07:40:45.1 e P Z T2.5 A180 mb5.7  
GRA1 07:40:51.7 e pP Z  
GRA1 08:04:55.2 e L Z T19.1 A643 MS4.8  
SZGRF: OT 07:30:51.4 4.7N 33.3W dep 24km  
CENTRAL MID-ATLANTIC RIDGE

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1998-08-05

GRA1 08:29:37.5 e PKP Z

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1998-08-05

GRA1 09:45:01.8 e PKP Z

GRA1 09:45:11.8 e Z

NEIC: OT 09:25:52.9 21.4S 178.1W dep381km mb5.0

FIJI ISLANDS REGION  
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1998-08-05 D 72.7 AZ 16

GRA1 10:53:43.5 e P Z T1.7 A75 mb5.5

SZGRF: OT 10:42:20.6 55.5N 163.6E dep 33km

OFF EAST COAST OF KAMCHATKA  
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1998-08-05 D158.9

GRA1 13:14:25.6 e PKP Z

GRA1 13:14:33.5 e Z

GRA1 14:19:37.8 e L Z T22.5 A1752 MS5.8

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1998-08-05 D 30.7 AZ108

GRA1 14:33:13.8 e P Z T1.6 A114 mb5.6

SZGRF: OT 14:27:02.3 33.8N 46.9E dep 33km

IRAN-IRAQ BORDER REGION  
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1998-08-05

GRA1 22:20:08.2 e PKP Z

NEIC: OT 22:00:39.7 25.1S 179.6W dep411km mb4.6

SOUTH OF FIJI ISLANDS  
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1998-08-06

GRA1 06:25:25.7 e PKP Z

GRA1 06:25:36.7 e Z

NEIC: OT 06:05:44.2 21.8S 169.8E dep 33km mb4.6

LOYALTY ISLANDS REGION  
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1998-08-06 D 48.6

GRA1 13:53:33.1 e P Z T0.8 A8 mb4.8

SZGRF: OT 13:44:53.3 26.9N 45.3W dep 33km

NORTH ATLANTIC RIDGE  
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1998-08-07 D 27.3 AZ108

GRA1 01:41:47.7 e P Z T1.6 A68 mb5.1

GRA1 01:46:29.1 e S E

GRA1 01:53:47.9 e L Z T18.9 A407 MS4.0

SZGRF: OT 01:36:06.1 35.8N 43.6E dep 33km

IRAQ  
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1998-08-07

GRA1 04:33:32.8 e PKP Z  
GRA1 04:33:40.4 e Z  
NEIC: OT 04:14:37.3 20.4S 177.8W dep486km mb5.1  
FIJI ISLANDS REGION

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1998-08-07 D 80.0 AZ 24  
GRA1 13:20:46.1 e P Z T0.6 A14 mb5.0  
SZGRF: OT 13:08:41.4 45.8N 156.0E dep 33km  
KURIL ISLANDS REGION

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1998-08-07 D 78.5 AZ 24  
GRA1 17:46:12.8 i P c Z T0.8 A31 mb5.5  
SZGRF: OT 17:34:16.7 47.3N 155.1E dep 33km  
KURIL ISLANDS REGION

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1998-08-07  
GRB5 18:23:50.4 e P Z  
GRA1 18:23:50.6 e P Z

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1998-08-08  
GRB5 02:04:59.7 e PKP Z

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1998-08-08 D 46.1 AZ 84  
GRA1 18:14:09.6 e P Z T1.7 A16 mb4.8  
GRA1 18:14:51.2 e Z  
SZGRF: OT 18:05:49.5 35.4N 72.5E dep 33km  
PAKISTAN

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1998-08-08  
GRA1 18:53:11.0 e PKP Z

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1998-08-09 D 80.1 AZ 90  
GRA1 00:47:06.1 i P c Z T1.4 A57 mb5.3  
GRA1 01:28:54.4 e L Z T19.5 A338 MS4.7  
SZGRF: OT 00:34:59.0 7.2N 94.4E dep 33km  
NICOBAR ISLANDS REGION

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1998-08-09 D 6.3  
GRA1 03:33:55.0 e Sn N  
SZGRF: OT 03:31:12.5  
CENTRAL ITALY

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1998-08-09 D 78.6 AZ 8  
GRA1 05:39:31.1 i P c Z T1.0 A42 mb5.4  
GRA1 06:19:51.2 e L Z T19.0 A214 MS4.5  
SZGRF: OT 05:27:34.2 51.4N 178.0E dep 33km

## RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-09 D 82.7 AZ 91  
GRA1 08:38:36.1 e P Z T1.6 A27 mb5.2  
SZGRF: OT 08:26:15.4 5.0N 95.8E dep 33km  
NORTHERN SUMATERA

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1998-08-09 D 3.7 409km  
GRA1 09:17:08.1 e Pn Z M14.3  
GRA1 09:18:07.4 e Sg N  
SZGRF: OT 09:16:10.2 51.6N 16.2E dep 1km  
POLAND

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1998-08-09 D 1.7 194km  
GRA1 09:40:54.8 e Pg Z M12.3  
GRA1 09:41:17.1 e Sg E  
SZGRF: OT 09:40:22.6 50.5N 13.6E dep 0km  
Chomutov, Most/CR

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1998-08-09  
GRA1 10:02:20.4 e PKP Z  
NEIC: OT 09:43:19.5 23.2S 179.2W dep500km mb4.2  
SOUTH OF FIJI ISLANDS

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1998-08-09 D 1.7 192km  
GRA1 10:47:01.0 e Sg Z  
SZGRF: OT 10:46:06.6 50.4N 13.7E dep 0km  
Louny/CR, SE of Chomutov

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1998-08-09 D 78.9 AZ 11  
GRA1 11:44:30.7 e P Z T1.0 A10 mb4.8  
SZGRF: OT 11:32:32.3 50.7N 173.7E dep 33km  
ALEUTIAN ISLANDS REGION

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1998-08-09  
GRB4 18:34:46.8 e (P) Z

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1998-08-09  
GRA1 18:59:27.5 e PKP Z  
NEIC: OT 18:39:45.7 21.8S 170.0E dep 33km mb4.5  
LOYALTY ISLANDS REGION

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1998-08-09  
GRA1 20:10:36.0 e (P) Z

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1998-08-09  
GRA1 20:39:04.6 e PKP Z

GRA1 20:39:08.3 e Z  
NEIC: OT 20:19:51.3 18.8S 175.8W dep300km mb4.5  
TONGA ISLANDS

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1998-08-09

GRB5 21:06:20.8 e PKP Z  
NEIC: OT 20:47:25.2 24.1S 179.9E dep562km mb4.5  
SOUTH OF FIJI ISLANDS

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1998-08-09 D 84.9 AZ127

GRA1 21:13:39.0 e P Z T1.6 A20 mb5.1

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1998-08-09

GRA1 22:44:26.2 e PKP Z  
GRA1 22:45:02.3 e Z  
NEIC: OT 22:25:04.3 19.3S 169.2E dep138km mb4.3  
VANUATU ISLANDS

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1998-08-10 D 86.2 AZ 58

GRA1 03:31:04.3 e P Z T1.6 A20 mb5.0  
SZGRF: OT 03:18:26.6 23.3N 124.3E dep 33km  
SOUTHWESTERN RYUKYU ISLANDS

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1998-08-10 D 80.4 AZ 90

GRA1 10:04:23.0 e P Z  
GRA1 10:04:29.4 e pP Z  
GRA1 10:04:33.4 e sP Z  
GRA1 10:14:24.5 e S N  
GRA1 10:47:47.2 e L Z T21.8 A2286 MS5.5  
SZGRF: OT 09:52:14.8 7.1N 94.7E dep 24km  
NICOBAR ISLANDS REGION

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1998-08-10 D 80.2 AZ 91

GRA1 10:31:01.8 e P Z T1.1 A6 mb4.4  
SZGRF: OT 10:18:54.6 6.9N 94.1E dep 33km  
NICOBAR ISLANDS REGION

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1998-08-10 D 71.5 AZ275

GRA1 21:14:09.5 e P Z  
BEAM 21:14:09.7 e P Z T1.2 A17 mb5.0  
GRA1 21:14:14.8 e pP Z  
GRA1 21:14:17.0 e sP Z  
GRA1 21:42:43.5 e L Z T18.9 A278 MS4.5  
SZGRF: OT 21:02:52.5 17.5N 70.4W dep 19km  
DOMINICAN REPUBLIC REGION

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1998-08-10

GRA1 21:20:32.3 e PKP Z



GRA1 21:20:39.5 e Z  
NEIC: OT 21:00:34.4 62.7S 147.9E dep 10km mb4.7  
SOUTH OF AUSTRALIA

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1998-08-11 D 84.9 AZ 57  
GRA1 02:20:06.1 i P Z T1.3 A20 mb5.2  
GRA1 02:20:42.1 e pP Z  
SZGRF: OT 02:07:35.1 24.7N 123.8E dep143km  
SOUTHWESTERN RYUKYU ISLANDS

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1998-08-11 D 83.2 AZ 91  
GRA1 07:10:38.0 e P Z T1.4 A16 mb5.0  
GRA1 07:10:45.2 e Z  
SZGRF: OT 06:58:14.7 4.4N 95.9E dep 33km  
NORTHERN SUMATERA

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1998-08-11 D 47.3 AZ 71  
GRA1 07:43:32.1 e P Z T0.8 A11 mb5.0  
GRA1 07:43:36.1 e pP Z  
SZGRF: OT 07:35:02.7 42.5N 81.0E dep 15km  
KIRGHIZ-SINKIANG BORDER REGION

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1998-08-12 D 3.7 410km  
GRA1 02:11:38.9 e Pn Z M13.8  
GRA1 02:12:38.7 e Sg N  
SZGRF: OT 02:10:40.5 51.5N 16.2E dep 1km  
POLAND

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1998-08-12  
GRA1 03:46:16.8 e PKP Z  
GRA1 03:46:21.9 e Z

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1998-08-12 D 83.9 AZ323  
GRA1 14:23:00.9 e P Z T1.2 A17 mb5.2  
GRA1 15:02:55.3 e L Z T18.1 A766 MS5.1  
SZGRF: OT 14:10:35.7 37.0N 120.9W dep 33km  
CENTRAL CALIFORNIA

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1998-08-13 D 78.6 AZ 10  
GRA1 06:28:38.5 e P Z T0.7 A11 mb5.0  
GRA1 06:28:45.9 e pP Z  
SZGRF: OT 06:16:41.8 51.1N 174.9E dep 26km  
NEAR ISLANDS, ALEUTIAN ISLANDS

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1998-08-14 D136.3  
GRA1 01:14:54.3 e PKPdf Z  
GRA1 01:18:26.2 e (X) Z  
GRA1 01:18:36.9 e PP Z

GRA1 02:18:57.9 e L Z T20.4 A790 MS5.4

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1998-08-14

GRA1 02:05:09.8 e (PKPdf) Z

GRA1 02:05:26.0 e PKPab Z

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1998-08-14 D 82.7 AZ 40

GRA1 10:48:39.5 e P Z

GRA1 10:48:44.0 e (pP) Z

GRA1 11:31:34.2 e L Z T19.9 A142 MS4.3

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1998-08-14 D 46.3

GRA1 13:15:04.5 i P c Z mb5.0

ALIGN 13:15:04.5 T0.8 A12

GRA1 13:15:08.8 e pP Z

GRA1 13:35:53.3 e L Z T16.6 A557 MS4.6

NEIC: OT 13:06:39.9 40.2N 77.1E dep 33km mb4.7

KYRGYZSTAN-XINJIANG BORDER REG.

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1998-08-14 D153.0

GRA1 13:41:22.9 e PKPdf Z

GRA1 14:54:33.8 e L Z T20.3 A348 MS5.2

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1998-08-14 D 97.7 AZ 46

GRA1 22:45:01.4 e P Z mb4.9

BEAM 22:45:01.4 T0.9 A2

SZGRF: OT 22:31:30.6 20.3N 141.9E dep 33km

MARIANA ISLANDS REGION

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1998-08-15

GRA1 03:26:26.8 e Pn Z

GRA1 03:27:11.2 e Sn Z

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1998-08-15 D 96.9

GRA1 03:44:17.1 e Pdiff Z

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1998-08-15 D 86.1 AZ 41

GRA1 03:57:14.0 i P c Z mb4.7

BEAM 03:57:14.0 T1.0 A6

SZGRF: OT 03:44:37.6 32.7N 139.6E dep 33km

SOUTH OF HONSHU, JAPAN

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1998-08-15 D 7.5

GRA1 05:19:58.0 e Pn Z M15.1  
GRA1 05:21:18.2 e Sn N  
GRA1 05:23:39.3 e L Z T14.9 A2443  
SZGRF: OT 05:18:11.0 42.3N 13.1E dep 10km  
CENTRAL ITALY

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1998-08-15 D 59.0 AZ162  
GRA1 05:50:30.2 e P Z mb4.7  
BEAM 05:50:30.2 T1.2 A9  
GRA1 05:50:35.3 e pP Z  
GRA1 06:15:41.7 e L Z T21.6 A67 MS3.7  
SZGRF: OT 05:40:30.1 8.0S 26.6E dep 18km  
ZAIRE REPUBLIC

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1998-08-15 D 59.1 AZ161  
GRA1 15:06:31.6 e P d Z mb4.7  
BEAM 15:06:31.6 T1.1 A8  
GRA1 15:06:35.5 e pP Z  
SZGRF: OT 14:56:29.8 7.9S 27.5E dep 14km  
ZAIRE REPUBLIC

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1998-08-15 D 60.2 AZ160  
GRA1 16:06:45.1 e P d Z mb4.5  
BEAM 16:06:45.1 T1.2 A6  
GRA1 16:06:49.8 e pP Z  
SZGRF: OT 15:56:36.3 8.8S 28.4E dep 17km  
ZAIRE REPUBLIC

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1998-08-15  
GRA1 16:33:57.7 e PKPab Z

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1998-08-15 D 58.7 AZ161  
GRA1 17:38:23.0 i P d Z mb4.9  
BEAM 17:38:23.0 T1.3 A15  
GRA1 17:38:27.1 e pP Z  
GRA1 17:38:30.4 e sP Z  
SZGRF: OT 17:28:24.4 7.5S 27.6E dep 17km  
ZAIRE REPUBLIC

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1998-08-15  
GRA1 18:33:54.5 e PKPdf Z  
GRA1 18:33:57.4 e (pPKPdf) Z  
GRA1 18:34:00.0 e (PKPab) Z  
NEIC: OT 18:14:11.6 21.7S 170.3E dep 33km mb4.1  
LOYALTY ISLANDS REGION

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1998-08-15 D 81.8  
GRA1 18:43:31.6 i P c Z mb5.1

BEAM 18:43:31.6 T1.4 A22  
GRA1 19:21:48.6 e L Z T20.4 A985 MS5.2

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1998-08-15 D 67.9 AZ205  
GRA1 23:43:17.4 e P c Z mb4.8  
BEAM 23:43:17.4 T1.4 A8  
GRA1 23:43:21.8 e (pP) Z  
SZGRF: OT 23:32:17.7  
SOUTH ATLANTIC RIDGE

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1998-08-16 D 11.5  
GRC1 01:42:55.8 e Pn Z  
GRA1 01:43:04.9 e Pn Z  
NEIC: OT 01:40:12.5 39.4N 20.8E dep 4km  
GREECE-ALBANIA BORDER REGION

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1998-08-16 D 79.7 AZ 3  
GRA1 02:11:12.8 i P Z T1.1 A15 mb4.9  
SZGRF: OT 01:59:10.1 50.9N 173.0W dep 33km  
ANDREANOF ISLANDS, ALEUTIAN IS.

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1998-08-16  
GRA1 02:23:43.1 e PKP Z

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1998-08-16 D 3.6 400km  
GRC2 02:27:55.1 e Pn Z  
GRA1 02:28:10.5 e Pn Z M13.2  
GRA1 02:29:23.2 e Sg E  
SZGRF: OT 02:27:01.1 45.3N 10.6E dep 10km  
NORTHERN ITALY

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1998-08-16 D 54.8 AZ159  
GRA1 04:56:45.4 e P Z T1.5 A16 mb4.8  
GRA1 04:56:50.2 e pP Z  
GRA1 05:18:17.8 e L Z T18.3 A302 MS4.4  
SZGRF: OT 04:47:17.0 3.2S 28.5E dep 17km  
LAKE TANGANYIKA REGION

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1998-08-16  
GRA1 05:07:51.5 e PKP Z  
NEIC: OT 04:48:14.3 15.3S 173.4W dep 33km mb4.7  
TONGA ISLANDS

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1998-08-16 D 17.7  
GRA1 05:10:06.7 e P Z T1.2 A64 mb4.6

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1998-08-16 D 68.0 AZ207  
GRA1 05:45:39.0 e P Z T1.6 A25 mb5.2  
GRA1 05:45:44.7 e Z  
SZGRF: OT 05:34:40.9 14.8S 14.3W dep 20km  
SOUTH ATLANTIC RIDGE

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1998-08-16 D 35.8  
GRA1 11:17:16.7 e P Z T1.2 A14 mb4.7

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1998-08-16 D 86.8 AZ 59  
GRA1 11:25:36.2 e P Z  
BEAM 11:25:36.4 e P Z T1.2 A4 mb4.4  
GRA1 11:25:40.2 e Z  
SZGRF: OT 11:12:55.9 22.0N 123.4E dep 33km  
SOUTHEAST OF TAIWAN

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1998-08-16 D151.4  
GRA1 11:52:57.8 e PKPdf Z  
GRA1 11:53:03.4 e PKPbc Z  
GRA1 11:53:10.8 e PKPab Z  
NEIC: OT 11:34:19.8 20.2S 178.7W dep600km mb4.5  
FIJI ISLANDS REGION

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1998-08-16 D 84.9 AZ 37  
GRA1 14:17:42.9 i P c Z T1.1 A118 mb6.0  
GRA1 14:17:55.2 e pP Z  
GRA1 14:59:10.9 e L Z T18.1 A420 MS4.9  
SZGRF: OT 14:05:12.6 36.0N 143.7E dep 42km  
OFF EAST COAST OF HONSHU, JAPAN

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1998-08-16  
GRA1 16:48:44.2 e PKP Z  
NEIC: OT 16:26:10.8 16.0S 168.0E dep178km mb4.7  
VANUATU ISLANDS

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1998-08-17 D 83.4 AZ 40  
GRA1 01:27:28.5 e P Z T1.4 A15 mb5.0  
SZGRF: OT 01:15:05.9 35.5N 138.9E dep 33km  
HONSHU, JAPAN

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1998-08-17  
GRA1 06:18:01.9 e P Z

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1998-08-17 D 58.6 AZ207  
GRA1 08:11:47.5 e P Z T1.5 A34 mb5.1  
SZGRF: OT 08:01:52.4 5.5S 12.1W dep 33km  
ASCENSION ISLAND REGION

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1998-08-17GRA1 12:57:16.3 e PKP Z  
BEAM 12:57:16.5 e PKP Z

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1998-08-17 D 44.8 AZ 85GRA1 13:01:19.6 e P Z T0.7 A10 mb4.9  
SZGRF: OT 12:53:09.5 35.7N 70.8E dep 33km  
HINDU KUSH REGION

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1998-08-17GRA1 19:57:50.6 e PKP Z  
GRA1 19:57:55.6 e Z  
NEIC: OT 19:38:16.6 19.6S 175.5W dep143km mb4.6  
TONGA ISLANDS

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1998-08-17 D 70.0 AZ 12GRA1 20:06:52.5 e P Z T1.0 A11 mb5.0  
SZGRF: OT 19:55:46.1 59.3N 169.8E dep 33km  
EASTERN SIBERIA

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1998-08-18 D 65.0 AZ 80GRA1 04:20:49.4 i P Z T1.4 A29 mb5.3  
GRA1 04:20:57.4 e pP Z  
SZGRF: OT 04:10:12.5 25.1N 91.2E dep 28km  
INDIA-BANGLADESH BORDER REGION

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1998-08-18GRA1 05:21:41.0 e PKP Z  
NEIC: OT 05:01:27.0 30.2S 178.3W dep200km mb4.8  
KERMADEC ISLANDS, NEW ZEALAND

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1998-08-18GRA1 08:37:04.5 e PKP Z  
GRA1 08:37:07.8 e Z  
NEIC: OT 08:18:18.4 17.5S 179.0W dep504km mb4.5  
FIJI ISLANDS REGION

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1998-08-18 D 80.3 AZ 29GRA1 18:11:60.0 i P Z T1.5 A88 mb5.5  
GRA1 18:51:56.4 e L Z T20.0 A344 MS4.7  
SZGRF: OT 17:59:53.8 43.7N 150.1E dep 33km  
KURIL ISLANDS REGION

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1998-08-18GRA1 23:26:40.8 e PKP Z  
NEIC: OT 23:07:22.2 34.8S 108.6W dep 10km mb4.9  
SOUTHERN EAST PACIFIC RISE

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1998-08-19 D145.7  
GRA1 00:08:01.5 e PKPdf Z  
GRA1 00:08:41.5 e pPKPdf Z  
NEIC: OT 23:48:42.9 15.7S 174.3W dep200km mb4.6  
TONGA ISLANDS

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1998-08-19  
GRA1 02:26:27.4 e PKP Z  
GRA1 02:26:29.6 e Z  
NEIC: OT 02:07:22.9 13.7S 167.1E dep200km mb5.0  
VANUATU ISLANDS

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1998-08-19  
GRB5 06:52:25.5 e PKPbc Z  
NEIC: OT 06:33:31.2 22.4S 179.3W dep550km mb4.0  
SOUTH OF FIJI ISLANDS

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1998-08-19 D 8.3  
GRC3 08:00:41.1 e Pn Z  
SZGRF: OT 07:58:41.6 42.2N 18.6E dep 10km  
YUGOSLAVIA

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1998-08-20 D 80.0 AZ 29  
GRA1 05:02:21.7 e P Z T0.8 A19 mb5.1  
GRA1 05:02:26.1 e pP Z  
SZGRF: OT 04:50:16.9 44.0N 150.2E dep 15km  
KURIL ISLANDS REGION

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1998-08-20 D 89.2 AZ 44  
GRA1 06:53:03.7 e P Z T1.4 A101 mb6.0  
GRA1 06:53:12.1 e Z T1.2 A593  
GRA1 06:53:18.0 e Z  
GRA1 06:54:43.8 e pP Z  
GRA1 06:55:27.8 e sP Z  
GRA1 06:56:48.0 e PP Z  
GRA1 06:59:01.1 e PPP Z  
GRA1 07:03:01.5 e SKS N  
GRA1 07:06:02.9 e PS N  
GRA1 07:09:24.3 e SS N  
NEIC: OT 06:40:54.0 28.9N 139.4E dep422km mb6.1  
BONIN ISLANDS REGION

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1998-08-20 D 78.4 AZ 32  
GRA1 09:47:34.5 e P Z T0.9 A204 mb6.3  
SZGRF: OT 09:35:38.4 43.7N 144.6E dep 33km  
HOKKAIDO, JAPAN REGION

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1998-08-20 D 78.9 AZ 9

GRA1 15:08:38.0 i P c Z T1.4 A68 mb5.5  
SZGRF: OT 14:56:39.7 51.1N 177.7E dep 33km  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-20 D 79.5 AZ 10  
GRA1 15:12:06.3 i P c Z T3.0 A1172 mb6.3  
GRA1 15:21:56.8 e S N  
GRA1 15:51:32.6 e L Z T20.4 A5396 MS5.9  
SZGRF: OT 15:00:04.3 50.3N 176.5E dep 33km  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-20 D 15.0  
GRA1 19:24:03.4 e P Z

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1998-08-20 D 79.4 AZ 9  
GRA1 19:53:39.7 i P c Z T0.9 A31 mb5.3  
SZGRF: OT 19:41:38.4 50.5N 176.8E dep 33km  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-20 D 3.7 414km  
GRA1 23:30:32.9 e Pn Z M13.7  
GRA1 23:31:33.1 e Sg N  
SZGRF: OT 23:29:34.6 51.6N 16.2E dep 1km  
POLAND

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1998-08-21 D 76.2 AZ 21  
GRA1 02:09:45.9 e P Z mb4.8  
ALIGN 02:09:45.9 T1.4 A11  
SZGRF: OT 01:58:02.4  
KURIL ISLANDS REGION

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1998-08-21  
GRA1 03:36:18.6 e (P) Z  
BEAM 03:36:18.6 T0.9 A2  
NEIC: OT 03:24:21.6 51.5N 175.3E dep 33km mb4.5  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-21 D 34.6 AZ108  
GRA1 05:19:29.4 e P Z mb4.9  
ALIGN 05:19:29.4 T0.9 A14  
GRA1 05:33:51.5 e L Z T18.4 A314 MS4.1  
SZGRF: OT 05:12:43.9 31.0N 50.2E dep 33km  
IRAN

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1998-08-21  
GRA1 09:26:25.1 i PKP c Z  
NEIC: OT 09:06:51.8 19.2S 169.2E dep 33km mb5.0  
VANUATU ISLANDS



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1998-08-21

GRA1 11:22:56.9 e PKP Z

GRA1 11:23:06.2 e Z

NEIC: OT 11:04:11.5 21.1S 179.0W dep600km mb4.5

FIJI ISLANDS REGION

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1998-08-21

GRB1 13:11:48.9 e Pg Z

NEIC: OT 13:10:44.7 46.4N 13.7E dep 5km

AUSTRIA

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1998-08-21

AZ 9

GRA1 18:55:23.4 e P Z

BEAM 18:55:23.4 T2.7 A80

GRA1 19:33:05.5 e L Z T19.2 A287

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1998-08-21 D 79.0 AZ 10

GRA1 18:55:21.5 e P Z mb5.3

BEAM 18:55:21.5 T2.7 A81

SZGRF: OT 18:43:22.4

RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-22

GRA1 09:52:19.1 e PKP Z

GRA1 09:52:28.5 e Z

NEIC: OT 09:33:34.0 21.0S 179.0W dep600km mb4.5

FIJI ISLANDS REGION

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1998-08-22

GRA1 11:28:37.2 e PKP Z

GRA1 12:23:33.0 e L Z T19.9 A1063

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1998-08-22

GRA1 11:36:53.6 e (Pg) Z

GRA1 11:37:21.0 e Sg E

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1998-08-22

GRA1 12:50:21.6 e P Z

BEAM 12:50:21.6 T1.3 A15

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1998-08-22

GRA1 16:21:42.9 e (Pg) Z

GRA1 16:22:47.5 e Sg E

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 1998-08-22           409km  
   GRA1 20:36:07.1 e (Pn)    Z                   M13.4  
   GRA1 20:36:19.1 e Pg       Z  
   GRA1 20:37:09.4 e Sg       N  
 NEIC: OT 20:35:07.6 51.6N 16.3E dep 5km  
 POLAND

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 1998-08-22           D 78.6 AZ\*\*\*  
   GRA1 21:23:48.4 e P        Z                   mb4.6  
   BEAM 21:23:48.4            T1.1    A7  
 SZGRF: OT 21:11:51.6  
 FOX ISLANDS, ALEUTIAN ISLANDS

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 1998-08-22           D 96.7 AZ 66  
   GRA1 23:11:23.3 e P        Z                   mb5.2  
   BEAM 23:11:23.3            T1.5    A9  
   GRA1 23:11:30.0 e           Z  
   GRA1 23:54:01.3 e L        Z T18.3 A737       MS5.2  
 NEIC: OT 22:58:28.5 15.5N 119.4E dep 33km mb5.0  
 LUZON, PHILIPPINE ISLANDS

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 1998-08-23  
   GRA1 00:17:12.4 e PKP      Z  
   GRA1 00:17:14.1 e           Z  
   GRA1 00:17:23.1 e           Z

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 1998-08-23           D 88.5 AZ 64  
   GRA1 05:49:09.6 i P        c Z                   mb6.6  
   BEAM 05:49:09.6            T1.1    A304  
   GRA1 06:32:23.0 e L        Z T19.8 A6354       MS6.0  
 SZGRF: OT 05:36:21.0 17.8N 120.6E dep 33km  
 LUZON, PHILIPPINE ISLANDS

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 1998-08-23           D 86.3 AZ282  
   GRA1 14:09:56.4 i P        c Z                   mb6.9  
   BEAM 14:09:56.4            T4.9    A4729  
   GRA1 14:46:19.5 e L        Z T20.2 A29103       MS6.7  
 SZGRF: OT 13:57:17.7 10.5N 85.4W dep 33km  
 COSTA RICA

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 1998-08-23  
   GRA1 14:27:49.3 e (P)      Z  
   BEAM 14:27:49.3            T3.5    A165

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 1998-08-23  
   GRA1 14:35:48.5 e PKP      Z

GRA1 14:35:54.8 e Z

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1998-08-24

GRA1 01:54:35.6 e PKP Z

GRA1 01:54:39.3 e Z

NEIC: OT 01:35:56.9 17.9S 178.6W dep561km mb4.8

FIJI ISLANDS REGION

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1998-08-24

GRA1 05:09:33.4 e (PKP) Z

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1998-08-24 D 76.9 AZ359

GRA1 17:18:00.4 i P c Z mb5.1

BEAM 17:18:00.4 T1.1 A17

SZGRF: OT 17:06:13.2

FOX ISLANDS, ALEUTIAN ISLANDS

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1998-08-25 D 59.6 AZ 78

GRA1 07:51:43.5 i P d Z mb5.2

BEAM 07:51:43.5 T1.1 A25

GRA1 07:59:59.0 e S E

GRA1 08:19:19.4 e L Z T19.7 A4946 MS5.6

SZGRF: OT 07:41:43.4 30.1N 88.2E dep 33km

TIBET

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1998-08-25

GRA1 08:02:57.7 e (Pn) Z

GRA1 08:04:30.4 e (Sg) E

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1998-08-25 D 9.4

GRA1 23:40:09.5 e Pn Z

GRA1 23:40:12.9 e Z

NEIC: OT 23:36:18.4 36.0N 23.9E dep 33km mb4.2

SOUTHERN GREECE

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1998-08-25

GRA1 23:56:46.9 i P c Z

BEAM 23:56:46.9 T1.7 A16

NEIC: OT 23:44:26.9 28.6N 128.7E dep123km mb5.1

RYUKYU ISLANDS

-----  
1998-08-27 D 79.4 AZ 28

GRA1 00:19:45.5 i P c Z mb4.7

BEAM 00:19:45.5 T1.2 A8

NEIC: OT 00:08:05.4 46.6N 149.7E dep150km mb4.3

KURIL ISLANDS

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1998-08-27 D 81.6 AZ 50  
GRA1 02:07:22.8 e P Z mb4.8  
BEAM 02:07:22.8 T1.2 A9  
GRA1 02:51:17.3 e L Z T20.0 A95 MS4.2  
NEIC: OT 01:54:13.8 26.6N 141.8E dep 31km mb4.9  
BONIN ISLANDS REGION

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1998-08-27 D 46.7 AZ 75  
GRA1 09:12:03.7 e P Z mb5.8  
BEAM 09:12:03.7 T1.2 A98  
GRA1 09:18:55.1 e S Z  
GRA1 09:22:19.1 e SS Z  
GRA1 09:33:20.1 e L Z T18.5 A88836 MS6.8  
SZGRF: OT 09:03:38.7 40.0N 77.8E dep 33km  
KIRGHIZ-SINKIANG BORDER REGION

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1998-08-27 D 48.5 AZ 75  
GRA1 11:24:22.9 e P Z mb4.8  
BEAM 11:24:22.9 T1.0 A10  
NEIC: OT 11:15:55.6 39.6N 77.1E dep 33km mb4.6  
SOUTHERN XINJIANG, CHINA

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1998-08-27  
GRA1 14:20:57.2 e (Pn) Z  
GRA1 14:21:42.4 e (Sg) N  
NEIC: OT 14:19:46.8 51.6N 16.0E dep 10km  
POLAND

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1998-08-28  
GRA1 04:35:20.9 e (P) Z  
BEAM 04:35:20.9 T1.4 A8

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1998-08-28  
GRA1 08:44:06.6 i PKP c Z  
NEIC: OT 08:24:32.7 19.4S 168.8E dep 33km mb4.1  
VANUATU ISLANDS

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1998-08-28  
GRA1 12:55:02.0 i PKP c Z  
GRA1 12:55:03.2 e Z  
GRA1 13:47:09.1 e L Z T20.4 A2307

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1998-08-28  
GRA1 12:59:23.3 e P Z  
BEAM 12:59:23.3 T1.5 A97

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1998-08-28 D 79.3 AZ 8  
GRA1 15:43:37.0 i P c Z mb5.2  
BEAM 15:43:37.0 T1.1 A25  
GRA1 16:23:02.5 e L Z T20.6 A216 MS4.5  
SZGRF: OT 15:31:36.5 50.8N 178.1E dep 33km  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-28 D 84.6 AZ 40  
GRA1 16:03:21.4 e P Z mb5.1  
BEAM 16:03:21.4 T1.5 A18  
SZGRF: OT 15:50:52.4  
NEAR S. COAST OF HONSHU, JAPAN

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1998-08-28  
GRA1 16:45:34.6 e P Z  
BEAM 16:45:34.6 T8.6 A1832  
NEIC: OT 16:33:36.4 51.5N 175.5E dep 33km mb4.8  
RAT ISLANDS, ALEUTIAN ISLANDS

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1998-08-28  
GRA1 22:11:58.3 e P Z  
BEAM 22:11:58.3 T6.2 A988  
GRA1 22:39:29.4 e L Z T19.3 A468  
NEIC: OT 22:01:55.5 30.1N 88.2E dep 33km mb5.1  
XIZANG

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1998-08-28  
GRA1 22:20:42.3 e (Pn) Z  
GRA1 22:21:41.1 e Sg N

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1998-08-28 D 84.9 AZ 39  
GRA1 23:59:06.6 i P c Z mb6.2  
BEAM 23:59:06.6 T3.6 A556  
GRA1 00:40:24.8 e L Z T20.1 A321 MS4.7  
SZGRF: OT 23:46:36.2 35.0N 141.5E dep 33km  
OFF EAST COAST OF HONSHU, JAPAN

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1998-08-29  
GRA1 00:02:09.9 e P Z  
BEAM 00:02:09.9 T1.0 A5  
GRA1 00:02:18.9 e Z  
GRA1 00:40:24.8 e L Z T20.1 A321

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1998-08-29  
GRA1 04:59:17.7 e P Z  
BEAM 04:59:17.7 T1.0 A4

GRA1 04:59:20.9 e Z

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1998-08-29

GRA1 08:49:16.3 e P Z

BEAM 08:49:16.3 T1.9 A28

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1998-08-29 D 77.7 AZ 12

GRA1 16:35:35.6 i P c Z mb4.6

BEAM 16:35:35.6 T1.2 A5

SZGRF: OT 16:23:43.9 51.8N 172.6E dep 33km

NEAR ISLANDS, ALEUTIAN ISLANDS

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1998-08-29

GRA1 19:42:58.6 e (PKP) Z

NEIC: OT 19:22:28.4 16.2S 176.2W dep350km mb4.4

FIJI ISLANDS REGION

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1998-08-29

GRA1 20:24:30.6 e P Z

BEAM 20:24:30.6 T0.7 A1

GRA1 20:24:33.4 e Z

GRA1 20:53:37.8 e L Z T20.8 A204

NEIC: OT 20:14:04.0 43.4N 109.0E dep 33km mb4.7

MONGOLIA

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1998-08-29

GRA1 21:34:46.6 i PKP d Z

NEIC: OT 21:15:01.0 23.0S 170.0E dep 33km mb4.5

LOYALTY ISLANDS REGION

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1998-08-30 D 5.5

GRC1 00:27:33.7 e Pn Z

GRA1 00:28:52.9 e Sn N

NEIC: OT 00:26:08.2 43.3N 11.7E dep 10km

CENTRAL ITALY

-----  
1998-08-30 D 3.7 409km

GRC1 01:19:14.2 e Pn Z M14.4

GRA1 01:19:24.3 e Pn Z

SZGRF: OT 01:18:17.4 45.7N 14.0E dep 5km

YUGOSLAVIA

-----  
1998-08-30 D 88.8 AZ 45

GRA1 02:02:07.3 i P d Z mb6.6

BEAM 02:02:07.3 T6.0 A2412

GRA1 02:02:20.9 e Z

NEIC: OT 01:48:08.6 17.1N 148.1E dep 33km mb6.1

## MARIANA ISLANDS REGION

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 1998-08-30 D 62.1 AZ 78  
 GRA1 03:47:51.3 e P Z mb4.7  
 BEAM 03:47:51.3 T0.9 A4  
 NEIC: OT 03:37:48.6 30.0N 88.1E dep 33km mb4.8  
 XIZANG

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 1998-08-30 D 71.5 AZ 78  
 GRA1 04:21:38.1 e P Z mb4.8  
 BEAM 04:21:38.1 T1.9 A14  
 SZGRF: OT 04:10:21.0 21.9N 97.8E dep 33km  
 BURMA

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 1998-08-30 D 69.7 AZ 81  
 GRA1 04:48:04.8 i P d Z mb4.9  
 BEAM 04:48:04.8 T1.3 A14  
 SZGRF: OT 04:36:58.3 21.1N 94.2E dep 33km  
 BURMA

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 1998-08-30 D 74.0 AZ332  
 GRA1 11:45:13.0 e P Z mb5.2  
 BEAM 11:45:13.0 T1.5 A40  
 GRA1 11:55:03.5 e S Z  
 GRA1 11:59:44.8 e SS Z  
 GRA1 12:17:57.2 e L Z T19.2 A6453 MS5.9  
 NEIC: OT 11:33:34.6 51.1N 130.4W dep 10km mb5.4  
 QUEEN CHARLOTTE ISLANDS REGION

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 1998-08-30 D 80.4 AZ 10  
 GRA1 14:46:17.5 i P c Z mb6.2  
 BEAM 14:46:17.5 T3.0 A1042  
 GRA1 14:56:06.1 e S Z  
 GRA1 15:24:25.9 e L Z T18.4 A2806 MS5.6  
 NEIC: OT 14:34:43.2 53.7N 161.9E dep 33km mb5.5  
 OFF EAST COAST OF KAMCHATKA

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 1998-08-30  
 GRA1 20:18:01.1 e P Z  
 BEAM 20:18:01.1 T6.2 A198

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 1998-08-31 D 58.4 AZ209  
 GRA1 01:54:33.9 e P Z mb4.8  
 BEAM 01:54:33.9 T1.3 A12  
 GRA1 02:18:45.9 e L Z T20.9 A141 MS4.1  
 NEIC: OT 01:44:55.8 2.5S 11.8W dep 10km mb4.6  
 NORTH OF ASCENSION ISLAND

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1998-08-31 D 3.8 419km  
GRC1 02:33:03.8 e Pn Z  
GRA1 02:33:12.8 e Pn Z  
SZGRF: OT 02:32:05.5 46.0N 14.9E dep 10km  
YUGOSLAVIA

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1998-08-31 D 3.6 401km  
GRA1 03:41:03.7 e Pn Z M14.2  
SZGRF: OT 03:40:07.5 51.6N 16.0E dep 1km  
POLAND

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1998-08-31  
GRA1 14:52:33.0 e (PKP) Z

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1998-08-31 D 90.1 AZ 64  
GRA1 19:29:17.1 i P c Z mb5.5  
BEAM 19:29:17.1 T1.1 A33  
GRA1 20:12:21.6 e L Z T20.0 A798 MS5.1  
NEIC: OT 19:16:16.9 14.9N 120.2E dep 33km mb5.2  
LUZON, PHILIPPINE ISLANDS

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