Eidgenössische Technische Hochschule Zürich

Institut für Geophysik

Jahresbericht 1974 des Schweizerischen Erdbebendienstes

(Seismological Bulletin)

edited by D. Mayer-Rosa

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THE SEISMOLOGICAL SERVICE OF SWITZERLAND (SCHWEIZ.ERDBEBENDIENST *SED*) IS AN INTEGRAL PART OF THE INSTITUTE OF GEOPHYSICS (INSTITUT FUER GEOPHYSIK *IG*) OF THE SWISS FEDERAL INSTITUTE OF TECHNOLOGY (EIDGEN.TECHNISCHE HOCHSCHULE) SINCE 1956.

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THE COOPERATION WITH THE OBSERVATORIES IN BASEL AND NEUCHATEL IS GRATEFULLY ACKNOWLEDGED.
THE SED IS INDEBTED TO THE ELECTRIC POWER STATIONS OF LINTH-LIMMERN(GL), GRANDE DIXENCE(VS) AND EMOSSON(VS) FOR MAINTENANCE OF THE STATIONS LIN, DIX, EMO, RESPECTIVELY.
THE HELP OF DR.N.PAVONI OF THE IG DURING THE INSTALLATION OF THE STATION EMO IS GRATEFULLY RECOGNIZED.
THANKS ARE DUE TO THE FOLLOWING INSTITUTIONS FOR DATA EXCHANGE AND SPECIAL SERVICES: SEISMOLOGISCHES ZENTRALOBSERVATORIUM GRAEFENBERG(D), GEOPHYSIKALISCHES INSTITUT DER UNIVERSITAET KARLSRUHE(D), LANDES-ERDBEBENDIENST IN STUTTGART(D) AND INSTITUT DE PHYSIQUE DU GLOBE IN STRASBOURG(F).

****

THE FOLLOWING INTERNATIONAL DATA CENTERS HAVE BEEN SUPPLIED WITH DATA BY THE SED DURING THE PERIOD OF 1974:
- NATIONAL EARTHQUAKE INFORMATION SERVICE,U.S.GEOL.SURVEY(USA) VIA: SEISMOL.ZENTRALOBSERVATORIUM GRAEFENBERG(D)
- INTERN.SEISMOL.CENTRE,NEWBURY(UK)
- BUREAU CENTRAL INTERN.DE SEISMOL.,STRASBOURG(F)

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DURING 1974 A TOTAL OF 13 SEISMIC STATIONS HAS BEEN OPERATED CONTINUOUSLY OR PART TIME IN SWITZERLAND (SEE FIG.1 AND PAGE 25). THE CHARACTERISTICS CAN BE FOUND ON PP 5-15. THE STATIONS LIN, DIX AND EMO ARE INSTALLED NEAR LARGE DAM SITES IN THE SWISS ALPS. THE STATIONS BAS AND BLA ARE OPERATED BY THE OBSERVATORIUM DER ABT. METEOROLOGIE DER STADT BASEL, THE STATION NEU IS OPERATED BY THE OBSERVATOIRE CANTONAL DE NEUCHATEL.

DUE TO THE RAPID INCREASE OF TELEMETERING SEISMIC SHORT-PERIOD STATIONS IN SWITZERLAND DURING 1974, A NEW MICROFILM TYPE RECORDER (16 MM DEVELOCORDER) WAS INSTALLED IN NOV.1974. THE OVERALL MAGNIFICATION INDICATED IN FIGURES 2A-L REFERS TO THE WORKING SCREEN OF THE MICROFILM PROJECTOR.

IN ORDER TO EXPAND THE DYNAMIC RANGE OF THE SYSTEM, SUPPLEMENTARY VERTICAL STRONG MOTION CHANNELS ARE RECORDED SEPARATELY ON THE FILM. THESE STRONG MOTION CHANNELS ARE SET AT A 26 DB LOWER GAIN, COMPARED WITH THE STANDARD VERTICAL COMPONENTS. THE PRINCIPAL SETUP OF THE SYSTEM IS DEPICTED IN FIGURE 3.

THE TIMING OF THE SYSTEM IS ACCOMPLISHED BY A TIME-CODE GENERATOR WHICH WRITES A SLOW CODE DIRECTLY ON THE MICROFILM. THIS GENERATOR IS DRIVEN BY A QUARTZ CLOCK, SYNCHRONIZED BY THE RADIO TIME SIGNAL OF STATION HBG (75 KHZ). CONSEQUENTLY THE ABSOLUTE TIME ERRORS IN SEISMOGRAM READINGS ARE KEPT BELOW 0.1 SEC.

DURING 1974 ALSO A LONG-PERIOD SEISMOGRAPH SYSTEM WAS OPERATED IN ZURICH IN THE BASEMENT OF AN OFFICE BUILDING. THE PARAMETERS ARE: LAT=47.410N LONG=8.513E, SEISMOMETER:PERIOD=15 SEC, DAMPING=1.5, FILTER: LP200 SEC, DAMPING=0.707, ADDITIONAL FILTER: HP 300 SEC, DAMPING=0.707, GAIN=300 (AT 15 SEC). SEISMOMETER: VERTICAL SPRENGNETHER 5007, AMPLIFIER: TYPE WIELANDT, PAPER-LOOP INK RECORDER. THE LP-SEISMOGRAMS ARE NOT USED FOR ROUTINE WORK, THEY SERVE FOR PHASE-VELOCITY STUDIES IN CONJUNCTION WITH A NETWORK OF LP-STATIONS IN EUROPE.

TABLE 1 LISTS SEISMIC EVENTS WITH EPICENTERS LOCATED OR FELT IN OR NEAR SWITZERLAND. DETAILED INFORMATION ON THESE EVENTS CAN BE FOUND IN TABLE 2. A HYPOCENTER PLOT IS SHOWN IN FIG.4. THE SIZE OF THE SYMBOLS X AND O IS PROPORTIONAL TO THE MAGNITUDE AND DEPTH OF AN EARTHQUAKE (SEE LEGEND TO FIG.4).

THE CALCULATION OF THE SOURCE PARAMETERS WAS CARRIED OUT USING HYPOELLIPSE, A COMPUTER PROGRAM OF THE U.S.GEOLOGICAL SURVEY. THE ESTIMATED AVERAGE ABSOLUTE (EPICENTRAL) ACCURACY IS +/-5 TO 10 KM, DEPENDING ON THE DISTRIBUTION OF THE STATIONS USED FOR LOCALISATION. IN GENERAL, ALL EARTHQUAKES ARE SITUATED WITHIN THE DEPTH RANGE OF 2-25 KM. IF NO CLEAR COMPUTATIONAL SOLUTION FOR THE FOCAL DEPTH COULD BE DERIVED, IT WAS FIXED EITHER AT 2 OR 10 KM FROM THE BEGINNING. IN MOST CASES THE FIRST P- AND S-WAVE ARRIVALS WERE USED FOR LOCALISATION.

THE FOLLOWING SIMPLIFIED P-WAVE VELOCITY MODELS WERE ADOPTED FOR THE CALCULATIONS, TAKING VP/VS= 1.73:

	LAYER	P-VELOCITY KM/SEC	DEPTH KM	THICKNESS OF LAYER KM
MODEL 1	1	5.0	0.0	1.5
	2	6.0	1.5	18.5
	3	6.7	20.0	25.0
	4	8.1	45.0	-
MODEL 2	1	5.0	0.0	1.5
	2	6.0	1.5	18.5
	3	6.7	20.0	10.0
	4	8.1	30.0	-

MODEL 1 IS CHOSEN, WHEN THE FIRST RECORDING STATION IS OUTSIDE THE ALPINE AREA AND MODEL 2 FOR STATIONS WITHIN THE ALPS. THUS A CRUDE APPROXIMATION TO THE DIFFERENCES IN THE STRUCTURE OF THE CRUST BETWEEN ALPINE AND NONALPINE AREAS IS TAKEN INTO ACCOUNT.

THE MAGNITUDE VALUES IN TABLE 1 CORRESPOND TO THE RICHTER-SCALE (ML), EVALUATED BY TAKING THE AMPLITUDE OF THE STATIONS BUB AND ZUL. THE EPICENTRAL INTENSITIES IN TABLES 1 AND 2 ARE BASED ON INFORMATION RECEIVED FROM THE POPULATION. THEY CORRESPOND TO THE VALUES OF THE MSK-SCALE 1964. FIGURES 5,6 AND 7 CONTAIN THE INTENSITIES OF THE FELT EARTHQUAKES IN SWITZERLAND.

TABLE 3 LISTS ALL EARTHQUAKES WITHIN A RADIUS OF ABOUT 2500 KM DISTANCE (SEE ALSO FIGURE 8). AS DATA BASIS SERVED THE HYPOCENTER DETERMINATIONS OF THE NATIONAL EARTHQUAKE INFORMATION SERVICE, BOULDER(USA).

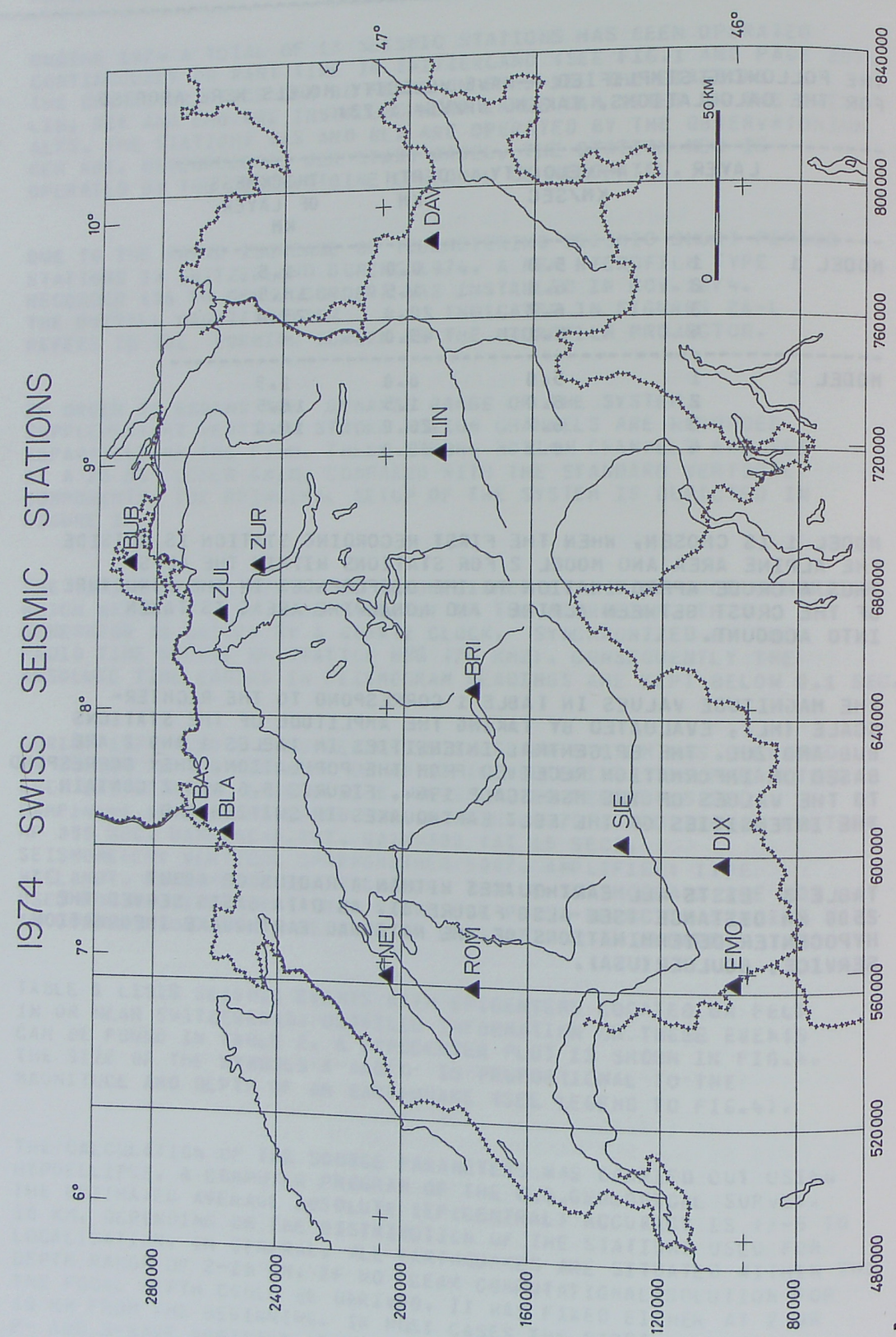
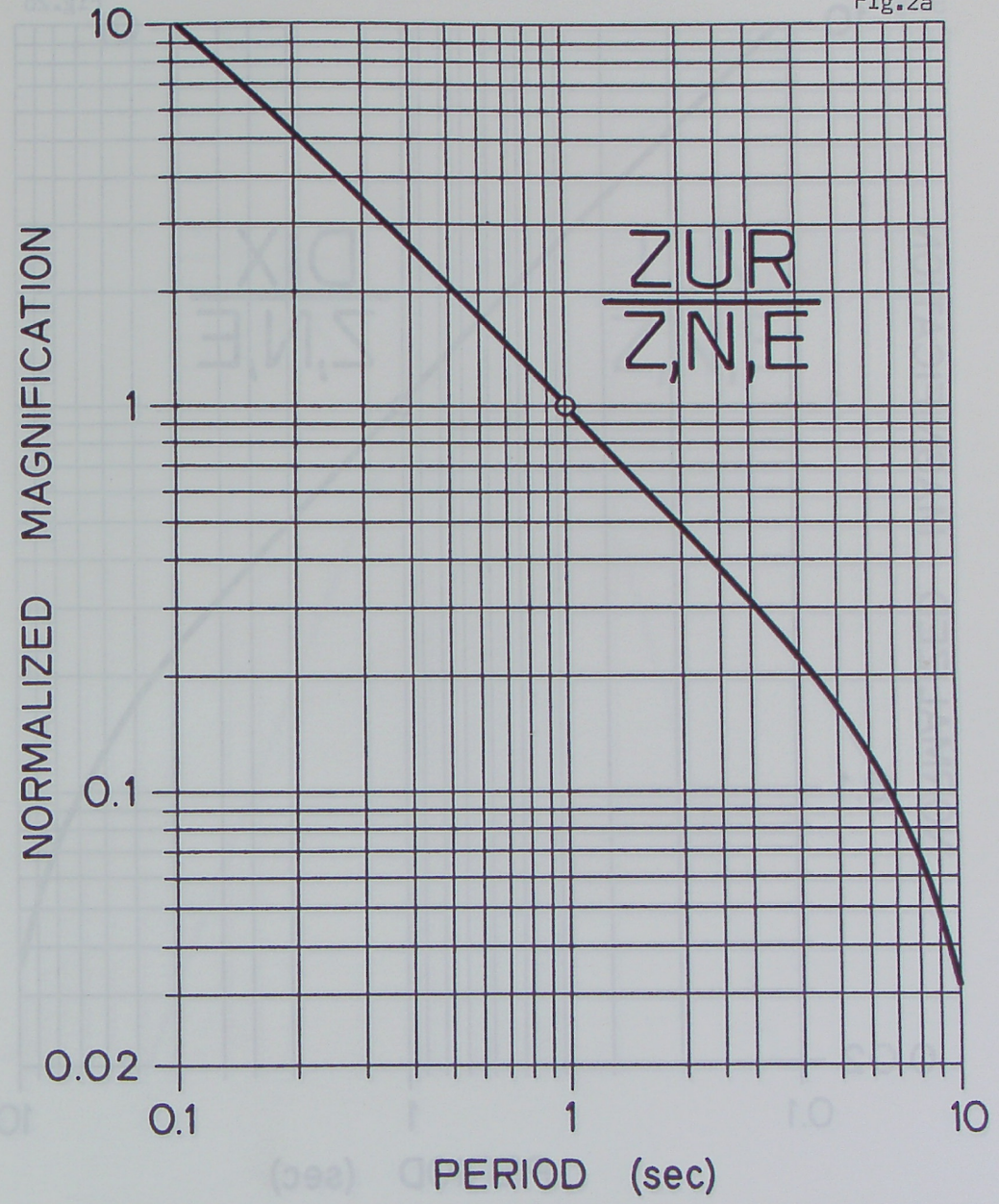


Fig.1

Fig.2a



STATION : Zürich-Degenried (ZUR) INSTALLED : 1911

LAT : 47° 22.12'N LONG : 8° 34.83'E ALTITUDE : 600m

OPERATED BY : Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Sandstones and Marls of the Upper Freshwater Molasse

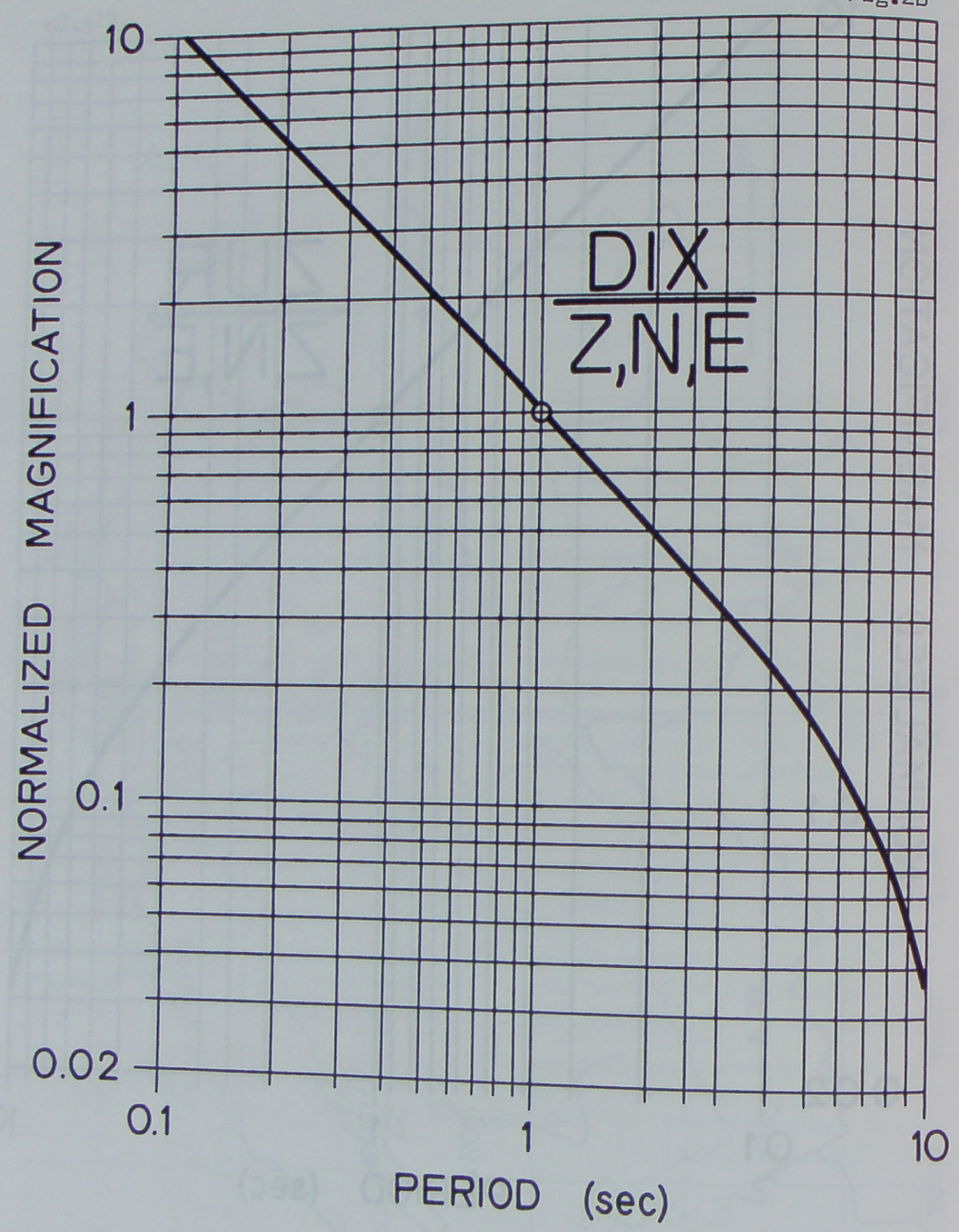
SEISMOMETER : BB (5 sec) DAMPING : 0.7 ELECTRONICS : IG

RECORDER : Ink-recorder, system Volk, 120 mm/min

MAGNIFICATION at 1 Hz : 5 000

TIMING : Quartz-clock, synchronized by radio HBG(75KHz)

Fig.2b



STATION: Grande Dixence (DIX) INSTALLED : Nov.1970

LAT: 46° 04.83'N LONG: 7° 24.65'E ALTITUDE : 2400m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Casanna-Schists

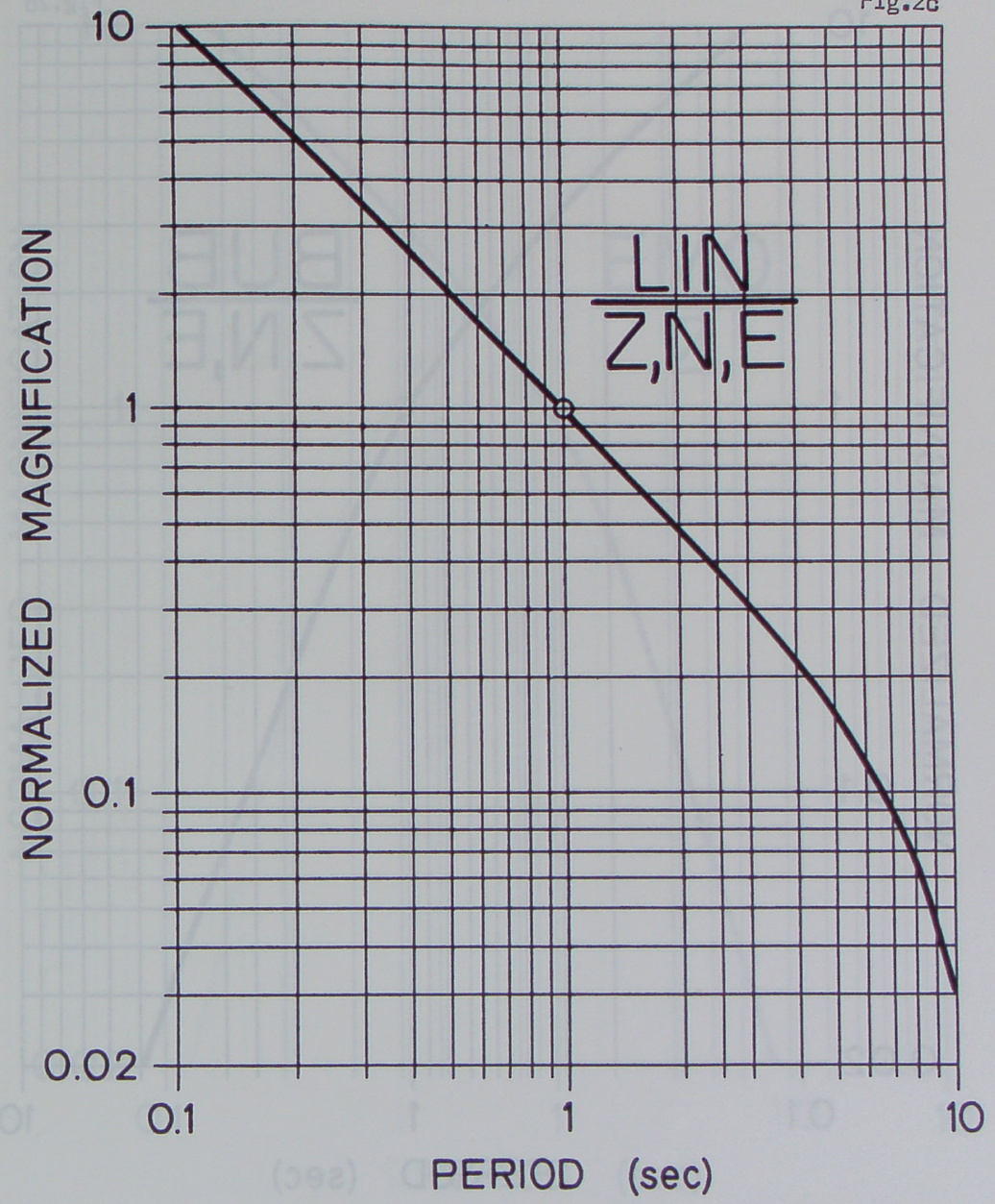
SEISMOMETER : BB (5 sec) DAMPING: 0.7 ELECTRONICS: IG

RECORDER : 35mm scratch-film

MAGNIFICATION at 1 Hz : 5 000

TIMING : Quartz-clock, synchronized by radio HBG(75KHz)

Fig.2c



STATION: Linth-Limmern (LIN) INSTALLED : Nov.1971

LAT: 46° 52.14'N LONG: 8° 59.82'E ALTITUDE : 1900m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Upper Jurassic Limestone

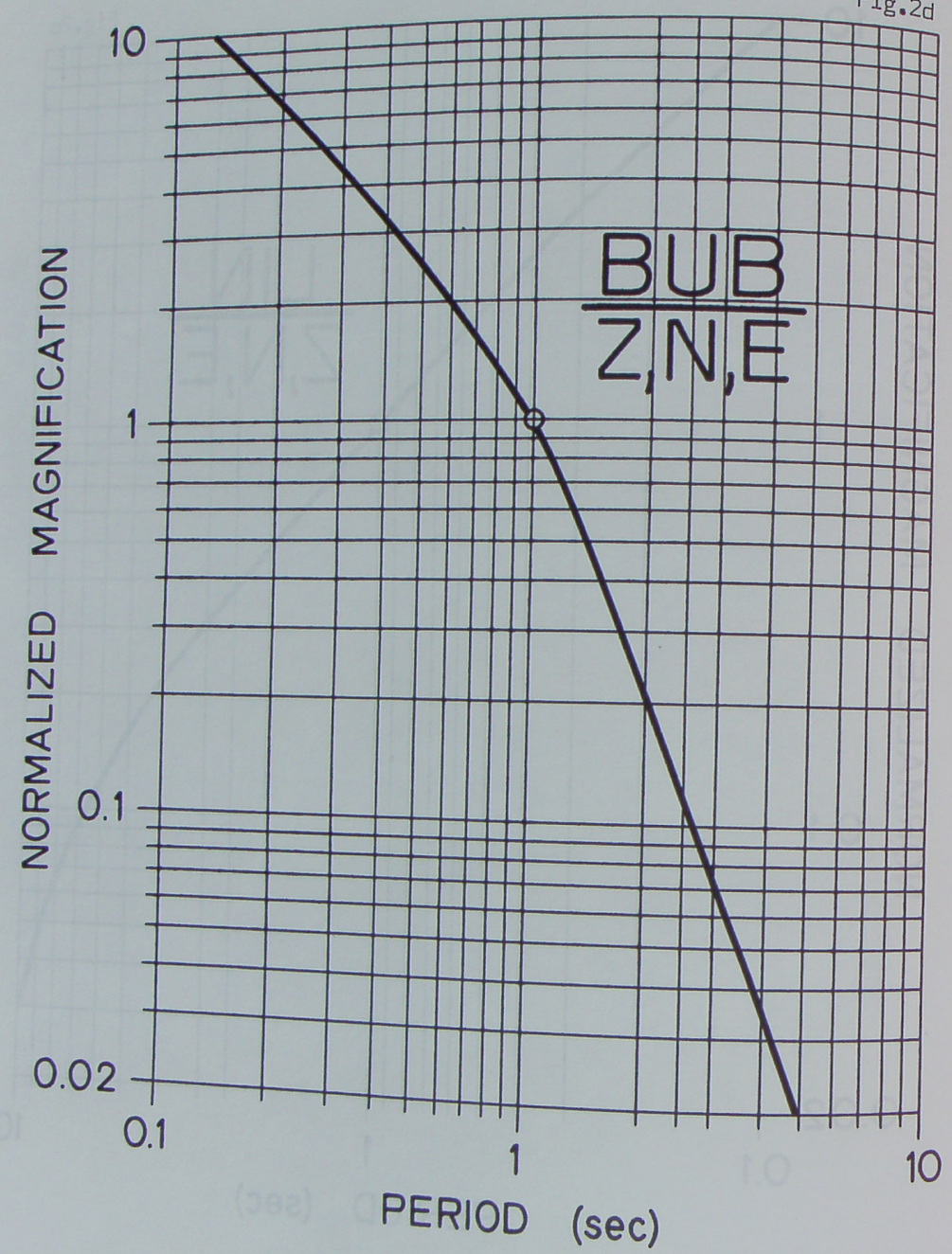
SEISMOMETER : BB (5 sec) DAMPING: 0.7 ELECTRONICS: IG

RECORDER : 35mm scratch-film

MAGNIFICATION at 1 Hz : 5 000

TIMING : Time-signal by radio HBG(75KHz), t_{corr}= 0.2 s

Fig.2d



STATION: Buchberg (BUB)

LAT: 47° 44.94'N LONG: 8° 36.18'E INSTALLED : Jan.1972 ALTITUDE : 740m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Upper Jurassic Limestone

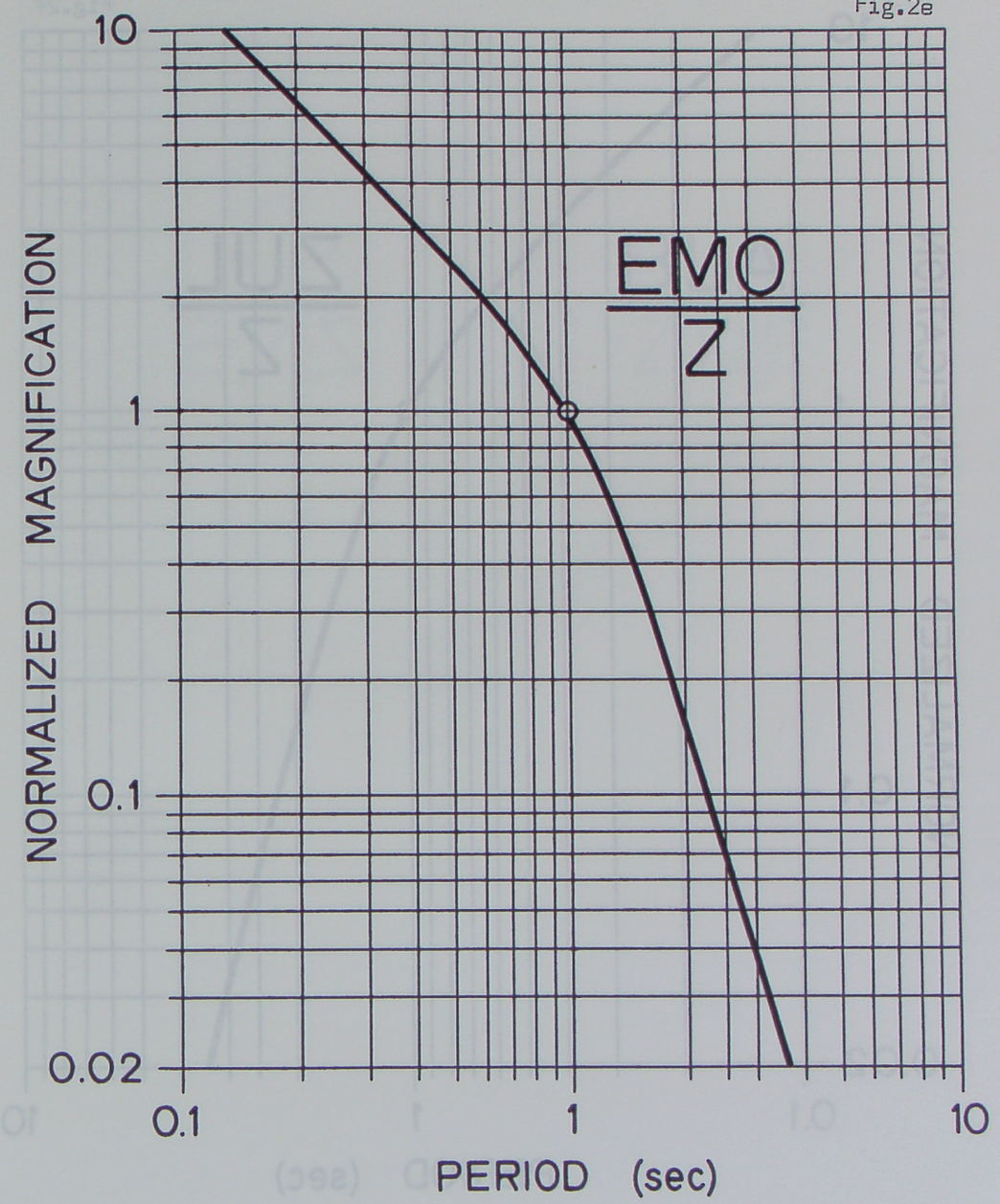
SEISMOMETER : Mark L4-3D(1Hz) DAMPING: 0.7 ELECTRONICS: Hel.

RECORDER : Ink-recorder, system Volk, 120 mm/min

MAGNIFICATION at 1 Hz : 20 000

TIMING : Time-signal by radio HBG(75KHz), t(corr)= 0.2 s

Fig.2e



STATION: Emosson (EMO) INSTALLED : Sept.1973

LAT: 46° 02.89'N LONG: 6° 57.72'E ALTITUDE : 1500m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Permo-Carboniferous rocks

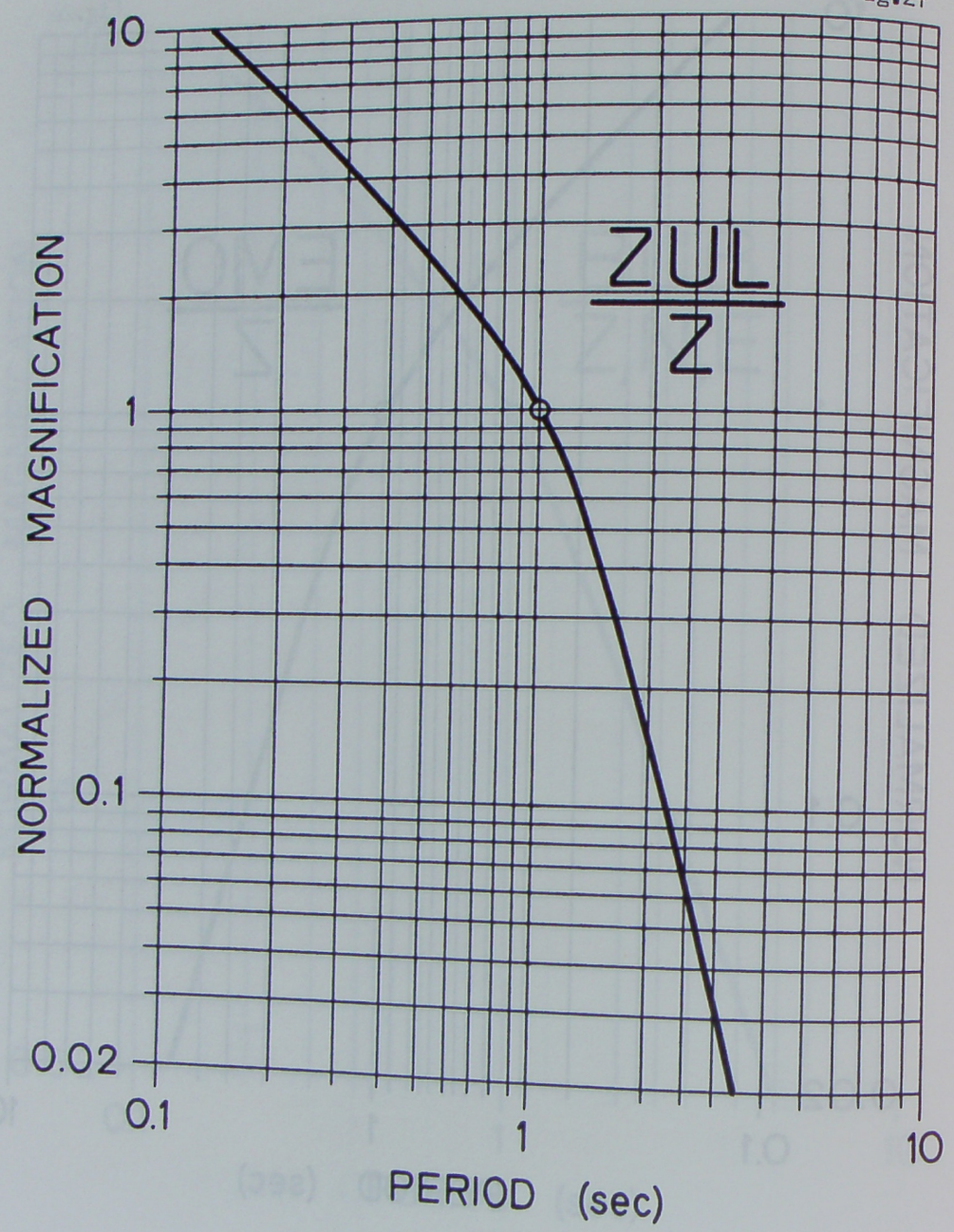
SEISMOMETER : Mark L-4C(1Hz) DAMPING: 0.7 ELECTRONICS: STS

RECORDER : 35mm scratch-film

MAGNIFICATION at 1 Hz : 20 000

TIMING : Quartz-clock, time signal by radio HBG(75KHz), t_c=0.2s

Fig.2f



STATION: Zürich-Lägeren (ZUL) INSTALLED: Jan.1974

LAT: 47° 28.88'N LONG: 8° 23.42'E ALTITUDE: 740m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION: Jurassic Limestone

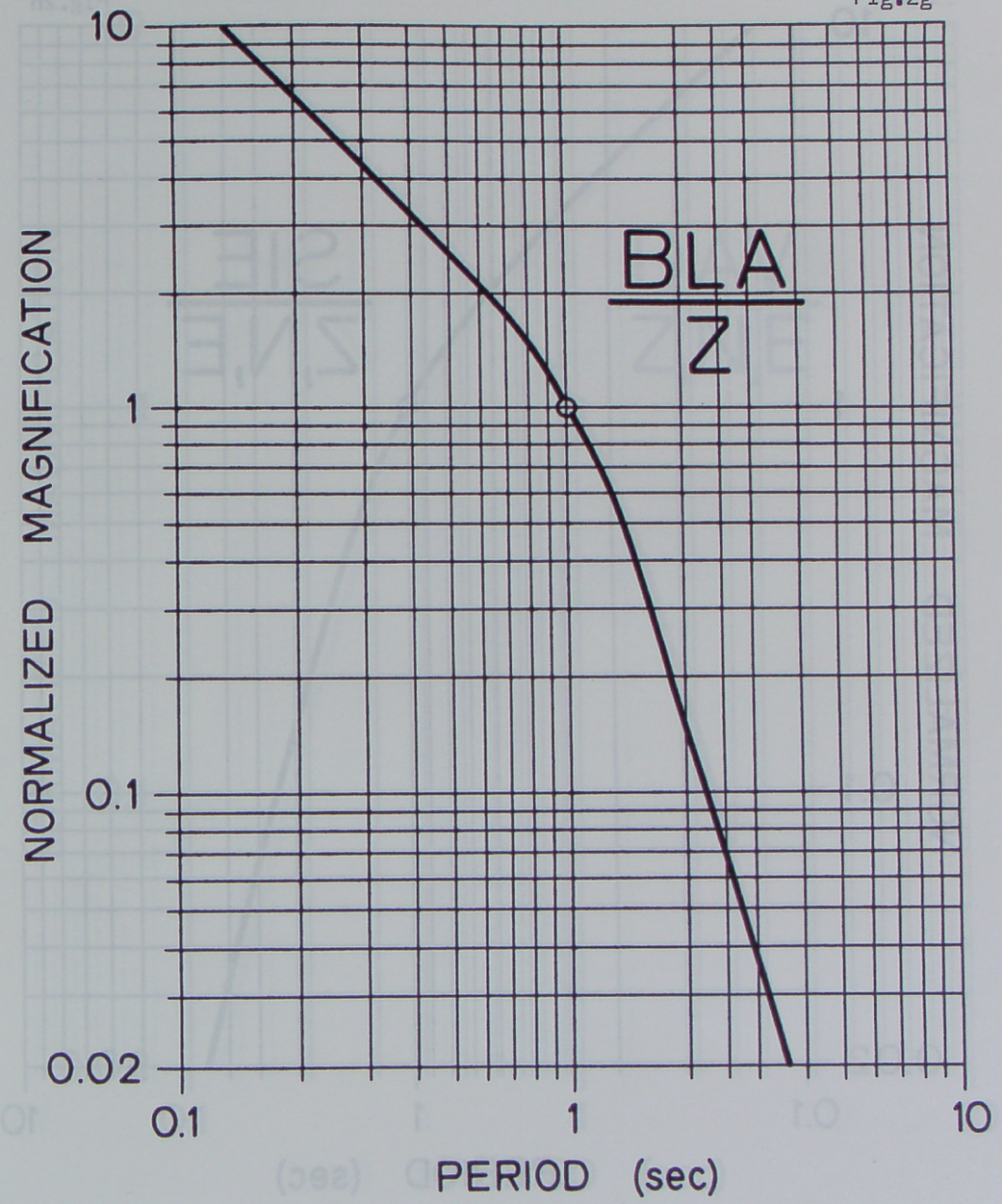
SEISMOMETER: Mark L4-C (1Hz) DAMPING: 0.7 ELECTRONICS: STS

RECORDER: Develocorder

MAGNIFICATION at 1 Hz: 20 000

TIMING: Quartz-clock, synchronized by radio HBG(75KHz)

Fig.2g



STATION: Basel-Blauen (BLA) INSTALLED: Jun.1974

LAT: 47° 27.87'N LONG: 7° 30.55'E ALTITUDE: 700m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION: Jurassic Limestone

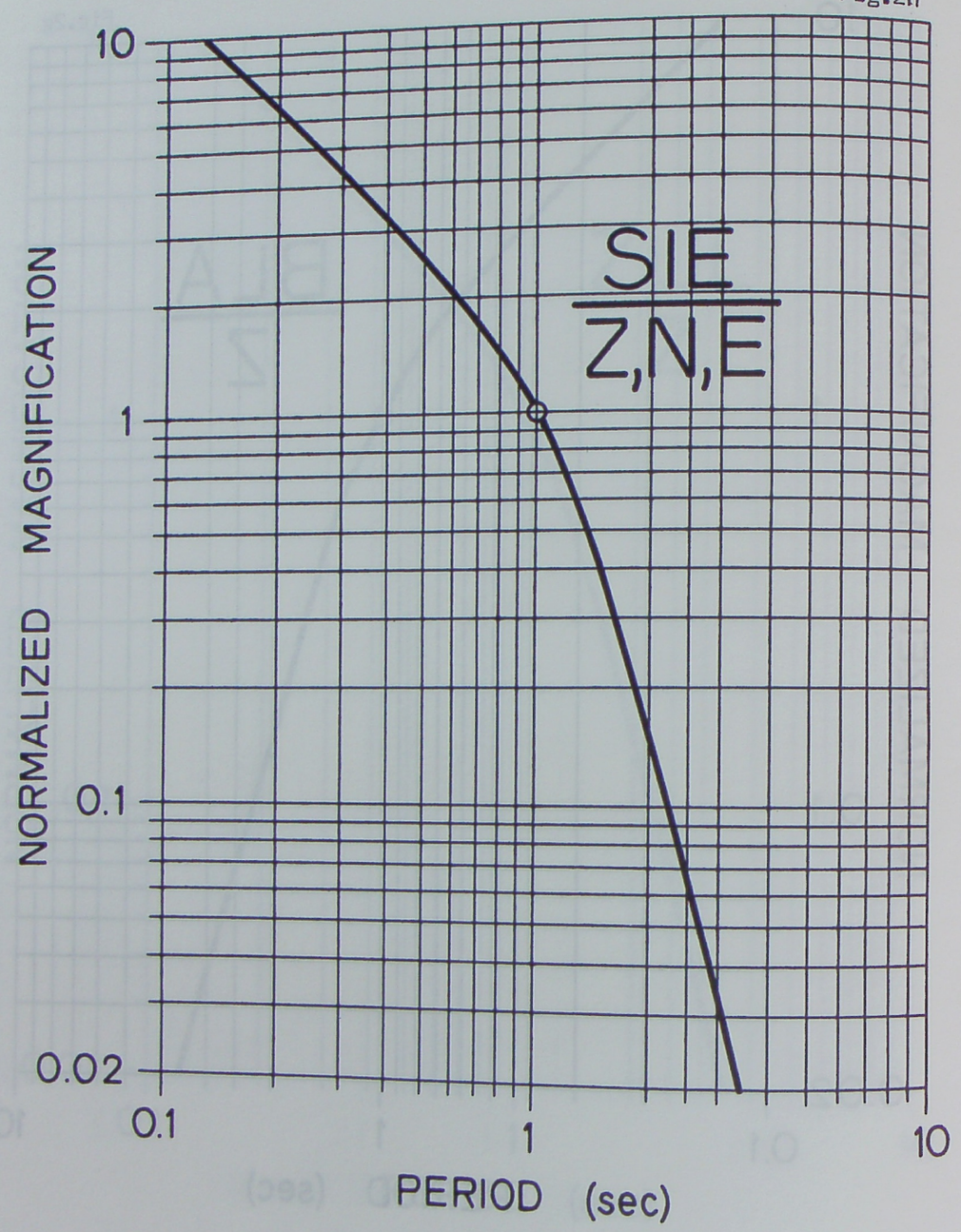
SEISMOMETER: Ranger(1Hz) DAMPING: 0.7 ELECTRONICS: KA

RECORDER: Ink-recorder, system Volk, 120 mm/min

MAGNIFICATION at 1 Hz: 50 000

TIMING: Radio DCF(77KHz)

Fig.2h



STATION: Sierre (SIE) INSTALLED : Aug.1974

LAT: 46° 20.80'N LONG: 7° 29.14'E ALTITUDE :2500m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Mesozoic Limestone

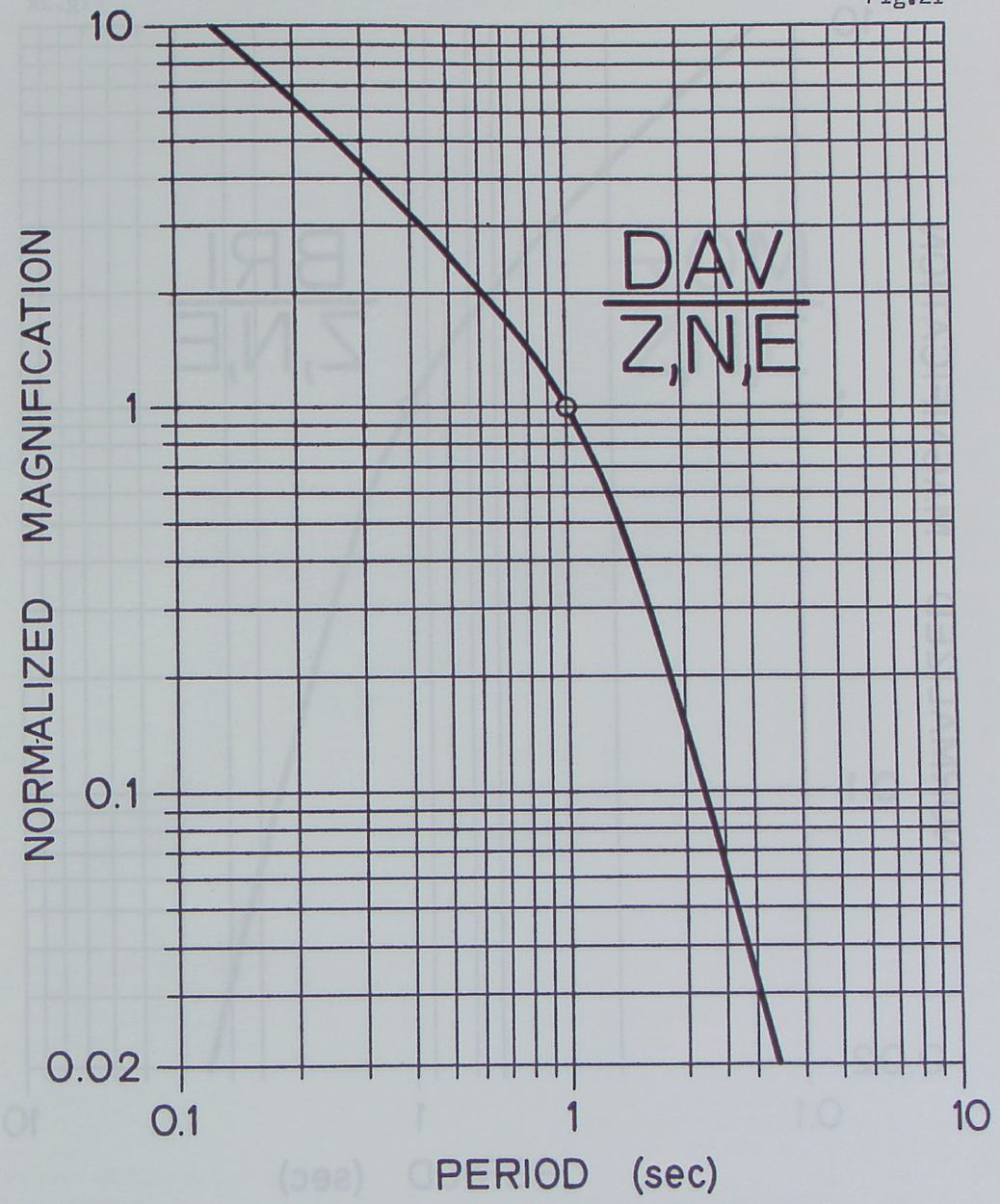
SEISMOMETER : Mark L4-3D(1Hz) DAMPING:0.7 ELECTRONICS:STS

RECORDER : Develocorder

MAGNIFICATION at 1 Hz : 40 000

TIMING :Quartz-clock, synchronized by radio HBG(75KHz)

Fig.2i



STATION: Davos (DAV) INSTALLED : Aug.1974

LAT: 46° 51.61'N LONG: 9° 50.92'E ALTITUDE :2300m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Mesozoic Dolomite

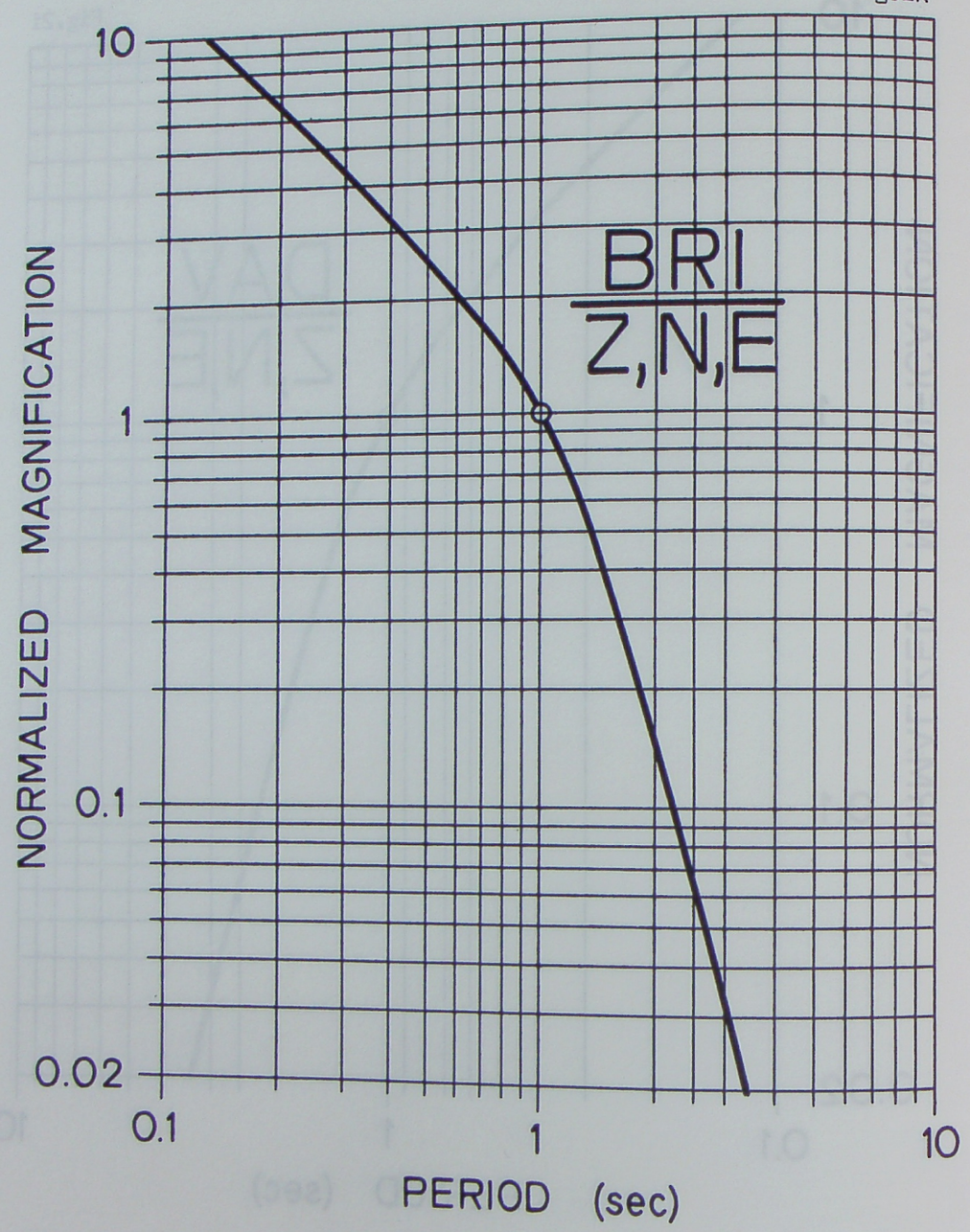
SEISMOMETER : Mark L4-3D(1Hz) DAMPING:0.7 ELECTRONICS:STS

RECORDER : Develocorder

MAGNIFICATION at 1 Hz : 40 000

TIMING :Quartz-clock, synchronized by radio HBG(75KHz)

Fig.2k



STATION: Brienz (BRI) INSTALLED : Sept.1974

LAT: 46° 45.53'N LONG: 8° 04.40'E ALTITUDE : 700m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Mesozoic Limestone

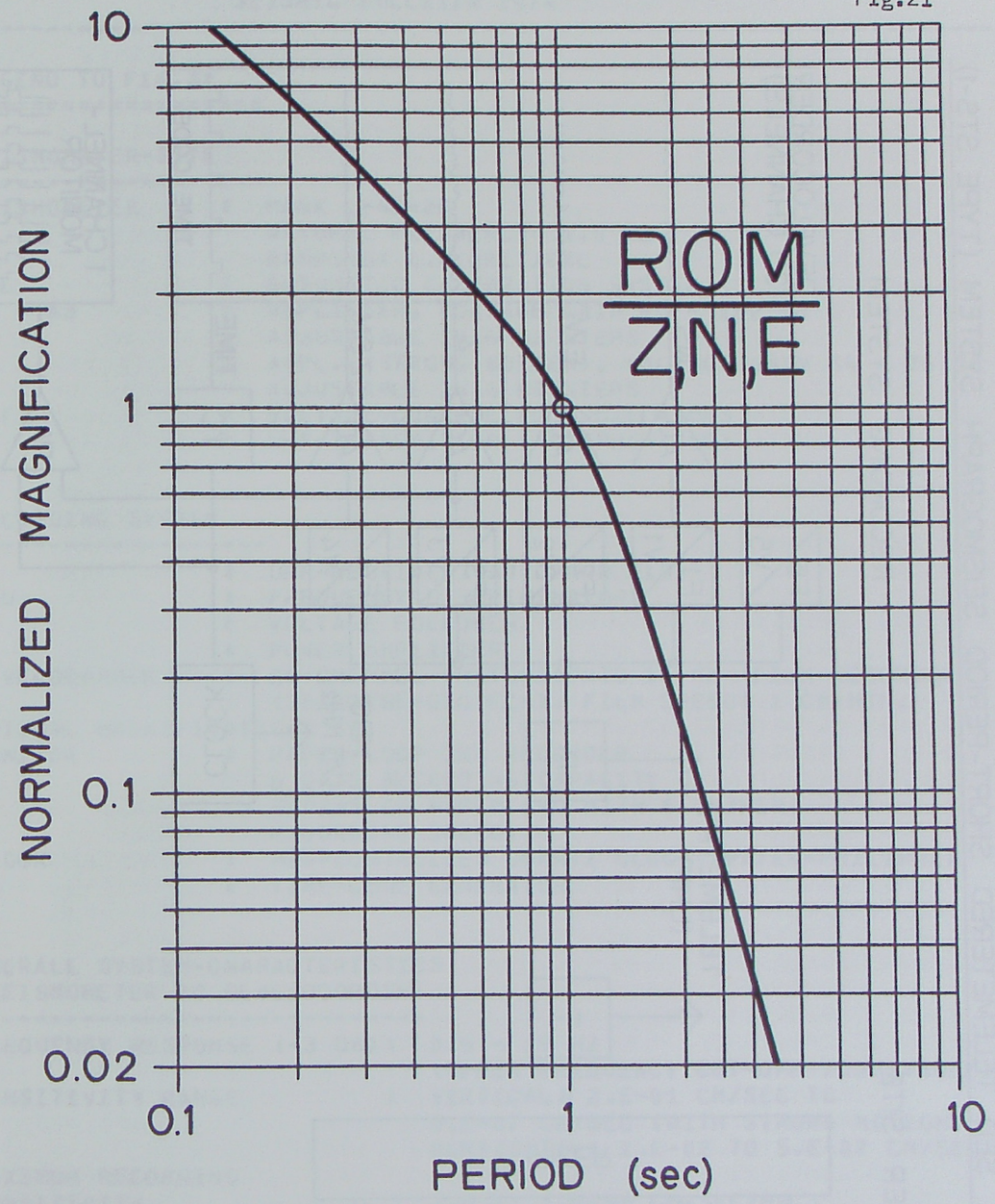
SEISMOMETER : Mark L4-3D DAMPING: 0.7 ELECTRONICS: STS

RECORDER : Develocorder

MAGNIFICATION at 1 Hz : 20 000

TIMING : Quartz-clock, synchronized by radio HBG(75KHZ)

Fig.21



STATION: Romont (ROM) INSTALLED : Sept.1974

LAT: 46° 45.18'N LONG: 6° 55.08'E ALTITUDE : 620m

OPERATED BY: Schweiz.Erdbebendienst, E.T.H.Zürich

FOUNDATION : Moraine on Molasse Sandstone

SEISMOMETER : Mark L4-3D(1Hz) DAMPING: 0.7 ELECTRONICS: STS

RECORDER : Develocorder

MAGNIFICATION at 1 Hz : 10 000

TIMING : Quartz-clock, synchronized by radio HBG(75KHz)

BLOCK DIAGRAM OF THE SED TELEMETERED SHORT-PERIOD SEISMOGRAPH SYSTEM (TYPE STS-1)

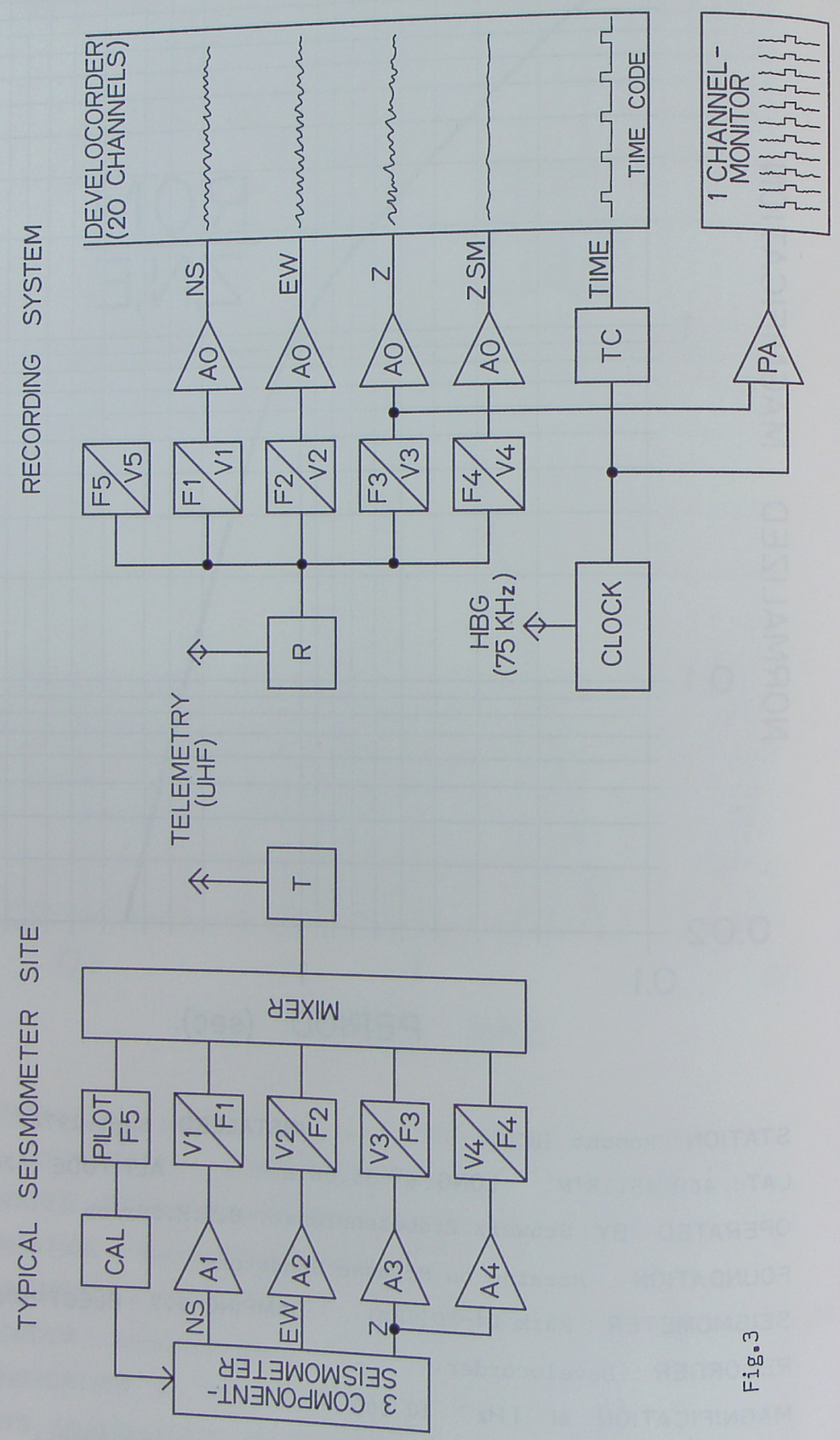


Fig.3

LEGEND TO FIG.3:

SEISMOMETER-SITE

SEISMOMETER	:	MARK L-4C-3D NATURAL FREQUENCY= 1.0 HZ DAMPING: 0.6 CRITICAL
CAL	:	AUTOMATIC CALIBRATION SYSTEM
A1 - A3	:	AMPLIFIER, VOLTAGE GAIN 60 - 102 DB ADJUSTABLE IN 6 DB STEPS
A4	:	AMPL. (STRONG MOTION), VOLTAGE GAIN 34 - 76 DB ADJUSTABLE IN 6 DB STEPS
V/F	:	VOLTAGE-CONTROLLED OSCILLATORS
T	:	UHF-TRANSMITTER (AUTOPHON S19)

RECORDING SYSTEM

R	:	UHF-RECEIVER (AUTOPHON E19)
F/U	:	FREQUENCY DISCRIMINATORS
AO	:	VOLTAGE FOLLOWER
PA	:	POWER AMPLIFIER
DEVELOCORDER	:	20-CHANNEL PHOTOGRAPHIC 16-MM FILM RECORDER (TELEDYNE-GEOTECH), FILM SPEED: 1 CM/MIN. OPTICAL MAGNIFICATION: 10
MONITOR	:	PAPER-LOOP INK RECORDER 6 DAYS RECORDING CAPACITY ON 55*240 CM PAPER AND WITH 6 CM/MIN RECORDING SPEED.
CLOCK	:	HBG-CONTROLLED QUARTZ CLOCK (PATEK-PHILIPPE)
TC	:	TIME-CODE GENERATOR

OVERALL SYSTEM-CHARACTERISTICS
(SEISMOMETER TO DEVELOCORDER)

FREQUENCY RESPONSE (-3 DB)	:	0.9 - 15 HZ (UPPER FREQUENCY CUT-OFF ADJUSTABLE)
SENSITIVITY RANGE	:	VERTICAL: 2.E-01 CM/SEC TO 5.E-07 CM/SEC (WITH STRONG MOTION) HORIZONTAL: 1.E-02 TO 5.E-07 CM/SEC
MAXIMUM RECORDING SENSITIVITY	:	Z,N,E: 1.2E-6 CM/SEC/MM STRONG MOTION: 2.4E-5 CM/SEC/MM

TABLE 1: SUMMARY OF LOCAL EARTHQUAKES

1974	ORIGIN TIME	LAT	LON	DEPTH	MAG	REGION	IO(MSK)
JAN 15	20:11: 9.1	46N38.1	7E19.4	14KM	3.8	KT.BERN	IV
JAN 15	23:25:10.1	46N37.4	7E19.0	15KM	1.9	KT.BERN	
JAN 15	23:57:49.5	46N39.0	7E14.3	12KM	1.8	KT.BERN	
JAN 16	0: 2: .5	46N40.6	7E16.7	2KM	1.9	KT.BERN	
JAN 18	18:57:39.2	46N18.0	7E16.8	4KM	1.9	VALAIS	
JAN 19	2:49:49.8	46N36.8	7E18.6	15KM	3.9	KT.BERN	V
JAN 19	3: 2:33.5	46N39.7	7E13.5	10KM	2.8	KT.BERN	
JAN 19	7:56:29.7	46N38.9	7E17.0	13KM	1.8	KT.BERN	
JAN 24	19:36:50.2	47N43.4	9E .7	18KM	1.9	BODENSEE	
JAN 25	2: 9:37.3	46N 5.8	7E34.9	10KM	2.1	VALAIS	
JAN 28	1:58:10.6	47N28.1	7E52.4	14KM	.9	BASELLAND	
JAN 28	2:35:32.0	47N27.9	7E53.4	2KM	.8	BASELLAND	
JAN 28	2:37:55.5	47N27.9	7E53.0	10KM	.8	BASELLAND	
JAN 28	2:57:15.4	47N26.0	7E52.9	7KM	1.3	BASELLAND	
JAN 28	4: 6:40.0	47N28.2	7E53.0	2KM	.8	BASELLAND	
JAN 28	5:38:59.4	47N26.5	7E52.7	2KM	1.3	BASELLAND	
JAN 29	0:51:58.9	46N 4.0	7E42.6	10KM	2.1	VALAIS	
JAN 29	19: 6:39.2	46N58.6	8E56.4	10KM	1.4	GLARUS	
JAN 31	6:54:51.5	47N22.2	9E41.3	12KM	2.4	VORARLBERG	
FEB 7	21:49:27.4	46N23.1	7E16.9	2KM	1.8	KT.BERN	
FEB 10	22:34: .6	46N39.0	7E23.6	7KM	3.2	KT.BERN	IV
FEB 11	0:54: .6	46N44.9	7E10.3	14KM	1.7	FRIBOURG	
FEB 11	8:41:50.0	47N28.6	7E45.6	3KM	.9	BASELLAND	
FEB 11	13:44:29.9	46N13.0	7E37.6	3KM	2.9	VALAIS	
FEB 11	14:48:30.7	46N36.1	7E14.5	10KM	1.9	FRIBOURG	
FEB 12	12:35:42.9	46N32.9	6E50.5	10KM	2.6	FRIBOURG	
FEB 13	14: 6:14.5	46N14.4	7E30.1	10KM	1.8	VALAIS	
FEB 14	10:16:10.2	46N14.8	7E29.4	10KM	2.2	VALAIS	
FEB 14	21:24:45.0	47N34.3	7E40.3	2KM	1.4	BASEL	
FEB 16	1:55:59.3	47N30.4	7E52.7	10KM	.8	BASELLAND	
FEB 18	20: 9:36.7	46N13.1	7E36.6	2KM	2.0	VALAIS	
FEB 25	21:23:47.0	46N39.5	7E18.6	10KM	1.8	KT.BERN	
FEB 27	2: 3:13.5	47N28.7	7E32.8	17KM	2.6	BASEL	
MAR 9	16:12:11.5	46N15.2	7E30.3	2KM	1.8	VALAIS	
APR 6	19:31:20.1	46N19.6	7E15.2	10KM	2.4	VALAIS	
APR 22	4:50:33.4	46N50.7	9E28.6	13KM	1.4	GRAUBÜNDEN	
APR 26	7:21: 7.2	47N 6.9	7E51.9	27KM	2.7	KT.BERN	
APR 26	7:25: 7.9	47N 7.6	7E51.4	33KM	2.7	KT.BERN	
MAY 5	15:49:23.7	46N17.6	7E21.6	7KM	2.0	VALAIS	
MAY 12	19:48:13.3	48N16.2	9E 6.0	12KM	3.8	SCHWAB.ALB	V
MAY 18	2:48:49.6	46N44.5	8E30.2	17KM	1.5	URI	
MAY 21	7:42:37.0	47N35.4	7E44.8	24KM	3.2	DINKELBG,D	V
MAY 21	7:59: 5.9	47N35.8	7E49.2	19KM	2.4	DINKELBG,D	
MAY 22	18: 0:44.0	47N49.0	6E56.1	8KM	2.0	ALSACE,F	
MAY 22	21:40:15.2	47N30.3	7E50.0	9KM	.7	BASELLAND	
MAY 25	10:51:39.5	46N .1	6E51.4	10KM		HTE.SAVOIE	
MAY 26	14:11:37.7	46N 1.4	7E19.2	2KM	2.3	VALAIS	
MAY 26	15:13:15.2	46N12.3	9E40.4	10KM	2.1	VALTELLINA	
JUN 7	1:55:29.2	46N 9.7	6E28.0	10KM	3.0	HTE.SAVOIE	
JUN 9	0:18: 7.9	45N48.7	6E33.1	10KM	2.9	HTE.SAVOIE	
JUN 13	0:15:43.3	46N19.4	7E29.8	10KM	1.5	VALAIS	
JUN 25	12: 9:39.6	46N53.4	6E55.6	7KM	1.9	NEUCHATEL	
JUN 28	20:54:11.9	47N24.1	7E42.9	21KM	1.2	BASELLAND	
JUL 5	19: 6:22.1	46N 4.2	7E50.4	10KM	1.8	VALAIS	
JUL 10	4: 4:26.3	45N40.9	6E57.8	10KM	1.9	HTE.SAVOIE	

TABLE 1: SUMMARY OF LOCAL EARTHQUAKES

1974	ORIGIN TIME	LAT	LON	DEPTH	MAG	REGION	IO(MSK)
JUL 10	8:47:39.4	45N41.6	6E57.5	2KM		HTE.SAVOIE	
JUL 10	8:49:55.0	46N54.0	9E 1.9	13KM	1.5	GLARUS	
JUL 18	22:26:24.6	46N41.0	9E51.1	2KM	2.0	GRAUBÜNDEN	
JUL 19	0:55:59.2	46N46.0	6E53.3	5KM	1.8	FRIBOURG	
JUL 26	1:15:40.8	46N48.8	9E45.4	4KM	3.0	GRAUBÜNDEN	IV
JUL 29	4:31: 3.3	46N12.3	7E28.8	10KM	1.9	VALAIS	
AUG 2	10:58:38.1	46N 4.1	9E45.3	10KM	2.8	VALTELLINA	
AUG 4	10:18:30.6	47N36.8	9E22.8	7KM	2.4	BODENSEE	
AUG 4	10:21:26.8	46N32.0	8E36.2	6KM	2.6	TICINO	
AUG 5	17:37:53.3	46N30.8	7E38.5	10KM	1.8	KT.BERN	
AUG 6	18: 7:56.2	46N38.4	9E28.0	8KM	1.9	GRAUBÜNDEN	
AUG 9	21:56:15.8	47N34.9	9E21.7	26KM	1.4	BODENSEE	
AUG 14	1:39:39.2	46N55.6	9E17.7	9KM	1.9	GLARUS	
AUG 15	17:16:15.8	46N12.7	7E32.8	7KM	3.1	VALAIS	III-IV
AUG 23	17:45:45.9	46N49.6	9E27.7	12KM	1.8	GRAUBÜNDEN	
AUG 29	13:30:20.9	46N45.1	9E36.2	3KM	2.0	GRAUBÜNDEN	
SEP 3	0:18:11.5	47N33.6	7E37.0	11KM	2.2	BASEL	III
SEP 3	5:36:59.9	47N30.5	7E35.4	7KM	2.0	BASEL	II
SEP 3	5:53: 6.1	47N31.6	7E34.6	11KM	2.2	BASEL	III
SEP 3	10:52: 4.4	47N33.2	7E38.2	10KM	1.5	BASEL	
SEP 3	17:41:33.9	47N36.4	7E34.3	2KM	1.0	BASEL	
SEP 5	7:10:26.0	47N30.0	7E38.7	15KM	1.6	BASELL	
SEP 6	3:59:12.3	46N51.4	7E11.0	2KM	2.2	FRIBOURG	
SEP 6	4: 2:48.4	46N50.7	7E15.4	2KM	2.7	FRIBOURG	III
SEP 6	5:56:30.4	47N 6.1	7E49.3	11KM	2.5	KT.BERN	
SEP 20	15:50:15.6	46N12.0	6E60.0	10KM	1.7	VAUD	
SEP 21	1:22:39.1	46N56.6	9E25.6	5KM	2.3	GRAUBÜNDEN	
SEP 22	19:40:56.4	45N36.3	6E19.4	2KM	2.1	HTE.SAVOIE	
OCT 9	0:13:28.2	47N31.5	9E16.5	3KM	2.0	THURGAU	
OCT 14	13: 4:57.4	46N32.0	7E17.7	6KM	1.5	KT.BERN	
OCT 15	1:39:50.1	47N15.1	8E45.8	13KM	1.6	KT.ZURICH	
OCT 16	3:42: 8.6	48N17.3	9E 7.3	10KM	3.6	SCHWAB.ALB	V
OCT 16	3:59:11.2	45N57.3	7E 9.0	10KM		HTE.SAVOIE	
OCT 16	15:36: 1.6	47N24.8	9E54.9	14KM	1.6	VORARLBERG	
NOV 5	22:59:51.6	46N 5.6	7E 1.3	10KM	1.7	VALAIS	
NOV 12	2:58:40.0	48N20.5	6E46.4	10KM		FRANCE	IV
NOV 13	7:14: 7.4	46N24.3	7E23.8	3KM	2.1	VALAIS	
NOV 13	7:55:15.1	46N49.8	9E50.2	19KM	2.0	GRAUBÜNDEN	
NOV 19	21:46:10.8	47N39.9	9E21.4	10KM	2.8	BODENSEE	
NOV 20	2:30:30.5	46N53.0	8E 4.5	13KM	1.3	OBWALDEN	
NOV 21	15: 2:30.3	47N28.1	9E56.2	10KM	1.8	VORARLBERG	
NOV 29	17:49:51.0	47N 3.3	7E11.7	10KM	2.1	KT.BERN	
DEC 2	0:23:57.9	47N 9.8	9E34.3	13KM	1.5	LIECHTENST	
DEC 7	17:16:14.2	46N23.2	7E26.7	3KM	1.9	VALAIS	
DEC 12	22:24:30.4	47N42.5	7E34.6	10KM	1.6	ALSACE,F	
DEC 20	16:36:59.5	46N52.3	7E11.4	2KM	2.3	FRIBOURG	
DEC 22	3:24:16.2	46N41.9	6E58.2	4KM	2.2	FRIBOURG	
DEC 24	22:59:34.8	46N17.7	8E52.5	2KM	2.3	TICINO	
DEC 26	5:37:36.6	46N42.7	8E24.7	8KM	1.6	BERN/URI	
DEC 28	9:22:57.6	46N19.0	7E30.1	2KM	1.8	VALAIS	

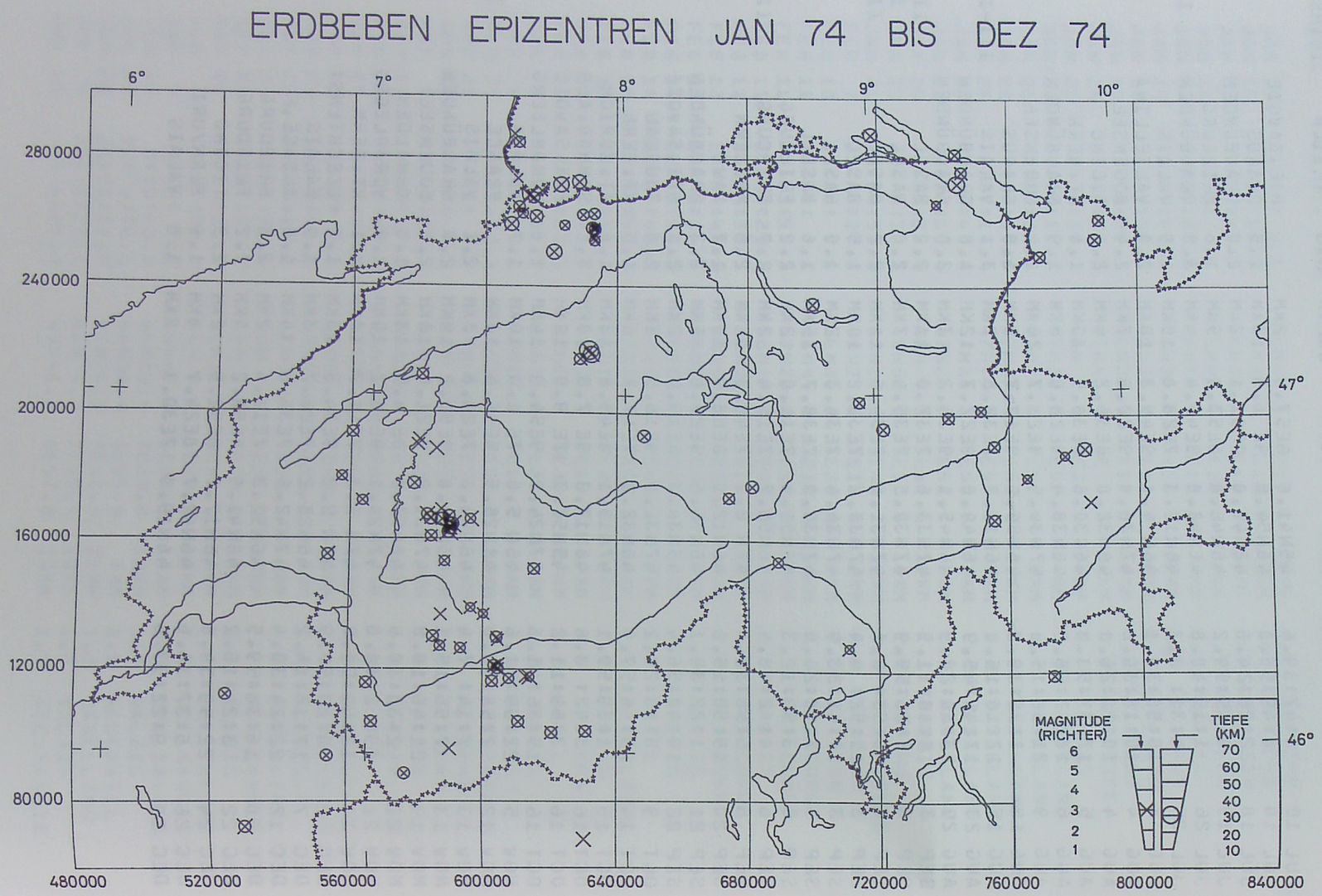


Fig.4: Map of epicenters in Switzerland

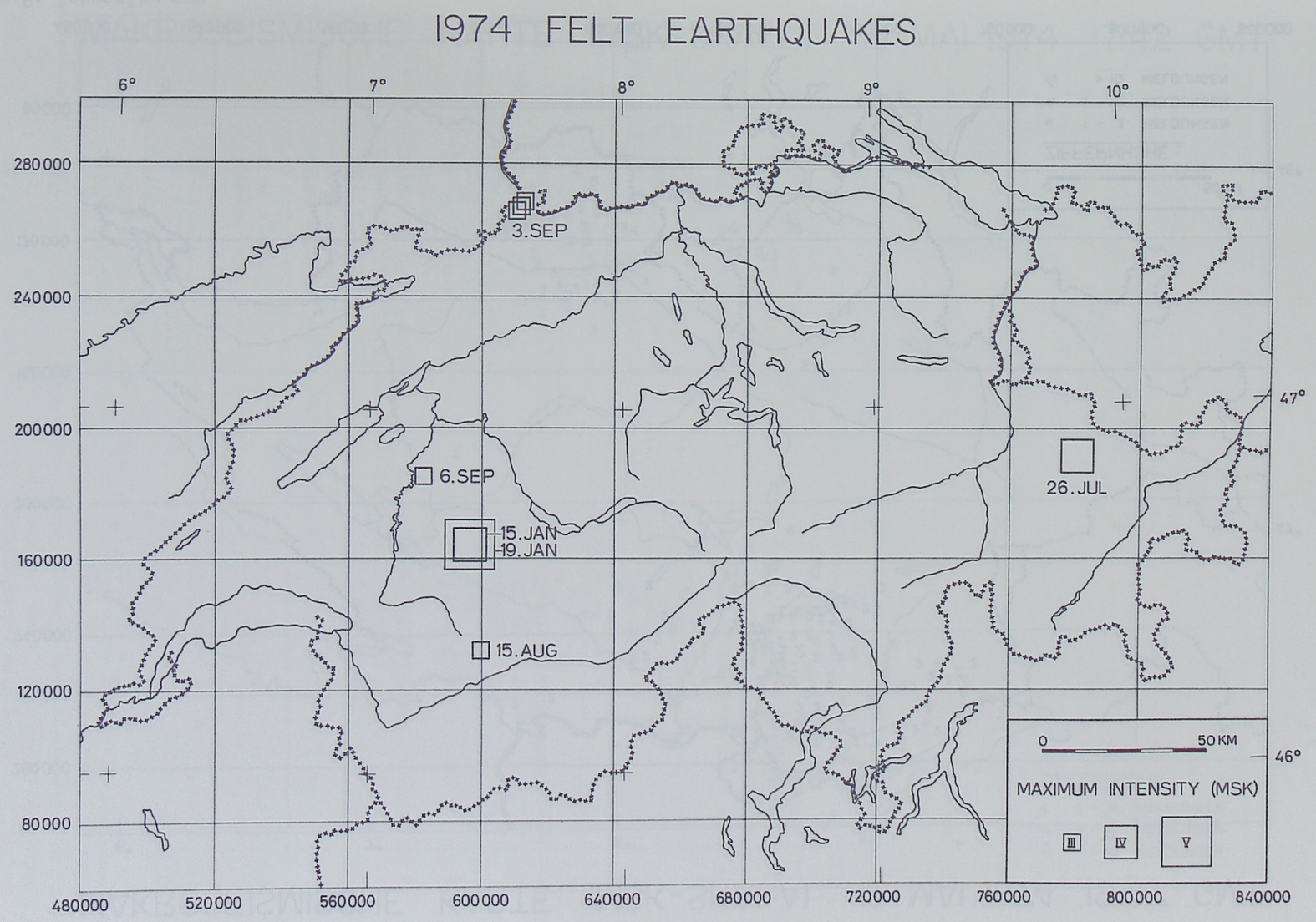


Fig.5

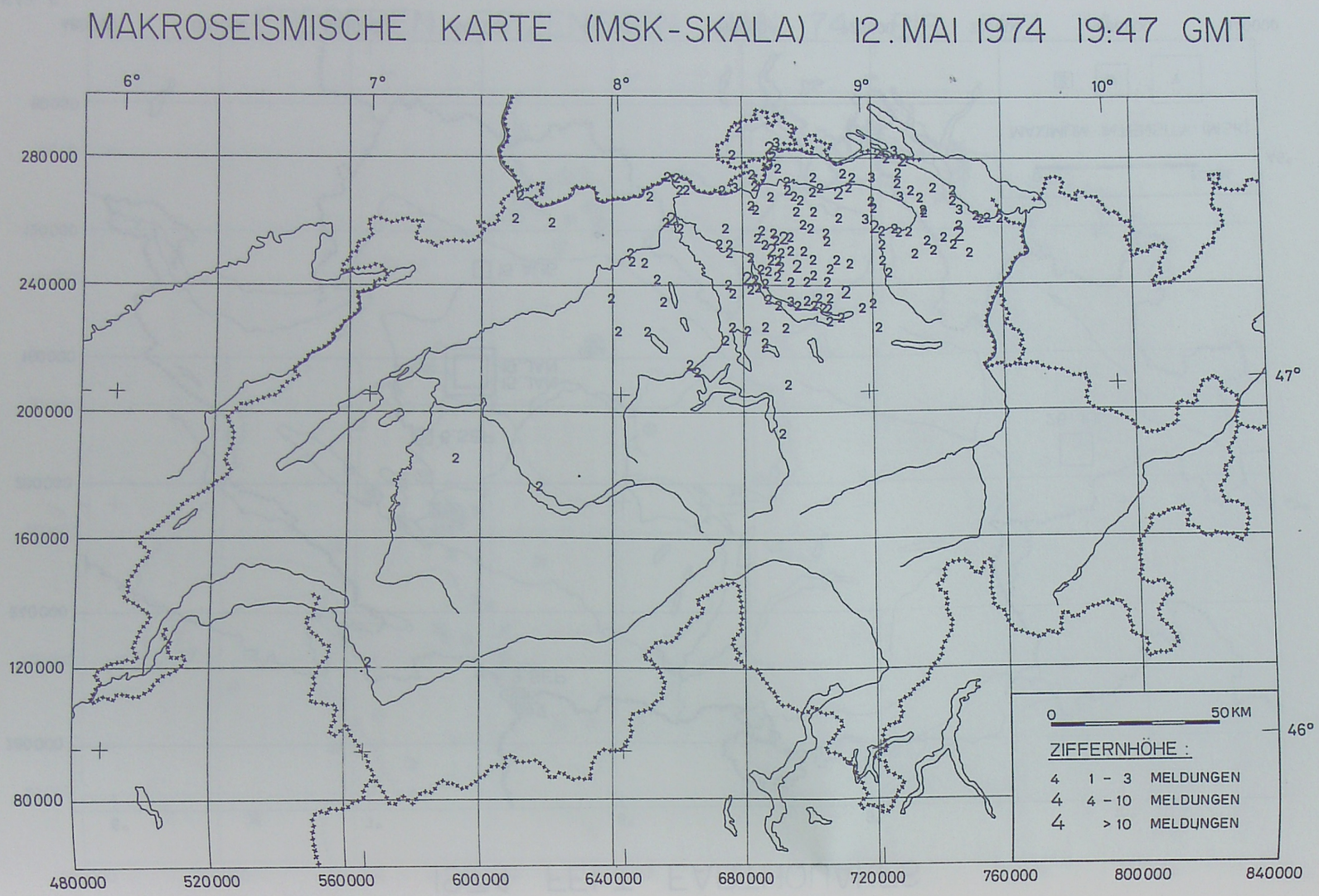


Fig.6: Intensity map

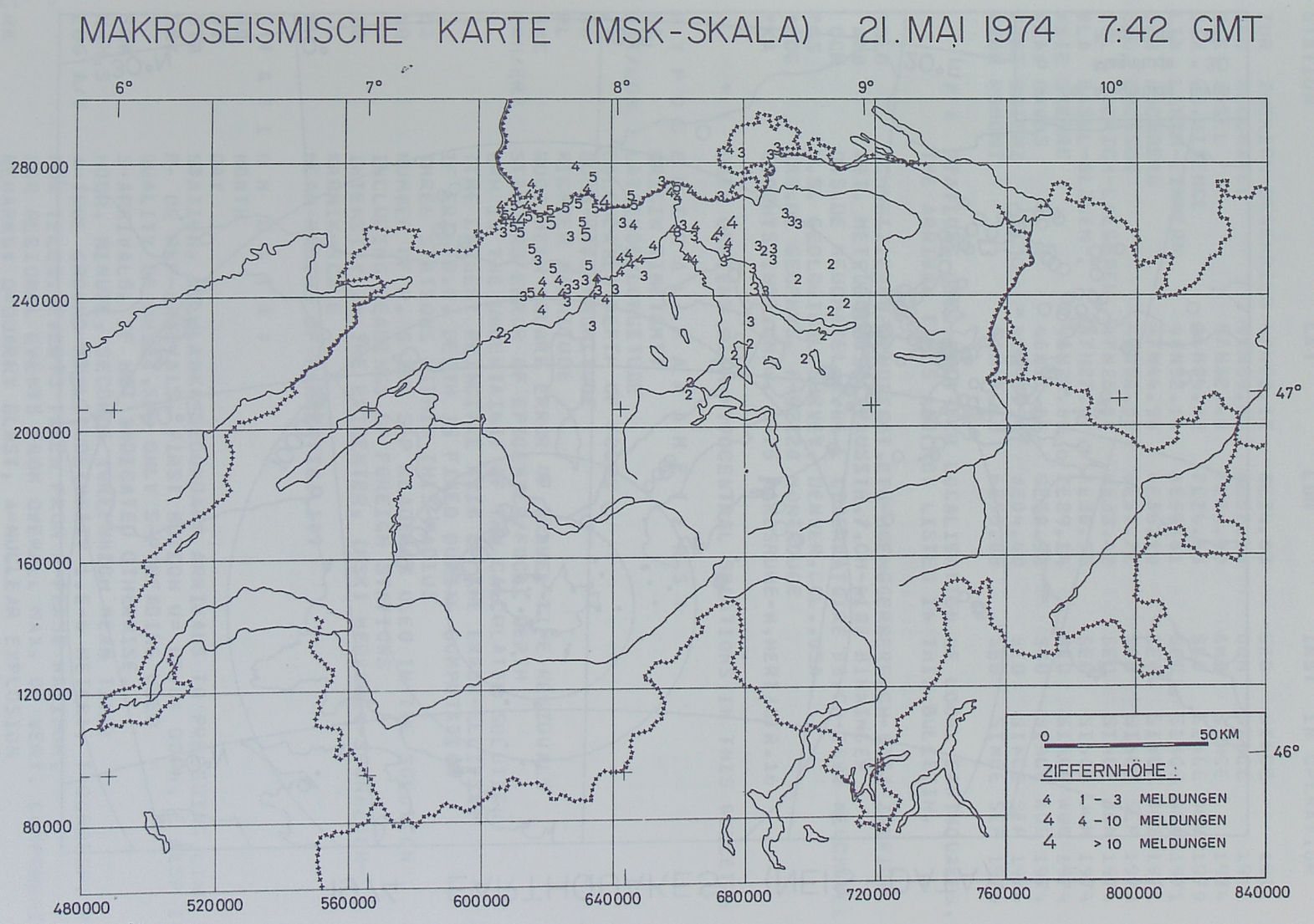


Fig.7: Intensity map

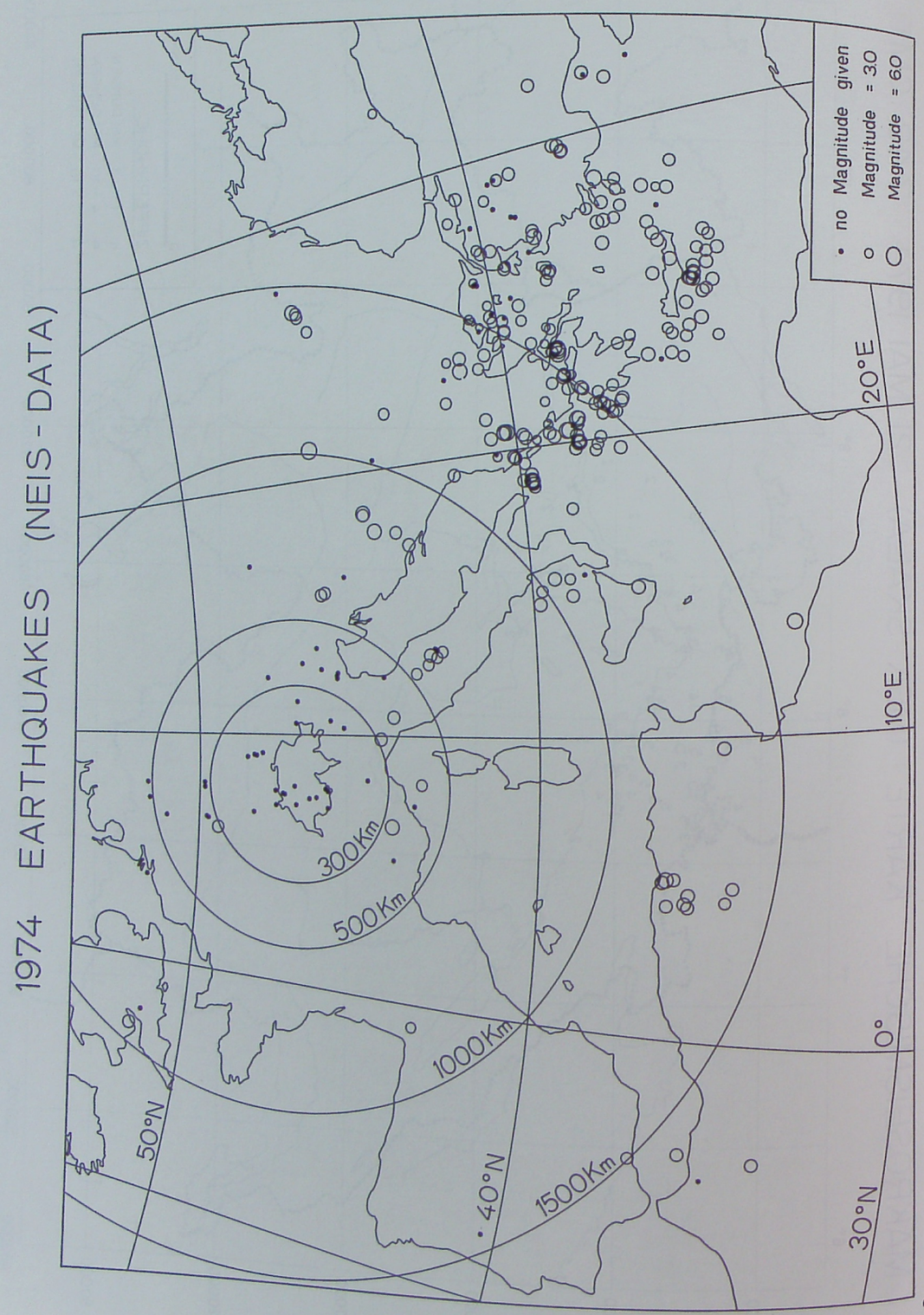


Fig.8

STATION		LAT	LON	INST	IN OPERATION
ZUR	ZUERICH-DEGENRIED	47N22.12	8E34.83	SED	SINCE 1911
NEU	NEUCHATEL	46N59.84	6E57.44	OCN	SINCE 1911
BAS	BASEL	47N32.40	7E34.90	AMB	SINCE 1934
DIX	GD.DIXENCE	46N04.82	7E24.65	SED	SINCE NOV 1970
LIN	LINTH-LIMMERN	46N52.14	8E59.81	SED	SINCE NOV 1971
BUB	BUCHBERG	47N44.94	8E36.18	SED	SINCE DEZ 1971
EMO	EMOSSON	46N02.89	6E57.72	SED	SINCE SEP 1973
ZUL	ZUERICH-LAEGEREN	47N28.88	8E23.42	SED	SINCE JAN 1974
BLA	BASEL-BLAUEN	47N27.87	7E30.55	SED	SINCE JUN 1974
≠SIE	SIERRE	46N20.80	7E29.14	SED	SINCE AUG 1974
≠DAV	DAVOS	46N51.61	9E50.92	SED	SINCE AUG 1974
≠BRI	BRIENZ	46N45.53	8E04.40	SED	SINCE SEP 1974
≠ROM	ROMONT	46N45.18	6E55.08	SED	SINCE SEP 1974

≠ : STATIONS USED ONLY FOR LOCALISATION OF LOCAL EARTHQUAKES, THE ARRIVAL TIMES ARE NOT LISTED IN THIS BULLETIN.

*SED	SCHWEIZ.ERDBEBENDIENST,ETH-HOENGGERBERG,CH-8093 ZUERICH
AMB	ABT. METEOROLOGIE,VENUSSTR.7,CH-4102 BINNINGEN
OCN	OBS.DE NEUCHATEL,R.DE L OBSERVATOIRE 58,CH-2000 NEUCHATEL
*GS	U.S. GEOLOGICAL SURVEY, DENVER,COL.,USA
*LDG	LAB.DE GEOPHYS. F-92120 MONTROUGE
*KA	GEOPHYS.INST.UNIV. D-75 KARLSRUHE-W,HERTZSTR.16

* : DATA CENTERS WITH HYPOCENTRAL SOLUTIONS IN THIS BULLETIN

H Y P O C E N T R A L P A R A M E T E R S :

HO	ORIGIN TIME(GMT)
LAT/LON	LATITUDE/LONGITUDE
Z	CALCULATED DEPTH OF FOCUS
MB	BODY-WAVE MAGNITUDE
ML	RICHTER MAGNITUDE
RMS	ROOT MEAN SQUARE ERROR OF TRAVEL-TIME RESIDUALS
ERH/ERZ	STANDARD ERROR OF EPICENTER/FOCAL DEPTH ERH IS THE UNCERTAINTY OF THE CALCULATED SOLUTION (THE LARGEST PRINCIPLE AXIS OF THE ERROR-ELLIPSE) IF ERZ=-0.0, DEPTH IS FIXED DURING COMPUTATION
D3	THREE STATIONS WITHIN THIS RADIUS
NO	NUMBER OF P, S AND S-P READINGS USED IN THE SOLUTION INCLUDING READINGS OF FOREIGN STATIONS
IO	INTENSITY IN THE EPICENTER, (MSK) MEDVEDEV-SPONHEUER-KARNIK-SCALE
R	MEAN RADIUS OF PERCEPTIBILITY

S T A T I O N D A T A :

MO	MONTH
DY	DAY
STA	STATION, IF BLANK: SECONDARY ARRIVALS TO PRECEDING LINE
PRK	P- OR PKP-ARRIVALS, FIRST MOTION U= UP,D= DOWN, E RESP I= QUALITY OF ONSET,SP= ONLY S-P READING USED
SRK	S-ARRIVALS, IF NOT INDICATED OTHERWISE.
H,M,S	HOUR, MINUTE, SECONDS (GREENWICH MEAN TIME)
LOG A/T	A=TRUE GROUND AMPLITUDE(UNIT= 1.E-6 METER), T=CORRESP. PERIOD. FOR TELES. EVENTS TAKEN FROM P-PHASE MAXIMUM, FOR REGIONAL EVENTS FROM OVERALL MAX. OF VERT. COMPONENT
RK	REMARKS: Q=QUARRY BLAST, A=NUCLEAR EXPLOSION

```
MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

JAN 02 ZUR   PU  10 55 54                        9  1.5   2.6
       BUB   PU  10 55 55
      *GS  : HO= 10:42:29.9  LAT=22.538S LCN= 68.397W Z=105KM MB=6.4
             NORTHERN CHILE

                                                 23  1.5   3.0
JAN 02 BUB   PD  14 54  8
       ZUR   PD  14 54  9
      *GS  : HO= 14:41:47.9  LAT=26.022N LCN=124.383E Z=205KM MB=5.7
             NORTHEAST OF TAIWAN

                                                  1  1.5   1.7
JAN 05 ZUR   P    7 34 50
       BUB   P    7 34 53
      *GS  : HO=  7:33:37.3  LAT=43.430N LCN= 12.303E Z= 33KM MB=3.9
             CENTRAL ITALY

                                                 18  1.5   2.9
JAN 05 BUB   PD   8 47  6
       ZUR   PD   8 47  6
      *GS  : HO=  8:33:50.7  LAT=12.299S LCN= 76.352W Z= 98KM MB=6.3
             NEAR COAST OF PERU

                          19 18.0
JAN 05 BAS   P   11 19  6
       ZUR   P   11 19 19.5  19 31.3
       BUB   P   11 19 20.3  19 32.5       2   .2   1.4

                          20 54.8          3   .2   1.6
JAN 05 BUB   PD  20 20 48.0
      *KA  : HO= 20:20:44.5  LAT=47.950N LCN=  7.930E Z= 16KM ML=1.0

                                                 14  1.5   2.8
JAN 06 BUB   P   14 41 55
       ZUR   P   14 41 55
      *GS  : HO= 14:32:39.9  LAT= 1.503S LCN= 15.525W Z= 33KM MB=5.3
             NORTH OF ASCENSION ISLAND

                                                  6  1.5   2.4
JAN 06 ZUR   PKP  17 59  2
       BUB   PKP  17 59  2.1
      *GS  : HO= 17:39:44.1  LAT=14.856S LCN=167.235E Z=117KM MB=5.6
             NEW HEBRIDES ISLANDS

                          2  8.0
JAN 07 BUB   P    9  1 52

                          2 29.0          10   .5   2.3
JAN 07 BUB   PU   9  2 27.1

JAN 07 ZUR   PD  15 31  8                        6  1.5   2.4
       BUB   PD  15 31  9
      *GS  : HO= 15:24:38.2  LAT=33.303N LCN= 47.924E Z= 32KM MB=5.0
             WESTERN IRAN

JAN 07 BUB   PD  16 49 38                        3  1.5   2.1
      *GS  : HO= 16:35:57.8  LAT=26.889S LCN= 65.704W Z= 33KM MB=5.8
             TUCUMAN PROVINCE, ARGENTINA

JAN 07 ZUR   PD  17 13 59.5        14  5.3

JAN 08 BUB   PU  10 57 42.7        57 48.0       2   .2   1.4

JAN 08 BUB   PU  11 54 13.7        54 24.0       1   .2   1.1
       EMO   PU  11 54 17.1        54 29.9
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

JAN 08 BUB   P   22  0 30                        3  1.5   2.1
       ZUR   P   22  0 30
      *GS  : HO= 21:47:21.6  LAT=38.954S LCN= 46.180E Z= 33KM MB=6.0
             ATLANTIC-INDIAN RISE

JAN 09 BUB   P    3  1 41                        1  1.5   1.7
       ZUR   P    3  1 43
      *GS  : HO=  2:49:46.2  LAT=51.645N LCN=159.639E Z= 33KM MB=5.4
             OFF EAST COAST OF KAMCHATKA

JAN 10 BUB   P    5 30 50                        1  1.5   1.7
      *GS  : HO=  5:18:54.3  LAT=51.590N LCN=159.718E Z= 33KM MB=5.3
             OFF EAST COAST OF KAMCHATKA

JAN 10 BUB   PU   8 24 48.3        24 55.2       3   .2   1.6

JAN 10 BUB  PKP   9 10 38                       28  1.5   3.1
       ZUR  PKP   9 10 40
      *GS  : HO=  8:51:13.3  LAT=14.434S LCN=166.863E Z= 34KM MB=6.7
             NEW HEBRIDES ISLANDS

JAN 10 BUB   PD  11 55 49.9                        6  1.5   2.4
      *GS  : HO= 11:53:32.6  LAT=38.897N LCN= 14.822E Z=339KM MB=4.3
             SICILY

JAN 10 BUB   PD  16 26 13                        4  1.5   2.3
      *GS  : HO= 16:13:25.8  LAT=31.787N LCN=131.697E Z= 37KM MB=5.2
             KYUSHU, JAPAN

JAN 10 BUB   PD  22 37 30                        3  1.5   2.1
       ZUR   P   22 37 30
      *GS  : HO= 22:31:47.8  LAT=57.327N LCN= 33.567W Z= 33KM MB=5.1
             NORTH ATLANTIC OCEAN

JAN 11 BUB  PKP   5 55 57                        4  1.5   2.3
       ZUR  PKP   5 56  0
      *GS  : HO=  5:36:30.8  LAT=14.159S LCN=166.589E Z= 15KM MB=5.7
             NEW HEBRIDES ISLANDS

JAN 11 BUB   PD  10  7 41.6         7 56.2       2   .4   1.5

JAN 11 BUB   PU  14 57 51.5        58  2.7       2   .2   1.4

JAN 12 ZUR   PU  14 48  2.0
       BUB   PU  14 48  6.1

JAN 14 ZUR   P    8 47 35
       LIN   P    8 47 36.0        47 00.0
       BUB   PU   8 47 38.9                        5  1.5   2.4

JAN 14 BUB   PD  10  6 44.1         6 48.7       7   .2   1.9

JAN 14 BUB   P   10 17 29                        7  1.5   2.5

JAN 14 BUB   PU  20 43 50                        3  1.5   2.1
      *GS  : HO= 20:31:43.0  LAT=48.757N LCN=154.955E Z= 14KM MB=5.5
             KURIL ISLANDS
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

JAN 15 BUB   PU   8 49 24.7          49 39.2    3   .2   1.6

JAN 15 BUB  PKP   8 52 50                       3  1.5   2.1
      *GS  : HO=  8:32:14.0  LAT=30.924S LON=178.928W Z=114KM MB=5.6
             KERMADEC ISLANDS

JAN 15 NEU   P   20 11 17.9          11 25.2
       DIX   P   20 11 20.2          11 27.8
       EMO   P   20 11 21.3          11 30.6
       BAS   P   20 11 26.5          11 41.5
       ZUR   P   20 11 29.5          11 44.5   60   .4   3.3
       BUB   P   20 11 33.3          11 51.2  100   .4   3.2
      *SED  : HO= 20:11: 9.1  LAT=46N38.1 LON=  7E19.4 Z= 14KM ML=3.8
             RMS= .17S  ERH= 2.2KM  ERZ= 2.0KM  D3= 71KM  NO=16
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)
             IO= IV      (MSK)      R= 40 KM
             INTENS.(MSK): ERLENBACH IV, JAUN IV, LENK (3) IV
                           WEISSENBACH (4) IV, ZWEISIMMEN (4)
                           IV, MANNRIED IV, LAUENEN IV, BOLTIGEN
                           IV, FRUTIGEN III, ADELBODEN III, HOR-
                           BODEN III, REUTIGEN III, SCHOENRIED III,
                           MONTREUX II,BUELACH II, ZUERICH II,
                           GOCKHAUSEN II.

JAN 15 BUB   P   20 18 32          18 51.5    1   .2   1.1

JAN 15 BUB   P   23  1 35                       3  1.5   2.1
      *GS  : HO= 22:50:29.9  LAT=32.913N LON=104.203E Z= 33KM MB=5.3
             SZECHWAN PROVINCE, CHINA

JAN 15 DIX   P   23 25 21          25 28.3
       EMO   P   23 25 22.3        25 31.0
       BUB   P   23 25 34.5        25 53.2    3   .2   1.6
      *SED  : HO= 23:25:10.1  LAT=46N37.4 LON=  7E19.0 Z= 15KM ML=1.9
             RMS= .34S  ERH= 7.8KM  ERZ= 6.7KM  D3=125KM  NO= 9
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

JAN 15 EMO   P   23 58  1.7        58 10.5
       ZUR   P   23 58 11          58 26.0
       BUB   P   23 58 14.0        58 33.0    2   .2   1.4
       DIX  SP   23                58  8.4
      *SED  : HO= 23:57:49.5  LAT=46N39.0 LON=  7E14.3 Z= 12KM ML=1.8
             RMS= .40S  ERH= 7.5KM  ERZ= 5.5KM  D3=125KM  NO=11
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

JAN 16 EMO   P    0  2 13.1          2 22.0
       ZUR   P    0  2 21.7          2 37.3
       BUB   P    0  2 25.3          2 44.3    3   .2   1.6
      *SED  : HO=  0: 2:  .5  LAT=46N40.6 LON=  7E16.7 Z=  2KM ML=1.9
             RMS= .45S  ERH= 8.1KM  ERZ=-0.0KM  D3=125KM  NO=11
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

JAN 16 BUB  PKP  11  4 46                       9  1.5   2.6
      *GS  : HO= 10:45:10.9  LAT=17.454S LON=167.894E Z= 30KM MB=5.3
             NEW HEBRIDES ISLANDS

JAN 18 BUB   PU  17  3 37.3                     4  1.5   2.3
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

JAN 18*GS  : HO= 16:52:43.1  LAT=18.791N LON= 69.370W Z= 82KM MB=5.3
             DOMINICAN REPUBLIC REGION
JAN 18 DIX   P   18 57 44.0        57 47.3
       EMO   P   18 57 45.6        57 50.5
       ZUL   P   18 58  4.2        58 22.5
       ZUR   P   18 58  4.5        58 23.0
       BUB   P   18 58 10.5        58 33.0    2   .2   1.4
      *SED  : HO= 18:57:39.2  LAT=46N18.0 LON=  7E16.8 Z=  4KM ML=1.9
             RMS= .35S  ERH= 3.0KM  ERZ= 4.5KM  D3=155KM  NO=11
             REGION SION,KT.VALAIS(CH)

JAN 18 BUB   PD  21 27 25                       6  1.5   2.4
      *GS  : HO= 21:14:50.5  LAT=34.175S LON= 20.237W Z= 33KM MB=5.5
             SOUTH ATLANTIC RIDGE

JAN 19 DIX   P    2 50  1.1        50  7.5
       EMO   P    2 50  2.1        50 10.0
       BAS   P    2 50  7.5        50 21.5
       ZUL   PU   2 50  9.8        50 25.5  150   .4   3.4
       ZUR   PU   2 50 10.3        50 26.3  100   .4   3.5
       LIN   P    2 50 11.2        50 27.8
       BUB   P    2 50 14.2        50 -0.0  150   .4   3.4
      *SED  : HO=  2:49:49.8  LAT=46N36.8 LON=  7E18.6 Z= 15KM ML=3.9
             RMS= .61S  ERH= 4.3KM  ERZ= 4.2KM  D3=105KM  NO=26
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)
             IO= V       (MSK)      R= 50 KM
             INTENS.(MSK): ZWEISIMMEN (5) V, ERLENBACH V, MANNRIED
                           IV, LAUENEN IV, WEISSENBACH (3) IV, LENK
                           IV, FRUTIGEN IV, ADELBODEN IV, SCHOEN-
                           RIED IV, LATTERBACH IV, REUTIGEN III,
                           GIFFERS III, SAANEN III, BERN II,
                           WINTERTHUR II.

JAN 19 DIX   P    3  2 45           2 52.2
       EMO   P    3  2 46.4         2 55.2
       BAS   P    3  2 50           3  7.0
       ZUL   P    3  2 54.5         3 10.5
       ZUR   P    3  2 54.7         3 10.6
       LIN   P    3  2 56.5         3 13.0
       BUB   P    3  2 58.3         3 17.5   14   .3   2.3
      *SED  : HO=  3: 2:33.5  LAT=46N39.7 LON=  7E13.5 Z= 10KM ML=2.8
             RMS= .58S  ERH= 4.5KM  ERZ=-0.0KM  D3=101KM  NO=17
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

JAN 19 DIX   P    7 56 41          56 49.0
       EMO   P    7 56 42.0        56 50.8
       ZUL   P    7 56 50.0        57  5.0
       ZUR   P    7 56 51.5        57  6.2
       BUB   P    7 56 53.7        57 12.6    2   .2   1.4
      *SED  : HO=  7:56:29.7  LAT=46N38.9 LON=  7E17.0 Z= 13KM ML=1.8
             RMS= .34S  ERH= 4.1KM  ERZ= 3.5KM  D3=124KM  NO=11
             REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

JAN 20 BUB  PKP   5 32 39                       5  1.5   2.4
      *GS  : HO=  5:13:14.8  LAT=14.364S LON=166.955E Z= 33KM MB=5.6
             NEW HEBRIDES ISLANDS
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```
MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

                                     31 10.2    1   .2   1.1
JAN 21 BUB  PU  16 30 51.0                      3  1.5   2.1

JAN 22 BUB  PU  13 39 58
       ZUR  P   13 40  1
      *GS  : HO= 13:28:20.0  LAT=55.204N LON=162.142E  Z= 33KM MB=5.7
             NEAR EAST COAST OF KAMCHATKA

                                                    2  1.5   2.0
JAN 24 ZUL  PD  13 21 27.0
       BUB  PD  13 21 27.7
      *GS  : HO= 13:19:23.2  LAT=39.810N LON= 14.589E  Z=358KM MB=4.6
             TYRRHENIAN SEA

                                                    1  1.5   1.7
JAN 24 BUB  PU  18 54 42
      *GS  : HO= 18:43:26.8  LAT=61.588N LON=147.626W  Z= 40KM MB=4.8
             SOUTHERN ALASKA

                                                   23  1.5   3.0
JAN 24 BUB  PU  19 25  8
       ZUL  PU  19 25 10
      *GS  : HO= 19:12:52.1  LAT=42.126N LON=143.913E  Z= 45KM MB=5.9
             HOKKAIDO, JAPAN REGION

                                 37   .7   15   .2   2.3
JAN 24 BUB  P   19 36 56.7       37  6.9   23   .2   2.5
       ZUL  P   19 36 59.8       37  4.3
       LIN  SP  19 36 56.0
      *SED  : HO= 19:36:50.2  LAT=47N43.4 LON=  9E   .7  Z= 18KM ML=1.9
             RMS= .37S  ERH= 7.3KM  ERZ= 4.8KM  D3= 76KM  NO= 8
             REGION RADOLFZELL(BRD)

                                                    7  1.5   2.5
JAN 24 BUB  PD  23 50 27
      *GS  : HO= 23:38: 8.5  LAT=41.932N LON=143.954E  Z= 41KM MB=5.2
             HOKKAIDO, JAPAN REGION

                                                    1  1.5   1.7
JAN 25 BUB  PU   0 45  8

JAN 25 DIX  P    2  9 41.0        9 43.4
       EMO  P    2  9 45.5        9 51.2
       ZUL  PD   2 10  2.9       10 22.2
       BUB  PD   2 10  8.7       10 31.5    3   .2   1.6
      *SED  : HO=  2: 9:37.3  LAT=46N 5.8 LON=  7E34.9  Z= 10KM ML=2.1
             RMS= .47S  ERH= 5.0KM  ERZ=-0.0KM  D3=166KM  NO= 7
             V.D'ANNIVIERS,KT.VALAIS(CH)

JAN 25 BUB  PD   8 31 34.3       31 48.0    4   .2   1.7

JAN 25 BUB  PD  11 36 59.4       37  3.3    2   .2   1.4

JAN 25 BUB  PD  23  0  5                    4  1.5   2.3

JAN 27 BUB  PD  21 10 21                    4  1.5   2.3
      *GS  : HO= 21: 6:20.4  LAT=35.163N LON= 25.421E  Z= 66KM MB=4.5
             CRETE

JAN 28 ZUL  PU   1 58 17.3       58 22.6    3   .2   1.6
       BUB  PU   1 58 21.8       58 29.6    1   .2   1.1
      *SED  : HO=  1:58:10.6  LAT=47N28.1 LON=  7E52.4  Z= 14KM ML= .9
             RMS= .27S  ERH= 2.8KM  ERZ= 4.2KM  D3= 47KM  NO= 9
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

             REGION GELTERKINDEN,KT.BASELLAND(CH)
JAN 28 ZUL  PU   2 35 38.1       35 43.2
       BUB  PU   2 35 43.0       35 50.3    1   .2   1.1
      *SED  : HO=  2:35:32.0  LAT=47N27.9 LON=  7E53.4  Z=  2KM ML= .8
             RMS= .32S  ERH=17.4KM  ERZ=-0.0KM  D3= 47KM  NO= 7
             REGION GELTERKINDEN,KT.BASELLAND(CH)

JAN 28 ZUL  PU   2 38  1.8       38  7.2
       BUB  PU   2 38  7.1       38 14.2    1   .2   1.1
      *SED  : HO=  2:37:55.5  LAT=47N27.9 LON=  7E53.0  Z= 10KM ML= .8
             RMS= .49S  ERH= 6.3KM  ERZ=-0.0KM  D3= 47KM  NO= 7
             REGION GELTERKINDEN,KT.BASELLAND(CH)

JAN 28 ZUL  PU   2 57 22.1       57 27.2
       BUB  PU   2 57 26.5       57 34.6    3   .2   1.6
      *SED  : HO=  2:57:15.4  LAT=47N26.0 LON=  7E52.9  Z=  7KM ML=1.3
             RMS= .20S  ERH= 1.9KM  ERZ=10.6KM  D3= 50KM  NO=11
             REGION GELTERKINDEN,KT.BASELLAND(CH)

JAN 28 ZUL  PU   4  6 46.1        6 51.2
       BUB  PU   4  6 51.3        6 58.5    1   .2   1.1
      *SED  : HO=  4: 6:40.0  LAT=47N28.2 LON=  7E53.0  Z=  2KM ML= .8
             RMS= .41S  ERH= 5.0KM  ERZ=-0.0KM  D3= 46KM  NO= 7
             REGION GELTERKINDEN,KT.BASELLAND(CH)

JAN 28 ZUL  PU   5 39  6.2       39 10.7
       BUB  PU   5 39 10.2       39 18.2    3   .2   1.6
      *SED  : HO=  5:38:59.4  LAT=47N26.5 LON=  7E52.7  Z=  2KM ML=1.3
             RMS= .18S  ERH= 1.6KM  ERZ=-0.0KM  D3= 49KM  NO=10
             REGION GELTERKINDEN,KT.BASELLAND(CH)

JAN 28 ZUL  PU  19 58 27.1       59 12.0
       BUB  PU  19 58 29.2       59 16.0    2  1.5   2.0

JAN 29 DIX  P    0 52  4.0       52  7.0
       EMO  P    0 52  8.8       52 15.3
       ZUL  PU   0 52 23.6       52 43.2
       BUB  PU   0 52 28.8       52 51.2    3   .2   1.6
      *SED  : HO=  0:51:58.9  LAT=46N 4.0 LON=  7E42.6  Z= 10KM ML=2.1
             RMS= .49S  ERH=10.5KM  ERZ=-0.0KM  D3=166KM  NO= 8
             REGION ZERMATT,KT.VALAIS(CH)

JAN 29 LIN  P   19  6 41.5        6 42.7
       ZUL  P   19  6 50.1        7  3.7
       BUB  PD  19  6 54.7        7  5.2    2   .2   1.4
      *SED  : HO= 19: 6:39.2  LAT=46N58.6 LON=  8E56.4  Z= 10KM ML=1.4
             RMS= .87S  ERH=14.6KM  ERZ=-0.0KM  D3= 90KM  NO= 7
             REGION SCHWANDEN,KT.GLARUS(CH)

JAN 30 ZUL  P    1 47 51       48 27.0
       BUB  PD   1 47 54       48 31.0    1  1.5   1.7

                                            6  1.5   2.4     A
JAN 30 BUB  PU   5  5 15
       ZUL  P    5  5 18
      *GS  : HO=  4:56:57.6  LAT=49.894N LON= 77.993E  Z=  0KM MB=4.6
             EASTERN KAZAKH SSR
      *GS  : HO=  4:57: 2.1  LAT=49.835N LON= 78.079E  Z=  0KM MB=5.4
             EASTERN KAZAKH SSR
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T  LOG A/T  RK

JAN 30 BUB   PU   9 51 53                         1  1.5   1.7

JAN 31 BUB   PU   6 55  7.5          55 18.0     20   .2   2.4
       LIN  SP    6 55 10.5          55 18.3
      *SED : HO=  6:54:51.5  LAT=47N22.2 LON=  9E41.3 Z= 12KM ML=2.4
             RMS= .49S  ERH= 7.5KM  ERZ= 4.2KM  D3=135KM  NO=11
             VORARLBERG(A)

JAN 30 BUB   PD   7 16 33                        11  1.5   2.7

JAN 31 BUB   PU  20  7 34.6                       9  1.5   2.6
       ZUL   P   20  7 36
      *GS  : HO= 19:55:26.2  LAT=52.357N LON=168.740W Z= 36KM MB=5.6
             FOX ISLANDS, ALEUTIAN ISLANDS

JAN 31 BUB   PD  20 38 53                         6  1.5   2.4

JAN 31 BUB  PKP  23 49 15                        11  1.5   2.7
      *GS  : HO= 23:30: 5.3  LAT= 7.461S LON=155.894E Z= 34KM MB=6.0
             SOLOMON ISLANDS

FEB 01 BUB   PD   0  4 49                        18  1.5   2.9
       ZUL   PD   0  4 50

FEB 01 ZUL  PKP   3 31 42
       BUB  PKP   3 31 43                        14  1.5   2.8
      *GS  : HO=  3:12:33.1  LAT= 7.383S LON=155.575E Z= 40KM MB=6.2
             SOLOMON ISLANDS

FEB 01 BUB   PD   7 24 50                         7  1.5   2.5

FEB 01 BUB   PD   8 35 41.2          35 52.4      3   .3   1.6
       ZUL   P    8 35 41.6          35 53.0      2   .2   1.4

FEB 01 LIN   P   19 55  0.0          55 21.4
       ZUL   P   19 55  4            55 29.0      5   .3   1.9
       BUB   PU  19 55  4.3          55 29.2      9   .2   2.0

FEB 02 BUB  PKP   8 46 52                         9  1.5   2.6
       ZUL  PKP   8 46 53
      *GS  : HO=  8:27:40.2  LAT=19.104S LON=169.491E Z=269KM MB=5.6
             NEW HEBRIDES ISLANDS

FEB 02 BUB   PD  16  6 31                         5  1.5   2.4
       ZUL   P   16  6 33
      *GS  : HO= 15:55:28.3  LAT=61.602N LON=147.603W Z= 48KM MB=5.1
             SOUTHERN ALASKA

FEB 03 BUB   PD  10 21 44                         6  1.5   2.4
       ZUL   P   10 21 45
      *GS  : HO= 10: 8:48.4  LAT=18.909N LON=120.070E Z= 30KM MB=5.9
             LUZON, PHILIPPINE ISLANDS

FEB 04 BUB   PU   7 52 53.2          53  3.6      1   .3   1.2
       ZUL   PU   7 52 56.9          53 11.2

FEB 04 BUB   PD  14  3  7.0           3 19.0      3   .2   1.6
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T  LOG A/T  RK

FEB 04 ZUL   PD  14  3  9.3                       3   .2   1.6

FEB 04 BUB   P   14  3 49            4  7.0      2   .2   1.4
       ZUL   P   14  3 53            4 12.0      2   .2   1.4

FEB 04 ZUL   P   15 32 28.8          32 40.2
       BUB   P   15 32 29.0          32 42.1      4   .2   1.7

FEB 04 BUB   PD  15 32 51            33  7.0      2   .9   1.7
       ZUL   P   15 32 58

FEB 04 BUB   PU  20 26  3.5          26 12.2      3   .2   1.6
       ZUL   PU  20 26 10.0          26 22.2      3   .2   1.6

FEB 04 BUB  PKP  20 29 51                         5  1.5   2.4
      *GS  : HO= 20:10:42.0  LAT= 7.297S LON=155.831E Z= 55KM MB=5.4
             SOLOMON ISLANDS

FEB 04 BUB   PU  20 33 21                         6  1.5   2.4

FEB 05 BAS   P   10 42 35            42 38.0
       ZUL   PD  10 42 44.6          42 55.0      3   .2   1.6
       BUB   P   10 42 46.6          42 58.4      1   .2   1.1

FEB 05 BUB   PD  12 29  6.7          29 19.0      5   .2   1.8
       ZUL   PD  12 29 12.1          29 27.0      3   .2   1.6

FEB 05 BUB   PD  12 56 10.3          56 25.7      2   .2   1.4
       ZUL   PU  12 56 16.7          56 35.0      2   .2   1.4

FEB 05 BUB   P   15  9 17                         9  1.5   2.6
       ZUL   P   15  9 18
      *GS  : HO= 15: 5:24.2  LAT=36.819N LON= 27.016E Z=153KM MB=4.8
             DODECANESE ISLANDS

FEB 05 ZUL   PU  15 47 25
       BUB   PU  15 47 29.6          47 41.2      2   .2   1.4
       LIN  SP   15 47  0.0          47 14.0

FEB 05 BUB   PD  18 27 42                         3  1.5   2.1
      *GS  : HO= 18:23:26.2  LAT=37.309N LON= 29.583E Z= 39KM MB=4.4
             TURKEY

FEB 06 ZUL   PU   0  5 11.3           5 19.0      1   .2   1.1
       BUB   PU   0  5 13.2           5 22.3      3   .2   1.6
      *KA  : HO=  0: 5:13.2  LAT=47.570N LON=  7.630E Z=  0KM ML= .5
             BASEL

FEB 06 BUB   PD   4 16 12.7                      11  1.5   2.7
      *GS  : HO=  4: 4: 7.2  LAT=53.799N LON=164.672W Z=  2KM MB=5.9
             UNIMAK ISLAND REGION

FEB 07 DIX   P   21 49 34.0          49 38.0
       EMO   P   21 49 35.4          49 40.7
       ZUL   P   21 49 51.8          50 10.9      2   .2   1.4
       BUB   PU  21 49 57.4          50 19.2      2   .2   1.4
      *SED : HO= 21:49:27.4  LAT=46N23.1 LON=  7E16.9 Z=  2KM ML=1.8
             RMS= .39S  ERH= 4.1KM  ERZ=-0.0KM  D3=148KM  NO= 9
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T   LOG A/T  RK

            REGION GSTEIG,KT.BERN(CH)
FEB 08 BAS   P   13 27 32
       ZUL   PU  13 27 34.7          27 41.0     1   1.0   1.0
       BUB   PU  13 27 35.6          27 44.2     3   1.1   1.9
       LIN   P   13 27 42            27 49.0

FEB 08 BUB   PU  14 33 26                         3   1.5   2.1
       ZUL   P   14 33 27
      *GS  : HO= 14:21:37.4  LAT=54.402N LON=167.595E  Z= 33KM MB=5.4
            KOMANDORSKY ISLANDS REGION

FEB 08 BUB   PU  14 37 47.6         37 58.0
       ZUL   PU  14 37 51           37 60.0

FEB 08 ZUL   P   14 53 24.3         53 37.7     2   .4    1.5
       BUB   PU  14 53 28.8         53 43.2     2   .6    1.6
       LIN   P   14 53 29.2

FEB 08 BUB  PKP  18 43 17                         6   1.5   2.4
       ZUL   P   18 44 18
      *GS  : HO= 18:24:32.2  LAT=21.377S LON=170.103E  Z= 33KM MB=5.4
            LOYALTY ISLANDS REGION

FEB 08 ZUL   PD  20 13 12.1                      10   .5    2.3
       BUB   PD  20 13 15.7                      18   1.5   2.9
      *GS  : HO= 20:12:17.7  LAT=44.197N LON=  6.542E  Z= 33KM MB=4.9
            FRANCE

FEB 10 EMO  SP   22 34  0.0         34  8.0
       DIX   P   22 34 12.0         34 19.5
       BAS   P   22 34 19
       ZUL   PU  22 34 20.8         34 36.7    35   .3    2.7
       BUB   PU  22 34 25.1         34 43.7    65   .3    3.0
      *SED  : HO= 22:34:  .6  LAT=46N39.0 LON=  7E23.6  Z=  7KM ML=3.2
            RMS= .55S  ERH= 4.7KM  ERZ= 4.9KM  D3=120KM  NO=17
            REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)
            IO= IV      (MSK)      R= 20 KM
            INTENS.(MSK): ZWEISIMMEN IV, FRUTIGEN IV,
                          REICHENBACH I.S. III.

FEB 11 EMO  SP    0 54 12           54 22.0
       ZUL   PU   0 54 20.4         54 35.2     1   .3    1.2
       BUB   PU   0 54 24.6         54 42.5     2   .3    1.5
      *SED  : HO=  0:54:  .6  LAT=46N44.9 LON=  7E10.3  Z= 10KM ML=1.7
            RMS= .24S  ERH=19.0KM  ERZ=-0.0KM  D3=123KM  NO= 7
            REGION FRIBOURG(CH)

FEB 11 ZUL   P    8 41 58.1         42  4.2     1   .2    1.1
       BUB   PU   8 42  1.9         42 10.7     2   .2    1.4
      *SED  : HO=  8:41:50.0  LAT=47N28.6 LON=  7E45.6  Z=  2KM ML=1.2
            RMS= .09S  ERH= 3.6KM  ERZ=-0.0KM  D3= 70KM  NO= 6
            REGION LIESTAL,KT.BASELLAND(CH)

FEB 11 ZUL   PU  13 44 55.0         45 13.3    25   .2    2.5
       BUB   PU  13 44 58.7         45 19.8    25   .2    2.5
       BAS   P   13 45  2           45 12.0
       DIX  SP   13 45 35           45 38.0
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T   LOG A/T  RK

FEB 11 LIN  SP   13 44 55           45 10.0
       EMO  SP   13 45  0.0          45  6.8
      *SED  : HO= 13:44:29.9  LAT=46N13.0 LON=  7E37.6  Z=  3KM ML=2.9
            RMS= .45S  ERH=10.1KM  ERZ= 8.1KM  D3=128KM  NO=17
            V.D'ANNIVIERS,KT.VALAIS(CH)

FEB 11 EMO  SP   14 48 43           48 51.0
       ZUL   P   14 48 52.2         49  7.7     2   .2    1.4
       BUB   P   14 48 56           49 14.7     2   .5    1.6
      *SED  : HO= 14:48:30.7  LAT=46N36.1 LON=  7E14.5  Z= 10KM ML=1.9
            RMS= .22S  ERH= 7.2KM  ERZ=-0.0KM  D3=131KM  NO= 6
            JAUNPASS,KT.FRIBOURG(CH)

FEB 11 ZUL   PU  14 59 30.1         59 44.2     1   .2    1.1
       BUB   PU  14 59 32.5         59 48.7     1   .2    1.1

FEB 12 ZUL   PU  10 56 35.7         56 38.7    18   .2    2.3     Q
       BUB   PU  10 56 39.5         56 44.9     7   .2    1.9
       EMO   P   10 57  5           57 29.0

FEB 12 DIX   P   12 34 45.0         34 47.3
       EMO   P   12 34 51.5         34 58.0

FEB 12 EMO  SP   12 36  0.0          36  6.6
       ZUL   PU  12 36  8.1          36 27.2    12   .2    2.2
       BUB   PU  12 36 13.7          36 36.1    13   .2    2.2
      *SED  : HO= 12:35:42.9  LAT=46N32.9 LON=  6E50.5  Z= 10KM ML=2.6
            RMS= .99S  ERH=15.5KM  ERZ=-0.0KM  D3=157KM  NO=10
            REGION CHATEL ST.CENIS,KT.FRIBOURG(CH)

FEB 12 BUB   PU  15 16 47.0         17  1.0     4   .2    1.7
       ZUL   PU  15 16 50.0         17  3.0     1   .2    1.1

FEB 13 DIX   P   14  6 18.5          6 21.0
       EMO   P   14  6 22.5          6 29.0
       ZUL   PD  14  6 39.6          6 57.2     2   .2    1.4
       BUB   PD  14  6 44.6          7  7.3     2   .2    1.4
      *SED  : HO= 14: 6:14.5  LAT=46N14.4 LON=  7E30.1  Z= 10KM ML=1.8
            RMS= .62S  ERH= 5.1KM  ERZ=-0.0KM  D3=154KM  NO= 7
            REGION SIERRE,KT.VALAIS(CH)

FEB 14 DIX   P   10 16 14.5         16 16.7
       EMO   P   10 16 18.3         16 24.5
       ZUL   PU  10 16 35.0         16 54.2     5   .2    1.8
       BUB   PU  10 16 40.2         17  3.1     4   .3    1.8
      *SED  : HO= 10:16:10.2  LAT=46N14.8 LON=  7E29.4  Z= 10KM ML=2.2
            RMS= .49S  ERH= 6.2KM  ERZ=-0.0KM  D3=153KM  NO= 8
            REGION SIERRE,KT.VALAIS(CH)

FEB 14 EMO   P   10 49  9.6         49 12.2
       ZUL   PD  10 49 35.2         49 37.8    12   .5    2.3
       BUB   PD  10 49 38.8         49 44.0     5   .6    2.0

FEB 14 BUB   PD  16 17 19.9         17 34.2     4   .2    1.7
       ZUL   PD  16 17 22.3         17 38.0     2   .2    1.4

FEB 14 ZUL   PD  21 24 55.2         25  2.9     3   .2    1.6
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

FEB 14 BUB   PU  21 24 57.0        25  6.1      4   .2   1.7
     *SED : HO= 21:24:45.0  LAT=47N34.3 LON=  7E40.3 Z=  2KM ML=1.4
            RMS= .37S  ERH= 3.9KM  ERZ=-0.0KM  D3= 55KM  NO= 9
            REGION BASEL(CH)

FEB 16 BUB   PU   1 56 10.2        56 16.7      1   .2   1.1
     *SED : HO=  1:55:59.3  LAT=47N30.4 LON=  7E52.7 Z= 10KM ML= .8
            RMS= .41S  ERH=13.6KM  ERZ=-0.0KM  D3= 61KM  NO= 6
            REGION GELTERKINDEN,KT.BASELLAND(CH)

FEB 16 BUB   PU   2  2 59.7                    3  1.5   2.1
     *GS  : HO=  1:51:10.8  LAT=11.430N LON= 92.346E Z= 25KM MB=5.5
            ANDAMAN ISLANDS REGION

FEB 16 BUB  PKP   5 59 49                     11  1.5   2.7
       ZUL  PKP   5 59 51
     *GS  : HO=  5:39:57.4  LAT=31.471S LON=179.115E Z=510KM MB=5.2
            KERMADEC ISLANDS REGION

FEB 16 BUB   PU  13 34 12.7        34 16.6      2   .2   1.4
       ZUL   PU  13 34 16.6        34 25.6      1   .2   1.1

FEB 18 ZUL   PU  14 16  5.2        16 24.7      2   .2   1.4
       BUB   PU  14 16 10.6        16 33.5      2   .2   1.4
       DIX   P   14 15 43.7        16 46.7
       EMO   P   14 15 48.5        16 54.0

FEB 18 DIX   P   20  9 41.0         9 44.0
       EMO   P   20  9 46           9 52.0
       ZUL   PD  20 10  2.2        10 21.7      3   .2   1.6
       BUB   PD  20 10  7.7        10 30.4      3   .2   1.6
     *SED : HO= 20: 9:36.7  LAT=46N13.1 LON=  7E36.6 Z=  2KM ML=2.0
            RMS= .50S  ERH= 6.7KM  ERZ=-0.0KM  D3=153KM  NO=10
            V.D'ANNIVIERS,KT.VALAIS(CH)

FEB 19 BUB   PD   3 43 44.2                    9  1.5   2.6
       ZUL   P    3 43 45
     *GS  : HO=  3:30:21.8  LAT=13.909N LON=122.116E Z= 17KM MB=5.7
            LUZON, PHILIPPINE ISLANDS

FEB 20 BUB   P   11 37 19.7        37 33.5      4   .3   1.8
       ZUL   PU  11 37 22.0        37 35.6      4   .2   1.7

FEB 20 BUB   PU  14 46 23.2        46 35.5      3   .2   1.6
       ZUL   PU  14 46 27.0        46 42.7      1   .2   1.1

FEB 20 ZUL   PU  15 23 25.0        23 27.8     15   .5   2.4
       BUB   PU  15 23 28.5        23 33.8      4  1.0   1.6

FEB 20 BUB   PD  16 22 27                      2  1.5   2.0
     *GS  : HO= 16:11:26.8  LAT=19.583N LON= 70.021W Z= 18KM MB=4.9
            DOMINICAN REPUBLIC REGION

FEB 21 BUB   PD  20 59 34.3        59 37.8     14   .2   2.2
       ZUL   PD  20 59 38.7        59 44.2      6   .2   1.9

FEB 21 BUB   PD  22 56 53.0        56 56.5      4   .2   1.7
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

FEB 21 ZUL   PD  22 56 57.3        57  3.7      1   .2   1.1

FEB 22 BUB   PD   1  8 56                      36  1.5   3.2
       ZUL   PD   1  8 57.8

FEB 22 BUB   PU   3 41 44.7                     6  1.5   2.4
       ZUL   PU   3 41 46.7
     *GS  : HO=  3:33:26.5  LAT=36.500N LON= 71.500E Z=116KM MB=5.4
            AFGHANISTAN-USSR BORDER REGION

FEB 22 BUB   PD  11  9  1.5         9 11.7      5   .2   1.8
       ZUL   PD  11  9  7.5         9 20.0      4   .2   1.7

FEB 22 BUB   PU  16 47 17.7        47 28.0      1   .2   1.1
       ZUL   PU  16 47 18.2        47 30.0      1   .2   1.1

FEB 23 BUB   PU   0 27 44.3        27 54.2      4   .2   1.7
       ZUL   PU   0 27 48.8        28  2.7      3   .2   1.6

FEB 23 BUB   PU   1 32  5                      1  1.5   1.7
     *GS  : HO=  1:28:45.5  LAT=38.062N LON= 21.774E Z= 44KM MB=4.4
            GREECE

FEB 23 BUB   PU   4 27  9                      4  1.5   2.3
     *GS  : HO=  4:14:56.7  LAT=42.220N LON=143.049E Z= 64KM MB=5.3
            HOKKAIDO, JAPAN REGION

FEB 23 BUB   PU  14 15 29.7        15 51.1      1   .3   1.2
       ZUL   P   14 15 33          16  1.0      1   .3   1.2

FEB 25 BUB   PD   4  3 28.5         3 37.2      3   .2   1.6
       ZUL   PD   4  3 34.9         3 47.2      3   .2   1.6

FEB 25 BUB   PU   5 58 44.9                    14  1.5   2.8
       ZUL   PU   5 58 46
     *GS  : HO=  5:46:25.1  LAT=44.041N LON=147.799E Z= 12KM MB=5.9
            KURIL ISLANDS

FEB 25 BUB   PD  20  5 46.7         7 16.0      4  1.0   1.6
     *GS  : HO= 20: 3:44.1  LAT=51.578N LON=  3.039W Z= 33KM MB=4.3
            UNITED KINGDOM

FEB 25 EMO  SP   21 23 58.5        24  6.8
       ZUL   PD  21 24  7.1        24 22.7      3   .2   1.6
       BUB   P   21 24 11          24 29.6      2   .2   1.4
     *SED : HO= 21:23:47.0  LAT=46N39.5 LON=  7E18.6 Z= 10KM ML=1.8
            RMS= .43S  ERH=27.1KM  ERZ=-0.0KM  D3=123KM  NO= 6
            REGION BOLTIGEN,KT.BERN/FRIBOURG(CH)

FEB 26 BUB   PU   6 35 29                      5  1.5   2.4
       ZUL   P    6 35 32
     *GS  : HO=  6:23:45.3  LAT=53.321N LON=159.697E Z= 49KM MB=5.6
            NEAR EAST COAST OF KAMCHATKA

FEB 26 LIN   P   15 21 29          21 31.0
       ZUL   PU  15 21 47.4        21 51.0      8   .5   2.2
       BUB   PU  15 21 51.2        21 56.6      4   .5   1.9
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

FEB 27 BAS   P    2  3 16.0          3 19.0
       ZUL   PU   2  3 24.7          3 32.6    55   .2   2.8
       BUB   PU   2  3 28.2          3 38.1    39   .2   2.7
       EMO  SP    2  3 37.6          3 55.0
       LIN   P    2  3 38            3 51.0
       DIX   P    2  3 39            3 57.0
      *SED : HO=  2: 3:13.5  LAT=47N28.7 LON=  7E32.8 Z= 17KM ML=2.6
             RMS= .45S  ERH= 3.0KM  ERZ= 1.8KM  D3= 57KM  NO=19
             REGION BASEL(CH)

FEB 27 BUB   PU  18 14 34                          6  1.5   2.4
       ZUL   P   18 14 38
      *GS  : HO= 18: 1:48.7  LAT= 1.271N LON= 97.669E Z= 33KM MB=5.9
             NORTHERN SUMATRA

FEB 27 BUB   PU  22 44  7.2        44 11.7     3   .2   1.6
       ZUL   P   22 44 13.5        44 22.2     2   .2   1.4

FEB 28 BUB   PD   1 22 24.6        22 35.7     2   .2   1.4
       ZUL   P    1 22 27.4        22 40.2     1   .2   1.1

FEB 28 ZUL   PD   4 45 50.6        45 60.0     4   .2   1.7
       BUB   PD   4 45 51.2        46  1.8     5   .2   1.8

FEB 28 ZUL   PU  11 35  8.8        35 18.7    25   .2   2.5
       BUB   PU  11 35  9.6        35 19.9    70   .2   2.9

FEB 28 BUB  PKP  14 20 20                          6  1.5   2.4
      *GS  : HO= 13:59:17.8  LAT=36.813S LON=176.851E Z= 15KM MB=5.8
             OFF E. COAST OF N. ISLAND, N.Z.

FEB 28 BUB  PKP  14 26 22                          4  1.5   2.3
      *GS  : HO= 14: 5:20.1  LAT=36.695S LON=177.113E Z= 28KM MB=5.7
             OFF E. COAST OF N. ISLAND, N.Z.

FEB 28 BUB   PU  20 28  8                          7  1.5   2.5
      *GS  : HO= 20:15:36.9  LAT= 9.229N LON= 84.153W Z= 59KM MB=5.2
             COSTA RICA

FEB 28 BUB   PU  20 32 40                         28  1.5   3.1
       ZUL   P   20 32 41
      *GS  : HO= 20:20:10.2  LAT= 9.336N LON= 84.064W Z= 46KM MB=5.8
             COSTA RICA

MAR 02 BUB   P    5  6 58.2

MAR 03 BUB   PD   5  3 25                          7  1.5   2.5

MAR 03 BUB   PU  13 12 51.5                        7  1.5   2.5

MAR 03 ZUL   PU  14 42 24
       BUB   PU  14 42 24.5                       11  1.5   2.7

MAR 04 ZUL   PD   2 18  8.6        18 43.4
       BUB   PD   2 18  9.3        18 44.4     5  1.5   2.4

MAR 04 BUB   P   12 57 40                          3  1.5   2.1
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

MAR 04 ZUL   P   12 57 42

MAR 06 BUB   PU   1 52 45                          6  1.5   2.4
      *GS  : HO=  1:40:26.4  LAT=12.289N LON= 86.386W Z=110KM MB=5.8
             NICARAGUA

MAR 06 BUB   PD   1 53 19                         23  1.5   3.0
       ZUL   P    1 53 19

MAR 07 BUB   PU   1 54 16.1        54 23.0     2   .2   1.4
       ZUL   PU   1 54 20.5        54 30.4     1   .2   1.1

MAR 07 BUB   P   11 42 57                          6  1.5   2.4
      *GS  : HO= 11:36: 2.4  LAT=37.599N LON= 55.828E Z= 21KM MB=5.1
             IRAN-USSR BORDER REGION

MAR 08 BUB   PD   2 37 56.5                        4  1.5   2.3
      *GS  : HO=  2:33:53.1  LAT=34.781N LON= 24.722E Z= 50KM MB=4.5
             CRETE

MAR 08 BUB   PD   9 37 44                          3  1.5   2.1
      *GS  : HO=  9:25: 6.1  LAT=30.916N LON=131.625E Z= 42KM MB=5.5
             KYUSHU, JAPAN

MAR 08 ZUL   P   12 59 36        59 49.0     2   .2   1.4
       BUB   PU  12 59 40.7      59 54.6     2   .2   1.4

MAR 09 BUB   P    4 16 14                          2  1.5   2.0
      *GS  : HO=  4:12: 7.7  LAT=34.631N LON= 25.054E Z= 54KM MB=4.6
             CRETE

MAR 09 DIX   P   16 12 15.4       12 17.6
       EMO   P   16 12 19.5       12 26.0
       ZUL   P   16 12 35.9       12 55.2     2   .2   1.4
       BUB   P   16 12 41.2       13  3.7     2   .2   1.4
      *SED : HO= 16:12:11.5  LAT=46N15.2 LON=  7E30.3 Z=  2KM ML=1.8
             RMS= .62S  ERH= 6.1KM  ERZ=-0.0KM  D3=152KM  NO= 7
             REGION SIERRE,KT.VALAIS(CH)

MAR 09 ZUL  PKP  18  0 29
       BUB  PKP  18  0 30.0                        6  1.5   2.4
      *GS  : HO= 17:41:20.1  LAT=18.995S LON=169.564E Z=286KM MB=5.4
             NEW HEBRIDES ISLANDS

MAR 09 BUB  PKP  20 33 36                          5  1.5   2.4
      *GS  : HO= 20:14:28.3  LAT= 7.484S LON=156.179E Z= 50KM MB=5.8
             SOLOMON ISLANDS

MAR 10 BUB   P   16 30 57                          1  1.5   1.7
      *GS  : HO= 16:17: 8.8  LAT=  .403N LON= 80.047W Z= 43KM MB=5.1
             NEAR COAST OF ECUADOR

MAR 11 BUB   PU  11 49 21                         14  1.5   2.8
      *GS  : HO= 11:37:33.5  LAT=48.323N LON=153.200E Z=169KM MB=5.9
             KURIL ISLANDS

MAR 12 BUB   PD   9 34 14.7       34 28.2     7   .2   1.9
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

MAR 12 ZUL   PD   9 34 19.5          34 37.1    3   .2   1.6

MAR 12 BUB   PD  18 25 32                       1  1.5   1.7
      *GS  : HO= 18:21:33.9  LAT=36.820N LON= 26.326E  Z= 39KM MB=4.7
             DODECANESE ISLANDS

MAR 13 ZUL   P   10  0 22                       3  1.5   2.1
       BUB   PD  10  0 23

MAR 13 ZUL   PU  13 14 57.2          14 60.0   12   .5   2.3
       BUB   PU  13 15  0.7          15  6.2    5   .5   2.0

MAR 13 ZUL   PD  14 56 38.0          56 50.4    2   .3   1.5
       BUB   PD  14 56 42.5          56 57.6    2   .8   1.7

MAR 13 ZUL   P   17 24 50                       7  1.5   2.5
       BUB   PU  17 24 51.5
      *GS  : HO= 17:20:45.5  LAT=34.651N LON= 24.831E  Z= 51KM MB=4.6
             CRETE

MAR 13 ZUL   P   23 20 23.7                     1  1.5   1.7
       BUB   PD  23 20 25.8

MAR 14 BUB  PKP  10 32 17.4                     4  1.5   2.3
      *GS  : HO= 10:12:27.6  LAT=20.199S LON=169.956E  Z=  1KM MB=5.2
             NEW HEBRIDES ISLANDS

MAR 14 ZUL   P   20 59 53.5
       BUB   PD  20 59 54.6                     1  1.5   1.7
      *GS  : HO= 20:57:34.4  LAT=41.853N LON= 19.383E  Z= 33KM MB=4.3
             ALBANIA

MAR 14 BUB  PKP  21 18 21.4                     1  1.5   1.7
      *GS  : HO= 20:58:54.8  LAT=13.862S LON=166.765E  Z= 18KM MB=5.6
             NEW HEBRIDES ISLANDS

MAR 14 BUB  PKP  21 55  4                       4  1.5   2.3
      *GS  : HO= 21:35:23.0  LAT=19.155S LON=167.671E  Z= 33KM MB=5.2
             NEW HEBRIDES ISLANDS REGION

MAR 14 BUB  PKP  23 13  1.7                     4  1.5   2.3
      *GS  : HO= 22:54: 9.0  LAT=19.162S LON=177.832W  Z=542KM MB=5.0
             FIJI ISLANDS REGION

MAR 16 BUB   PU  10 15 44.2          16  1.0    4   .3   1.8

MAR 17 BUB   PD   4  9 56.5                     9  1.5   2.6
       ZUL   P    4  9 57
      *GS  : HO=  3:57: 7.1  LAT= 1.294N LON= 98.555E  Z= 61KM MB=5.7
             NORTHERN SUMATRA

MAR 18 BUB  PKP  11 15 52                      14  1.5   2.8
       ZUL  PKP  11 15 54
      *GS  : HO= 10:56:12.4  LAT=14.929S LON=172.833W  Z= 27KM MB=5.9
             SAMOA ISLANDS

MAR 20 BUB   PD  18  2  3.0           2 13.0    2   .2   1.4
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

MAR 20 ZUL   P   18  2  6           2 20.0    2   .2   1.4

MAR 22 BUB   PD  17  4 58                       3  1.5   2.1
      *GS  : HO= 17: 2:20.8  LAT=40.681N LON= 20.489E  Z= 33KM MB=4.7
             GREECE-ALBANIA BORDER REGION

MAR 22 BUB   PD  19 15 57                       7  1.5   2.5
      *GS  : HO= 19:10:27.6  LAT=70.738N LON= 14.722W  Z= 22KM MB=5.0
             JAN MAYEN ISLAND REGION

MAR 23 BUB  PKP  14 47 27.8                    28  1.5   3.1
       ZUL  PKP  14 47 28
      *GS  : HO= 14:28:35.4  LAT=23.931S LON=179.779E  Z=535KM MB=6.1
             SOUTH OF FIJI ISLANDS

MAR 23 BUB   P   20 25 40.0                    45  1.5   3.3
       ZUL   P   20 25 42

MAR 24 ZUL   PD  14 26 19
       BUB   PD  14 26 20                       3  1.5   2.1
      *GS  : HO= 14:16: 3.1  LAT=27.727N LON= 86.110E  Z= 33KM MB=5.7
             NEPAL

MAR 25 BUB   PD  17 21 28.7          21 39.5    3   .2   1.6
       ZUL   PD  17 21 30.2          21 40.5    2   .2   1.4

MAR 27 BUB   PD  16 41  5.6                     5  1.5   2.4
       ZUL   P   16 41  7
      *GS  : HO= 16:28:47.3  LAT=50.109N LON=179.657W  Z= 37KM MB=5.6
             ANDREANOF ISLANDS, ALEUTIAN IS.

MAR 29 BUB   PD  22  2  7.8                     6  1.5   2.4
       ZUL   P   22  2  9
      *GS  : HO= 21:50:35.3  LAT=57.585N LON=153.922W  Z= 44KM MB=5.7
             KODIAK ISLAND REGION

APR 01 ZUL   PU  13 51 53.8          51 57.2   11   .5   2.3
       BUB   PU  13 51 57.5          52  3.0    4   .5   1.9

APR 02 LIN   P   16 26 32
       ZUL   PU  16 26 42.8          26 57.2    2   .3   1.5
       BUB   PU  16 26 43.5          26 58.9    2   .3   1.5

APR 03 BUB   PU   6 21 41.7          21 52.0    2   .2   1.4
       ZUL   PU   6 21 46.5          21 60.0    1   .2   1.1

APR 05 BUB   P   12 27  2.5          27  9.0    2   .3   1.5
       ZUL   P   12 27  9.5          27 20.2    2   .2   1.4
       DIX   P   12 27 22.0          27 32.0

APR 06 BUB   PD   2  5 39.5                     6  1.5   2.4
       ZUL   P    2  5 40
      *GS  : HO=  1:53:47.3  LAT=55.102N LON=160.440W  Z= 27KM MB=5.7
             ALASKA PENINSULA

APR 06 BUB   PD   4  7 51.5                    11  1.5   2.7
       ZUL   P    4  7 53.7
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T  LOG A/T  RK

APR 06*GS  : HO=  3:56: 1.8  LAT=55.120N LON=160.443W Z= 40KM MB=6.0
           ALASKA PENINSULA
APR 06 EMO  SP   19 31 21.0          31 26.0
       DIX  P    19 31 26.0          31 30.0
       LIN  P    19 31 42.0          31 59.5      7   .2   1.9
       ZUL  P    19 31 45.2          32  3.2      7   .2   1.9
       BUB  PU   19 31 49.0          32 13.2
      *SED : HO= 19:31:20.1  LAT=46N19.6 LON=  7E15.2 Z= 10KM ML=2.4
           RMS= .89S  ERH= 5.0KM  ERZ= 3.2KM  D3=118KM  NO=14
           REGION SION,KT.VALAIS(CH)

APR 07 ZUL  P    14 26 53                            6  1.5   2.4
       BUB  PD   14 26 54.7
      *GS  : HO= 14:22:47.1  LAT=34.750N LON= 24.699E Z= 29KM MB=4.7
           CRETE
                                                     9  1.5   2.6
APR 09 BUB  PD   13 23 19.9
      *GS  : HO= 13:11:21.6  LAT=45.490N LON=148.292E Z=139KM MB=5.5
           KURIL ISLANDS
                                          39  7.8    1   .2   1.1
APR 09 BUB  PU   16 38 57.7               39 13.9    2   .2   1.4
       ZUL  PU   16 39  1.5
                                          47 56.0    3   .2   1.6
APR 10 BUB  PU    7 47 41.7               48  3.8    2   .2   1.4
       ZUL  P     7 47 47.9
                                          42  1.0    2   .3   1.5
APR 10 BUB  PD   11 41 55.4               42 11.0    4   .2   1.7
       ZUL  PD   11 42  2.4
                                           2 56.0    1   .2   1.1
APR 10 ZUL  PD   15  2 43.6                2 58.1    2   .2   1.4
       BUB  PU   15  2 46.2
                                                     4  1.5   2.3
APR 10 BUB  PD   22 35 29.5
       ZUL  P    22 35 30
                                          29  5.2    7   .3   2.0
APR 11 BUB  P    14 28 53.5               29 10.0    2   .2   1.4
       ZUL  P    14 28 56.7
                                                    70   .2   2.9
APR 11 BUB  P    14 34  2.2
       ZUL  P    14 34  8
       LIN  P    14 34 20                34 33.0
                                          35 52.0    7   .3   2.0
APR 11 ZUL  PU   19 35 14.2               35 55.0    7   .3   2.0
       BUB  PU   19 35 16.4               36 30.0
       EMO  SP   19 35 53.5
      *GS  : HO= 19:34:34.4  LAT=44.932N LON=  8.246E Z= 33KM
           NORTHERN ITALY

APR 13 BUB  PU    7  7 26                            1  1.5   1.7

APR 13 BUB  PD    7  7 56.5                          4  1.5   2.3

APR 13 ZUL  P     7 15 34
       BUB  PU    7 15 35.4                          1  1.5   1.7

APR 13 ZUL  P     7 15 42
       BUB  PD    7 15 44.1                          5  1.5   2.4
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T  LOG A/T  RK

APR 14 BUB  PD   23 54 30.6               54 48.6    6   .2   1.9
       ZUL  PD   23 54 31.7               54 49.5    7   .2   1.9

APR 15 ZUL  P    21 50  2.3
       BUB  PD   21 50  4.8               50 44.0    5  1.5   2.4
      *GS  : HO= 21:49:13.6  LAT=44.532N LON=  9.850E Z= 33KM MB=4.5
           NORTHERN ITALY

APR 16 ZUL  P    16 57 32.0               57 48.0    1   .2   1.1
       BUB  PU   16 57 34.7               57 51.4    1   .2   1.1

APR 18 ZUL  P     2 26 10
       BUB  PD    2 26 13.2                          5  1.5   2.4

APR 18 BUB  PU   11  6 29.5                6 45.2    3   .2   1.6
       ZUL  P    11  6 35.7                6 53.9    2   .2   1.4

APR 18 BUB  PD   14 54 23.1               54 32.4    3   .2   1.6
       ZUL  PD   14 54 23.8               54 33.2    2   .2   1.4

APR 19 BUB  PD   13  6  8.2                6 18.0    5   .2   1.8
       ZUL  PU   13  6 10.7                6 22.0    4   .2   1.7

APR 19 BUB  PU   15  0 52.5               16  2.5   70   .2   2.9

APR 21 BUB  PKP   1 13 16                            2  1.5   2.0
      *GS  : HO=  0:53:30.0  LAT=22.819S LON=171.691E Z= 33KM MB=5.3
           LOYALTY ISLANDS REGION

APR 22 BUB  PU    3 24 34                            2  1.5   2.0
      *GS  : HO=  3:20:13.5  LAT=34.876N LON= 27.679E Z= 65KM MB=4.4
           EASTERN MEDITERRANEAN SEA

APR 22 LIN  SP    4 50 37               50 41.8
       ZUL  PU    4 50 51.7             51  5.5    1   .2   1.1
       BUB  PU    4 50 53.1             51  7.5    2   .2   1.4
      *SED : HO=  4:50:33.4  LAT=46N50.7 LON=  9E28.6 Z= 13KM ML=1.4
           RMS= .17S  ERH=10.0KM  ERZ= 6.8KM  D3=120KM  NO= 7
           REGION CHUR,KT.GRAUBUENDEN(CH)

APR 22 BUB  PU   11 30 23.1               30 32.7    2   .2   1.4
       ZUL  PU   11 30 23.7               30 33.4    1   .2   1.1

APR 24 BUB  PD    7  0 12                            1  1.5   1.7

APR 24 BUB  PU   10 28 35                            5  1.5   2.4

APR 25 BUB  PD    8  3  7.0                3 21.3    3   .2   1.6
       ZUL  P     8  3 12                  3 30.0

APR 25 BUB  PD    8 53 17.0               53 25.9    4   .2   1.7
       ZUL  PD    8 53 23.2               53 35.5    4   .2   1.7

APR 25 BUB  PD   16 39 18.5               39 21.8    3   .6   1.8

APR 26 BAS  P     7 21 16.0               21 24.0
       ZUL  PU    7 21 18.2               21 24.2   50   .2   2.8
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

APR 26 BUB  PU   7 21 22.0          21 31.9    70   .2   2.9
       LIN  P    7 21 22.1          21 32.9
       EMO  P    7 21 29.5
       DIX  P    7 21 30            21 44.0
      *SED : HO=  7:21: 7.2  LAT=47N 6.9 LON=  7E51.9 Z= 27KM ML=2.7
              RMS= .42S  ERH= 6.3KM  ERZ= 6.2KM  D3= 90KM  NO=12
              REGION HUTTWIL,KT.BERN(CH)

APR 26 BAS  P    7 25 16.5          25 24.0
       ZUL  PU   7 25 18.3          25 25.5    50   .2   2.8
       BUB  PU   7 25 22.2          25 32.6    70   .2   2.9
       LIN  P    7 25 22.6          25 33.0
       EMO  P    7 25 29.3          25 45.0
       DIX  P    7 25 30.0          25 43.0
      *SED : HO=  7:25: 7.9  LAT=47N 7.6 LON=  7E51.4 Z= 33KM ML=2.7
              RMS= .58S  ERH= 6.2KM  ERZ=12.2KM  D3= 56KM  NO=15
              REGION HUTTWIL,KT.BERN(CH)

APR 27 BUB  PU   7 44 47                          3  1.5   2.1
      *GS  : HO=  7:24:54.0  LAT=26.246S LON=175.912W Z= 45KM MB=6.1
              SOUTH OF TONGA ISLANDS

APR 29 BUB  PD  12 33 29.4         33 40.2     5   .2   1.8
       ZUL  PD  12 33 34.2         33 47.6     4   .2   1.7

APR 29 BUB  PU  20  9 59                          4  1.5   2.3
      *GS  : HO= 20: 4:39.7  LAT=30.529N LON= 31.721E Z= 33KM MB=4.9
              UNITED ARAB REPUBLIC

APR 30 BUB  PKP 20 15 19                          1  1.5   1.7
      *GS  : HO= 19:55:52.1  LAT=19.657S LON=169.212E Z=158KM MB=5.0
              NEW HEBRIDES ISLANDS

MAY 02 BLA  P   18  2 40.7          2 48.0
       BUB  PD  18  2 52.7          3  9.2     2   .2   1.4

MAY 04 BUB  PU   0 20 31           21 19.0     5   .6   2.0

MAY 04 BUB  PKP 13  5 56.2                       71  1.5   3.5
      *GS  : HO= 12:47:28.3  LAT=13.881S LON=172.611E Z=602KM MB=5.5
              NEW HEBRIDES ISLANDS REGION

MAY 05 BUB  PU   6 10 25.0                        1  1.5   1.7
      *GS  : HO=  5:57:35.0  LAT=22.301N LON=121.490E Z= 26KM MB=5.5
              TAIWAN REGION

MAY 05 BUB  PKP  8 37 24.9                        6  1.5   2.4
      *GS  : HO=  8:17:50.3  LAT=17.452S LON=167.907E Z= 33KM MB=5.1
              NEW HEBRIDES ISLANDS

MAY 05 BUB  PKP 11 46 57.0                        6  1.5   2.4
      *GS  : HO= 11:28:28.6  LAT=13.998S LON=172.705E Z=597KM MB=4.8
              NEW HEBRIDES ISLANDS REGION

MAY 05 BUB  PU  14 31 44                          6  1.5   2.4
      *GS  : HO= 14:19:12.0  LAT=37.740N LON=141.707E Z= 48KM MB=5.6
              NEAR EAST COAST OF HONSHU, JAPAN
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

MAY 05 DIX  P   15 49 28.3         49 33.3
       EMO  P   15 49 30.9         49 36.3
       BLA  P   15 49 46.0         50  1.2
       BUB  PD  15 49 55.2         50 17.2     2   .3   1.5
      *SED : HO= 15:49:23.7  LAT=46N17.6 LON=  7E21.6 Z=  7KM ML=2.0
              RMS= .19S  ERH= 4.5KM  ERZ= 7.0KM  D3=131KM  NO= 7
              REGION SION,KT.VALAIS(CH)

MAY 06 DIX  P    7 51  9.8
       BUB  PD   7 51 17.7         52 17.0     7   .2   1.9
      *GS  : HO=  7:50:22.1  LAT=46.336N LON= 13.403E Z= 54KM
              AUSTRIA

MAY 06 BUB  PKP 11 58  5                          4  1.5   2.3
      *GS  : HO= 11:38:19.7  LAT=15.201S LON=173.417W Z= 13KM MB=5.7
              TONGA ISLANDS

MAY 06 BUB  PU  17 46  3.6         46  9.5     2   .3   1.5

MAY 07 BUB  PKP  2 44 54                          7  1.5   2.5
      *GS  : HO=  2:25:10.8  LAT=16.693S LON=177.342W Z= 33KM MB=5.5
              FIJI ISLANDS REGION

MAY 07 BUB  PD  15  8 17.2          8 22.7     2   .5   1.6

MAY 07 BUB  PU  15 55 36.6         55 45.0     3   .2   1.6

MAY 08 BUB  PU  23 46 10                          6  1.5   2.4
       ZUL  P   23 46 11
      *GS  : HO= 23:33:25.2  LAT=34.522N LON=138.740E Z=  2KM MB=6.0
              NEAR S. COAST OF HONSHU, JAPAN

MAY 09 BUB  PKP 16 27 29                          5  1.5   2.4
       ZUL  PKP 16 27 30
      *GS  : HO= 16: 7:43.0  LAT=21.756S LON=169.747E Z= 35KM MB=5.5
              LOYALTY ISLANDS REGION

MAY 10 BUB  PKP  2 24  8                          5  1.5   2.4
       ZUL  PKP  2 24  9
      *GS  : HO=  2: 3:46.1  LAT=30.722S LON=179.552W Z=227KM MB=5.3
              KERMADEC ISLANDS REGION

MAY 10 BUB  PU  15 43 26.7         43 30.4     4   .2   1.7
       ZUL  PU  15 43 29.4         43 34.9     2   .2   1.4
       BLA  P   15 43 34.7         43 44.5

MAY 10 BUB  PD  17 37  3.2         37 23.0     2   .3   1.5

MAY 10 BUB  PD  19 36 47                         14  1.5   2.8
       ZUL  P   19 36 48
      *GS  : HO= 19:25:15.0  LAT=28.243N LON=104.015E Z= 11KM MB=6.2
              SZECHWAN PROVINCE, CHINA

MAY 12 BUB  PU   0 24 52                          4  1.5   2.3
       ZUL  P    0 24 52
      *GS  : HO=  0:20:56.9  LAT=36.663N LON= 27.033E Z=156KM MB=4.5
              DODECANESE ISLANDS
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK

                                      48 34.2    70   .1   2.8
MAY 12 BUB   PU  19 48 25.8
       ZUL   PU  19 48 31.6           48 44.2    55   .1   2.7
       BLA   P   19 48 36.5           48 54.3
       LIN   P   19 48 38.4           48 55.8
       DIX   P   19 48 55.6           49 34.5
       EMO   P   19 48 56.4           49 34.0
      *GS  : HO= 19:48:13.3  LAT=48.269N LON=  9.102E Z= 12KM
             GERMANY
             IO= V-VI    (MSK)      R= 140 KM
             INTENS.(MSK): 577 MESSAGES FROM 128 LOCALITIES.
                           (SEE INTENSITY - MAP)

                                                 4  1.5   2.3
MAY 13 BUB   PU  17 48 35
      *GS  : HO= 17:40:28.4  LAT=36.469N LON= 70.912E Z=208KM MB=5.5
             HINDU KUSH REGION

                                                 6  1.5   2.4
MAY 15 BUB  PKP  11 48 54
      *GS  : HO= 11:29:23.2  LAT=17.295S LON=167.835E Z= 18KM MB=4.5
             NEW HEBRIDES ISLANDS

                                                18  1.5   2.9
MAY 15 BUB   PU  19 11 52
      *GS  : HO= 18:59:55.9  LAT=50.050N LON=156.113E Z= 56KM MB=6.1
             KURIL ISLANDS

                                                 1  1.5   1.7     A
MAY 16 BUB   PU   3 11 12
      *GS  : HO=  3: 2:57.3  LAT=49.743N LON= 78.150E Z=  0KM MB=5.3
             EASTERN KAZAKH SSR

MAY 16 BUB   PD  16  1  9.3          1 23.9     2   .2   1.4
       ZUL   PD  16  1 11.4          1 26.2     1   .2   1.1

                                                 7  1.5   2.5
MAY 16 BUB   PD  20 12 26
       ZUL   P   20 12 27
      *GS  : HO= 20: 0: 1.5  LAT=27.158N LON=140.067E Z=471KM MB=5.3
             BONIN ISLANDS REGION

MAY 17 BUB   PD  14 32 38                        6  1.5   2.4
       ZUL   P   14 32 39
      *GS  : HO= 14:27:32.0  LAT=64.667N LON= 21.227W Z= 33KM MB=5.0
             ICELAND

MAY 17 ZUL   P   15 35 13
       BUB   PU  15 35 14                        9  1.5   2.6
      *GS  : HO= 15:22: 7.4  LAT=11.173S LON= 75.077W Z=111KM MB=6.0
             PERU

MAY 17 BUB   PD  17 24 40                       11  1.5   2.7
       ZUL   P   17 24 41
      *GS  : HO= 17:11:50.8  LAT=25.141N LON=125.555E Z= 18KM MB=5.8
             SOUTHWESTERN RYUKYU ISLANDS

MAY 18 LIN  SP    2 48 51.5         48 57.2
       ZUL   PU   2 49  5.5         49 16.5     2   .2   1.4
       BUB   PU   2 49  8.9         49 22.2     3   .2   1.6
      *SED : HO=  2:48:49.6  LAT=46N44.5 LON=  8E30.2 Z= 10KM ML=1.5
             RMS= .27S  ERH= 8.9KM  ERZ=-0.0KM  D3=110KM  NO= 6
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK

             REGION WASSEN,KT.URI(CH)
MAY 18 BLA   P   10 17  5.2          17 13.9
       ZUL   PD  10 17 15            17 30.5     1   .2   1.1
       BUB   PD  10 17 16.8          17 33.2     2   .2   1.4

MAY 19 BLA   P    5 40 40.0          40 57.7
       BUB   PU   5 40 47.2          40 56.5    15   .2   2.3
       ZUL   PU   5 40 52.8          41  5.7    14   .2   2.2
       LIN   P    5 41  1.4          41 21.9

MAY 19 LIN   P   13 20 44.0
       ZUL   PU  13 20 53.9                      7   .2   1.9
       BUB   PU  13 20 55.8                     10   .2   2.1
      *GS  : HO= 13:20:17.3  LAT=45.630N LON= 10.275E Z= 33KM
             NORTHERN ITALY

MAY 19 ZUL   P   22  5 14
       BUB   PD  22  5 14.4                      9  1.5   2.6
      *GS  : HO= 22: 1: 9.4  LAT=35.486N LON= 26.333E Z= 83KM MB=4.9
             CRETE

MAY 20 BUB   P    4 20  0          20 29.0    11   .2   2.1
       ZUL   PU   4 20  3.3        20 35.0     5   .2   1.8
       LIN   P    4 20 13.2
      *GS  : HO=  4:19:25.2  LAT=49.832N LON=  7.700E Z= 25KM
             GERMANY

MAY 21 ZUL   PU   7 42 46.2        42 52.7   150   .4   3.4
       BUB   PD   7 42 48.7        42 56.9   150   .4   3.4
       LIN  SP    7 42 55.5        43 11.6
      *SED : HO=  7:42:37.0  LAT=47N35.4 LON=  7E44.8 Z= 24KM ML=3.2
             RMS= .25S  ERH= 7.7KM  ERZ= 4.4KM  D3= 50KM  NO= 9
             DINKELBERG(BRD)
             IO= V       (MSK)      R= 70 KM
             INTENS.(MSK): 215 MESSAGES FROM 127 LOCALITIES.
                           ( SEE INTENSITY-MAP )

MAY 21 ZUL   PU   7 59 14.2        59 28.7    25   .4   2.6
       BUB   PD   7 59 16.7        59 24.9    25   .4   2.6
       LIN  SP    7 59 24.4        59 39.0
      *SED : HO=  7:59: 5.9  LAT=47N35.8 LON=  7E49.2 Z= 19KM ML=2.4
             RMS= .09S  ERH= 4.1KM  ERZ= 2.2KM  D3= 45KM  NO= 7
             DINKELBERG(BRD)

MAY 21 BUB   PD   9 31 57.3        32  5.6     1   .2   1.1

MAY 21 BLA   P   10 18 42.2        18 49.2
       BUB   PU  10 18 42.8        18 52.7     4   .2   1.7
       ZUL   PU  10 18 43.5        18 53.9     2   .2   1.4

MAY 21 BLA   P   21 50 50.7        50 57.0
       ZUL   PU  21 50 55.4        51  6.0     5   .2   1.6
       BUB   PU  21 50 55.5        51  6.0    13   .2   2.2

MAY 22 BLA   P   18  0 53.7         1  1.8
       ZUL   PU  18  1  3.7         1 18.1     4   .2   1.7
       BUB   PU  18  1  5.1         1 19.7     6   .2   1.9
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

      *SED : HO= 18: 0:44.0  LAT=47N49.0 LON=  6E56.1 Z=  8KM ML=2.0
             RMS= .26S  ERH= 7.7KM  ERZ= 5.2KM  D3=116KM  NO= 8
             ALSACE(F)

MAY 22 BLA   P   21 40 19.7        40 23.2
       ZUL   PU  21 40 24.2        40 29.9      1   .2   1.1
       BUB   PU  21 40 26.3        40 33.7      1   .2   1.1
      *SED : HO= 21:40:15.2  LAT=47N30.3 LON=  7E50.0 Z=  9KM ML= .7
             RMS= .19S  ERH= 8.3KM  ERZ= 9.7KM  D3= 42KM  NO= 7
             REGION GELTERKINDEN,KT.BASELLAND(CH)

MAY 23 BUB   PU  19 53 17.7                    11  1.5   2.7
       ZUL   P   19 53 17.7
      *GS  : HO= 19:51:30.0  LAT=43.377N LON= 17.067E Z= 33KM MB=4.7
             YUGOSLAVIA

MAY 25 EMO   P   10 51 38.9        51 39.6
       DIX   P   10 51 43.4        51 48.2
       BLA   PU  10 52  6.2        52 25.7
      *SED : HO= 10:51:41.3  LAT=46N 4.1 LON=  6E56.0 Z= 10KM
             RMS= .59S  ERH=14.5KM  ERZ= 3.4KM  D3= 37KM  NO= 5
             HTE.SAVOIE(F)

MAY 25 BUB   PD  11 37  6.1        37 18.2      1   .2   1.1
       ZUL   P   11 37 11.5        37 27.5      1   .2   1.1

MAY 26 BUB  PKP   1 51 51.5                    57  1.5   3.4
      *GS  : HO=  1:32:11.2  LAT=17.699S LON=167.752E Z= 13KM MB=5.8
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   2 34 47.5                     9  1.5   2.6
      *GS  : HO=  2:15:26.4  LAT=17.768S LON=167.476E Z= 31KM MB=5.2
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   5 57 22.2                     6  1.5   2.4
      *GS  : HO=  5:37:43.4  LAT=17.631S LON=167.645E Z= 17KM MB=4.9
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   6  6 30.0                     3  1.5   2.1
      *GS  : HO=  5:47:36.9  LAT=20.755S LON=178.499W Z=565KM MB=5.7
             FIJI ISLANDS REGION

MAY 26 BUB   PU   6  8  6.2                    11  1.5   2.7

MAY 26 BUB  PKP   6 12 17.5                     6  1.5   2.4
      *GS  : HO=  5:52:40.2  LAT=17.321S LON=167.124E Z= 53KM MB=5.5
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   7 35 22.2                     7  1.5   2.5
      *GS  : HO=  7:15:44.4  LAT=17.673S LON=167.847E Z= 27KM MB=4.7
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   8 34 29.7                     5  1.5   2.4
      *GS  : HO=  8:14:50.0  LAT=17.724S LON=167.677E Z=  8KM MB=5.1
             NEW HEBRIDES ISLANDS

MAY 26 BUB  PKP   8 56  8.3                     6  1.5   2.4
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

MAY 26*GS  : HO=  8:36:28.4  LAT=17.663S LON=167.647E Z=  8KM MB=4.9
             NEW HEBRIDES ISLANDS
MAY 26 BUB   PD  11 22 19.7                     6  1.5   2.4

MAY 26 BUB  PKP  11 43 52.8                    11  1.5   2.7
      *GS  : HO= 11:24:14.0  LAT=17.722S LON=167.741E Z= 19KM MB=4.6
             NEW HEBRIDES ISLANDS

MAY 26 BUB   PU  13 10 16.5                     3  1.5   2.1
      *GS  : HO= 13: 6:53.3  LAT=37.518N LON= 21.128E Z= 57KM MB=4.2
             SOUTHERN GREECE

MAY 26 DIX   P   14 11 39.7        11 41.2
       EMO   P   14 11 42.8        11 46.1
       LIN   P   14 12  1.4        12 12.7
       BAS   P   14 12 03.7
       BLA   P   14 12  4.2        12 22.7
       ZUL   P   14 12  6.5        12 28.7      2   .2   1.4
       BUB   PD  14 12 12.4        12 37.4      9   .2   2.0
      *SED : HO= 14:11:37.7  LAT=46N 1.4 LON=  7E19.2 Z=  2KM ML=2.3
             RMS= .58S  ERH= 4.6KM  ERZ=-0.0KM  D3= 66KM  NO=14
             V.DE BAGNES,KT.VALAIS(CH)

MAY 26 LIN   P   15 13 27.2        13 38.5                          Q
       ZUL   P   15 13 41.7        14  3.0      3   .2   1.6
       BUB   PD  15 13 43.6        14  4.8      5   .2   1.8
       BLA   P   15 13 51.1        14 14.7
      *SED : HO= 15:13:15.2  LAT=46N12.3 LON=  9E40.4 Z= 10KM ML=2.1
             RMS= .20S  ERH=15.4KM  ERZ=-0.0KM  D3=190KM  NO= 8
             VALTELLINA(I)

MAY 27 BUB   PU   4 53 19                      3  1.5   2.1
      *GS  : HO=  4:41:23.6  LAT=50.833N LON=157.349E Z= 47KM MB=5.6
             KURIL ISLANDS

MAY 27 BUB   PD  14 12 58.0                    4  1.5   2.3
      *GS  : HO= 14: 1:43.5  LAT=60.328N LON=146.016W Z= 21KM MB=5.5
             SOUTHERN ALASKA

MAY 28 BUB   PU  14  2 41.2         2 47.3      2   .4   1.5
       ZUL   PU  14  2 46.5         2 56.1      1   .2   1.1
       BLA   P   14  2 50           3  7.2

MAY 29 LIN   P   13 27  8.1        27 11.1                          Q
       ZUL   PU  13 27 18.7        27 32.5      4   .2   1.7
       BUB   PU  13 27 19.9        27 34.8      2   .3   1.5

MAY 30 BUB   P   13 37  1.6        37 10.2      3   .3   1.6
       ZUL   P   13 37  5.8        37 17.7      3   .2   1.6
       BLA   P   13 37 11.7        37 28.0

MAY 31 BUB   PU   3 35 13.7                    14  1.5   2.8      A
      *GS  : HO=  3:26:57.4  LAT=49.952N LON= 78.844E Z=  0KM MB=5.9
             EASTERN KAZAKH SSR

MAY 31 BUB   PU   8 31 33.8        31 43.7      2   .2   1.4
             P    8 31 36.0        31 47.3
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MO  DY STA  PRK   H  M  S        SRK   M   S      AMP   T   LOG A/T  RK

MAY 31 BUB  PU   16 34 25.0            34 30.2     3   .2   1.6
       ZUL  PU   16 34 30.7            34 39.7     2   .2   1.4
       BLA  P    16 34 34.5            34 50.6

JUN 01 BUB  PD    0 17 15.1            17 20.5     3   .2   1.6
       ZUL  PU    0 17 18.2            17 25.2     4   .2   1.7
       BLA  P     0 17 20.7            17 30.2

JUN 04 BUB  PKP    4 33 26.5                       36  1.5   3.2
     *GS  : HO=   4:14:15.9  LAT=15.847S LON=175.101W  Z=276KM MB=6.0
            TONGA ISLANDS

JUN 05 LIN  PI     0 44 20            44 41.0
       BUB  PU     0 44 25.4          44 47.4     3   .2   1.6
       ZUL  PU     0 44 28.2          44 50.6     3   .2   1.6

JUN 05 BUB  PU    10  4 59.9           5 10.7     2   .3   1.5
       ZUL  P     10  5  0             5 11.7     3   .3   1.6

JUN 06 BLA  PU     8  3 20.7           3 26.3    11   .2   2.1
       ZUL  PU     8  3 23.7           3 31.2    13   .2   2.2
       BUB  PU     8  3 24.2           3 32.2    15   .2   2.3

JUN 06 BUB  PD    14 55 23.5          55 35.7     5   .3   1.9
       ZUL  PD    14 55 26.4          55 41.5     5   .2   1.8
       BLA  P     14 55 27.5          55 43.0

JUN 06 BUB  PU    14 57 13.1          57 28.0     6   .2   1.9
       ZUL  PU    14 57 13.5          57 28.6     4   .3   1.8
       BLA  P     14 57 22.4          57 43.7

JUN 06 DIX  P     17 38 37.5          38 40.5
       BLA  P     17 38 58.5          39 15.2
       ZUL  PU    17 38 59.7          39 18.7     2   .2   1.4
       BUB  P     17 39  4.7          39 20.6     1   .2   1.1

JUN 07 EMO  SPD    1 55 35            55 40.5
       DIX  P      1 55 42            55 51.0
       BLA  P      1 55 55.4          56 14.1
       ZUL  PU     1 55 58.2          56 25.0
       LIN  P      1 56  2            56 28.0
       BUB  PU     1 56  7.4          56 35.0
     *SED : HO=   1:55:29.2  LAT=46N 9.7 LON=  6E28.0 Z= 10KM ML=3.0
            RMS= .92S  ERH=16.5KM  ERZ=14.8KM  D3=165KM  NO=11
            HTE.SAVOIE(F)

JUN 07 BUB  PU     6  1 33.1           1 44.7    25   .2   2.5
       ZUL  PU     6  1 38.7           1 53.0     7   .2   1.9
       BLA  P      6  1 47.1           2  5.0

JUN 07 LIN  P     13 39 38            40  6.0
       ZUL  PD    13 39 47            40 19.0
       BUB  PU    13 39 49.2          40 23.0    14   .8   2.5

JUN 07 BUB  PU    16  0  7.0           0 21.9     3   .2   1.6
       ZUL  PU    16  0  9.1           0 24.9     1   .2   1.1
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MO  DY STA  PRK   H  M  S        SRK   M   S      AMP   T   LOG A/T  RK

JUN 07 BLA  PU    16 13 37.3            13 45.0
       ZUL  PD    16 13 47.7            14  3.0     3   .2   1.6
       BUB  PU    16 13 49.2            14  5.8     2   .2   1.4

JUN 08 BUB  PD    11 58 40.4            58 49.2     4   .2   1.7
       ZUL  P     11 58 46.2            58 60.0     2   .2   1.4

JUN 08 BUB  PU    12 10 50.8            11  1.0    28   .2   2.5
       ZUL  PU    12 10 56.0            11  9.0    20   .2   2.4
       BLA  P     12 11  2.3            11 22.7
       LIN  P     12 11  4              11 20.0

JUN 08 BUB  PU    13 32 14.2            32 24.3    24   .2   2.5
       ZUL  PU    13 32 19.2            32 32.0    18   .2   2.3
       BLA  P     13 32 26.2            32 46.2
       LIN  P     13 32 28              32 44.0

JUN 09 EMO  P      0 18 15.1            18 20.0
       DIX  P      0 18 20.5            18 30.0
       BLA  P      0 18 37.5            18 60.0
       ZUL  PU     0 18 41.5            19  9.1    10   .2   2.1
       LIN  P      0 18 45              19  7.0
       BUB  PU     0 18 45.8            19 14.5    12   .2   2.2
     *SED : HO=   0:18: 7.9  LAT=45N48.7 LON=  6E33.1 Z= 10KM ML=2.9
            RMS= .37S  ERH=10.3KM  ERZ= 7.9KM  D3=198KM  NO=12
            HTE.SAVOIE(F)

JUN 09 BUB  PD     5 38 27.4            38 36.2     4   .2   1.7
       ZUL  PD     5 38 33.2            38 46.7     3   .2   1.6
       BLA  P      5 38 42.4            39  .5

JUN 09 LIN  SP    18 55  0              56 16.0
       ZUL  P     18 55 49.2            56 15.0     4   .2   1.7
       BUB  PD    18 55 51.8            56 19.0     2   .2   1.4
       BLA  P     18 55 55.5            56 23.7

JUN 10 BUB  PU     9 32 30.7            32 46.0     3   .2   1.6
       ZUL  PD     9 32 35.7            32 54.0     3   .2   1.6

JUN 10 BUB  PU    11 54 41                          6  1.5   2.4

JUN 10 ZUL  PD    15 35  2              35 14.7     2   .2   1.4
       BUB  PD    15 35  2.7            35 15.2     1   .2   1.1

JUN 10 BUB  PD    23 28  5.1            28 29.8     3   .2   1.6
       ZUL  PD    23 28  6.6            28 29.9     3   .2   1.6
       BLA  PU    23 28 16.7            28 44.2

JUN 12 BUB  PU    16 28  4.5            28 10.7     3   .3   1.6
       ZUL  PU    16 28 11.2            28 21.8     1   .2   1.1

JUN 12 BUB  PU    16 36 57                         23  1.5   3.0
     *GS  : HO= 16:25:47.6  LAT=10.563N LON= 63.382W Z= 34KM MB=5.7
            NEAR COAST OF VENEZUELA

JUN 12 BUB  PD    18  0 17                          9  1.5   2.6
     *GS  : HO= 17:55: 8.7  LAT=64.771N LON= 21.045W Z= 13KM MB=5.5
            ICELAND
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP   T   LOG A/T  RK

                                         14 30.3    4   .2   1.7
JUN 12 BUB   PD   18 14 21.9             14 40.8    5   .2   1.8
       ZUL   PD   18 14 28.4             14 51.9
       BLA   P    18 14 36.5

                                         15 53.0
JUN 13 DIX   P     0 15 48.5             15 56.5
       EMO   P     0 15 50.0             16 19.2
       BLA   P     0 16 04.3             16 25.7    1   .2   1.1
       ZUL   P     0 16  6.2             16 33.9    1   .2   1.1
       BUB   PD    0 16 12.0
      *SED : HO=   0:15:43.3  LAT=46N19.4 LON=  7E29.8 Z= 10KM ML=1.5
             RMS= .57S  ERH=17.1KM  ERZ=-0.0KM  D3=127KM  NO= 7
             REGION SIERRE,KT.VALAIS(CH)
                                                                    Q
                                         44 41.0
JUN 14 LIN   P    10 44 36               45  1.0    4   .2   1.7
       BUB   PU   10 44 47.2             45  1.2    5   .2   1.8
       ZUL   PU   10 44 47.4

                                         58 28.7    2   .2   1.4
JUN 14 BUB   PU   10 58 14.6             58 35.0    1   .2   1.1
       ZUL   PU   10 58 18.4

                                          3 24.0    1   .2   1.1
JUN 14 ZUL   P    15  3 16.2              3 30.0    2   .3   1.5
       BUB   PU   15  3 19.8

                                         31  5.0
JUN 14 BLA   P    18 30 38               31 21.0    1   .2   1.1
       ZUL   PU   18 30 44.7             31 26.5    3   .3   1.6
       BUB   PU   18 30 51.7

                                                    2  1.5   2.0
JUN 15 BUB   PU    2 49 50
      *GS  : HO=   2:37:13.8  LAT=52.262N LON=178.791E Z=157KM MB=5.7
             RAT ISLANDS, ALEUTIAN ISLANDS

                                                    6  1.5   2.4
JUN 15 BUB   PD    7 14 27
      *GS  : HO=   7: 3:  .2  LAT=28.273N LON=103.954E Z= 39KM MB=5.5
             SZECHWAN PROVINCE, CHINA

JUN 15 EMO   P    17 41 38.0             41 40.0
       DIX   P    17 41 46.5             41 52.0
       BLA   P    17 42  8.6             42 31.7
       LIN   P    17 42  9               42 33.0
       ZUL   P    17 42  9.8             42 38.8    4   .2   1.7
       BUB   PD   17 42 16.0             42 48.0    6   .3   1.9
      *SED : HO= 17:41:37.6  LAT=45N51.4 LON=  6E53.3 Z= 10KM ML=2.7
             RMS=1.10S  ERH=10.9KM  ERZ=-0.0KM  D3=  0KM  NO=-0
             HTE. SAVOIE(F)
                                                                    Q
JUN 16 BLA   P    10 59 35.2             59 45.6
       ZUL   PU   10 59 37.9             59 54.6    3   .2   1.6
       LIN   P    10 59 38               59 55.0
       BUB   PU   10 59 41.4             60  2.7    3   .2   1.6

JUN 16 BUB   P    23  3 11               3 22.7    2   .2   1.4
       ZUL   P    23  3 13.7             3 30.6    2   .2   1.4
       BLA   P    23  3 23               3 37.0

JUN 17 ZUL   P     2 30 37
       BUB   P     2 30 38                                1  1.5   1.7
      *GS  : HO=   2:18:29.5  LAT=48.229N LON=154.351E Z= 33KM MB=5.1
             KURIL ISLANDS
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP   T   LOG A/T  RK

JUN 17 LIN   P    21 26 29             26 44.0
       BUB   PD   21 26 35.9           26 56.1    6   .2   1.9
       ZUL   PD   21 26 36.9           26 57.7   12   .2   2.2
       BLA   P    21 26 50.2           27 14.3

JUN 18 BUB   PU    8 29 16                        3  1.5   2.1
      *GS  : HO=   8:26:12.9  LAT=38.543N LON= 20.416E Z= 33KM MB=4.8
             GREECE

JUN 18 BUB   PD   14 35 51.1           36  1.0    1   .2   1.1
       ZUL   PD   14 35 55.7           36  9.7    2   .2   1.4
       BLA   P    14 36  1.7           36 20.0

JUN 18 BUB   PU   19 14 36.6           14 44.2    1   .2   1.1
       ZUL   PU   19 14 42.2           14 54.1    2   .2   1.4

JUN 19 BUB   P    14 59 15.2           59 22.7    4   .2   1.7
       ZUL   PD   14 59 23.5           59 34.7    2   .2   1.4
       BLA   P    14 59 36.7           59 51.7

JUN 19 ZUL   PD   16  0 39.6            0 50.5    2   .2   1.4
       BUB   PD   16  0 40.2            0 51.0    1   .2   1.1

JUN 20 BUB   PU    9 30 19.2            28  1.5   3.1
      *GS  : HO=   9:28:33.4  LAT=44.352N LON= 17.714E Z= 33KM MB=5.1
             YUGOSLAVIA

JUN 20 BUB   P    17  9 44.0             4   .2   1.7
       ZUL   P    17  9 44.7
      *GS  : HO= 17: 8:27.3  LAT=45.965N LON= 15.529E Z= 47KM MB=4.5
             YUGOSLAVIA

JUN 20 BUB   PU   22 27 46.7            18  1.5   2.9
       ZUL   PU   22 27 48
      *GS  : HO= 22:26:31.8  LAT=46.085N LON= 15.479E Z= 33KM MB=4.4
             YUGOSLAVIA

JUN 22 ZUL   PD    7 43 30.1           43 41.3    1   .2   1.1
       BUB   PD    7 43 32.1           43 43.9    1   .2   1.1

JUN 22 BUB  PKP    8 31 51                        5  1.5   2.4
      *GS  : HO=   8:12:47.5  LAT=22.065S LON=113.589W Z= 33KM MB=5.9
             EASTER ISLAND REGION

JUN 22 BUB   PD   23 33  6.7                      5  1.5   2.4
      *GS  : HO= 23:30:15.0  LAT=41.262N LON= 23.032E Z= 33KM MB=5.1
             GREECE-BULGARIA BORDER REGION

JUN 23 BUB  PKP    6 39 55.7                      5  1.5   2.4
      *GS  : HO=   6:20:50.3  LAT= 7.007S LON=155.843E Z= 70KM MB=5.5
             SOLOMON ISLANDS

JUN 23 BUB   PD   21 11 22                        3  1.5   2.1
      *GS  : HO= 21: 6:10.2  LAT=38.728N LON= 39.179E Z= 33KM MB=4.5
             TURKEY

JUN 24 BUB   PD   11 57 56.7           58 13.5    2   .2   1.4
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T   LOG A/T  RK

JUN 24 ZUL   PD  11 58  2.7          58 22.3     2   .2    1.4
                                                                 Q
JUN 24 LIN   P   17 16 47           16 51.0
       ZUL   PD  17 17  2.3          17 16.0
       BUB   PD  17 17  3.7          17 18.7     2   .2    1.4
                                                 4  1.5    2.3
JUN 25 BUB   PD   5 13 48
     *GS  : HO=  5: 0:58.9  LAT=15.484N LON= 95.381W  Z= 25KM MB=5.3
            NEAR COAST OF OAXACA, MEXICO

JUN 25 BUB   P   11 26 14.3          26 21.8     2   .2    1.4
       ZUL   PD  11 26 22.2          26 32.5     2   .2    1.4
       BLA   P   11 26 33.5          26 49.2

JUN 25 EMO  SP   12  9 50            10  1.5
       BLA   P   12  9 52.8          10  2.4
       ZUL   PD  12 10  1.5          10 17.6     4   .2    1.7
       BUB   PD  12 10  6.2          10 24.7
     *SED : HO= 12: 9:39.6  LAT=46N53.4 LON=  6E55.6  Z=  7KM ML=1.9
            RMS= .32S  ERH= 7.1KM  ERZ= 5.8KM  D3=129KM  NO= 9
            REGION NEUCHATEL(CH)

JUN 25 BUB   PU  16 56 14.5          56 20.7     4   .3    1.8
       ZUL   PD  16 56 21.2          56 32.7     2   .3    1.5
       BLA   P   16 56 26.0          56 39.7

JUN 25 BUB   PD  22 28 40.8                     14  1.5    2.8
     *GS  : HO= 22:23:46.2  LAT=64.602N LON= 17.651W  Z= 33KM MB=5.1
            ICELAND

JUN 27 BUB   PD   2  1 57.3                     14  1.5    2.8

JUN 27 BUB   PD   8  5 10                        5  1.5    2.4

JUN 27 BUB   PD  19  4 33.3                      4  1.5    2.3
     *GS  : HO= 18:52:36.2  LAT=10.501N LON= 92.785E  Z= 33KM MB=5.3
            ANDAMAN ISLANDS REGION

JUN 28 BUB   PD   5 30 41.5                      4  1.5    2.3
     *GS  : HO=  5:29:39.5  LAT=51.581N LON=  7.789E  Z=  1KM
            GERMANY

JUN 28 BUB   PU  11 12 24.6                      3  1.5    2.1
     *GS  : HO= 11: 9:40.2  LAT=36.586N LON=  5.271E  Z= 33KM MB=5.0
            ALGERIA

JUN 28 BUB  PKP  18 26 12.5                      6  1.5    2.4
     *GS  : HO= 18: 6:35.2  LAT=17.965S LON=167.838E  Z= 26KM MB=5.1
            NEW HEBRIDES ISLANDS

JUN 28 BLA   PU  20 54 16.8          54 19.9
       ZUL   PU  20 54 21.4          54 28.2     5   .2    1.8
       BUB   PU  20 54 25.3          54 34.7     3   .2    1.6
     *SED : HO= 20:54:11.9  LAT=47N24.1 LON=  7E42.9  Z= 21KM ML=1.2
            RMS= .21S  ERH= 3.5KM  ERZ= 3.9KM  D3= 52KM  NO= 9
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MO  DY STA  PRK   H  M  S      SRK   M    S    AMP   T   LOG A/T  RK

            REGION HOELSTEIN,KT.BASELLAND(CH)
JUN 30 BUB  PKP   8 53 19.6                     57  1.5    3.4
     *GS  : HO=  8:33:46.5  LAT=17.988S LON=168.287E  Z= 61KM MB=5.7
            NEW HEBRIDES ISLANDS

JUN 30 BUB   PU  12 21 22.4          21 25.0     4   .2    1.7
       ZUL   PU  12 21 24.6          21 28.7     6   .2    1.9

JUN 30 ZUL   PD  19  6 20.7
       BUB   PD  19  6 23.2                      4  1.5    2.3
     *GS  : HO= 19: 5:23.8  LAT=44.145N LON= 10.678E  Z= 33KM MB=4.3
            NORTHERN ITALY

JUL 01 BUB   PU   1 26 28.7          26 39.7     3   .2    1.6
       ZUL   PU   1 26 29.5          26 41.2     3   .2    1.6
     *GS  : HO=  1:26:38.0  LAT=49.417N LON=  6.033E  Z=  0KM MB=4.3
            GERMANY

JUL 01 BUB   PD   1 27 17.5                     18  1.5    2.9
       ZUL   PD   1 27 19.4                     36  1.5    3.2

JUL 01 BUB   PU  16 49 36.5          49 42.1     2   .3    1.5
       ZUL   PU  16 49 42.6          49 53.7     1   .3    1.2

JUL 01 BUB   PD  23 22 37                        6  1.5    2.4
     *GS  : HO= 23:11:14.5  LAT=22.642S LON= 10.674W  Z= 33KM MB=5.6
            SOUTH ATLANTIC RIDGE

JUL 02 ZUL   PD  23 40 58.2          41 35.0     3   .2    1.6
       BLA   P   23 41  1.2          41 35.2
       BUB   PD  23 41  1.7          41 40.2     2   .2    1.4
     *LDG : HO= 23:40:11.5  LAT=45.240N LON=  5.550E  Z=  0KM ML=3.2
            HTE.SAVOIE,F.

JUL 02 BUB  PKP  23 46 23.7                     45  1.5    3.3
     *GS  : HO= 23:26:26.6  LAT=29.082S LON=175.954W  Z= 33KM MB=6.8
            KERMADEC ISLANDS REGION

JUL 03 BUB   PD  13 26 40.7          26 43.7     3   .2    1.6
       ZUL   PD  13 26 41.3          26 45.2     3   .2    1.6

JUL 03 BUB   PD  18 52  3.0          52 12.2     1   .2    1.1
       ZUL   PD  18 52  9.2          52 21.9     2   .2    1.4

JUL 03 ZUL  PKP  23 45  5                       23  1.5    3.0
     *GS  : HO= 23:25: 9.3  LAT=29.122S LON=176.110W  Z= 33KM MB=6.2
            KERMADEC ISLANDS REGION

JUL 03 BLA   PD  23 57 42.2          57 48.1     1   .2    1.1
       BUB   PD  23 57 44.6          57 52.6     1   .2    1.1

JUL 04 ZUL   PU  19 40 20.5                     28  1.5    3.1
     *GS  : HO= 19:30:42.1  LAT=45.136N LON= 94.034E  Z= 33KM MB=6.1
            MONGOLIA

JUL 05 BUB   PD  14 47  7.7          47 14.9     2   .3    1.5
       ZUL   PU  14 47 13.2          47 25.5     4   .2    1.7
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK

JUL 05 BLA   P   14 47 17.5          47 33.5

JUL 05 DIX   P   19  6 28.2           6 32.5
       ZUL   PD  19  6 48.1           7  7.2
       BLA   P   19  6 49.0           7  5.4
       BUB   PD  19  6 53.4           7 15.2     3   .2   1.6
      *SED : HO= 19: 6:22.1  LAT=46N 4.2 LON=  7E50.4 Z= 10KM ML=1.8
             RMS= .72S  ERH=10.2KM  ERZ=12.1KM  D3=157KM  NO= 9
             REGION ZERMATT,KT.VALAIS(CH)

JUL 08 ZUL   PU   5 58 11.3                                5  1.5   2.4
      *GS  : HO=  5:45:37.0  LAT=36.414N LON=141.104E Z= 35KM MB=6.0
             NEAR EAST COAST OF HONSHU, JAPAN

JUL 09 BUB   P    2 36 28                                  6  1.5   2.4
       ZUL   P    2 36 28
      *GS  : HO=  2:32:17.6  LAT=36.652N LON= 28.449E Z= 69KM MB=5.0
             DODECANESE ISLANDS

JUL 09 ZUL   PD   8 57 15.6          57 26.2     2   .2   1.4
       BUB   PD   8 57 17.3          57 29.7     1   .2   1.1

JUL 09 BUB   PD  10 17 28.7          17 43.3     3   .2   1.6
       ZUL   PD  10 17 33.3          17 50.0     3   .2   1.6

JUL 09 BLA   P   14 46 55.0          47  1.0
       ZUL   PU  14 47  5.9          47 17.7     3   .5   1.7
       BUB   PU  14 47  7.8          47 19.1     2   .4   1.5

JUL 09 ZUL   PU  16 31 59                                  3  1.5   2.1
      *GS  : HO= 16:20:29.5  LAT=28.228N LON=103.886E Z= 33KM MB=5.2
             SZECHWAN PROVINCE, CHINA

JUL 10 ZUL   PU   3  5 13                                  4  1.5   2.3      A
      *GS  : HO=  2:56:57.5  LAT=49.789N LON= 78.139E Z=  0KM MB=5.3
             EASTERN KAZAKH SSR

JUL 10 EMO  SP    4  4 28.7           4 32.2
       DIX   P    4  4 36.0           4 43.5
       BLA   PD   4  5  0.4           5 24.0
       ZUL   PU   4  5  4.3           5 33.0     1   .2   1.1
       BUB   PU   4  5 10.2           5 41.0     1   .2   1.1
      *SED : HO=  4: 4:26.3  LAT=45N40.9 LON=  6E57.8 Z= 10KM ML=1.9
             RMS=1.36S  ERH= 6.4KM  ERZ=-0.0KM  D3= 56KM  NO= 9
             HTE.SAVOIE(F)

JUL 10 EMO  SP    8 47 39.0          47 43.5
       DIX   P    8 47 49            47 56.0
      *SED : HO=  8:47:39.4  LAT=45N41.6 LON=  6E57.5 Z= 10KM
             RMS= .35S  ERH= 3.0KM  ERZ= 1.4KM  D3= 45KM  NO= 6
             HTE.SAVOIE(F)

JUL 10 LIN   P    8 49 57            49 60.0
       ZUL   PU   8 50 10.0          50 19.7     2   .2   1.4
       BUB   PU   8 50 11.7          50 23.2     4   .2   1.7
       BLA   P    8 50 17            50 32.0
      *SED : HO=  8:49:55.0  LAT=46N54.0 LON=  9E 1.9 Z= 13KM ML=1.5
             RMS= .62S  ERH= 6.1KM  ERZ= 6.2KM  D3= 81KM  NO= 9
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK

             REGION LINTHAL,KT.GLARUS(CH)
JUL 10 BUB   PU   9 56 17.0          56 18.8    70   .2   2.9

JUL 10 ZUL   P   15 48 36.4          49 19.0     1  1.5   1.7

JUL 10 ZUL   PU  16 12 23                                  6  1.5   2.4      A
      *GS  : HO= 16: 0:  .1  LAT=37.068N LON=116.032W Z=  0KM MB=5.7
             SOUTHERN NEVADA

JUL 11 ZUL   PU  18  1 41                                  6  1.5   2.4
      *GS  : HO= 17:56:18.5  LAT=71.570N LON=  4.128W Z= 33KM MB=5.0
             JAN MAYEN ISLAND REGION

JUL 12 BUB   P   11 18 48.9          18 57.0
       ZUL   P   11 18 52            19  4.0     2   .2   1.4

JUL 12 BUB   P   16 49 57.7          50 13.5
       ZUL   P   16 50  3.0          50 20.0     2   .2   1.4

JUL 13 BLA   P    1 30 40
       ZUL   PD   1 30 42.5                                 23  1.5   3.0
      *GS  : HO=  1:18:22.8  LAT= 7.747N LON= 77.688W Z= 12KM MB=6.4
             PANAMA-COLOMBIA BORDER REGION

JUL 13 BLA   P    2 32 36
       ZUL   P    2 32 39                                  4  1.5   2.3
      *GS  : HO=  2:20:22.8  LAT= 7.409N LON= 77.662W Z= 45KM MB=5.5
             PANAMA-COLOMBIA BORDER REGION

JUL 13 ZUL   P   16  0 11                                  1  1.5   1.7
      *GS  : HO= 15:57:25.2  LAT=35.969N LON=  4.785E Z= 37KM MB=4.8
             ALGERIA

JUL 13 ZUL   PU  23 21  2                                  2  1.5   2.0
      *GS  : HO= 23: 8:41.9  LAT= 7.146N LON= 77.732W Z= 23KM MB=5.3
             PANAMA-COLOMBIA BORDER REGION

JUL 14 ZUL   P    2  0 59                                  3  1.5   2.1
      *GS  : HO=  1:48:43.6  LAT= 7.809N LON= 77.637W Z= 26KM MB=5.2
             PANAMA-COLOMBIA BORDER REGION

JUL 14 ZUL   PU   2 26  9                                  4  1.5   2.3
      *GS  : HO=  2:13:50.4  LAT= 7.745N LON= 77.612W Z= 15KM MB=5.9
             PANAMA-COLOMBIA BORDER REGION

JUL 16 BUB   P   16  4  2.5           4 18.0     2   .2   1.4
       ZUL   P   16  4  7.5           4 24.0     1   .2   1.1

JUL 17 ZUL   P    5 11 16                                  1  1.5   1.7
      *GS  : HO=  5: 9:23.0  LAT=45.750N LON= 26.531E Z=145KM MB=5.1
             RUMANIA

JUL 17 BUB   P   13 24 18.2          24 34.0
       ZUL   P   13 24 27.3          24 42.0     2   .2   1.4

JUL 18 ZUL  PKP  11 24 25                                 14  1.5   2.8
      *GS  : HO= 11: 4:43.2  LAT=15.218S LON=173.592W Z= 33KM MB=5.9
             TONGA ISLANDS
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

JUL 18 ZUL   P   14 53 31.8          53 44.5    2  .2   1.4
       BLA   P   14 53 35            53 40.0
       BUB   P   14 53 36.2          53 50.0

JUL 18 ZUL   PD  16 56  9.0                     1 1.5   1.7
       BUB   P   16 56 10.7

JUL 18 ZUL   P   17  5 53.6           6  8.0    2  .2   1.4
       BUB   P   17  5 57.0           6 12.5

JUL 18 ZUL   PU  19 34 12                       2 1.5   2.0
     *GS  : HO= 19:21:24.6  LAT=17.064N LON= 98.351W Z= 48KM MB=5.6
            GUERRERO, MEXICO

JUL 18 ZUL   P   22 26 48.5          27  5.0    4  .2   1.7
       BUB   P   22 26 50.8          27  8.6    4  .2   1.7
       BLA   P   22 27  0.0          27 23.0
       LIN  SP   22 27  0.0          27  8.5
     *SED : HO= 22:26:24.6  LAT=46N41.0 LON=  9E51.1 Z=  2KM ML=2.0
            RMS= .45S  ERH= 3.9KM  ERZ=-0.0KM  D3=108KM  NO=10
            REGION BERGUEN,KT.GRAUBUENDEN(CH)

JUL 19 BLA   P    0 56 16.5          56 26.0
       ZUL   P    0 56 21.5          56 38.0    3  .2   1.6
       BUB   P    0 56 27.5          56 47.0    2  .2   1.4
     *SED : HO=  0:55:59.2  LAT=46N46.0 LON=  6E53.3 Z=  5KM ML=1.8
            RMS= .51S  ERH=11.3KM  ERZ= 7.1KM  D3=139KM  NO=10
            REGION GRANGES,KT.FRIBOURG/VAUD

JUL 20 ZUL   P   16 14 34.4                     6  .2   1.9    Q
       BLA   P   16 14 36.0          14 44.0
       BUB   P   16 14 40.8          14 51.0

JUL 21 ZUL   P    8 41 11                       1 1.5   1.7
     *GS  : HO=  8:28:35.3  LAT=14.314N LON= 92.056W Z= 70KM MB=5.3
            NEAR COAST OF CHIAPAS, MEXICO

JUL 22 ZUL   P    7 21 48                       9 1.5   2.6
       BLA   P    7 21 52.0
     *GS  : HO=  7:19:34.1  LAT=39.362N LON= 15.441E Z=271KM MB=4.7
            SOUTHERN ITALY

JUL 22 ZUL   P   15 35 34                       1 1.5   1.7

JUL 23 BUB   P   10 46 35.5          46 46.0
       ZUL   P   10 46 40            46 53.5    2  .2   1.4

JUL 23 ZUL  PKP  11 18 12                       4 1.5   2.3
     *GS  : HO= 10:58:47.5  LAT=19.534S LON=169.272E Z=162KM MB=5.6
            NEW HEBRIDES ISLANDS

JUL 23 BUB   P   13  0 44           0 50.0
       ZUL   P   13  0 49           1  1.0
       BLA   P   13                 1  8.5

JUL 24 BUB   P    0 23 34.4         23 42.0
       ZUL   PD   0 23 40.3         23 53.0   40  .2   2.7
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

JUL 24 BLA   PD   0 23 47.5          24  5.0
     *GS  : HO=  0:23:24.6  LAT=48.528N LON=  9.029E Z= 31KM
            GERMANY

JUL 24 BUB   PU   8 47 23.5          47 31.5
       ZUL   P    8 47 29.5          47 41.5   10  .2   2.1
       BLA   P    8 47 37.0          47 54.3
       LIN   P    8 47 37.0          47 39.9

JUL 24 BUB   P   11 13 46.5          13 55.5
       ZUL   P   11 13 52.0          14  5.0    2  .2   1.4

JUL 24 BUB   P   19 45 47.5          46  9.0
       ZUL   P   19 45 55.0          46 19.0    2  .2   1.4
       BLA   P   19 46  3.5          46 32.0

JUL 25 ZUL   P   10 54 38.5                     2  .2   1.4
       BUB   P   10 54 45.5          54 58.5

JUL 25 BUB   P   19 11 55.0          12 56.0
       ZUL   P   19 11 58.0          12 59.0
     *GS  : HO= 19:10:58.3  LAT=50.981N LON=  6.411E Z=  8KM
            GERMANY

JUL 26 ZUL   P    1 16  2.2          16 18.0   50  .2   2.8
       BUB   P    1 16  3.5          16 19.5   50  .2   2.8
       BLA   P    1 16 10.0          16 33.5
       DIX   P    1 16 13.0          16 36.0
       EMO   P    1 16 18.0          16 45.0
     *SED : HO=  1:15:40.8  LAT=46N48.8 LON=  9E45.4 Z=  4KM ML=3.0
            RMS= .25S  ERH= 6.3KM  ERZ= 3.4KM  D3=166KM  NO=10
            REGION AROSA,KT.GRAUBUENDEN(CH)
            IO= IV      (MSK)      R= 20 KM
            INTENS.(MSK): DAVOS (13) IV, AROSA (3) III, CHUR (2)
                          III, FILISUR (2) III, TIEFENKASTEL III,
                          ZIZERS II-III.

JUL 26 BUB   P    9 41  7.2          41 22.0
       ZUL   P    9 41 11.0          41 30.0    3  .2   1.6

JUL 27 BUB   P   22 30 23.2          30 30.5    2  .2   1.4
       ZUL   P   22 30 25.5          30 34.5    2  .2   1.4

JUL 28 ZUL   PU  11 47 14                      11 1.5   2.7
     *GS  : HO= 11:34:59.7  LAT=46.293N LON=153.330E Z= 52KM MB=5.9
            KURIL ISLANDS

JUL 28 ZUL   P   12 20  5.5                     3 1.5   2.1
     *GS  : HO= 12: 7:50.0  LAT=46.175N LON=153.261E Z= 46KM MB=5.3
            KURIL ISLANDS

JUL 28 ZUL   PU  13 43 52                       3 1.5   2.1
     *GS  : HO= 13:31:39.3  LAT=46.267N LON=153.513E Z= 66KM MB=5.3
            KURIL ISLANDS

JUL 28 ZUL   PD  13 53 53.5                     2 1.5   2.0
     *GS  : HO= 13:41:38.8  LAT=46.324N LON=153.316E Z= 46KM MB=5.4
            KURIL ISLANDS
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

JUL 28 ZUL   P   16 46  9                      1  1.5   1.7
     *GS  : HO= 16:33:55.6  LAT=46.247N LON=153.228E  Z= 49KM MB=4.9
            KURIL ISLANDS

JUL 29 ZUL   PD   3 27 32.5                     9  1.5   2.6
             PD   3 27 32.5                     9  1.5   2.6
     *GS  : HO=  3:15:15.7  LAT=46.200N LON=153.100E  Z= 38KM
            KURIL ISLANDS

JUL 29 DIX   P    4 31  6.3        31  8.7
       EMO   P    4 31 11.0        31 17.4
       BLA   P    4 31 26.5        31 42.5
       ZUL   P    4 31 28.0        31 47.0     4   .1   1.6
       BUB   P    4 31 33.3        31 56.0     4   .1   1.6
     *SED : HO=  4:31: 3.3  LAT=46N12.3 LON=  7E28.8  Z= 10KM ML=1.9
            RMS= .78S  ERH= 7.2KM  ERZ=-0.0KM  D3=140KM  NO= 8
            REGION SIERRE,KT.VALAIS(CH)

JUL 29 ZUL   PD   7 28 43.0                    14  1.5   2.8
     *GS  : HO=  7:16:26.1  LAT=46.122N LON=153.092E  Z= 33KM MB=5.9
            KURIL ISLANDS

JUL 29 BUB   P   11  2 33          2 53.0
       ZUL   P   11  2 37          3  2.0     2   .2   1.4

JUL 30 ZUL   P    5 20 42                    45  1.5   3.3
     *GS  : HO=  5:12:40.6  LAT=36.353N LON= 70.763E  Z=211KM MB=6.5
            HINDU KUSH REGION

JUL 30 ZUL   P   22 52  0                      2  1.5   2.0
     *GS  : HO= 22:39:44.5  LAT=46.222N LON=153.174E  Z= 42KM MB=5.0
            KURIL ISLANDS

JUL 31 ZUL   P   10 34 11.5        34 23.0     2   .2   1.4
       BUB   P   10 34 15          34 26.0

JUL 31 BUB   P   16  2 46           2 56.0
       ZUL   P   16  2 48           2 57.0     2   .2   1.4

AUG 01 ZUL   PU   6  7 19                      3  1.5   2.1
     *GS  : HO=  5:55:38.2  LAT=56.670N LON=152.105W  Z= 33KM MB=5.7
            KODIAK ISLAND REGION

AUG 01 ZUL   PU   9 47 15                      3  1.5   2.1
     *GS  : HO=  9:36:27.0  LAT=16.652S LON= 28.004E  Z= 14KM MB=5.1
            ZAMBIA

AUG 01 ZUL   P   11  9  4.5         9 18.5     2   .2   1.4
       BUB   P   11  9  5.5         9 21.0

AUG 01 ZUL   P   22 51 23                      1  1.5   1.7
     *GS  : HO= 22:39:21.0  LAT=49.756N LON=155.967E  Z= 41KM MB=5.3
            KURIL ISLANDS

AUG 02 BUB   P    2 50 48.0        50 56.0     4   .2   1.7
       ZUL   P    2 50 48.7        50 56.5     4   .2   1.7
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

AUG 02 LIN   SP   10 59 10
       ZUL   PD   10 59  7.4        59 23.0
       BUB   PD   10 59  7.7        59 30.0    10   .4   2.2
       BLA   P    10 59 17.0        59 31.0     9   .4   2.2
       EMO   SP   10 59 21.8        59 42.3
     *SED : HO= 10:58:38.1  LAT=46N 4.1 LON=  9E45.3 Z= 10KM ML=2.8
            RMS=1.18S  ERH=46.6KM  ERZ=14.2KM  D3=207KM  NO=12
            VALTELLINA(I)

AUG 02 LIN   P    11  5 36.5         5 37.7
       BUB   PD   11  5 41.8         5 54.3     2   .2   1.4
       ZUL   PD   11  5 42.2         5 54.2     2   .2   1.4

AUG 02 BUB   P    14 10 24.4        10 31.2     4   .2   1.7
       ZUL   PU   14 10 31.0        10 42.9     2   .2   1.4

AUG 03 BUB   PD    2 31 37.3        31 42.2    45   .2   2.7
       ZUL   PD    2 31 42.2        31 49.0    32   .2   2.6
       LIN   P     2 31 49.3        32  1.6
       BLA   P     2 31 50.5        32  4.6
     *KA  : HO=  2:31:44.1  LAT=47.890N LON=  8.910E Z= 19KM ML=2.3
            STOCKACH,D.

AUG 03 ZUL   PD   18 29 12                      4  1.5   2.3
     *GS  : HO= 18:16:34.0  LAT=35.999N LON=139.819E  Z= 58KM MB=5.6
            HONSHU, JAPAN

AUG 04 BUB   PD    8 13 15.7        13 28.2     3   .2   1.6
       ZUL   PD    8 13 18.2        13 32.3     1   .2   1.1

AUG 04 BUB   PD   10 18 41.2        18 48.7    32   .2   2.6
       ZUL   P    10 18 43.4        18 53.5    40   .2   2.7
       LIN   SP   10 18 43.5        18 53.2
       BLA   P    10 18 53.7        19  9.7
       EMO   P    10 19 10.5        19 38.3
     *SED : HO= 10:18:30.6  LAT=47N36.8 LON=  9E22.8 Z=  7KM ML=2.4
            RMS= .58S  ERH= 3.5KM  ERZ= 9.7KM  D3= 78KM  NO=14
            REGION ROMANSHORN,KT.THURGAU(CH)

AUG 04 LIN   P    10 21 31.9        21 37.7
       ZUL   PU   10 21 44.2        21 59.0    35   .2   2.6
       BUB   PU   10 21 48.2        22  4.8    15   .2   2.3
       EMO   P    10 21 48.8        22  9.8
       BLA   P    10 21 50.0        22  5.1
     *SED : HO= 10:21:26.8  LAT=46N32.0 LON=  8E36.2 Z=  6KM ML=2.6
            RMS= .79S  ERH= 3.6KM  ERZ= 5.9KM  D3= 88KM  NO=21
            REGION GOTTHARD,KT.TICINO(CH)

AUG 04 BUB   PU   10 54 59.3        55  6.7     2   .2   1.4
       ZUL   PU   10 55  1.6        55 11.1     2   .2   1.4

AUG 04 ZUL   PD   15 11 55                     14  1.5   2.8
     *GS  : HO= 15: 6:17.1  LAT=42.335N LON= 45.932E  Z= 33KM MB=5.4
            EASTERN CAUCASUS

AUG 05 DIX   P     9 18 52.0        18 59.0
       EMO   P     9 18 53.3        19  1.0
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK
AUG 05 ZUL   P    9 19  0            19 16.6     4   .2   1.7
       BUB   PD   9 19  6.7          19 23.7     4   .2   1.7

AUG 05 EMO   P   10 56 24.4          56 30.8
       DIX   P   10 56 28.8          56 33.0
       ZUL   PD  10 56 32.0          56 47.5     2   .2   1.4
       BUB   PD  10 56 37.8          56 54.2     2   .2   1.4

AUG 05 ZUL   PD  13 27 14.5                      9  1.5   2.6
     *GS  : HO= 13:19:39.5  LAT=27.979N LON= 53.548E  Z= 11KM MB=5.3
            SOUTHERN IRAN

AUG 05 DIX  SP   17 38  4.5          38 10.5
       EMO   P   17 38  6.0          38 28.7     3   .2   1.6
       ZUL   PD  17 38 13.5          38 36.1     3   .2   1.6
       BUB   PD  17 38 19.0
     *SED : HO= 17:37:53.3  LAT=46N30.8 LON=  7E38.5  Z= 10KM ML=1.8
            RMS= .49S  ERH=11.5KM  ERZ= 6.8KM  D3= 74KM  NO=11
            REGION KANDERSTEG,KT.BERN(CH)

AUG 05 DIX   P   18 38 15.0          38 40.5
       EMO   P   18 38 16.5
       ZUL   P   18 38 35.7          39 12.0
       BUB   P   18 38 39.9          39 19.0

AUG 06 ZUL   PD  15 16 58.2          17 12.9     1   .2   1.1
       BUB   PD  15 17  1.0          17 17.6     1   .2   1.1

AUG 06 ZUL   PU  17  1 17.2                      7  1.5   2.5
     *GS  : HO= 16:49:22.2  LAT=46.760N LON=150.420E  Z=166KM MB=5.2
            KURIL ISLANDS

AUG 06 LIN  SP   18  8 11.2           8 17.4
       ZUL   PD  18  8 17.2           8 30.8     4   .2   1.7
       BUB   PU  18  8 18.7           8 32.9     4   .2   1.7
     *SED : HO= 18: 7:56.2  LAT=46N38.4 LON=  9E28.0  Z=  8KM ML=1.9
            RMS= .22S  ERH= 3.9KM  ERZ= 7.9KM  D3= 87KM  NO= 6
            REGION THUSIS,KT.GRAUBUENDEN(CH)

AUG 06 ZUL  PKP  18 58  0.0                      3  1.5   2.1
     *GS  : HO= 18:38:13.1  LAT=21.758S LON=175.161W  Z= 48KM MB=5.7
            TONGA ISLANDS

AUG 06 ZUL   PD  18 58 24.0                      6  1.5   2.4

AUG 07 BUB   P   15 40 27.9          40 34.9     2   .2   1.4
       ZUL   PD  15 40 35.0          40 47.5     2   .3   1.5

AUG 08 ZUL   PD   1 30 45.0                      3  1.5   2.1
     *GS  : HO=  1:25:15.8  LAT=73.200N LON=  6.194E  Z= 33KM MB=5.0
            GREENLAND SEA

AUG 08 ZUL   PU   7 47 10.2          47 23.9     2   .2   1.4
       BUB   PU   7 47 11.7          47 26.2     4   .2   1.7

AUG 08 ZUL   P   19 10 27                       11  1.5   2.7
     *GS  : HO= 19: 5:  .9  LAT=73.173N LON=  5.861E  Z= 33KM MB=4.8
            GREENLAND SEA
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MO  DY STA  PRK   H  M  S      SRK   M    S     AMP   T   LOG A/T  RK
AUG 08 ZUL   P   19 29 35                       7  1.5   2.5
     *GS  : HO= 19:16:45.9  LAT=24.572N LON=122.687E  Z= 32KM MB=5.4
            TAIWAN REGION

AUG 08 ZUL   P   23 30 12.0                      6  1.5   2.4
     *GS  : HO= 23:24:42.4  LAT=73.395N LON=  6.492E  Z= 33KM MB=4.7
            GREENLAND SEA

AUG 09 BUB   PD  21 56 26.5          56 34.0     3   .2   1.6
       ZUL   PD  21 56 28.6          56 38.0     4   .2   1.7
     *SED : HO= 21:56:15.8  LAT=47N34.9 LON=  9E21.7  Z= 10KM ML=1.4
            RMS= .18S  ERH= 2.6KM  ERZ=-0.0KM  D3= 88KM  NO= 8
            REGION ROMANSHORN,KT.THURGAU(CH)

AUG 09 BUB   PD  23 47 47.3          47 54.8     3   .2   1.6
       ZUL   PD  23 47 49.5          47 58.9     4   .2   1.7
     *KA  : HO= 23:47: 4.1  LAT=47.590N LON=  9.390E  Z= 10KM ML=1.6
            BODENSEE

AUG 10 BUB   PD   1 44 17.6          44 26.0    12   .2   2.2
       ZUL   PD   1 44 23.5          44 36.8    16   .2   2.3

AUG 10 ZUL  PKP  10  6 23.5                      4  1.5   2.3
     *GS  : HO=  9:47:39.2  LAT=18.539S LON=179.469W  Z=595KM MB=5.1
            FIJI ISLANDS REGION

AUG 10 ZUL  PKP  11 41 31.5                      7  1.5   2.5
     *GS  : HO= 11:22:26.4  LAT=21.385S LON=179.158W  Z=602KM MB=5.5
            FIJI ISLANDS REGION

AUG 10 ZUL   PD  12 52 39.7                      1  1.5   1.7
     *GS  : HO= 12:49:38.0  LAT=57.147N LON=  5.210W  Z= 10KM MB=4.3
            UNITED KINGDOM

AUG 10 ZUL   PU  12 55 23.0                      4  1.5   2.3

AUG 11 ZUL   PU   1 22 26.5                     23  1.5   3.0
     *GS  : HO=  1:13:55.5  LAT=39.457N LON= 73.830E  Z=  9KM MB=6.4
            TADZHIK-SINKIANG BORDER REGION

AUG 11 BUB   PD   3 53 14.2          53 22.5     7   .2   1.9
       ZUL   PD   3 53 19.8          53 32.0    15   .1   2.1

AUG 11 ZUL   P    5 21  1.5                      6  1.5   2.4
     *GS  : HO=  5:12:33.3  LAT=39.324N LON= 73.784E  Z= 33KM MB=5.4
            TADZHIK-SINKIANG BORDER REGION

AUG 11 ZUL   PU   5 32 20.6                      6  1.5   2.4
     *GS  : HO=  5:23:52.5  LAT=39.415N LON= 73.773E  Z= 27KM MB=5.6
            TADZHIK-SINKIANG BORDER REGION

AUG 11 ZUL   PU   7 10 35.5                      3  1.5   2.1
     *GS  : HO=  7: 2: 8.5  LAT=39.351N LON= 73.854E  Z= 33KM MB=5.2
            TADZHIK-SINKIANG BORDER REGION

AUG 11 ZUL   PU  20 13 56.8                      6  1.5   2.4
     *GS  : HO= 20: 5:30.1  LAT=39.471N LON= 73.652E  Z= 33KM MB=5.8
            TADZHIK-SINKIANG BORDER REGION
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

                                              14  1.5    2.8
AUG 11 ZUL   PD  21 30  4.5
     *GS  : HO= 21:21:33.8  LAT=39.469N LON= 73.629E Z=   9KM MB=5.9
            TADZHIK-SINKIANG BORDER REGION

                                               6  1.5    2.4
AUG 12 ZUL  PKP   3 12 22.0
     *GS  : HO=  2:52:42.4  LAT=15.982S LON=179.405W Z= 70KM MB=5.7
            FIJI ISLANDS REGION

                                               9  1.5    2.6
AUG 13 ZUL   PU   3 58 31.5
     *GS  : HO=  3:46:20.3  LAT=51.525N LON=178.112W Z= 52KM MB=5.8
            ANDREANOF ISLANDS, ALEUTIAN IS.

AUG 13 ZUL   PD  10 58  2.4        58 14.5     1   .2    1.1
       BUB   PD  10 58  4.8        58 20.0     2   .2    1.4

                                               7  1.5    2.5
AUG 13 ZUL  PKP  13 12 25.5
     *GS  : HO= 12:52:47.3  LAT=15.823S LON=179.483W Z= 55KM MB=5.4
            FIJI ISLANDS REGION

                                               9  1.5    2.6
AUG 13 ZUL   PD  15  5 36.0
     *GS  : HO= 14:45:42.0  LAT=55.456S LON=146.261E Z= 33KM MB=5.6
            WEST OF MACQUARIE ISLAND

AUG 13 ZUL   PD  16 15  3.4        15 16.9     4   .2    1.7
       BUB   PD  16 15  5.9        15 20.2     2   .2    1.4

AUG 13 ZUL   PD  17 54 44.4        54 52.0     1   .2    1.1
       BUB   PD  17 54 45.0        54 52.6     1   .2    1.1

AUG 14 LIN   P    1 39 43.5        39 47.1
       ZUL   PU   1 39 54.5        40  6.1     8   .2    2.0
       BUB   PU   1 39 57.8        40  9.1     9   .2    2.0
     *SED : HO=  1:39:39.2  LAT=46N55.6 LON=  9E17.7 Z=   9KM ML=1.9
            RMS= .49S  ERH= 3.8KM  ERZ= 6.9KM  D3= 58KM  NO=12
            P.SARDONA,KT.GLARUS/ST.GALLEN(CH)

AUG 14 ZUL   PD   5 47  5.2                   4  1.5    2.3
     *GS  : HO=  5:34:54.4  LAT=51.561N LON=178.145W Z= 56KM MB=5.7
            ANDREANOF ISLANDS, ALEUTIAN IS.

AUG 14 BUB   PD  10  0 24.4         0 36.2     1   .2    1.1
       ZUL   PD  10  0 25.3         0 37.5     1   .2    1.1

AUG 14 BUB   PD  11  5 58.4         6 10.7     2   .2    1.4
       ZUL   PD  11  6  4.0         6 17.7     3   .2    1.6

AUG 14 BUB   PD  14  1 21.6         1 33.0     6   .3    1.9
       ZUL   PD  14  1 25.1         1 38.5     2   .2    1.4

AUG 14 ZUL   PD  15  7 26.3                   3  1.5    2.1      A
     *GS  : HO= 14:59:58.3  LAT=68.913N LON= 75.899E Z=   0KM MB=5.5
            WESTERN SIBERIA

AUG 14 ZUL   PU  16  9  5.0                   3  1.5    2.1
     *GS  : HO= 16: 5:19.4  LAT=35.458N LON= 23.067E Z= 60KM MB=4.2
            CRETE
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

AUG 14 BUB   PD  17 30 11.7        30 27.0     2   .3    1.5
       ZUL   PD  17 30 16.8        30 35.6     1   .2    1.1

AUG 15 DIX   P   17 16 23.3        16 26.0
       EMO   P   17 16 25.7        16 31.5
       LIN   P   17 16 30.0        16 46.0
       BAS   P   17 16 40.5        16 57.8
       ZUL   PD  17 16 40.7        16 58.2    22   .3    2.5
       BUB   PU  17 16 44.6        17  6.5    30   .3    2.6
     *SED : HO= 17:16:15.8  LAT=46N12.7 LON=  7E32.8 Z=   7KM ML=3.1
            RMS= .45S  ERH= 3.6KM  ERZ= 3.3KM  D3= 49KM  NO=16
            REGION SIERRE,KT.VALAIS(CH)
            IO= III-IV (MSK)      R= 20 KM
            INTENS.(MSK): ADELBODEN III-IV, LES DIABLERETS III-IV
                          MONTANA/CRANS III-IV, LEUKERBAD III
                          ZWEISIMMEN III, GSTAAD II

AUG 16 ZUL   PD   9 53 43.6                   5  1.5    2.4
     *GS  : HO=  9:41:31.7  LAT=51.498N LON=177.828W Z= 46KM MB=5.7
            ANDREANOF ISLANDS, ALEUTIAN IS.

AUG 19 BUB   PD  10 51 16.9        51 23.0     2   .5    1.6
       ZUL   P   10 51 23.8        51 33.8     2   .3    1.5

AUG 19 ZUL   PU  12  2  3.3         2 10.1     2   .2    1.4
       BUB   PU  12  2  7.2         2 16.3     1   .2    1.1

AUG 19 ZUL   PD  12 21  1.4        21 13.5     2   .2    1.4
       BUB   PD  12 21  3.7        21 16.3     2   .2    1.4

AUG 19 DIX   P   15 46  0.0        46  1.5                      Q
       EMO   P   15 46  1.0        46  4.0

AUG 20 BUB   PU  11  8 37.6         8 45.8     1   .2    1.1
       ZUL   PD  11  8 38.6         8 48.2     2   .2    1.4

AUG 20 ZUL   PD  20 57  5.5                   7  1.5    2.5
     *GS  : HO= 20:45: 1.4  LAT=52.243N LON=174.972E Z= 58KM MB=5.6
            RAT ISLANDS, ALEUTIAN ISLANDS

AUG 21 BUB   PD  11 12 20          13  6.3     2   .2    1.4
       ZUL   PD  11 12 54.2        13  8.4     1   .2    1.1

AUG 21 ZUL   PU  17 44 57.1        45 28.0
       BUB   PU  17 45  0.0        45 32.0

AUG 21 ZUL   PU  17 50 11.2        50 41.0
       BUB   P   17 50 14.0        50 46.0

       ZUL   PD  16 55 36.6        55 54.1     2   .1    1.3

AUG 23 ZUL   P    5  8  1.0                   6  1.5    2.4
     *GS  : HO=  4:50:34.6  LAT= 7.490S LON=127.505E Z=136KM MB=5.8
            BANDA SEA

AUG 23 LIN   P   17 46  0.0        46  4.3
       ZUL   PU  17 46  4.5        46 17.9     4   .2    1.7
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

                                       46 20.2      3   .2   1.6
AUG 23 BUB   PU   17 46  6.0                   9-29.3 Z= 10KM ML=1.6
      *SED : HO= 17:45:47.4  LAT=46-56.7 LON=
             RMS= .36S  ERH= 4.6KM  ERZ=10.0KM  D3= 26KM  NO= 7
             REGION UNTERVAZ GR

                                                 6  1.5   2.4
AUG 24 ZUL   PD    2 59 50.8
      *GS  : HO=  2:47:30.1  LAT= 4.280N LON= 76.855W Z= 84KM MB=5.9
             COLOMBIA

                                                 2  1.5   2.0
AUG 24 ZUL   PD   10 23 42.5
      *GS  : HO= 10:20:20.5  LAT=37.753N LON= 21.172E Z= 33KM MB=4.2
             SOUTHERN GREECE

                                                 7  1.5   2.5
AUG 24 ZUL   PD   10 53 19.9
      *GS  : HO= 10:41:11.2  LAT=52.407N LON=168.273W Z= 41KM MB=5.7
             FOX ISLANDS, ALEUTIAN ISLANDS

                                                 2  1.5   2.0
AUG 24 ZUL  PKP   14 20 18.5
      *GS  : HO= 14: 1:52.5  LAT=14.590S LON=170.696E Z=631KM MB=4.9
             NEW HEBRIDES ISLANDS REGION

                                                 2  1.5   2.0
AUG 24 ZUL   PU   22 31  5.0
      *GS  : HO= 22:18:55.4  LAT=52.297N LON=168.314W Z= 37KM MB=5.3
             FOX ISLANDS, ALEUTIAN ISLANDS

                                                 6  1.5   2.4
AUG 25 ZUL   PU    1 31 40.0
      *GS  : HO=  1:18:39.9  LAT=32.049N LON=142.292E Z= 33KM MB=5.9
             SOUTH OF HONSHU, JAPAN

                                                 3  1.5   2.1
AUG 25 ZUL  PKP   14 54  7.0
      *GS  : HO= 14:34:46.7  LAT=23.481S LON=179.905W Z=542KM MB=5.3
             SOUTH OF FIJI ISLANDS

                                                 1  1.5   1.7
AUG 26 ZUL   PD   18 13 44.2
      *GS  : HO= 18: 9:55.9  LAT=35.254N LON= 22.270E Z= 33KM MB=3.8
             MEDITERRANEAN SEA

                                                 7  1.5   2.5
AUG 27 ZUL   PD   13  4 30.3
      *GS  : HO= 12:56: 3.2  LAT=39.669N LON= 73.833E Z= 33KM MB=5.8
             TADZHIK-SINKIANG BORDER REGION

                                                 3  1.5   2.1
AUG 29 ZUL  PKP    3 10 51.0
      *GS  : HO=  2:50:14.9  LAT=28.924S LON=177.473W Z= 58KM MB=5.3
             KERMADEC ISLANDS REGION

                                                36  1.5   3.2      A
AUG 29 ZUL   PD   10  6 34.4
      *GS  : HO=  9:59:55.5  LAT=73.366N LON= 55.094E Z=  0KM MB=6.4
             NOVAYA ZEMLYA

AUG 29 ZUL   PD   13 30 41.9        30 56.7      5   .2   1.8
       BUB   PD   13 30 42.5        30 58.9      3   .3   1.6
      *SED : HO= 13:30:20.9  LAT=46N45.1 LON=  9E36.2 Z=  2KM ML=2.0
             RMS= .39S  ERH= 4.1KM  ERZ=-0.0KM  D3=123KM  NO= 8
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

             REGION LENZERHEIDE,KT.GRAUBUENDEN(CH)
AUG 30 BUB   PU    4 29 11.8        29 18.7     10   .2   2.1
       ZUL   PU    4 29 17.7        29 29.0     15   .2   2.3
       LIN   P     4 29 30.0        29 45.0
      *GS  : HO=   4:29: 2.6  LAT=48.079N LON=  9.212E Z=  5KM
             GERMANY

AUG 30 ZUL   PU   11 17 58.2        17 27.2      1  1.5   1.7

AUG 30 ZUL   PU   15 12 23.0                     11  1.5   2.7      A
      *GS  : HO= 15: 0:  .2  LAT=37.150N LON=116.083W Z=  0KM MB=5.8
             SOUTHERN NEVADA

AUG 31 ZUL  PKP    1 33 54.0                      1  1.5   1.7
      *GS  : HO=  1:14:  .5  LAT=22.663S LON=170.925E Z= 17KM MB=4.6
             LOYALTY ISLANDS REGION

SEP 01 ZUL   PU   17 24 54.0                      1  1.5   1.7

SEP 02 ZUL   PD   17 17 24.7        17 36.7      2   .2   1.4
       BUB   PD   17 17 26.6        17 39.9      2   .3   1.5

SEP 03 BAS   P     0 18 11.8        18 13.7
       ZUL   PD    0 18 22.1        18 28.0     16   .2   2.3
       BUB   PD    0 18 24.2        18 34.0     28   .2   2.5
       LIN  SP     0 18 30          18 46.0
       DIX  SP     0 18 30          18 49.0
       EMO  SP     0 18 30.0        18 50.3
      *SED : HO=   0:18:11.5  LAT=47N33.6 LON=  7E37.0 Z= 11KM ML=2.2
             RMS= .71S  ERH= 3.1KM  ERZ= 5.4KM  D3= 46KM  NO=20
             REGION BASEL(CH)
             IO= III     (MSK)      R= 10 KM
             INTENS.(MSK): BOTTMINGEN III, NUGLAR III, ARLESHEIM
                           (6) II-III, BASEL (9) II-III, REINACH
                           (7) II-III, MUTTENZ II-III, BINNINGEN
                           (4) II-III, BIRSFELDEN II-III, ETTINGEN
                           II-III, MUENCHENSTEIN (2) II.

SEP 03 BAS   P     5 37  1.0        37  2.8
       ZUL   PD    5 37 10.6        37 17.5      8   .2   2.0
       BUB   PD    5 37 13.7        37 24.4     18   .2   2.3
       LIN  SP     5 37 10          37 20.0
       EMO  SP     5 37 10          37 30.0
      *SED : HO=   5:36:59.9  LAT=47N30.5 LON=  7E35.4 Z=  7KM ML=2.0
             RMS= .47S  ERH= 2.2KM  ERZ= 4.5KM  D3= 52KM  NO=18
             REGION BASEL(CH)
             IO= II      (MSK)      R= 10 KM
             INTENS.(MSK): ARLESHEIM (3) II-III, BASEL (3) II,
                           BINNINGEN II, MUENCHENSTEIN II, REINACH
                           (2) II.

SEP 03 BAS   P     5 53  8.0
       ZUL   PD    5 53 16.7        53 23.5     12   .2   2.2
       BUB   PD    5 53 20.0        53 29.7     30   .2   2.6
       LIN  SP     5 53 20.0        53 36.5
       DIX  SP     5 53 20.0        53 38.5
       EMO  SP     5 53 20.0        53 40.3
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

      *SED : HO=  5:53: 6.1  LAT=47N31.6 LON=  7E34.6 Z= 11KM ML=2.2
             RMS= .61S  ERH= 2.7KM  ERZ= 6.1KM  D3= 51KM  NO=21
             REGION BASEL(CH)
             IO= III    (MSK)      R= 10 KM
             INTENS.(MSK): ARLESHEIM (3) III, BINNINGEN (4) III,
                           BASEL (14) II-III, REINACH (7) II-III,
                           MUTTENZ (2) II-III, BOTTMINGEN (3)
                           II-III, BIRSFELDEN II, ETTINGEN II,
                           MUENCHENSTEIN II.

                                              11  1.5    2.7
SEP 03 ZUL   PD   6  8  6.5
      *GS  : HO=  5:55: 6.4  LAT=18.337N LON=119.171E Z= 11KM MB=5.9
             PHILIPPINE ISLANDS REGION

                                 52 21.2     3   .2    1.6
SEP 03 ZUL   PU  10 52 14.2      52 27.2     6   .2    1.9
       BUB   PU  10 52 17.3
      *SED : HO= 10:52: 4.4  LAT=47N33.2 LON=  7E38.2 Z= 10KM ML=1.5
             RMS= .24S  ERH= 3.4KM  ERZ= 8.4KM  D3= 76KM  NO=10
             REGION BASEL(CH)

                                  5 19.4     2   .3    1.5
SEP 03 BUB   PD  11  5  4.0       5 28.2     1   .3    1.2
       ZUL   PD  11  5 10.1

                                 47 58.5     3   .2    1.6
SEP 03 BUB   PD  12 47 50.1      48 10.0     5   .2    1.8
       ZUL   PD  12 47 57.0

                                 41 51.2     1   .2    1.1
SEP 03 ZUL   P   17 41 44.4      41 57.2     2   .2    1.4
       BUB   PD  17 41 47.5
      *SED : HO= 17:41:33.9  LAT=47N36.4 LON=  7E34.3 Z=  2KM ML=1.0
             RMS= .32S  ERH= 4.4KM  ERZ=-0.0KM  D3= 79KM  NO= 8
             REGION BASEL(CH)

                                              6  1.5    2.4
SEP 03 ZUL   PU  19 49 44.5
      *GS  : HO= 19:41:19.9  LAT=39.425N LON= 73.702E Z= 33KM MB=5.4
             TADZHIK-SINKIANG BORDER REGION

                                             28  1.5    3.1
SEP 04 ZUL   PD   6 32 48.0
      *GS  : HO=  6:29:16.4  LAT=33.134N LON= 13.567E Z= 17KM MB=5.1
             MEDITERRANEAN SEA

                                              3  1.5    2.1
SEP 04 ZUL   PU   9 32 38.5
      *GS  : HO=  9:20: 2.5  LAT=40.203N LON=141.743E Z= 55KM MB=5.3
             NEAR EAST COAST OF HONSHU, JAPAN

                                  0 26.6     4   .2    1.7
SEP 04 BUB   PD  10  0 15.7
       ZUL   PD  10  0 16.7      0 27.8     4   .2    1.7

                                 10 45.5     4   .2    1.7
SEP 05 ZUL   PD   7 10 37.3      10 49.0     6   .2    1.9
       BUB   PD   7 10 39.3
      *SED : HO=  7:10:26.0  LAT=47N30.0 LON=  7E38.7 Z= 15KM ML=1.6
             RMS= .10S  ERH=11.6KM  ERZ=10.6KM  D3=104KM  NO= 5
             REGION BASEL(CH)

SEP 05 ZUL   PD  11 38 32
                                              7  1.5    2.5
      *GS  : HO= 11:34:36.1  LAT=35.685N LON= 25.050E Z= 53KM MB=4.2
             CRETE
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

SEP 05 ZUL   PU  17 49  8.5
       BUB   PU  17 49  9.7      49 23.9    10   .2    2.1
                                 49 26.2     6   .2    1.9

SEP 06 ZUL   P    3 59 31.5
       BUB   PU   3 59 37.4      59 45.7    18   .2    2.3
      *SED : HO=  3:59:12.3  LAT=46N51.4 LON=  7E11.0 Z=  2KM ML=2.2
             RMS= .43S  ERH= 2.3KM  ERZ=-0.0KM  D3=113KM  NO=11
             REGION FRIBOURG(CH)

SEP 06 EMO   P    4  3  3.7      59 54.4     3   .2    1.6
       ZUL   PD   4  3  7.0       3 15.0
       BUB   P    4  3 12.7       3 22.0    50   .2    2.8
       LIN  SP    4  3 20        3 29.9    15   .2    2.3
                                  3 36.5
      *SED : HO=  4: 2:48.4  LAT=46N50.7 LON=  7E15.4 Z=  1KM ML=2.7
             RMS= .59S  ERH= 3.5KM  ERZ= 2.6KM  D3=108KM  NO=17
             REGION FRIBOURG(CH)
             IO= III    (MSK)      R= 10 KM
             INTENS.(MSK): NEUENEGG (7) III, UEBERSTORF (2) III,
                           DUEDINGEN II-III.

SEP 06 ZUL   PD   5 56 41.0
       BUB   PU   5 56 46.2      56 48.8    50   .2    2.8
       EMO   P    5 56 53.5      56 57.1    25   .2    2.5
       LIN  SP    5 57  0        57 10.0
                                 57 12.0
      *SED : HO=  5:56:30.4  LAT=47N 6.1 LON=  7E49.3 Z= 11KM ML=2.5
             RMS= .45S  ERH= 2.9KM  ERZ= 6.7KM  D3= 63KM  NO=15
             REGION HUTTWIL,KT.BERN(CH)

SEP 06 BUB   PD  13 28 40.0
       ZUL   P   13 28 44.2      28 55.2     2   .3    1.5
                                 29  2.7     4   .2    1.7

SEP 06 BUB   PD  23 10 23.8      10 31.2     3   .2    1.6

SEP 07 BUB   PU  17 33 52.7      34  6.8     4   .2    1.7      Q
       LIN   P   17 33 56.5      33 60.0

SEP 08 BUB   PU  12 58 36.7      59 25.0     3   .2    1.6
      *GS  : HO= 12:57:31.5  LAT=43.541N LON=  7.353E Z= 28KM
             NEAR SOUTH COAST OF FRANCE

SEP 09 BUB   PU  12 51  3.7      51 51.0     4   .2    1.7
      *GS  : HO= 12:50:15.3  LAT=46.223N LON= 12.565E Z= 33KM
             NORTHERN ITALY

SEP 10 BUB   PD   6  4 10.7       4 19.6    14   .2    2.2
       ZUL   PD   6  4 15.6       4 26.8

SEP 10 BUB   PU   7 22 31.5      22 37.9     3   .2    1.6

SEP 10 ZUL   PU  15 28 50.5      28 53.2                         Q
       BUB   PD  15 28 54.2      28 59.7     4   .5    1.9

SEP 10 BUB   PD  16 24 14.0      24 27.7     5   .2    1.8      Q
       ZUL   P   16 24 14.4      24 27.3
       LIN  SP   16 24 30        24 36.0

SEP 10 ZUL   P   21  8 39         9 28.5
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

SEP 11*GS  : HO=  1:17: 2.1  LAT=30.357S LON=177.973W Z= 43KM MB=5.3
             KERMADEC ISLANDS
SEP 11 BUB   PD   3 47 53.7        48  2.7     3   .2   1.6
       ZUL   P    3 48  0.2        48 13.3

SEP 11 ZUL   P    4  9 18.6
       LIN   P    4  9 20           9 41.0
      *GS  : HO=  5:12:57.0  LAT=40.086N LON= 19.696E Z= 51KM MB=4.4
             ALBANIA

SEP 12 BUB   PD   8  4 41.1         4 55.7
                                                6  1.5   2.4
SEP 13 BUB   PU   8  4 38.5
      *GS  : HO=  7:53: 2.7  LAT=55.289N LON=161.973E Z= 55KM MB=5.8
             NEAR EAST COAST OF KAMCHATKA

SEP 14 LIN  SP    6 49 15        49 60.0
       EMO   P    6 49 34        50 10.0
       BUB   PD   6 49 54.5      50 45.0     4   .2   1.7
      *GS  : HO=  6:48:46.4  LAT=43.338N LON=  8.172E Z= 17KM MB=4.1
             CORSICA

SEP 16 BUB   PD   0 51 18                     5  1.5   2.4
      *GS  : HO=  0:38:15.3  LAT=23.935S LON= 65.547W Z=280KM MB=5.6
             JUJUY PROVINCE,ARGENTINA

SEP 16 BUB   PU  16 54 19                     2  1.5   2.0
      *GS  : HO= 16:45:57.0  LAT=39.473N LON= 73.516E Z= 64KM MB=5.0
             TADZHIK-SINKIANG BORDER REGION

SEP 16 BUB   PD  22  7 50.4                   3  1.5   2.1
      *GS  : HO= 21:55:50.8  LAT=49.625N LON=155.944E Z= 48KM MB=5.5
             KURIL ISLANDS

SEP 17 BUB   PU   5 13 16                     6  1.5   2.4
      *GS  : HO=  5:10:31.5  LAT=40.294N LON= 20.639E Z= 17KM MB=5.2
             GREECE-ALBANIA BORDER REGION

SEP 18 BUB   PD   5 24 48.5                   5  1.5   2.4
      *GS  : HO=  5:20:40.8  LAT=34.482N LON= 24.259E Z= 20KM MB=4.2
             CRETE

SEP 20 BUB   PU   1  5 17.0                   6  1.5   2.4
      *GS  : HO=  0:53: 1.0  LAT=42.792N LON=144.954E Z= 51KM MB=5.6
             HOKKAIDO, JAPAN REGION

SEP 20 EMO   P   15 50 19.9        50 21.8
       BUB   P   15 50 20.0                   1   .2   1.1
      *SED : HO= 15:50:15.6  LAT=46N12.0 LON=  6E60.0 Z= 10KM ML=1.7
             RMS= .36S  ERH=35.8KM  ERZ=-0.0KM  D3= 41KM  NO= 6
             REGION ST.MAURICE,KT.VAUD/VALAIS(CH)

SEP 20 ZUL  PKP  20  9 40.6
       BUB  PKP  20  9 41.5                   1  1.5   1.7
      *GS  : HO= 19:48:42.9  LAT=44.476S LON=168.009E Z= 51KM MB=5.4
             SOUTH ISLAND, NEW ZEALAND
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

SEP 20 BUB  PKP  21 39  0.8                    4  1.5   2.3
       ZUL  PKP  21 39  1.0
      *GS  : HO= 21:20:12.3  LAT= 6.242S LON=146.059E Z=111KM MB=5.8
             EAST NEW GUINEA REGION

SEP 21 ZUL   P    1 22 55.6        23  8.0
       BUB   P    1 22 57.4        23 11.0    14   .2   2.2
       LIN  SP    1 22 56          22 60.0
      *SED : HO=  1:22:39.1  LAT=46N56.6 LON=  9E25.6 Z=  5KM ML=2.3
             RMS= .27S  ERH= 3.3KM  ERZ= 6.7KM  D3= 74KM  NO=11
             REGION CHUR,KT.GRAUBUENDEN(CH)

SEP 21 BUB  PKP   6 16 56.0                    7  1.5   2.5
       ZUL  PKP   6 16 56.5
      *GS  : HO=  5:55:57.6  LAT=44.374S LON=168.140E Z= 49KM MB=5.8
             SOUTH ISLAND, NEW ZEALAND

SEP 21 BUB  PKP  13  0 41                     4  1.5   2.3
       ZUL  PKP  13  0 42
      *GS  : HO= 12:40:22.1  LAT=23.708S LON=175.978W Z= 33KM MB=5.6
             SOUTH OF FIJI ISLANDS

SEP 21 BUB   PU  16  6 39.5                   5  1.5   2.4
       ZUL   P   16  6 41.5
      *GS  : HO= 15:54:59.1  LAT=52.173N LON=157.506E Z=118KM MB=5.8
             KAMCHATKA

SEP 21 ZUL   PU  17 15 53.7        16  7.5     4   .2   1.7
       BUB   PU  17 15 55.2        16 10.0
       LIN   P   17 15 56          15 60.0

SEP 22 EMO   P   19 41  6.7        41 14.6
       ZUL   P   19 41 39          42  9.0
       BUB   PD  19 41 44.6        42 18.4     1   .2   1.1
      *SED : HO= 19:40:56.4  LAT=45N36.3 LON=  6E19.4 Z=  2KM ML=2.1
             RMS=1.65S  ERH=11.0KM  ERZ=-0.0KM  D3= 87KM  NO=12
             HTE.SAVOIE(F)

SEP 23 BUB   PU  17  4 47.8         4 60.0     3   .2   1.6
       ZUL   P   17  4 53.3         5 10.0

SEP 23 BUB   PD  19 36 58.5                    7  1.5   2.5
      *GS  : HO= 19:28:17.2  LAT=  .278S LON= 12.917E Z= 33KM MB=5.9
             GABON

SEP 24 BUB   PU  14 29 27.2        29 38.8     4   .2   1.7

SEP 26 BUB  PKP  15 17 23.8                    4  1.5   2.3
       ZUL  PKP  15 17 24
      *GS  : HO= 15: 0:58.2  LAT=23.442S LON=175.742W Z= 33KM MB=5.2
             TONGA ISLANDS REGION

SEP 26 ZUL   P   18 34 17.5        34 27.7
       BUB   P   18 34 17.7        34 28.0    30   .2   2.6
       EMO   P   18 34 35          34 60.0
      *KA  : HO= 18:34:10.2  LAT=47.870N LON=  7.490E Z= 10KM ML=2.3
             ENSISHEIM,D.
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T   LOG A/T   RK

SEP 27 ZUL   P     3 22 57.5                        6   1.5    2.4
       BUB   PD    3 22 59.0
      *GS  : HO=   3:10: 7.9  LAT=33.602N LON=141.128E Z= 46KM MB=5.8
             OFF EAST COAST OF HONSHU, JAPAN
                                                    9   1.5    2.6
SEP 27 BUB   PD    4 21 14.5
       ZUL   P     4 21 14.6
      *GS  : HO=   4: 9: 1.3  LAT= 2.691N LON= 71.418W Z= 43KM MB=5.6
             COLOMBIA
                                                    5   1.5    2.4
SEP 27 BUB   PD    5 36 46.6
       ZUL   P     5 36 47.5
      *GS  : HO=   5:26:39.4  LAT=28.596N LON= 85.496E Z= 70KM MB=5.6
             NEPAL
                                                   36   1.5    3.2
SEP 27 BUB   PD    5 59 47.0
       ZUL   P     5 59 48.4
      *GS  : HO=   5:47:29.4  LAT=43.176N LON=146.651E Z= 43KM MB=6.0
             KURIL ISLANDS
                                                    7   1.5    2.5
SEP 28 BUB  PKP    0  3 20.2
       ZUL  PKP    0  3 21.6
      *GS  : HO= 23:44:  .9  LAT=25.288S LON=178.568E Z=605KM MB=5.4
             SOUTH OF FIJI ISLANDS

SEP 28 ZUL   P     1 38 58.8
       BUB   PD    1 38 59.3                        3   1.5    2.1
      *GS  : HO=   1:35:  .5  LAT=34.965N LON= 23.969E Z= 51KM MB=4.5
             CRETE

SEP 29 ZUL   P     6 39 51
       BUB   PU    6 39 52.3                        4   1.5    2.3
      *LDG : HO=   6:39:21.5  LAT=45.220N LON=  7.450E Z= 20KM ML=4.0
             TORINO,I.

SEP 29 ZUL   P     9 41  9.7
       BUB   PU    9 41 10.7                        1   1.5    1.7

SEP 29 ZUL   P    16  0 36.7
       BUB   PU   16  0 39                          5   1.5    2.4
      *GS  : HO= 15:51:51.7  LAT=40.387N LON= 77.978E Z= 33KM MB=5.4
             SOUTHERN SINKIANG PROV., CHINA

SEP 30 EMO   P    17 36 52          36 58.0

OCT 01 BUB   PU   11 21 31.8        21 38.6      2    .2    1.4

OCT 01 LIN   P    17 10 14.3        10 18.1
       ZUL   PD   17 10 30.0        10 43.8
       BUB   PD   17 10 31.7        10 46.7      5    .2    1.8
       EMO   P    17 10 46.5        11 15.0

OCT 03 ZUL   P    14 34 59.2
       BUB   PU   14 35  0.0
      *GS  : HO= 14:21:29.1  LAT=12.265S LON= 77.795W Z= 13KM MB=6.6
             NEAR COAST OF PERU                    18   1.5    2.9
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T   LOG A/T   RK

OCT 04 ZUL   P     4 10 58.2
       BUB   PD    4 10 59
      *GS  : HO=   3:58:31.0  LAT=22.753S LON= 63.732W Z=533KM MB=5.0
             SALTA PROVINCE, ARGENTINA                   3   1.5    2.1
OCT 04 BUB   PU   22 33 22.6
       ZUL   P    22 33 23.2                           9   1.5    2.6
      *GS  : HO= 22:24:32.7  LAT=26.288N LON= 66.543E Z= 33KM MB=5.8
             WEST PAKISTAN

OCT 07 BUB   PD   10  4 37.3
       ZUL   PD   10  4 38.8                           5   1.5    2.4
      *GS  : HO=   9:53: 9.7  LAT=45.928N LON=143.137E Z=325KM MB=5.2
             HOKKAIDO, JAPAN REGION

OCT 07 ZUL   P    11 46 14
       BUB   PD   11 46 15.7
      *GS  : HO= 11:43:36.9  LAT=39.734N LON= 18.847E Z= 19KM MB=4.6
             SOUTHERN ITALY                              3   1.5    2.1
OCT 07 ZUL   P    12 18 24
       BUB   PU   12 18 26.7                           2   1.5    2.0

OCT 07 BUB   PD   17 22 43.6
       ZUL   P    17 22 43.8                           6   1.5    2.4
      *GS  : HO= 17:10:36.2  LAT=11.579N LON= 85.439W Z=225KM MB=5.1
             NICARAGUA

OCT 08 BUB   PU   10  1 30.7                          71   1.5    3.5
      *GS  : HO=   9:50:58.1  LAT=17.336N LON= 62.008W Z= 47KM MB=6.6
             LEEWARD ISLANDS

OCT 09 BUB   PD    0 13 37.8        13 45.0          35    .2    2.6
       ZUL   PD    0 13 39.8        13 49.0
       LIN   P     0 13 40.7        13 50.2
      *SED : HO=   0:13:28.2  LAT=47N31.5 LON=  9E16.5 Z=  3KM ML=2.0
             RMS= .66S  ERH= 3.2KM  ERZ=12.1KM  D3= 76KM  NO=16
             REGION AMRISWIL,KT.THURGAU(CH)

OCT 09 BUB   PD    7 44 17.5                          40   1.5    3.3
       ZUL   P     7 44 19.5
      *GS  : HO=   7:32: 2.2  LAT=44.724N LON=150.119E Z= 49KM MB=6.3
             KURIL ISLANDS REGION

OCT 09 BUB   PU    8 57 43.6        57 52.1           9    .2    2.0
       ZUL   P     8 57 49.5        58  2.6
       LIN   P     8 58 19.5        58 22.5

OCT 09 BUB   PU   12 27 54.3        28  2.2           8    .2    2.0
       ZUL   P    12 28  0.5        28 13.5
       LIN   P    12 28 27.0        28 30.0

OCT 09 ZUL   PU   16 16 36.6        16 52.3
       BUB   PU   16 16 38.4        16 55.2           6    .2    1.9

OCT 10 ZUL  PKP    2  6 22.8                           1   1.5    1.7
       BUB  PKP    2  6 23.4
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

OCT 10*GS  : HO=  1:47:12.7  LAT=22.120S LON=179.492W Z=588KM MB=5.1
             SOUTH OF FIJI ISLANDS
                                                  7  1.5   2.5
OCT 10 BUB   PU   4  4  6.2
       ZUL   P    4  4  8.0
      *GS  : HO=  4: 3:27.4  LAT=47.855N LON= 12.282E Z= 33KM
             AUSTRIA
                                                  2  1.5   2.0
OCT 10 BUB   PU   5 17 15.3
       ZUL   P    5 17 17.0
                                                  7  1.5   2.5
OCT 10 BUB   PD   7  0 37.0
       ZUL   P    7  0 38.6
      *GS  : HO=  6:48:14.0  LAT=40.960N LON=143.129E Z= 29KM MB=5.8
             HOKKAIDO, JAPAN REGION
                                                 11  1.5   2.7
OCT 10 BUB   PU   7  9 11.0
       ZUL   P    7  9 11.5
      *GS  : HO=  6:56:49.0  LAT=40.929N LON=143.112E Z= 45KM MB=5.8
             OFF EAST COAST OF HONSHU, JAPAN
                                                                  Q
OCT 10 ZUL   P   13  7 29.5        7 43.0
       BUB   PD  13  7 34.5        7 40.3     2   .3   1.5
                                                  3  1.5   2.1
OCT 10 BUB   PU  21 45 37
       ZUL   P   21 45 37.6
      *GS  : HO= 21:32:10.6  LAT= 4.139S LON=102.827E Z= 21KM MB=6.0
             SOUTHERN SUMATRA
                                                  3  1.5   2.1
OCT 11 BUB  PKP   8 54 11
       ZUL  PKP   8 54 15.7
      *GS  : HO=  8:33:52.3  LAT=60.748S LON=153.931E Z= 33KM MB=5.3
             WEST OF MACQUARIE ISLAND
                                                  3  1.5   2.1
OCT 12 BUB   PU   4 59 56
       ZUL   P    4 59 59.6
      *GS  : HO=  4:47:31.4  LAT=40.486N LON=143.485E Z= 26KM MB=5.3
             OFF EAST COAST OF HONSHU, JAPAN
                                                  9  1.5   2.6
OCT 12 BUB   PD   6 27 18
       ZUL   P    6 27 19.2
      *GS  : HO=  6:14:51.5  LAT=40.506N LON=143.575E Z= 24KM MB=5.5
             OFF EAST COAST OF HONSHU, JAPAN
                                                  1  1.5   1.7
OCT 12 BUB   PU  16 29 52.9
       ZUL   P   16 29 54.6
      *GS  : HO= 16:17:23.1  LAT=40.307N LON=143.689E Z= 14KM MB=4.9
             OFF EAST COAST OF HONSHU, JAPAN
                                                  1  1.5   1.7
OCT 12 BUB  PKP  19 18 24
       ZUL  PKP  19 18 26.7
      *GS  : HO= 18:59:44.2  LAT=17.884S LON=178.683W Z=623KM MB=4.9
             FIJI ISLANDS REGION
                                                  7  1.5   2.5
OCT 14 BUB   PD   4 13  5.5
       ZUL   P    4 13  5.5
      *GS  : HO=  4:11:16.3  LAT=43.722N LON= 17.580E Z= 33KM MB=4.2
             YUGOSLAVIA
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

OCT 14 BUB   PU   8  2 38.3          2 44.5     3   .2   1.6
       ZUL   P    8  2 45.4          2 56.0
OCT 14 ZUL   P   13  5 19.6          5 35.0
       LIN   P   13  5 20.8          5 38.0
       BUB   P   13  5 23
                                                  1   .2   1.1
      *SED  : HO= 13: 4:57.4  LAT=46N32.0 LON=  7E17.7 Z=  6KM ML=1.5
             RMS= .32S  ERH= 2.7KM  ERZ= 5.7KM  D3=135KM  NO= 9
             REGION ZWEISIMMEN,KT.BERN(CH)
OCT 14 BUB   PU  14 24 10
       ZUL   P   14 24 11.5
                                                  3  1.5   2.1
      *GS  : HO= 14:11:41.1  LAT=40.572N LON=143.675E Z= 15KM MB=5.3
             OFF EAST COAST OF HONSHU, JAPAN
OCT 15 BUB   PU   1 29 15.5
       ZUL   P    1 29 16.2
                                                  3  1.5   2.1
      *GS  : HO=  1:16:47.1  LAT=40.628N LON=143.677E Z= 22KM MB=5.4
             OFF EAST COAST OF HONSHU, JAPAN
OCT 15 ZUL   PD   1 39 57.1         40  2.1
       BUB   PD   1 39 59.7         40  6.7     7   .2   1.9
      *SED  : HO=  1:39:50.1  LAT=47N15.1 LON=  8E45.8 Z= 13KM ML=1.6
             RMS= .20S  ERH= 1.3KM  ERZ= 3.8KM  D3= 76KM  NO=10
             REGION STAEFA,KT.ZUERICH(CH)
OCT 15 ZUL   PD  13 10 15.4         10 18.6                          Q
       BUB   PD  13 10 19.2         10 24.7     5   .2   1.8
OCT 16 BUB   PD   3 42 20.8         42 29.3    70   .2   2.9
       ZUL   PD   3 42 26.6         42 39.3
       LIN   P    3 42 33.7         42 51.2
      *GS  : HO=  3:42: 8.6  LAT=48.288N LON=  9.121E Z= 21KM ML=3.6
             GERMANY
             IO= V       (MSK)      R= 140 KM
             INTENS.(MSK): ZUERICH (3) III, FEHRALTDORF III,
                           DOETTINGEN III, TURBENTHAL III, WIN-
                           TERTHUR III, SCHAFFHAUSEN III, ERLEN-
                           BACH II-III, KILCHBERG II-III.
OCT 16 EMO  SP    3 59 12.1         59 15.0
      *SED  : HO=  3:59:11.2  LAT=45N57.3 LON=  7E 9.0 Z= 10KM
             RMS= .14S  ERH=31.4KM  ERZ=-0.0KM  D3=231KM  NO= 4
             HTE.SAVOIE(F)
OCT 16 ZUL   PD   5 50 42.8
       BUB   PD   5 50 42.9                      71  1.5   3.5
      *GS  : HO=  5:45: 9.8  LAT=52.636N LON= 32.070W Z= 33KM MB=5.8
             NORTH ATLANTIC OCEAN
                                                  7  1.5   2.5      A
OCT 16 BUB   PU   6 41 14.6
       ZUL   P    6 41 16.5
      *GS  : HO=  6:32:57.5  LAT=49.972N LON= 78.968E Z=  0KM MB=5.5
             EASTERN KAZAKH SSR
                                         36 32.8     2   .3   1.5
OCT 16 BUB   PU  15 36 19.4
       ZUL   PU  15 36 20.9              36 34.5
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

OCT 16*SED : HO= 15:36: 1.6  LAT=47N24.8 LON=  9E54.9 Z= 14KM ML=1.6
             RMS= .22S  ERH=13.2KM  ERZ=14.5KM  D3=115KM  NO= 8
             VORARLBERG(A)                          6  1.5   2.4
OCT 16 BUB   PD   9 42 16.8
       ZUL   P    9 42 18
      *GS  : HO=  9:29:49.0  LAT=40.338N LON=143.670E Z= 24KM MB=5.6
             OFF EAST COAST OF HONSHU, JAPAN

OCT 16 ZUL   PD  13  9 12.0          9 23.8
       BUB   PD  13  9 15.5          9 29.6     1   .2   1.1

OCT 16 BUB   PU  15 36 19.4         36 32.8     2   .3   1.5
       ZUL   PU  15 36 20.9         36 34.5

OCT 16 LIN   P   17  4 58.6          5  2.1
       ZUL   PD  17  5 14.3          5 28.4
       BUB   PU  17  5 16.1          5 30.4     2   .2   1.4

OCT 17 ZUL   P   17  5 23.3          5 38.3
       BUB   PD  17  5 24.2          5 40.9     6   .2   1.9

OCT 18 BUB  PKP  12 11 35.5                     3  1.5   2.1
       ZUL  PKP  12 11 35.5
      *GS  : HO= 11:51:49.0  LAT=16.332S LON=172.446W Z= 33KM MB=5.4
             SAMOA ISLANDS REGION

OCT 19 BUB   P   11  8 13.8

OCT 20 BUB   PU   0 28 57.7         29  5.5     5   .2   1.8
       ZUL   P    0 29  3.5         29 15.8

OCT 20 ZUL   P   11 28 29.2
       BUB   PU  11 28 30.2                     6  1.5   2.4
      *GS  : HO= 11:25:55.3  LAT=39.697N LON= 18.891E Z= 33KM MB=4.9
             SOUTHERN ITALY

OCT 21 BUB  PKP   4 31  8.5                     7  1.5   2.5
       ZUL  PKP   4 31  8.5
      *GS  : HO=  4:12:29.4  LAT=17.909S LON=178.612W Z=602KM MB=6.0
             FIJI ISLANDS REGION

OCT 21 BUB   PD  12 59 58.3                    14  1.5   2.8
       ZUL   P   13  0  0.0
      *GS  : HO= 12:48:13.6  LAT=53.929N LON=160.482E Z= 33KM MB=5.7
             NEAR EAST COAST OF KAMCHATKA

OCT 21 ZUL   P   14 51 37.1
       BUB   PD  14 51 38.5                     5  1.5   2.4
      *GS  : HO= 14:49:29.4  LAT=39.727N LON= 15.052E Z=317KM MB=4.0
             SOUTHERN ITALY

OCT 22 BUB   PU   5 11 31.5                     7  1.5   2.5
       ZUL   P    5 11 32.5
      *GS  : HO=  5: 6:16.2  LAT=62.120N LON= 26.375W Z= 33KM MB=5.1
             ICELAND REGION

OCT 22 BUB   PD  12 11 30.0                     5  1.5   2.4
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK

OCT 22 ZUL   P   12 11 30.0
      *GS  : HO= 12: 6:11.2  LAT=62.087N LON= 26.170W Z= 33KM MB=4.9
             ICELAND REGION

OCT 23 ZUL  PKP   6 34  2.8
       BUB  PKP   6 34  3                      14  1.5   2.8
      *GS  : HO=  6:14:54.0  LAT= 8.420S LON=154.034E Z= 48KM MB=6.1
             DENTRECASTEAUX ISLANDS REGION

OCT 24 LIN   P   15 11 40.4         11 53.6                          Q
       ZUL   P   15 11 52.6         12 14.4
       BUB   PU  15 11 53.2         12 15.7    10   .2   2.1

OCT 25 ZUL   P    0 18  1.7
       BUB   PU   0 18  2.9                     3  1.5   2.1

OCT 26 BUB   PD  11 47 30.0                    11  1.5   2.7
       ZUL   P   11 47 31.0

OCT 26 BUB   PU  15  8 47.9                     2  1.5   2.0
       ZUL   P   15  8 52.5          9 34.0

OCT 26 BUB   PU  17 58 57.1         59 31.0     2  1.5   2.0
       ZUL   P   17 58 57.4         59 31.8

OCT 27 ZUL   P    8 56 29.5
       BUB   PD   8 56 30                      3  1.5   2.1
      *GS  : HO=  8:52:20.4  LAT=34.273N LON= 25.138E Z= 70KM MB=4.4
             CRETE

OCT 28 BUB   PD   7 26 57.3         27  3.5     2   .2   1.4
       ZUL   P    7 27  4.6         27 15.5

OCT 29 BUB   PD   1  7  3.2                    28  1.5   3.1
       ZUL   P    1  7  5
      *GS  : HO=  1: 5:15.5  LAT=44.625N LON= 18.414E Z= 33KM MB=5.1
             YUGOSLAVIA

OCT 29 BUB  PKP   3 32 21.7                     6  1.5   2.4
       ZUL  PKP   3 32 21.8
      *GS  : HO=  3:14:14.6  LAT= 6.880S LON=129.463E Z=117KM MB=6.5
             BANDA SEA

OCT 29 BUB  PKP  10 11  2.5                     3  1.5   2.1
      *GS  : HO=  9:51:19.9  LAT=51.821S LON=139.439E Z= 33KM MB=5.0
             SOUTH OF AUSTRALIA

OCT 31 BUB   PD   7 17 38.5                     2  1.5   2.0
      *GS  : HO=  7:15:41.4  LAT=43.246N LON=   .884W Z= 33KM MB=3.8
             PYRENEES

NOV 02 BUB   PD   5  6 21.5                    90  1.5   3.6      A
       ZUL   P    5  6 23.5
      *GS  : HO=  4:59:56.7  LAT=70.817N LON= 54.063E Z=  0KM MB=6.7
             NOVAYA ZEMLYA

NOV 02 BUB   PU   8 39 44.7                     2  1.5   2.0
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

NOV 02 ZUL   P     8 39 45
     *GS  : HO=   8:27:29.2  LAT=41.432N LON=142.096E  Z= 67KM MB=5.1
            HOKKAIDO, JAPAN REGION
                                                  11   1.5    2.7

NOV 02 BUB  PKP   22 38 39.5
       ZUL  PKP   22 38 41
     *GS  : HO= 22:19: 5.2  LAT=15.182S LON=174.052W  Z= 97KM MB=5.6
            TONGA ISLANDS
                                                   2   1.5    2.0

NOV 03 BUB   PD   23  0 18.0
       ZUL   P    23  0 22.2
     *GS  : HO= 22:59:18.3  LAT=44.393N LON= 12.223E  Z= 22KM
            NORTHERN ITALY
                                  17 39.0     4   .5    1.9

NOV 04 BUB   PD   12 17 31.7
       ZUL   P    12 17 38.7      17 51.0

NOV 04 ZUL   P    13  7 19.2       7 33.4
       BUB   PU   13  7 24.6       7 39.4     3   .2    1.6

NOV 05 BUB   PD   11 12 17.9      12 22.5     2   .2    1.4

NOV 05 LIN  SP    14  2  0.0       2  5.1
       BUB   PU   14  2 12.5       2 25.2     3   .2    1.6

NOV 05 EMO   P    22 59 54.5      59 55.3
       BUB   PU   23  0 28.8       0 54.0     1   .2    1.1
     *SED : HO= 22:59:51.6  LAT=46N 5.6 LON=  7E 1.3  Z= 10KM ML=1.7
            RMS= .54S  ERH=16.3KM  ERZ=-0.0KM  D3= 46KM  NO= 6
            REGION MARTIGNY,KT.VALAIS(CH)
                                                   2   1.5    2.0

NOV 06 BUB   PU    7 12 52.8

NOV 06 BUB   PD   12 28 56.3      29 43.0     4   1.5    2.3
     *GS  : HO= 12:28:20.1  LAT=49.834N LON=  7.882E  Z=  8KM
            GERMANY
                                                  11   1.5    2.7

NOV 07 BUB   PU    2 38 16
       ZUL   P     2 38 22

NOV 07 BUB   PD    5 11 23.5                      1   1.5    1.7
       ZUL   P     5 11 24
     *GS  : HO=   4:59: 7.9  LAT=43.324N LON=146.274E  Z= 55KM MB=5.0
            KURIL ISLANDS

NOV 07 BUB   PD   14 37 43.5                      4   1.5    2.3
       ZUL   P    14 37 46

NOV 07 ZUL   P    16 14 20.6      14 36.3
       BUB   PD   16 14 22.2      14 40.2     2   .2    1.4

NOV 07 BUB   PU   22 26 12.0      26 21.2     5   .2    1.8
       ZUL   P    22 26 13.6      26 23.4
     *SED : HO= 22:26:  .1  LAT=48N 6.1 LON=  7E47.5  Z= 10KM ML=1.6
            RMS= .62S  ERH= 8.8KM  ERZ=-0.0KM  D3= 82KM  NO= 8
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

            RHEINGRABEN(BRD)
NOV 08 ZUL   P    11 52 51.7
       BUB   PU   11 52 54.9      53  6.5                                Q
       EMO   P    11 52 55.5      53 12.3    15   .2    2.3
     *LDG : HO= 11:52:34.7  LAT=47.450N LON=  6.630E  Z=  0KM ML=3.0
            BELFORT,F.
                                                   2   1.5    2.0

NOV 08 BUB   PU   21 35 24.0
       ZUL   PU   21 35 25.1      90   1.5    3.6
     *GS  : HO= 21:23:21.8  LAT=42.489N LON=141.780E  Z=132KM MB=6.0
            HOKKAIDO, JAPAN REGION

NOV 09 ZUL   PD    5 58 17.5
     *GS  : HO=   5:46:24.2  LAT=48.116N LON=152.876E  Z=153KM MB=4.8
            KURIL ISLANDS

NOV 09 ZUL   P    11 17 53.1      18  9.5
       BUB   PD   11 17 57.3      18 16.7     1   .2    1.1

NOV 09 ZUL   P    11 51 44.5      52  2.3                                Q
       BUB   P    11 51 49        52  9.2     3   .2    1.6

NOV 09 ZUL   P    13 13 18
       BUB   PU   13 13 21.5      9   1.5    2.6
     *GS  : HO= 12:59:49.8  LAT=12.500S LON= 77.786W  Z=  6KM MB=6.0
            NEAR COAST OF PERU

NOV 09 BUB   PD   14 29  5.0      5   1.5    2.4
       ZUL   P    14 29  6.8
     *GS  : HO= 14:16:36.8  LAT=40.015N LON=143.349E  Z= 27KM MB=5.4
            OFF EAST COAST OF HONSHU, JAPAN

NOV 09 BUB   PU   19 24 23.5      2   1.5    2.0
       ZUL   P    19 24 35
     *GS  : HO= 19:10:55.2  LAT= 6.498S LON=105.342E  Z= 51KM MB=6.1
            SUNDA STRAIT

NOV 10 BUB   PD    4 45 16      11   1.5    2.7
       ZUL   P     4 45 16.8
     *GS  : HO=   4:25:31.8  LAT=15.859S LON=178.510W  Z= 33KM MB=5.8
            FIJI ISLANDS REGION

NOV 11 BUB   PD    0 41 18.5      41 27.0    70   .2    2.9
       ZUL   PD    0 41 24.2      41 36.7
       LIN   P     0 41 31.5

NOV 11 BUB   PD    5 29 58.0      4   1.5    2.3
       ZUL   P     5 30  1.2
     *GS  : HO=   5:17:51.0  LAT=51.631N LON=178.110W  Z= 68KM MB=5.8
            ANDREANOF ISLANDS, ALEUTIAN IS.
                                                   6   1.5    2.4

NOV 11 BUB   PD    6 49 20.3
       ZUL   P     6 49 21.4
     *GS  : HO=   6:29:21.1  LAT=23.905S LON=177.560W  Z=196KM MB=5.6
            SOUTH OF FIJI ISLANDS
                                      59 10.1
NOV 12 BAS   P     2 58 56.9
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

NOV 12 NEU   P    2 59  2.6          59 19.1
       BUB   PD   2 59  3.3          59 19.5    200   .2   3.4
       ZUL   PD   2 59  3.7          59 20.0
       LIN   P    2 59 14.5
       EMO   P    2 59 14.5
      *GS  : HO=  2:58:40.0  LAT=48.342N LON=  6.773E Z= 36KM
              FRANCE
              INTENS.(MSK): NEUCHATEL II.

NOV 12 ZUL   PD   3 28 48                          3  1.5   2.1
      *GS  : HO=  3:16:31.7  LAT=45.456N LON=150.906E Z= 33KM MB=4.8
              KURIL ISLANDS

NOV 12 BUB  PKP   3 50 14                          3  1.5   2.1
      *GS  : HO=  3:30:32.5  LAT=20.138S LON=169.256E Z= 46KM MB=4.8
              NEW HEBRIDES ISLANDS

NOV 13 ZUL   P    2 42  2                          4  1.5   2.3
      *GS  : HO=  2:36:25.5  LAT=42.720N LON= 46.557E Z= 42KM MB=5.1
              EASTERN CAUCASUS

NOV 13 EMO   P    7 14 16.3          14 23.0
       ZUL   PU   7 14 30.6                       5   .2   1.8
       BUB   PU   7 14 36.4          14 56.9      4   .2   1.7
      *SED : HO=  7:14: 7.4  LAT=46N24.3 LON=  7E23.8 Z=  3KM ML=2.1
              RMS= .63S  ERH= 3.8KM  ERZ= 6.7KM  D3= 53KM  NO=14
              REGION RAWILPASS,KT.BERN/VALAIS(CH)

NOV 13 ZUL   P    7 55 35.4          55 50.2      5   .2   1.8
       BUB   P    7 55 36.4          55 52.0      4   .2   1.7
      *SED : HO=  7:55:15.1  LAT=46N49.8 LON=  9E50.2 Z= 19KM ML=2.0
              RMS= .11S  ERH= 2.1KM  ERZ=  .8KM  D3=135KM  NO= 8
              REGION DAVOS,KT.GRAUBUENDEN(CH)

NOV 13 BUB   P   17 10 16.8          10 25.5     10   .2   2.1
       ZUL   P   17 10 22.6          10 35.0     13   .2   2.2

NOV 13 BUB  PKP  17 19 21                          2  1.5   2.0
      *GS  : HO= 16:59:16.5  LAT=57.958S LON=148.284E Z= 33KM MB=5.3
              WEST OF MACQUARIE ISLAND

NOV 14 ZUL   P   11 19 51.2          20  8.5      1   .2   1.1
       BUB   P   11 19 53.5          20 13.7      1   .2   1.1

NOV 14 BUB   P   13 25 52                          4  1.0   1.6
       ZUL   P   13 25 52
      *GS  : HO= 13:22:33.1  LAT=38.518N LON= 23.123E Z= 19KM MB=5.0
              GREECE

NOV 14 BUB   P   14 30  5                         15  1.0   2.1
       ZUL   P   14 30  5
      *GS  : HO= 14:26:45.8  LAT=38.530N LON= 22.991E Z=  3KM MB=5.1
              GREECE

NOV 14 BUB   P   15 32 57                          4  1.0   1.6
      *GS  : HO= 15:29:44.8  LAT=38.486N LON= 23.091E Z= 24KM MB=5.0
              GREECE
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

NOV 14 BUB   PD  17  9 37.3
       ZUL   PD  17  9 41.8          9 45.5     60   .2   2.9
       LIN   P   17  9 48.5          9 54.5     70   .2   2.9
      *GS  : HO= 17: 9:24.3  LAT=48.314N LON=  9.116E Z= 15KM
              GERMANY

NOV 15 BUB   PD  23 45 22.5
       ZUL   PD  23 45 23.5
      *GS  : HO= 23:32:42.1  LAT=35.767N LON=140.991E Z= 36KM MB=5.8
              NEAR EAST COAST OF HONSHU, JAPAN

NOV 16 BUB   P   10 21 43.7          21 51.0     15   .2   2.3
       ZUL   P   10 21 48.9          22   .5

NOV 16 BUB   P   16 37  2                          2  1.0   1.3
       ZUL   P   16 37  7
      *GS  : HO= 16:25:53.8  LAT=33.048N LON=103.982E Z= 33KM MB=5.1
              KANSU PROVINCE, CHINA

NOV 16 BUB   P   19 29 47                          4  1.0   1.6
       ZUL   P   19 29 47
      *GS  : HO= 19:24:14.5  LAT=52.651N LON= 32.118W Z= 33KM MB=5.0
              NORTH ATLANTIC OCEAN

NOV 17 ZUL   P    0 17 17                          2  1.5   2.0

NOV 17 ZUL   P   17 36  0                          2  1.5   2.0
      *GS  : HO= 17:24:17.9  LAT=54.808N LON=161.536E Z= 31KM MB=5.3
              NEAR EAST COAST OF KAMCHATKA

NOV 19 ZUL   P    4  8 15
       BUB   P    4  8 17                          3  1.0   1.4
      *GS  : HO=  3:55:18.9  LAT=18.973N LON=121.311E Z= 44KM MB=5.7
              PHILIPPINE ISLANDS REGION

NOV 19 BUB   PD  21 46 21.3          46 28.6    100   .2   3.1
       ZUL   PD  21 46 24.0          46 33.5     70   .2   2.9
       LIN  SP   21 46 24.5          46 36.5
       EMO   P   21 46 52.5          47 22.0
      *SED : HO= 21:46:10.8  LAT=47N39.9 LON=  9E21.4 Z= 10KM ML=2.8
              RMS= .69S  ERH= 8.5KM  ERZ=14.0KM  D3= 93KM  NO=13
              BODENSEE(BRD/CH)

NOV 20 ZUL   P    2 30 42.4          30 48.6      2   .2   1.4
       BUB   P    2 30 48.3          30 58.0      2   .2   1.4
      *SED : HO=  2:30:30.5  LAT=46N53.0 LON=  8E 4.5 Z= 13KM ML=1.3
              RMS= .16S  ERH= 5.1KM  ERZ= 2.5KM  D3= 87KM  NO= 7
              REGION ENTLEBUCH-SARNEN,KT.OBWALDEN(CH)

NOV 20 BUB  PKP   4 34 14                         14  2.3   3.1
       ZUL  PKP   4 34 14                         23  1.3   2.9
      *GS  : HO=  4:14:46.9  LAT=15.023S LON=167.139E Z= 33KM MB=6.4
              NEW HEBRIDES ISLANDS

NOV 20 BUB   P    8 42 40.0                        5   .4   1.9
       ZUL   P    8 42 40.0                        5   .4   1.9
      *GS  : HO=  8:42: 7.4  LAT=46.992N LON= 11.311E Z= 33KM
              AUSTRIA
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T   LOG A/T  RK

                                                   5   .4    1.9
NOV 20 BUB   P    15 11 44.5                       5   .4    1.9
       ZUL   P    15 11 44.5
      *GS  : HO= 15:10:54.9  LAT=45.767N LON= 12.258E  Z= 33KM
             NORTHERN ITALY

                                                   3   .4    1.7
NOV 20 BUB   P    19 33 52.5                       3   .4    1.7
       ZUL   P    19 33 52.5
      *GS  : HO= 19:33: 2.4  LAT=45.767N LON= 12.193E  Z= 25KM
             NORTHERN ITALY

                                                   5   .2    1.8
NOV 21 BUB   P    15  2 48.0          3  1.5       3   .2    1.6
       ZUL   P    15  2 50.0          3  4.0
      *SED  : HO= 15: 2:30.3  LAT=47N28.1 LON=  9E56.2  Z= 10KM  ML=1.8
             RMS= .16S  ERH= 1.4KM  ERZ= 2.3KM  D3=117KM  NO= 8
             VORARLBERG(A)

                                                   2  1.0    1.3
NOV 21 BUB   P    21 48 50                         2  1.0    1.3
       ZUL   P    21 48 51
      *GS  : HO= 21:43:19.6  LAT=52.273N LON= 31.613W  Z= 33KM  MB=4.7
             NORTH ATLANTIC RIDGE

                                 14 40.0
NOV 21 LIN   P    23 14 20                         2   .2    1.4
       BUB   P    23 14 30.3                       2   .2    1.4
       ZUL   P    23 14 30.3

                                                   3   .2    1.6
NOV 22 BUB   P    17  4  8.0                       3   .2    1.6
       ZUL   P    17  4  8.7
       LIN  SP    17  4  1.5          4 31.8

                                                   4  1.0    1.6
NOV 23 BUB  PKP    0 55 45                         4  1.0    1.6
       ZUL  PKP    0 55 45
      *GS  : HO=  0:36: 8.9  LAT=22.790S LON=177.543W  Z=211KM  MB=5.4
             SOUTH OF FIJI ISLANDS

                                                   3  1.0    1.4
NOV 23 BUB   P    18 49 12                         3  1.0    1.4
       ZUL   P    18 49 13
      *GS  : HO= 18:46:33.4  LAT=39.707N LON= 19.075E  Z= 33KM  MB=4.7
             GREECE-ALBANIA BORDER REGION

NOV 24 ZUL   P     0  7 45          8  3.0       2   .3    1.5

NOV 25 BUB   PU   11 24 38.5       24 46.4       8   .5    2.2
       ZUL   PU   11 24 45.4       24 57.9       3   .5    1.7

NOV 25 ZUL   PU   14 31 46.7       31 54.0       3   .2    1.6      Q
       BUB   PU   14 31 52.0       32  5.2       4   .2    1.7

NOV 27 LIN   P    12 56 25.4       56 40.6
       BUB   PU   12 56 33.2       56 59.0      50   .2    2.8
       ZUL   PU   12 56 33.7       56 60.0      25   .2    2.5
      *GS  : HO= 12:56: 9.6  LAT=47.046N LON= 10.445E  Z= 33KM
             AUSTRIA

NOV 29 ZUL  PKP   10  8 44.7                       1  1.0    1.0
      *GS  : HO=  9:49:15.4  LAT=19.563S LON=169.362E  Z=142KM  MB=5.5
             NEW HEBRIDES ISLANDS
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T   LOG A/T  RK

NOV 29 ZUL   P    15 42 53.4
      *LDG  : HO= 15:42:11.1  LAT=45.010N LON=                1   .2    1.1
             TORINO,I.                                  7.540E  Z=  0KM  ML=3.1

NOV 29 ZUL   P    17 50  8.0          50 21.0      10   .2    2.1
       EMO   P    17 50 10.9          50 26.3
       BUB   P    17 50 13.2          50 28.5       5   .2    1.8
      *SED  : HO= 17:49:51.0  LAT=47N 3.3 LON=  7E11.7  Z= 10KM  ML=2.1
             RMS= .64S  ERH= 3.6KM  ERZ= 9.3KM  D3= 82KM  NO=14
             REGION BIEL,KT.BERN(CH)

NOV 29 BUB   PU   22 17 35.2                      90  1.5    3.6
       ZUL   PU   22 17 36.2
      *GS  : HO= 22: 5:22.4  LAT=30.698N LON=138.319E  Z=419KM  MB=6.1
             SOUTH OF HONSHU, JAPAN

NOV 29 ZUL   P    22 41  1                         2  1.0    1.3
      *GS  : HO= 22:27:26.8  LAT=27.723S LON= 66.677W  Z=126KM  MB=5.5
             CATAMARCA PROVINCE, ARGENTINA

DEC 01 ZUL   P     1 22 56.1         24   .5       2  1.5    2.0

DEC 01 EMO   P    20  4 51.2          4 58.0
       ZUL   P    20  5  9.0          5 34.2       7   .2    1.9
       BUB   P    20  5 14.5          5 44.4      12   .2    2.2
      *SED  : HO= 20: 4:38.5  LAT=45N47.0 LON=  7E49.9  Z=  2KM  ML=2.6
             RMS= .36S  ERH= 7.3KM  ERZ=-0.0KM  D3=110KM  NO=11
             V.DI GRESSONEY(I)

DEC 01 BUB   P    20 40  3.5         40 12.0      20   .1    2.3
       ZUL   P    20 40  9.3         40 21.6      14   .1    2.1

DEC 02 ZUL   P     0 24 14          24 26.5       4   .1    1.6
      *SED  : HO=  0:23:57.9  LAT=47N 9.8 LON=  9E34.3  Z= 10KM  ML=1.5
             RMS= .28S  ERH=76.6KM  ERZ=-0.0KM  D3=183KM  NO= 6
             LIECHTENSTEIN

DEC 02 ZUL   P     1 56 40                         2  1.5    2.0
       BUB   P     1 56 41                         2  1.5    2.0
      *GS  : HO=  1:55:15.9  LAT=42.988N LON= 12.970E  Z=  7KM  MB=4.9
             CENTRAL ITALY

DEC 02 BUB   P     6 47  4                         2  1.5    2.0
       ZUL   P     6 47  5                         2  1.5    2.0
      *GS  : HO=  6:34: 7.7  LAT=19.076N LON=121.155E  Z= 53KM  MB=5.5
             PHILIPPINE ISLANDS REGION

DEC 02 BUB  PKP    7  2 36.5                       7  1.5    2.5
       ZUL  PKP    7  2 36.7                       6  1.5    2.4
      *GS  : HO=  6:43:30.4  LAT= 6.168S LON=153.071E  Z= 28KM  MB=5.8
             NEW BRITAIN REGION

DEC 02 BUB   P     9 13 27.5                       9  1.5    2.6
       ZUL   P     9 13 28                        11  1.5    2.7
      *GS  : HO=  9: 5:44.2  LAT=27.991N LON= 55.819E  Z= 36KM  MB=5.4
             SOUTHERN IRAN
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK
                                                 4  1.5   2.3
                                                 4  1.5   2.3
DEC 02 BUB   P   12 49 14.5
       ZUL   P   12 49 14.5
      *GS  : HO= 12:36:44.5  LAT=14.633N LON= 91.510W  Z= 97KM MB=5.2
             GUATEMALA
                                                 3   .2   1.6      Q
DEC 03 BUB   P   11 18  5
                                                18  1.5   2.9
                                                18  1.5   2.9
DEC 04 BUB   P    3 20 41
       ZUL   P    3 20 41
      *GS  : HO=  3: 7:46.3  LAT=  .393N LON= 97.843E  Z= 20KM MB=6.0
             NORTHERN SUMATRA
                                                 1  1.5   1.7
                                                 1  1.5   1.7
DEC 05 BUB   P    5 23 30
       ZUL   P    5 23 30
      *GS  : HO=  5:22:10.4  LAT=43.060N LON= 12.630E  Z= 33KM MB=4.2
             CENTRAL ITALY
                                                11  1.5   2.7
                                                14  1.5   2.8
DEC 05 ZUL   PD  12 10 17.5
       BUB   PU  12 10 18
      *GS  : HO= 11:57:31.3  LAT= 7.686S LON= 74.453W  Z=162KM MB=6.0
             PERU-BRAZIL BORDER REGION
                                                 1  1.5   1.7
DEC 06 ZUL   PU  17 50 29
      *GS  : HO= 17:49: 3.7  LAT=42.802N LON= 12.897E  Z= 33KM MB=4.0
             CENTRAL ITALY
                                                 2   .2   1.4
DEC 06 ZUL   PD  21 53 40.5        53 50.6
       BUB   PD  21 53 40.6        53 50.8       6   .2   1.9
                                                 4  1.5   2.3
DEC 07 BUB   PU   7 46 24.5
       ZUL   PU   7 46 25.5                      2  1.5   2.0
      *GS  : HO=  7:34:11.0  LAT=51.857N LON=170.795W  Z= 33KM MB=5.5
             FOX ISLANDS, ALEUTIAN ISLANDS
                                                 2   .4   1.5      Q
DEC 07 ZUL   P   16  3 24.0         3 42.0
       BUB   PD  16  3 27.5         3 47.6       3   .4   1.7
DEC 07 EMO   P   17 16 23.6        16 30.0
       ZUL   P   17 16 37.7        16 55.5       2   .2   1.4
       BUB   PU  17 16 43.8        17  3.9       4   .2   1.7
      *SED : HO= 17:16:14.2  LAT=46N23.2 LON=  7E26.7  Z=  3KM ML=1.9
             RMS= .51S  ERH= 2.7KM  ERZ= 5.9KM  D3= 57KM  NO=16
             REGION SION,KT.VALAIS(CH)
                                                 1  1.5   1.7
DEC 07 ZUL   PU  22 14 50.5
      *GS  : HO= 22: 2:40.2  LAT=51.675N LON=174.762E  Z= 33KM MB=5.0
             NEAR ISLANDS, ALEUTIAN ISLANDS
                                                 1  1.5   1.7
DEC 09 ZUL   PU  12 15 41.8
      *GS  : HO= 12:14:15.8  LAT=48.167N LON= 16.862E  Z= 10KM
             AUSTRIA
                                                 2  1.5   2.0
DEC 09 BUB   PD  13  2 28.2
       ZUL   PD  13  2 28.8                      1  1.5   1.7
      *GS  : HO= 13: 1:40.4  LAT=46.783N LON= 12.823E  Z= 33KM
             NORTHERN ITALY
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MO  DY STA  PRK   H  M  S      SRK   M   S    AMP   T  LOG A/T  RK
DEC 09 BUB   PD  16  7 23.5         7 35.1       8   .2   2.0
       ZUL   PD  16  7 26.0         7 39.9       6   .2   1.9
      *KA  : HO= 16: 7:20.4  LAT=48.410N LON=  7.700E  Z=  5KM ML=1.7
             RHEINGRABEN,D.
DEC 10 BUB   PU   1 49 11                        7  1.5   2.5
       ZUL   PU   1 49 11.8                      5  1.5   2.4
      *GS  : HO=  1:41: 5.9  LAT=36.457N LON= 70.479E  Z=204KM MB=5.5
             HINDU KUSH REGION
DEC 10 LIN   P   13  0 21.0         0 25.5
       ZUL   PU  13  0 30.4         0 43.0       3   .2   1.6
       BUB   PU  13  0 33.7         0 45.5       4   .2   1.7
DEC 10 ZUL   PD  13  6 52.4         7  5.0      10   .2   2.1
       BUB   PD  13  6 56.7         7 11.2       7   .2   1.9
       EMO   P   13  6 57.7         7 14.6
DEC 11 ZUL   PU  13  7  4.8         7 18.3       8   .2   2.0
       BUB   PU  13  7  9.1         7 23.1       6   .2   1.9
DEC 12 ZUL   PD  16  7 45.9                      2  1.5   2.0
       BUB   PD  16  7 49.9                      2  1.5   2.0
DEC 12 BLA   PD  22 24 10.7        24 14.7
       ZUL   PD  22 24 17.5        24 25.6       4   .2   1.7
       BUB   PD  22 24 18.9        24 28.7      11   .2   2.1
      *SED : HO= 22:24: 5.8  LAT=47N43.9 LON=  7E33.6  Z=  2KM ML=1.7
             RMS= .18S  ERH= 1.1KM  ERZ=-0.0KM  D3= 77KM  NO= 8
             ALSACE(F)
DEC 12 BLA   PD  22 24 35.2        24 38.9
       ZUL   P   22 24 42.0        24 49.9       3   .2   1.6
       BUB   P   22 24 43.3        24 53.1       7   .2   1.9
      *SED : HO= 22:24:30.4  LAT=47N42.5 LON=  7E34.6  Z= 10KM ML=1.6
             RMS= .22S  ERH= 9.9KM  ERZ=-0.0KM  D3= 77KM  NO= 6
             ALSACE(F)
DEC 13 BUB   PD   9  5  1.7                      1  1.5   1.7
       ZUL   PD   9  5  2.2                      1  1.5   1.7
DEC 13 BLA   P   16 25 23.8        25 37.0
       ZUL   PU  16 25 35.3        25 52.7       3   .2   1.6
       BUB   PU  16 25 38.3        25 58.7       2   .2   1.4
DEC 13 BUB   PD  22 50 43.4                      3  1.5   2.1
       ZUL   PU  22 50 43.7                      3  1.5   2.1
      *GS  : HO= 22:49:52.3  LAT=45.739N LON= 12.393E  Z= 33KM
             NORTHERN ITALY
DEC 13 BUB   PD  23 13 34.7                      3  1.5   2.1
       ZUL   P   23 13 35.1                      2  1.5   2.0
DEC 14 ZUL   PD   2 39 41                        9  1.5   2.6
       BUB   P    2 39 42.5                      7  1.5   2.5
      *GS  : HO=  2:36:38.4  LAT=38.278N LON= 20.751E  Z= 33KM MB=5.3
             GREECE
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

                                              3  1.5   2.1
DEC 14 ZUL  PU   21 32 21.2                   3  1.5   2.1
       BUB  PU   21 32 22.6
      *GS : HO= 21:29:19.8  LAT=38.605N LCN= 20.407E  Z= 11KM MB=5.0
            GREECE

                                              1  1.5   1.7
DEC 15 BUB  PD   20 58 20.4                   1  1.5   1.7
       ZUL  PD   20 58 20.6
                                                                Q
DEC 16 BLA  PU   17 16  6.5        16 19.6
       ZUL  P    17 16 17.6        16 35.5    2   .2   1.4
       BUB  PD   17 16 21.4        16 41.2    3   .2   1.6

                                              1  1.5   1.7
DEC 16 ZUL  PU   17 53 54.2                   1  1.5   1.7
       BUB  PU   17 53 54.7
      *GS : HO= 17:53:14.3  LAT=49.752N LCN=  6.446E  Z= 33KM
            GERMANY

DEC 18 BUB  P     9 13 50.1        14  4.2    1   .2   1.1      Q
       BLA  P     9 13 50.7        14  4.7

DEC 19 BUB  PD    8  5 31.9         5 46.7    2   .2   1.4
       ZUL  PD    8  5 36.8         5 54.5    2   .2   1.4

DEC 19 EMO  P     8  7 24.1         7 26.9

DEC 19 BUB  PD    9 18 17.9        18 25.5    3   .2   1.6
       ZUL  PU    9 18 22.2        18 34.6    7   .2   1.9
       BLA  P     9 18 29.0        18 47.2

                                              2  1.5   2.0
DEC 19 BUB  PD   11 17 41.0                   2  1.5   2.0
       ZUL  PD   11 17 41.2
      *GS : HO= 10:59: 1.9  LAT=17.467S LCN=179.042E  Z=646KM MB=4.5
            FIJI ISLANDS

DEC 19 ZUL  PU   15 33  7.1        33 18.4   10   .2   2.1      Q
       BUB  PU   15 33  7.6        33 19.8    5   .2   1.8

                                              5  1.5   2.4
DEC 19 BUB  PD   16 13 14.7                   3  1.5   2.1
       ZUL  PD   16 13 15.3
      *GS : HO= 16: 0:49.0  LAT= 7.379N LCN= 78.650W  Z= 13KM MB=5.4
            PANAMA

DEC 20 ZUL  PD   12  7 30.2         7 33.6   25   .2   2.5      Q
       BUB  P    12  7 34.0         7 39.5    3   .2   1.6
       BLA  P    12  7 36.2         7 42.5
       LIN  P    12  7 45.5         7 58.5

                                              2  1.5   2.0
DEC 20 ZUL  PD   12 28 46.5                   2  1.5   2.0
       BUB  PD   12 28 46.8
      *GS : HO= 12:16:47.2  LAT=50.767N LCN=157.263E  Z= 33KM MB=5.1
            KURIL ISLANDS
      *GS : HO= 15: 9:29.0  LAT=39.736N LCN= 20.375E  Z= 12KM MB=4.8
            GREECE-ALBANIA BORDER REGION

DEC 20 BLA  PD   16 37 11.3        37 20.0   14   .2   2.2
       EMO  P    16 37 14.9        37 26.4
       ZUL  PD   16 37 18.2        37 32.0   12   .2   2.2
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MO  DY STA  PRK   H  M  S      SRK   M   S     AMP   T  LOG A/T  RK

DEC 20 LIN  P    16 37 22.0            37 38.0
       BUB  PU   16 37 23.5            37 40.5     9   .2   2.0
      *SED : HO= 16:36:59.5  LAT=46N52.3 LON=  7E11.4 Z=  2KM ML=2.3
             RMS= .72S  ERH= 2.6KM  ERZ=-0.0KM  D3= 69KM  NO=26
             REGION FRIBOURG(CH)

DEC 20 BUB  PU   16 50  6                          3  1.5   2.1
       ZUL  PD   16 50  6.8                        6  1.5   2.4
      *GS : HO= 16:38:55.6  LAT=49.832N LON=149.681E Z=416KM MB=5.0
             NORTHWEST OF KURIL ISLANDS

DEC 21 ZUL  PKP   8 48 37                          9  1.5   2.6
       BUB  PKP   8 48 37.5                        9  1.5   2.6
      *GS : HO=  8:28:55.9  LAT=14.563S LCN=175.232W Z= 33KM MB=5.6
             SAMOA ISLANDS REGION

DEC 21 BLA  PU   11 27 18.4            27 31.2                      Q
       ZUL  PD   11 27 30.2            27 47.9     1   .2   1.1
       BUB  PD   11 27 32.8            27 52.9     1   .2   1.1

DEC 21 ZUL  PD   15 15 46.7                        1  1.5   1.7
       BUB  PD   15 15 47                          1  1.5   1.7

DEC 22 BLA  PD    3 24 31.4            24 44.4
       ZUL  P     3 24 38.0            24 54.3     6   .2   1.9
       BUB  PU    3 24 44.0            25  3.3     5   .2   1.8
      *SED : HO=  3:24:16.2  LAT=46N41.9 LCN=  6E58.2 Z=  4KM ML=2.2
             RMS= .63S  ERH= 2.8KM  ERZ= 4.1KM  D3= 85KM  NO=18
             REGION ROMONT,KT.FRIBOURG(CH)

DEC 22 BUB  PD   17  2 52.4                        4  1.5   2.3
       ZUL  PD   17  2 53.0                        2  1.5   2.0
      *GS : HO= 16:44: 5.3  LAT=17.622S LCN=179.023W Z=559KM MB=5.1
             FIJI ISLANDS REGICN

DEC 23 ZUL  PKP   1 23 47.2                        5  1.5   2.4
       BUB  PKP   1 23 49.5                        3  1.5   2.1
      *GS : HO=  1: 4: 2.7  LAT=14.590S LCN=175.666W Z= 33KM MB=5.4
             SAMOA ISLANDS REGION

DEC 23 BUB  PU    5 27 47.5                        4  1.5   2.3
       ZUL  PU    5 27 50.0                        2  1.5   2.0
      *GS : HO=  5:22: 8.4  LAT=43.128N LCN= 47.049E Z= 33KM MB=4.9
             EASTERN CAUCASUS

DEC 23 BUB  PU    9 55 30.5                        2  1.5   2.0
       ZUL  PU    9 55 31.4                        2  1.5   2.0
      *GS : HO=  9:45:42.8  LAT=29.412N LCN= 81.393E Z= 45KM MB=5.2
             NEPAL

DEC 24 BUB  PD    2 22 46            23 22.0       3  1.5   2.1
       ZUL  PD    2 22 46                          2  1.5   2.0
      *GS : HO=  2:10:25.4  LAT=14.259N LCN= 90.080W Z=155KM MB=5.4
             GUATEMALA

DEC 24 ZUL  PU    7  8 53                         14  1.5   2.8
       BUB  PU    7  8 54                         14  1.5   2.6
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

DEC 24*GS  : HO=  6:55:47.1  LAT= 2.308S LON= 99.043E  Z= 33KM MB=5.8
             SOUTHERN SUMATRA
DEC 24 LIN   P   22 59 45.5        59 53.5
       ZUL   PD  22 59 58.0        60 16.3      6   .2    1.9
       BUB   PU  23  0  3.0         0 22.8      8   .2    2.0
       BLA   P   23  0  3.2         0 24.2
      *SED : HO= 22:59:34.8  LAT=46N17.7 LON=  8E52.5 Z=  2KM ML=2.3
             RMS= .96S  ERH= 4.8KM  ERZ=-0.0KM  D3= 98KM  NO=16
             V.VERZASCA,KT.TICINO(CH)
                                                 2  1.5    2.0
DEC 25 BUB  PKP   2 36 24                        2  1.5    2.0
       ZUL  PKP   2 36 24
      *GS  : HO=  2:17:14.4  LAT=14.301S LON=167.254E  Z=179KM MB=5.0
             NEW HEBRIDES ISLANDS
                                                 6  1.5    2.4
DEC 25 BUB   PD   3  1 21.0                      9  1.5    2.6
       ZUL   PD   3  1 22.8
      *GS  : HO=  2:49:13.0  LAT=51.697N LON=174.635E  Z= 40KM MB=5.7
             NEAR ISLANDS, ALEUTIAN ISLANDS
                                                 2  1.5    2.0
DEC 25 BUB   PD   8  6 54.5                      2  1.5    2.0
       ZUL   PD   8  6 56
      *GS  : HO=  7:54:46.0  LAT=51.731N LON=174.466E  Z= 37KM MB=5.1
             NEAR ISLANDS, ALEUTIAN ISLANDS
                                                 2  1.5    2.0
DEC 25 ZUL   PU  15 13  8.8                      2  1.5    2.0
       BUB   PU  15 13 10
      *GS  : HO= 15: 3:16.7  LAT=52.507N LON=152.048E  Z=524KM MB=4.8
             NORTHWEST OF KURIL ISLANDS

DEC 26 ZUL   P    5 37 51.0        38  4.2      4   .2    1.7
       BUB   PD   5 37 56.1        38  9.8      2   .2    1.4
       BLA   P    5 37 56.7        38  9.8
      *SED : HO=  5:37:36.6  LAT=46N42.7 LON=  8E24.7 Z= 10KM ML=1.6
             RMS= .72S  ERH= 4.7KM  ERZ=-0.0KM  D3= 82KM  NO=14
             SUSTENPASS,KT.BERN/URI(CH)

DEC 27 BUB   PU   5 55 15.5                      6  1.5    2.4      A
       ZUL   PU   5 55 16.8                      6  1.5    2.4
      *GS  : HO=  5:46:56.8  LAT=49.960N LON= 79.046E  Z=  0KM MB=5.6
             EASTERN KAZAKH SSR

DEC 27 BUB   PD   8 28 27.4        28 35.6     10   .2    2.1
       ZUL   PD   8 28 33.3        28 45.9      8   .2    2.0
       BLA   P    8 28 40.2        28 57.9

DEC 27 BLA   P   16 31 31.1        31 44.0                        Q
       ZUL   PU  16 31 42.0        32   .2      3   .4    1.7
       BUB   PU  16 31 44.6        32  4.7      4   .5    1.9

DEC 28 EMO   P    9 23  6.4        23 12.8
       BLA   P    9 23 20.0        23 35.7
       ZUL   P    9 23 22.6        23 40.5      2   .2    1.4
       BUB   P    9 23 27.5        23 49.0      2   .2    1.4
      *SED : HO=  9:22:57.6  LAT=46N19.0 LON=  7E30.1 Z=  2KM ML=1.8
             RMS= .45S  ERH= 4.5KM  ERZ=-0.0KM  D3= 66KM  NO=11
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MO  DY STA  PRK    H  M  S      SRK    M    S     AMP    T  LOG A/T  RK

             REGION SIERRE,KT.VALAIS(CH)
DEC 28 BUB   PD  12 20 26.0                     11  1.5    2.7
       ZUL   PD  12 20 27.1                      6  1.5    2.4
      *GS  : HO= 12:11:43.7  LAT=35.054N LON= 72.870E  Z= 22KM MB=6.0
             WEST PAKISTAN

DEC 28 ZUL   PU  14 29 33                        2   .6    1.6      Q
       BUB   P   14 29 40.6        29 54.0
DEC 29 ZUL   PU   0  2 54.8                      2  1.5    2.0
       BUB   PU   0  2 55.5                      2  1.5    2.0
      *GS  : HO= 23:49:51.0  LAT=14.974N LON= 91.062W  Z=186KM MB=4.6
             MEXICO-GUATEMALA BORDER REGION

DEC 29 BUB   PU   3 54 59                       18  1.5    2.9
       ZUL   PU   3 55  0.5                     18  1.5    2.9
      *GS  : HO=  3:50: 6.1  LAT=64.507N LON= 17.625W  Z= 33KM MB=5.2
             ICELAND

DEC 29 BUB   PU  18 36  4.5                      14  1.5    2.8
       ZUL   PU  18 36  5.9                       7  1.5    2.5
      *GS  : HO= 18:25:  .7  LAT=61.597N LON=150.511W  Z= 67KM MB=5.6
             SOUTHERN ALASKA

DEC 30 BUB   PU   4 55 56.0                       6  1.5    2.4
       ZUL   PU   4 55 57.2                       5  1.5    2.4
      *GS  : HO=  4:47:44.3  LAT=35.991N LON= 69.718E  Z=116KM MB=5.3
             HINDU KUSH REGION

DEC 31 BUB   PD   0  9 31.5                       1  1.5    1.7
       ZUL   PD   0  9 31.5                       1  1.5    1.7
      *GS  : HO= 23:57: 3.2  LAT=39.528N LON=143.178E  Z= 51KM MB=4.6
             OFF EAST COAST OF HONSHU, JAPAN

DEC 31 ZUL   PU  20 28  8.5                       2  1.5    2.0
       BUB   PU  20 28  9.0                       2  1.5    2.0
      *GS  : HO= 20:15:32.7  LAT=14.150N LON= 91.921W  Z= 75KM MB=5.4
             GUATEMALA

DEC 31 ZUL   PD  20 33 48.5                       4  1.5    2.3
       BUB   PD  20 33 49.5                       5  1.5    2.4
      *GS  : HO= 20:21: 9.0  LAT=14.126N LON= 91.824W  Z= 39KM MB=5.7
             GUATEMALA
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JAN 03	HO= 7:39:47.3	LAT=39.803N	LON= 26.883E	Z= 33KM	MB=4.3	GS
		TURKEY				
JAN 05	HO= 4:28: 3.9	LAT=45.431N	LON= 25.675E	Z= 90KM	MB=3.9	GS
		RUMANIA				
JAN 05	HO= 7:33:37.3	LAT=43.430N	LON= 12.303E	Z= 33KM	MB=3.9	GS
		CENTRAL ITALY				
JAN 06	HO= 7:46: 6.8	LAT=35.130N	LON= 27.750E	Z= 28KM	MB=3.2	GS
		DODECANESE ISLANDS				
JAN 06	HO= 23:24:16.7	LAT=40.183N	LON= 24.646E	Z= 33KM	MB=4.3	GS
		AEGEAN SEA				
JAN 06	HO= 23:49:48.9	LAT=40.090N	LON= 24.725E	Z= 47KM		GS
		AEGEAN SEA				
JAN 10	HO= 11:53:32.6	LAT=38.897N	LON= 14.822E	Z=339KM	MB=4.3	GS
		SICILY				
JAN 11	HO= 21:15: 6.1	LAT=40.139N	LON= 24.463E	Z= 45KM	MB=3.8	GS
		AEGEAN SEA				
JAN 15	HO= 17:34:19.4	LAT=37.405N	LON= 21.009E	Z= 38KM	MB=4.2	GS
		SOUTHERN GREECE				
JAN 15	HO= 19:47:34.3	LAT=64.757N	LON= 17.113W	Z= 33KM	MB=4.7	GS
		ICELAND				
JAN 15	HO= 20:11:13.3	LAT=47.067N	LON= 7.156E	Z= 33KM		GS
		SWITZERLAND				
JAN 18	HO= 10:57:14.2	LAT=40.429N	LON= 28.904E	Z= 23KM	MB=4.2	GS
		TURKEY				
JAN 19	HO= 2:49:50.3	LAT=46.664N	LON= 7.428E	Z= 33KM		GS
		SWITZERLAND				
JAN 21	HO= 0:13: 8.1	LAT=36.165N	LON= 27.963E	Z= 70KM	MB=4.0	GS
		DODECANESE ISLANDS				
JAN 21	HO= 20:11:57.6	LAT=38.942N	LON= 15.406E	Z=133KM	MB=3.8	GS
		SICILY				
JAN 21	HO= 21:18:22.3	LAT=38.266N	LON= 22.260E	Z=140KM	MB=3.1	GS
		GREECE				
JAN 24	HO= 9:40:16.0	LAT=38.323N	LON= 19.979E	Z= 33KM	MB=4.7	GS
		GREECE				
JAN 24	HO= 13:19:23.2	LAT=39.810N	LON= 14.589E	Z=358KM	MB=4.6	GS
		TYRRHENIAN SEA				
JAN 25	HO= 0:43:40.4	LAT=42.852N	LON= 13.212E	Z= 33KM		GS
		CENTRAL ITALY				
JAN 26	HO= 5:19:16.6	LAT=37.404N	LON= 29.756E	Z= 25KM	MB=4.4	GS
		TURKEY				

JAN 27	HO= 21: 6:20.4	LAT=35.163N	LON= 25.421E	Z= 66KM	MB=4.5	GS
		CRETE				
JAN 28	HO= 0:36:10.9	LAT=37.386N	LON= 11.075W	Z= 33KM	MB=4.0	GS
		NORTH ATLANTIC OCEAN				
JAN 28	HO= 3:39: 3.6	LAT=36.065N	LON= 4.498E	Z= 33KM	MB=4.8	GS
		ALGERIA				
JAN 29	HO= 15:12:44.9	LAT=38.392N	LON= 21.798E	Z= 31KM	MB=4.4	GS
		GREECE				
FEB 01	HO= 0: 1: 2.4	LAT=38.552N	LON= 27.015E	Z= 29KM	MB=5.2	GS
		TURKEY				
FEB 04	HO= 23:38: 4.0	LAT=40.168N	LON= 27.006E	Z= 57KM	MB=3.6	GS
		TURKEY				
FEB 05	HO= 6:41:59.5	LAT=35.979N	LON= 4.385E	Z= 33KM	MB=4.4	GS
		ALGERIA				
FEB 05	HO= 15: 5:24.2	LAT=36.819N	LON= 27.016E	Z=153KM	MB=4.8	GS
		DODECANESE ISLANDS				
FEB 05	HO= 18:23:26.2	LAT=37.309N	LON= 29.583E	Z= 39KM	MB=4.4	GS
		TURKEY				
FEB 07	HO= 8:46:54.6	LAT=40.081N	LON= 26.860E	Z= 37KM	MB=4.3	GS
		TURKEY				
FEB 08	HO= 20:12:17.7	LAT=44.197N	LON= 6.542E	Z= 33KM	MB=4.9	GS
		FRANCE				
FEB 10	HO= 4:12: .4	LAT=37.333N	LON= 29.572E	Z= 33KM	MB=4.6	GS
		TURKEY				
FEB 11	HO= 11:52:11.7	LAT=36.227N	LON= 31.801E	Z= 99KM		GS
		TURKEY				
FEB 11	HO= 13:44:30.8	LAT=46.186N	LON= 7.835E	Z= 33KM		GS
		SWITZERLAND				
FEB 12	HO= 12:35:44.5	LAT=46.126N	LON= 7.751E	Z= 33KM		GS
		SWITZERLAND				
FEB 14	HO= 9:17:10.1	LAT=38.559N	LON= 27.214E	Z= 15KM	MB=4.3	GS
		TURKEY				
FEB 17	HO= 5: 3: 7.4	LAT=38.013N	LON= 21.707E	Z= 33KM	MB=3.9	GS
		GREECE				
FEB 17	HO= 11:38:15.1	LAT=37.328N	LON= 20.799E	Z= 8KM	MB=4.0	GS
		IONIAN SEA				
FEB 19	HO= 23:42: 5.7	LAT=36.561N	LON= 23.216E	Z=111KM	MB=3.6	GS
		SOUTHERN GREECE				
FEB 22	HO= 13:40:48.9	LAT=45.646N	LON= 26.305E	Z=149KM	MB=4.2	GS
		RUMANIA				

FEB 23	HO= 1:28:45.5	LAT=38.062N	LON= 21.774E	Z= 44KM	MB=4.4	GS
		GREECE				
FEB 23	HO= 20:55:19.1	LAT=38.346N	LON= 20.216E	Z= 33KM	MB=4.4	GS
		GREECE				
FEB 25	HO= 18:10:56.7	LAT=51.298N	LON= 2.341W	Z= 33KM		GS
		UNITED KINGDOM				
FEB 25	HO= 20: 3:44.1	LAT=51.578N	LON= 3.039W	Z= 33KM	MB=4.3	GS
		UNITED KINGDOM				
FEB 26	HO= 11:13:20.7	LAT=37.239N	LON= 20.847E	Z= 33KM	MB=4.4	GS
		IONIAN SEA				
FEB 26	HO= 14:19:18.3	LAT=35.104N	LON= 22.923E	Z= 33KM	MB=4.2	GS
		MEDITERRANEAN SEA				
FEB 27	HO= 2: 3:13.4	LAT=47.415N	LON= 7.564E	Z= 33KM		GS
		SWITZERLAND				
FEB 27	HO= 8:28:39.9	LAT=41.600N	LON= 23.393E	Z= 21KM	MB=3.4	GS
		GREECE-BULGARIA BORDER REGION				
MAR 01	HO= 3: 6:52.1	LAT=40.591N	LON= 19.928E	Z= 33KM		GS
		ALBANIA				
MAR 03	HO= 21:36:25.0	LAT=34.207N	LON= 25.484E	Z= 33KM	MB=4.1	GS
		CRETE				
MAR 04	HO= 2:17:33.0	LAT=46.021N	LON= 10.541E	Z= 33KM		GS
		NORTHERN ITALY				
MAR 07	HO= 3:50:29.0	LAT=33.917N	LON= 25.542E	Z= 33KM	MB=4.3	GS
		EASTERN MEDITERRANEAN SEA				
MAR 08	HO= 2:33:53.1	LAT=34.781N	LON= 24.722E	Z= 50KM	MB=4.5	GS
		CRETE				
MAR 08	HO= 12:30:16.1	LAT=34.680N	LON= 24.656E	Z= 33KM	MB=4.3	GS
		CRETE				
MAR 09	HO= 3:52: 7.1	LAT=34.640N	LON= 24.891E	Z= 57KM	MB=4.2	GS
		CRETE				
MAR 09	HO= 4:12: 7.7	LAT=34.631N	LON= 25.054E	Z= 54KM	MB=4.6	GS
		CRETE				
MAR 10	HO= 21:51: 2.5	LAT=40.754N	LON= 21.161E	Z= 17KM	MB=4.1	GS
		GREECE				
MAR 11	HO= 5:25:32.1	LAT=40.397N	LON= 7.730W	Z= 33KM		GS
		PORTUGAL				
MAR 11	HO= 12:31:42.9	LAT=30.420N	LON= 9.999W	Z= 33KM		GS
		MOROCCO				
MAR 12	HO= 18:21:33.9	LAT=36.820N	LON= 26.326E	Z= 39KM	MB=4.7	GS
		DODECANESE ISLANDS				

MAR 13	HO= 3:17:40.0	LAT=44.112N	LON= 5.278E	Z= 33KM		GS
		FRANCE				
MAR 13	HO= 17:20:45.5	LAT=34.651N	LON= 24.831E	Z= 51KM	MB=4.6	GS
		CRETE				
MAR 14	HO= 20:57:34.4	LAT=41.853N	LON= 19.383E	Z= 33KM	MB=4.3	GS
		ALBANIA				
MAR 19	HO= 17: 7:20.1	LAT=34.065N	LON= 25.979E	Z= 33KM	MB=4.1	GS
		CRETE				
MAR 20	HO= 23:38:51.6	LAT=37.227N	LON= 21.697E	Z=111KM	MB=3.9	GS
		SOUTHERN GREECE				
MAR 22	HO= 17: 2:20.8	LAT=40.681N	LON= 20.489E	Z= 33KM	MB=4.7	GS
		GREECE-ALBANIA BORDER REGION				
MAR 25	HO= 13:44:43.8	LAT=34.916N	LON= 4.501W	Z= 33KM		GS
		MOROCCO				
MAR 26	HO= 6:56:27.2	LAT=38.826N	LON= 23.400E	Z=105KM	MB=3.1	GS
		GREECE				
MAR 28	HO= 21:32:35.3	LAT=37.145N	LON= 14.987E	Z= 33KM	MB=4.6	GS
		SICILY				
APR 01	HO= 0:22:39.8	LAT=35.562N	LON= 22.439E	Z= 67KM	MB=4.4	GS
		MEDITERRANEAN SEA				
APR 04	HO= 10:26: 7.8	LAT=46.080N	LON= 27.447E	Z= 33KM		GS
		RUMANIA				
APR 07	HO= 0:56:55.7	LAT=36.542N	LON= 4.410E	Z= 33KM	MB=4.2	GS
		ALGERIA				
APR 07	HO= 3:57:49.8	LAT=39.030N	LON= 27.862E	Z= 11KM		GS
		TURKEY				
APR 07	HO= 14:22:47.1	LAT=34.750N	LON= 24.699E	Z= 29KM	MB=4.7	GS
		CRETE				
APR 08	HO= 0: 9:42.1	LAT=40.566N	LON= 19.827E	Z= 19KM	MB=3.2	GS
		ALBANIA				
APR 09	HO= 0:31: 9.0	LAT=39.435N	LON= 20.238E	Z= 44KM	MB=3.1	GS
		GREECE-ALBANIA BORDER REGION				
APR 10	HO= 19:44:38.5	LAT=34.278N	LON= 22.809E	Z= 33KM	MB=3.8	GS
		MEDITERRANEAN SEA				
APR 11	HO= 19:34:34.4	LAT=44.932N	LON= 8.246E	Z= 33KM		GS
		NORTHERN ITALY				
APR 12	HO= 20:21: 7.2	LAT=35.553N	LON= 23.232E	Z=101KM	MB=3.7	GS
		CRETE				
APR 14	HO= 11:29:31.3	LAT=34.420N	LON= 25.634E	Z= 2KM	MB=4.2	GS
		CRETE				

APR 14	HO= 12: 2:25.3	LAT=36.377N	LON= 27.064E	Z= 45KM	MB=4.0	GS
		DODECANESE ISLANDS				
APR 15	HO= 21:49:13.6	LAT=44.532N	LON= 9.850E	Z= 33KM	MB=4.5	GS
		NORTHERN ITALY				
APR 17	HO= 1:31:33.9	LAT=45.972N	LON= 21.141E	Z= 33KM	MB=5.6	GS
		RUMANIA				
APR 18	HO= 10:15:45.2	LAT=34.381N	LON= 24.336E	Z= 33KM	MB=4.1	GS
		CRETE				
APR 22	HO= 3:20:13.5	LAT=34.876N	LON= 27.679E	Z= 65KM	MB=4.4	GS
		EASTERN MEDITERRANEAN SEA				
APR 22	HO= 17:58:36.0	LAT=38.438N	LON= 22.247E	Z= 66KM	MB=4.0	GS
		GREECE				
APR 26	HO= 7:21:14.2	LAT=47.672N	LON= 7.104E	Z= 33KM		GS
		SWITZERLAND				
APR 26	HO= 7:25: 6.7	LAT=47.118N	LON= 7.890E	Z= 33KM		GS
		SWITZERLAND				
APR 28	HO= 0:55:32.8	LAT=36.269N	LON= 31.854E	Z= 33KM	MB=4.2	GS
		TURKEY				
APR 28	HO= 12:52:50.3	LAT=68.680N	LON= 16.231E	Z= 33KM	MB=4.9	GS
		NORTHERN NORWAY				
APR 28	HO= 16:29:31.4	LAT=34.184N	LON= 24.550E	Z= 33KM	MB=4.3	GS
		CRETE				
MAY 04	HO= 15:14:11.9	LAT=34.807N	LON= 5.051E	Z= 33KM	MB=4.3	GS
		ALGERIA				
MAY 05	HO= 6: 9:19.2	LAT=34.996N	LON= 4.576E	Z= 30KM	MB=4.1	GS
		ALGERIA				
MAY 06	HO= 7:50:22.1	LAT=46.336N	LON= 13.403E	Z= 54KM		GS
		AUSTRIA				
MAY 09	HO= 17: 2:21.7	LAT=36.602N	LON= 27.638E	Z= 33KM	MB=4.5	GS
		DODECANESE ISLANDS				
MAY 12	HO= 0:20:56.9	LAT=36.663N	LON= 27.033E	Z=156KM	MB=4.5	GS
		DODECANESE ISLANDS				
MAY 12	HO= 19:48:13.3	LAT=48.269N	LON= 9.102E	Z= 12KM		GS
		GERMANY				
MAY 16	HO= 2:28:37.2	LAT=35.040N	LON= 32.074E	Z= 33KM		GS
		CYPRUS				
MAY 16	HO= 15: 7:26.5	LAT=36.153N	LON= 27.408E	Z= 33KM	MB=4.1	GS
		DODECANESE ISLANDS				
MAY 19	HO= 13:20:17.3	LAT=45.630N	LON= 10.275E	Z= 33KM		GS
		NORTHERN ITALY				

MAY 19	HO= 22: 1: 9.4	LAT=35.486N	LON= 26.333E	Z= 83KM	MB=4.9	GS
		CRETE				
MAY 20	HO= 4:19:25.2	LAT=49.832N	LON= 7.700E	Z= 25KM		GS
		GERMANY				
MAY 21	HO= 7:42:35.7	LAT=47.686N	LON= 7.688E	Z= 33KM		GS
		SWITZERLAND				
MAY 22	HO= 7:40:15.2	LAT=37.623N	LON= 21.545E	Z=129KM	MB=3.9	GS
		SOUTHERN GREECE				
MAY 23	HO= 19:51:30.0	LAT=43.377N	LON= 17.067E	Z= 33KM	MB=4.7	GS
		YUGOSLAVIA				
MAY 25	HO= 12: 2:29.0	LAT=35.612N	LON= 9.882W	Z= 33KM		GS
		WEST OF GIBRALTAR				
MAY 26	HO= 13: 6:53.3	LAT=37.518N	LON= 21.128E	Z= 57KM	MB=4.2	GS
		SOUTHERN GREECE				
MAY 30	HO= 15:39:40.7	LAT=39.344N	LON= 24.862E	Z= 38KM	MB=4.2	GS
		AEGEAN SEA				
JUN 01	HO= 1:45:35.4	LAT=38.473N	LON= 27.087E	Z= 33KM		GS
		TURKEY				
JUN 01	HO= 16: 7: 8.4	LAT=36.178N	LON= 22.490E	Z= 39KM	MB=4.5	GS
		SOUTHERN GREECE				
JUN 07	HO= 14:46:30.3	LAT=39.065N	LON= 20.402E	Z= 35KM	MB=4.2	GS
		GREECE-ALBANIA BORDER REGION				
JUN 10	HO= 4:23:28.6	LAT=33.611N	LON= 3.790W	Z= 39KM	MB=4.3	GS
		MOROCCO				
JUN 10	HO= 5:11: .3	LAT=45.645N	LON= 26.460E	Z=167KM	MB=4.2	GS
		RUMANIA				
JUN 11	HO= 2: 6:33.9	LAT=34.630N	LON= 28.505E	Z= 43KM	MB=4.1	GS
		EASTERN MEDITERRANEAN SEA				
JUN 13	HO= 4:20: 6.2	LAT=36.877N	LON= 4.077W	Z= 51KM	MB=4.1	GS
		STRAIT OF GIBRALTAR				
JUN 15	HO= 17:41:41.0	LAT=46.104N	LON= 7.051E	Z= 33KM		GS
		SWITZERLAND				
JUN 16	HO= 9: 4:21.0	LAT=39.342N	LON= 24.314E	Z= 33KM	MB=3.7	GS
		AEGEAN SEA				
JUN 17	HO= 19:25:52.8	LAT=38.697N	LON= 17.768E	Z= 33KM	MB=3.8	GS
		SOUTHERN ITALY				
JUN 18	HO= 8:26:12.9	LAT=38.543N	LON= 20.416E	Z= 33KM	MB=4.8	GS
		GREECE				
JUN 20	HO= 9:28:33.4	LAT=44.352N	LON= 17.714E	Z= 33KM	MB=5.1	GS
		YUGOSLAVIA				

JUN 20	HO= 17: 8:27.3	LAT=45.965N	LON= 15.529E	Z= 47KM	MB=4.5	GS	YUGOSLAVIA
JUN 20	HO= 22:26:31.8	LAT=46.085N	LON= 15.479E	Z= 33KM	MB=4.4	GS	YUGOSLAVIA
JUN 22	HO= 23:30:15.0	LAT=41.262N	LON= 23.032E	Z= 33KM	MB=5.1	GS	GREECE-BULGARIA BORDER REGION
JUN 25	HO= 22:23:46.2	LAT=64.602N	LON= 17.651W	Z= 33KM	MB=5.1	GS	ICELAND
JUN 26	HO= 14:24:37.7	LAT=36.595N	LON= 34.439E	Z= 33KM	MB=4.0	GS	TURKEY
JUN 28	HO= 5:29:39.5	LAT=51.581N	LON= 7.789E	Z= 1KM		GS	GERMANY
JUN 28	HO= 11: 9:40.2	LAT=36.566N	LON= 5.271E	Z= 33KM	MB=5.0	GS	ALGERIA
JUN 28	HO= 23:54:39.6	LAT=39.463N	LON= 28.268E	Z= 21KM		GS	TURKEY
JUN 29	HO= 1: 6:58.6	LAT=36.669N	LON= 5.190E	Z= 33KM	MB=4.7	GS	ALGERIA
JUN 29	HO= 22:32: .7	LAT=39.650N	LON= 18.658E	Z= 33KM	MB=4.0	GS	SOUTHERN ITALY
JUN 30	HO= 19: 5:23.8	LAT=44.145N	LON= 10.678E	Z= 33KM	MB=4.3	GS	NORTHERN ITALY
JUL 01	HO= 1:26:38.0	LAT=49.417N	LON= 6.033E	Z= 0KM	MB=4.3	GS	GERMANY
JUL 09	HO= 2:32:17.6	LAT=36.652N	LON= 28.449E	Z= 69KM	MB=5.0	GS	DODECANESE ISLANDS
JUL 10	HO= 12:15: 5.9	LAT=36.136N	LON= 28.290E	Z= 45KM	MB=3.9	GS	DODECANESE ISLANDS
JUL 10	HO= 19:34:52.7	LAT=36.924N	LON= 23.018E	Z= 61KM	MB=4.0	GS	SOUTHERN GREECE
JUL 13	HO= 15:57:25.2	LAT=35.969N	LON= 4.785E	Z= 37KM	MB=4.8	GS	ALGERIA
JUL 14	HO= 2:55:26.7	LAT=35.591N	LON= 3.735W	Z= 31KM	MB=4.4	GS	STRAIT OF GIBRALTAR
JUL 14	HO= 11:21: 9.4	LAT=37.049N	LON= 21.141E	Z= 41KM	MB=4.2	GS	SOUTHERN GREECE
JUL 14	HO= 20:17:23.1	LAT=38.803N	LON= 22.048E	Z= 67KM	MB=3.8	GS	GREECE
JUL 17	HO= 5: 9:23.0	LAT=45.750N	LON= 26.531E	Z=145KM	MB=5.1	GS	RUMANIA

JUL 19	HO= 7:40:23.3	LAT=35.734N	LON= 31.557E	Z= 65KM	MB=4.2	GS	CYPRUS
JUL 20	HO= 18:21: 9.9	LAT=39.063N	LON= 21.468E	Z= 43KM	MB=3.3	GS	GREECE
JUL 20	HO= 23:56:36.3	LAT=37.037N	LON= 27.522E	Z= 33KM	MB=3.9	GS	TURKEY
JUL 21	HO= 5:24:22.2	LAT=40.116N	LON= 19.740E	Z= 33KM	MB=4.3	GS	ALBANIA
JUL 22	HO= 7:19:34.1	LAT=39.362N	LON= 15.441E	Z=271KM	MB=4.7	GS	SOUTHERN ITALY
JUL 24	HO= 0:23:24.6	LAT=48.528N	LON= 9.029E	Z= 31KM		GS	GERMANY
JUL 25	HO= 1: 1:37.6	LAT=45.366N	LON= 16.108E	Z= 33KM		GS	YUGOSLAVIA
JUL 25	HO= 19:10:58.3	LAT=50.981N	LON= 6.411E	Z= 8KM		GS	GERMANY
JUL 25	HO= 21:16: 2.9	LAT=38.704N	LON= 23.937E	Z= 33KM	MB=3.0	GS	GREECE
JUL 26	HO= 11:29:14.6	LAT=43.624N	LON= 22.014E	Z= 33KM	MB=3.8	GS	YUGOSLAVIA
AUG 02	HO= 10:30:14.4	LAT=35.566N	LON= 26.705E	Z= 50KM	MB=4.3	GS	CRETE
AUG 09	HO= 22:19: 4.0	LAT=51.500N	LON= 7.100E	Z= 0KM		GS	GERMANY
AUG 10	HO= 12:49:38.0	LAT=57.147N	LON= 5.210W	Z= 10KM	MB=4.3	GS	UNITED KINGDOM
AUG 14	HO= 16: 5:19.4	LAT=35.458N	LON= 23.067E	Z= 60KM	MB=4.2	GS	CRETE
AUG 15	HO= 17:16:19.6	LAT=46.450N	LON= 7.487E	Z= 33KM		GS	SWITZERLAND
AUG 20	HO= 23:52:40.1	LAT=38.243N	LON= 20.776E	Z= 53KM	MB=4.5	GS	GREECE
AUG 21	HO= 12:20:15.0	LAT=41.752N	LON= 22.821E	Z= 74KM		GS	YUGOSLAVIA
AUG 21	HO= 13: 2:46.2	LAT=37.239N	LON= 19.610E	Z= 33KM	MB=4.1	GS	IONIAN SEA
AUG 24	HO= 10:20:20.5	LAT=37.753N	LON= 21.172E	Z= 33KM	MB=4.2	GS	SOUTHERN GREECE
AUG 24	HO= 22: 8:38.6	LAT=37.893N	LON= 19.640E	Z= 11KM	MB=4.1	GS	IONIAN SEA

AUG 25	HO= 5:56:36.9	LAT=37.719N	LON= 20.078E	Z= 9KM	MB=3.9	GS	IONIAN SEA
AUG 25	HO= 13:31:23.4	LAT=38.342N	LON= 19.971E	Z= 33KM	MB=4.0	GS	GREECE
AUG 25	HO= 19:43:11.5	LAT=38.429N	LON= 19.778E	Z= 33KM	MB=4.1	GS	IONIAN SEA
AUG 25	HO= 20:15:51.1	LAT=40.518N	LON= 24.397E	Z= 33KM	MB=2.7	GS	AEGEAN SEA
AUG 26	HO= 1:51:28.8	LAT=40.530N	LON= 24.263E	Z= 33KM		GS	AEGEAN SEA
AUG 26	HO= 7:16:30.7	LAT=40.772N	LON= 24.719E	Z= 41KM	MB=3.3	GS	AEGEAN SEA
AUG 26	HO= 18: 9:55.9	LAT=35.254N	LON= 22.270E	Z= 33KM	MB=3.8	GS	MEDITERRANEAN SEA
AUG 27	HO= 18:26:23.1	LAT=42.056N	LON= 32.783E	Z= 33KM	MB=3.0	GS	BLACK SEA
AUG 28	HO= 3: 4:56.6	LAT=40.379N	LON= 25.880E	Z= 15KM		GS	AEGEAN SEA
AUG 28	HO= 18:46:24.8	LAT=40.438N	LON= 25.931E	Z= 33KM	MB=3.0	GS	AEGEAN SEA
AUG 29	HO= 8: 2:29.6	LAT=38.830N	LON= 29.268E	Z= 18KM	MB=4.2	GS	TURKEY
AUG 29	HO= 23:58:44.2	LAT=40.352N	LON= 25.827E	Z= 33KM		GS	AEGEAN SEA
AUG 30	HO= 0:13:37.1	LAT=38.614N	LON= 23.858E	Z= 15KM	MB=3.7	GS	GREECE
AUG 30	HO= 4:29: 2.6	LAT=48.079N	LON= 9.212E	Z= 5KM		GS	GERMANY
AUG 30	HO= 17:42:59.4	LAT=44.174N	LON= 20.371E	Z= 33KM		GS	YUGOSLAVIA
SEP 04	HO= 6:29:16.4	LAT=33.134N	LON= 13.567E	Z= 17KM	MB=5.1	GS	MEDITERRANEAN SEA
SEP 05	HO= 7:10:25.9	LAT=47.468N	LON= 7.583E	Z= 33KM		GS	SWITZERLAND
SEP 05	HO= 11:34:36.1	LAT=35.685N	LON= 25.050E	Z= 53KM	MB=4.2	GS	CRETE
SEP 07	HO= 8:33:18.8	LAT=39.662N	LON= 28.600E	Z= 17KM	MB=3.8	GS	TURKEY
SEP 08	HO= 8: 4: 6.1	LAT=37.022N	LON= 21.215E	Z= 44KM	MB=4.3	GS	SOUTHERN GREECE

SEP 08	HO= 12:41: 5.5	LAT=40.190N	LON= 27.831E	Z= 11KM		GS	TURKEY
SEP 08	HO= 12:57:31.5	LAT=43.541N	LON= 7.353E	Z= 28KM		GS	NEAR SOUTH COAST OF FRANCE
SEP 08	HO= 19:10: .2	LAT=39.863N	LON= 24.453E	Z= 33KM	MB=4.3	GS	AEGEAN SEA
SEP 08	HO= 22:48:41.8	LAT=39.448N	LON= 29.143E	Z= 8KM		GS	TURKEY
SEP 09	HO= 12:50:15.3	LAT=46.223N	LON= 12.565E	Z= 33KM		GS	NORTHERN ITALY
SEP 09	HO= 22:56:17.1	LAT=41.799N	LON= 21.972E	Z= 24KM	MB=3.9	GS	YUGOSLAVIA
SEP 10	HO= 0:25:33.1	LAT=37.827N	LON= 19.821E	Z= 33KM	MB=3.9	GS	IONIAN SEA
SEP 11	HO= 5:12:57.0	LAT=40.086N	LON= 19.696E	Z= 51KM	MB=4.4	GS	ALBANIA
SEP 13	HO= 12:10: 2.5	LAT=40.791N	LON= 28.174E	Z= 15KM	MB=3.6	GS	TURKEY
SEP 13	HO= 18:24:59.2	LAT=40.519N	LON= 23.429E	Z= 24KM	MB=4.5	GS	GREECE
SEP 14	HO= 1:18:18.3	LAT=40.443N	LON= 25.862E	Z= 33KM		GS	AEGEAN SEA
SEP 14	HO= 6:48:46.4	LAT=43.338N	LON= 8.172E	Z= 17KM	MB=4.1	GS	CORSICA
SEP 15	HO= 0:37:20.6	LAT=35.835N	LON= 22.301E	Z=105KM		GS	MEDITERRANEAN SEA
SEP 16	HO= 2:10:35.0	LAT=39.186N	LON= 23.515E	Z= 24KM	MB=3.8	GS	AEGEAN SEA
SEP 16	HO= 22:22:40.4	LAT=38.538N	LON= 15.517E	Z=100KM		GS	SICILY
SEP 17	HO= 4:18:12.2	LAT=40.336N	LON= 20.628E	Z= 47KM	MB=4.4	GS	GREECE-ALBANIA BORDER REGION
SEP 17	HO= 5:10:31.5	LAT=40.294N	LON= 20.639E	Z= 17KM	MB=5.2	GS	GREECE-ALBANIA BORDER REGION
SEP 18	HO= 5:20:40.8	LAT=34.482N	LON= 24.259E	Z= 20KM	MB=4.2	GS	CRETE
SEP 18	HO= 9: 7: 2.8	LAT=40.240N	LON= 20.622E	Z= 10KM	MB=4.7	GS	GREECE-ALBANIA BORDER REGION
SEP 23	HO= 15:57:28.0	LAT=37.599N	LON= 21.201E	Z= 49KM	MB=4.2	GS	SOUTHERN GREECE

SEP 28	HO= 1:35: .5	LAT=34.965N	LON= 23.969E	Z= 51KM	MB=4.5	GS
		CRETE				
SEP 28	HO= 12:31:56.4	LAT=39.768N	LON= 24.544E	Z= 33KM		GS
		AEGEAN SEA				
SEP 29	HO= 6:35:34.4	LAT=35.503N	LON= 27.883E	Z= 56KM	MB=4.6	GS
		DODECANESE ISLANDS				
SEP 29	HO= 17:50:20.9	LAT=39.836N	LON= 19.459E	Z= 33KM	MB=3.9	GS
		GREECE-ALBANIA BORDER REGION				
SEP 29	HO= 23:34:57.3	LAT=35.088N	LON= 9.605E	Z= 33KM	MB=4.5	GS
		TUNISIA				
OCT 01	HO= 0:34:40.2	LAT=39.690N	LON= 18.774E	Z= 22KM	MB=3.9	GS
		SOUTHERN ITALY				
OCT 03	HO= 21:32:39.3	LAT=35.210N	LON= 27.193E	Z= 51KM		GS
		DODECANESE ISLANDS				
OCT 07	HO= 11:43:36.9	LAT=39.734N	LON= 18.847E	Z= 19KM	MB=4.6	GS
		SOUTHERN ITALY				
OCT 09	HO= 18:20:43.4	LAT=37.573N	LON= 20.811E	Z= 40KM	MB=4.0	GS
		IONIAN SEA				
OCT 10	HO= 4: 3:27.4	LAT=47.855N	LON= 12.282E	Z= 33KM		GS
		AUSTRIA				
OCT 12	HO= 0:11:13.9	LAT=39.495N	LON= 2[illegible].162E	Z= 33KM		GS
		AEGEAN SEA				
OCT 13	HO= 0:20:23.9	LAT=34.177N	LON= 26.159E	Z= 33KM	MB=4.2	GS
		CRETE				
OCT 14	HO= 4:11:16.3	LAT=43.722N	LON= 17.580E	Z= 33KM	MB=4.2	GS
		YUGOSLAVIA				
OCT 15	HO= 9:56:52.4	LAT=40.734N	LON= 22.981E	Z= 33KM	MB=4.2	GS
		GREECE				
OCT 16	HO= 3:42: 8.6	LAT=48.288N	LON= 9.121E	Z= 21KM		GS
		GERMANY				
OCT 20	HO= 11:25:55.3	LAT=39.697N	LON= 18.891E	Z= 33KM	MB=4.9	GS
		SOUTHERN ITALY				
OCT 21	HO= 14:49:29.4	LAT=39.727N	LON= 15.052E	Z=317KM	MB=4.0	GS
		SOUTHERN ITALY				
OCT 22	HO= 7:29: 4.6	LAT=39.645N	LON= 18.844E	Z= 33KM	MB=4.3	GS
		SOUTHERN ITALY				
OCT 25	HO= 11:43:35.6	LAT=34.646N	LON= 23.420E	Z= 43KM	MB=4.9	GS
		CRETE				
OCT 25	HO= 12:53:48.5	LAT=38.753N	LON= 26.568E	Z= 33KM		GS
		AEGEAN SEA				

OCT 27	HO= 8:52:20.4	LAT=34.273N	LON= 25.138E	Z= 70KM	MB=4.4	GS
		CRETE				
OCT 29	HO= 1: 5:15.5	LAT=44.625N	LON= 18.414E	Z= 33KM	MB=5.1	GS
		YUGOSLAVIA				
OCT 31	HO= 7:15:41.4	LAT=43.246N	LON= .884W	Z= 33KM	MB=3.8	GS
		PYRENEES				
OCT 31	HO= 22:23:22.7	LAT=44.643N	LON= 18.353E	Z= 33KM	MB=4.0	GS
		YUGOSLAVIA				
NOV 03	HO= 22:59:18.3	LAT=44.393N	LON= 12.223E	Z= 22KM		GS
		NORTHERN ITALY				
NOV 04	HO= 2:57:33.1	LAT=38.371N	LON= 25.722E	Z= 33KM	MB=4.1	GS
		AEGEAN SEA				
NOV 05	HO= 7: 0:41.6	LAT=39.190N	LON= 29.193E	Z= 33KM	MB=3.9	GS
		TURKEY				
NOV 06	HO= 12:28:20.1	LAT=49.834N	LON= 7.882E	Z= 8KM		GS
		GERMANY				
NOV 09	HO= 6: 0:44.9	LAT=38.955N	LON= 20.264E	Z= 23KM	MB=4.8	GS
		GREECE-ALBANIA BORDER REGION				
NOV 09	HO= 7:14:25.2	LAT=69.492N	LON= 9.980E	Z= 33KM		GS
		NORWEGIAN SEA				
NOV 09	HO= 12:15: 7.0	LAT=36.382N	LON= 5.297E	Z= 33KM	MB=4.1	GS
		ALGERIA				
NOV 12	HO= 2:58:40.0	LAT=48.342N	LON= 6.773E	Z= 36KM		GS
		FRANCE				
NOV 14	HO= 2:13:49.5	LAT=39.070N	LON= 20.701E	Z= 45KM	MB=3.6	GS
		GREECE-ALBANIA BORDER REGION				
NOV 14	HO= 12:41:27.9	LAT=38.571N	LON= 23.194E	Z= 12KM	MB=4.1	GS
		GREECE				
NOV 14	HO= 13:22:33.1	LAT=38.518N	LON= 23.123E	Z= 19KM	MB=5.0	GS
		GREECE				
NOV 14	HO= 14:26:45.8	LAT=38.530N	LON= 22.991E	Z= 3KM	MB=5.1	GS
		GREECE				
NOV 14	HO= 15:29:44.8	LAT=38.486N	LON= 23.091E	Z= 24KM	MB=5.0	GS
		GREECE				
NOV 14	HO= 17: 9:24.3	LAT=48.314N	LON= 9.116E	Z= 15KM		GS
		GERMANY				
NOV 14	HO= 22: 1:13.3	LAT=38.652N	LON= 23.087E	Z= 11KM	MB=4.0	GS
		GREECE				
NOV 20	HO= 8:42: 7.4	LAT=46.992N	LON= 11.311E	Z= 33KM		GS
		AUSTRIA				

NOV 20	HO= 15:10:54.9	LAT=45.767N	LON= 12.258E	Z= 33KM		GS
		NORTHERN ITALY				
NOV 20	HO= 19:33: 2.4	LAT=45.767N	LON= 12.193E	Z= 25KM		GS
		NORTHERN ITALY				
NOV 23	HO= 7:52:28.9	LAT=39.925N	LON= 18.908E	Z= 33KM	MB=4.4	GS
		SOUTHERN ITALY				
NOV 23	HO= 18:46:33.4	LAT=39.707N	LON= 19.075E	Z= 33KM	MB=4.7	GS
		GREECE-ALBANIA BORDER REGION				
NOV 23	HO= 21:47:33.9	LAT=37.721N	LON= 31.952E	Z= 33KM	MB=4.3	GS
		TURKEY				
NOV 25	HO= 23:54:38.3	LAT=38.927N	LON= 27.811E	Z= 8KM		GS
		TURKEY				
NOV 27	HO= 12:56: 9.6	LAT=47.046N	LON= 10.445E	Z= 33KM		GS
		AUSTRIA				
DEC 01	HO= 6:21:18.1	LAT=38.510N	LON= 23.236E	Z= 33KM	MB=4.2	GS
		GREECE				
DEC 01	HO= 12: 9:28.8	LAT=39.520N	LON= 26.198E	Z= 36KM	MB=4.5	GS
		TURKEY				
DEC 02	HO= 1:14:33.8	LAT=42.781N	LON= 13.104E	Z= 33KM		GS
		CENTRAL ITALY				
DEC 02	HO= 1:55:15.9	LAT=42.988N	LON= 12.970E	Z= 7KM	MB=4.9	GS
		CENTRAL ITALY				
DEC 02	HO= 14:15:45.0	LAT=41.235N	LON= 23.452E	Z= 43KM	MB=4.2	GS
		GREECE-BULGARIA BORDER REGION				
DEC 02	HO= 23: 2:16.4	LAT=38.478N	LON= 22.185E	Z= 16KM	MB=4.7	GS
		GREECE				
DEC 02	HO= 23: 9:31.6	LAT=38.476N	LON= 22.293E	Z= 33KM	MB=4.0	GS
		GREECE				
DEC 04	HO= 16:14:46.9	LAT=42.654N	LON= 13.090E	Z= 33KM	MB=4.0	GS
		CENTRAL ITALY				
DEC 05	HO= 5:22:10.4	LAT=43.060N	LON= 12.630E	Z= 33KM	MB=4.2	GS
		CENTRAL ITALY				
DEC 05	HO= 7: 7:38.6	LAT=38.328N	LON= 25.773E	Z= 33KM	MB=4.4	GS
		AEGEAN SEA				
DEC 06	HO= 17:49: 3.7	LAT=42.802N	LON= 12.897E	Z= 33KM	MB=4.0	GS
		CENTRAL ITALY				
DEC 08	HO= 5:41:29.9	LAT=38.467N	LON= 25.491E	Z= 38KM	MB=3.8	GS
		AEGEAN SEA				
DEC 09	HO= 12:14:15.8	LAT=48.167N	LON= 16.862E	Z= 10KM		GS
		AUSTRIA				

DEC 09	HO= 13: 1:40.4	LAT=46.783N	LON= 12.823E	Z= 33KM		GS
		NORTHERN ITALY				
DEC 10	HO= 8:26:14.4	LAT=38.426N	LON= 25.827E	Z= 33KM	MB=3.3	GS
		AEGEAN SEA				
DEC 11	HO= 16:14: 4.9	LAT=38.284N	LON= 25.902E	Z= 23KM		GS
		AEGEAN SEA				
DEC 13	HO= 22:49:52.3	LAT=45.739N	LON= 12.393E	Z= 33KM		GS
		NORTHERN ITALY				
DEC 14	HO= 2:36:38.4	LAT=38.278N	LON= 20.751E	Z= 33KM	MB=5.3	GS
		GREECE				
DEC 14	HO= 21:29:19.8	LAT=38.605N	LON= 20.407E	Z= 11KM	MB=5.0	GS
		GREECE				
DEC 16	HO= 17:19:23.2	LAT=49.715N	LON= 6.408E	Z= 33KM		GS
		GERMANY				
DEC 16	HO= 17:53:14.3	LAT=49.752N	LON= 6.446E	Z= 33KM		GS
		GERMANY				
DEC 18	HO= 3:15:58.4	LAT=39.289N	LON= 29.239E	Z= 8KM		GS
		TURKEY				
DEC 18	HO= 20:12:15.1	LAT=67.845N	LON= 10.345E	Z= 33KM	MB=4.6	GS
		NORWEGIAN SEA				
DEC 18	HO= 21:30:54.0	LAT=39.870N	LON= 24.018E	Z= 38KM	MB=4.5	GS
		AEGEAN SEA				
DEC 18	HO= 21:59:31.4	LAT=39.846N	LON= 24.108E	Z= 39KM	MB=3.7	GS
		AEGEAN SEA				
DEC 20	HO= 5:32:32.7	LAT=39.472N	LON= 26.259E	Z= 16KM	MB=3.4	GS
		TURKEY				
DEC 20	HO= 15: 9:29.0	LAT=39.736N	LON= 20.375E	Z= 12KM	MB=4.8	GS
		GREECE-ALBANIA BORDER REGION				
DEC 20	HO= 16: 2: 4.3	LAT=39.783N	LON= 20.473E	Z= 33KM	MB=4.5	GS
		GREECE-ALBANIA BORDER REGION				
DEC 23	HO= 16:31:24.5	LAT=35.389N	LON= 26.075E	Z= 33KM	MB=4.5	GS
		CRETE				
DEC 24	HO= 10:27:42.8	LAT=37.521N	LON= 29.796E	Z= 25KM	MB=4.6	GS
		TURKEY				
DEC 26	HO= 14: 1:49.2	LAT=34.998N	LON= 23.218E	Z= 33KM	MB=4.4	GS
		CRETE				
DEC 29	HO= 3:50: 6.1	LAT=64.507N	LON= 17.625W	Z= 33KM	MB=5.2	GS
		ICELAND				
DEC 29	HO= 23:24:14.6	LAT=40.190N	LON= 25.062E	Z= 33KM	MB=3.2	GS
		AEGEAN SEA				

Explanation of the map of historical seismicity of Switzerland

by N. PAVONI, ETH Zürich

The map "Erdbebenzentren im Gebiet der Schweiz", reproduced in the Figure, shows the seismicity of Switzerland from the end of the thirteenth century to the year 1971. For the stronger earthquakes it covers a period of nearly 700 years. The map is based on macroseismic data. Therefore the term "center" is used instead of epicenter. The main sources of information were the reports of the Schweizerische Erdbebenkommission (1878-1912), the Annual Reports and the archives of the Schweizerischer Erdbebendienst (since 1913) and the Catalogues and works by G.H.O. VOLGER (1858), A. CANDREIA (1906), F.MONTANDON (1943) and E. WANNER (1932, 1945). A review of the history of seismological research is given by N. PAVONI (1964). The distribution of the "centers" of earthquakes, as shown on the map, is locally influenced by the population density. From 1972 on, all the epicenters are determined instrumentally (see Annual Bulletins of the Schweizerischer Erdbebendienst, D. MAYER-ROSA ed.).

The earthquakes are reproduced as points, open and solid circles. Their location is determined from the distribution of maximum observed intensity. In many cases, it was not possible to assign a well defined epicentral intensity to an event because of insufficient data. For this reason the earthquakes were divided into four categories:

Cat. A) Earthquakes with heavy damage to buildings (houses destroyed): large solid circles. Epicentral intensity I_o (according to MSK-Scale, W. SPONHEUER, 1965): $VIII \leq I_o < X$. The map shows seven events with the year of occurrence.
Period of observation: 1295-1971

Cat. B) Earthquakes with slight damage to buildings (fall of chimneys, slight cracks in the walls): small solid circles. Epicentral intensity I_o: $VI \leq I_o < VIII$.
Period of observation: 1295-1971

Cat. C) Earthquakes without damage to buildings (felt in areas of more than 100 km^2, often of several thousand km^2): open circles. Epicentral intensity I_o: $IV \leq I_o < VI$.
Period of observation: 1855-1971

Cat. D) Local shocks (felt very weakly and locally): black dots, hatched circles.
Period of observation: 1855-1971
Larger numbers of local shocks of the same locality are summarized in hatched circles.

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The intensities assigned to the different categories are general estimates. Maximum intensities observed in Switzerland are discussed by N. PAVONI (1974). It should be noted that the map represents the earthquakes belonging to two different periods of time: For the stronger earthquakes, Categories A and B, the period of observation is from 1295 to 1971 inclusive. With regard to the stronger earthquakes, the map contains nearly all events which occurred during the last 700 years. For the weaker events, Categories C and D, the record is quite complete but covers only the period from 1855 to 1971. A comprehensive description and discussion of seismicity in Switzerland is in preparation (N. PAVONI, 1977).

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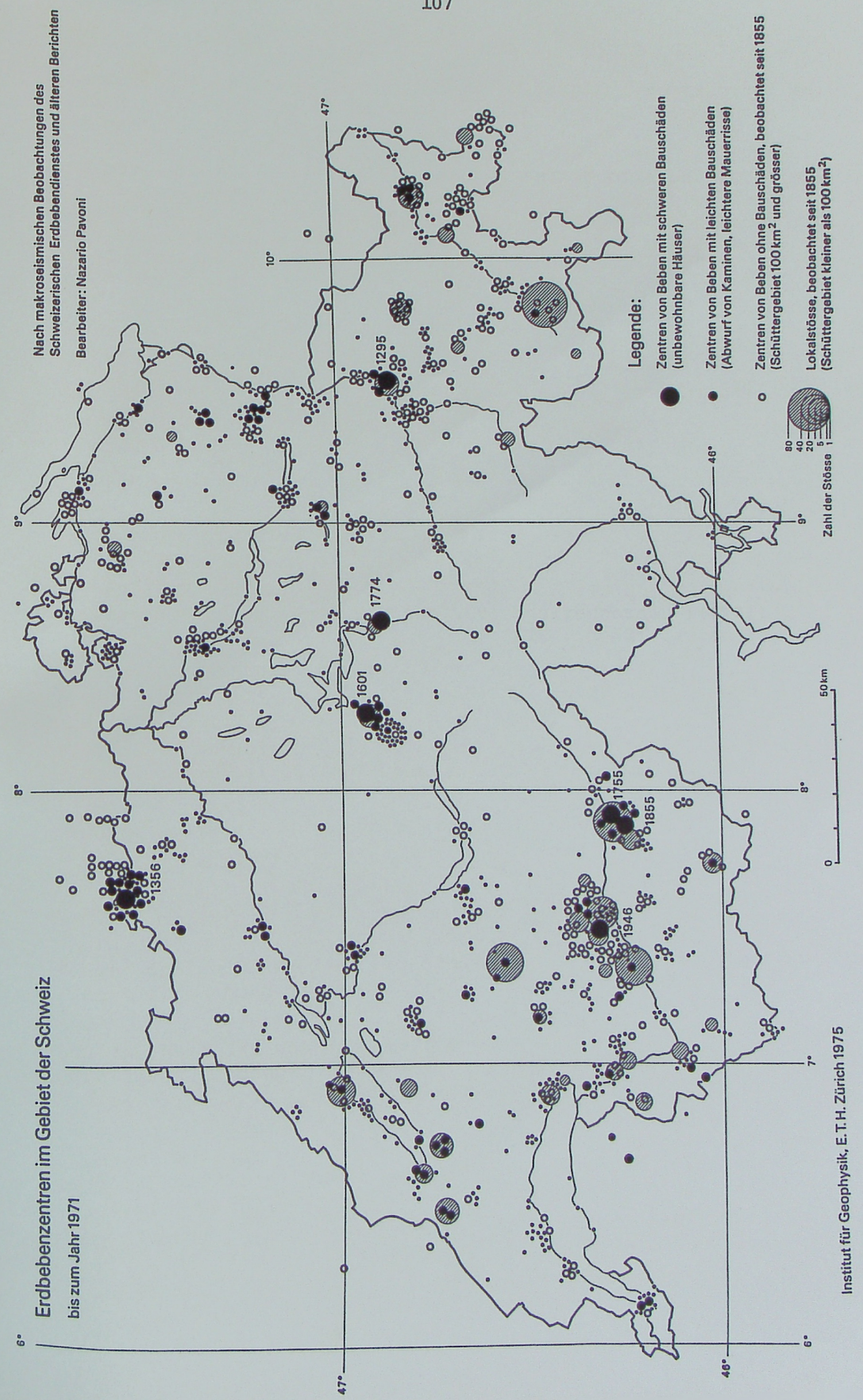
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