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Old seismologic reports

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SEISMIC OBSERVATIONS
AT FABRA OBSERVATORY IN 1982

by JAVIER PAVIA SEGURA
and M.^a TERESA SUSAGNA VIDAL

The Observatory has now the following seismographs:

— One short period “Hiller-Stuttgart” seismograph, vertical component, with photographic recording.

— Two long period “Mainka” seismographs, horizontal components, with mechanic recording.

— One short period “Vicentini” seismograph, vertical component, with mechanic recording.

We symbolize by ZH the Z component of Hiller-Stuttgart set, by NM and EM the Mainka horizontal components and by ZV the Vicentini vertical component.

For the most outstanding earthquakes, we describe their epicentral characteristics, calculated by the Seismic Section of this Observatory (FBR), together with “Servei Geològic de Catalunya” (SGC) or provided by the United States Geological Survey (GS), by the Centre Seismologique Europeo-Mediterranean (CSEM), by the “Sección de Sismología e Ingeniería Sísmica” (S.S.I.S.) of “Instituto Geográfico Nacional” (I.G.N.), by the Laboratoire de Détection et de Géophysique (LDG) or by P. Stahl (PS).

The average instrumental constants have been:

1.º) Seismograph with photographic recording:

Type	Component	Period (s)		Maximun Amplification V_m	Damping
		T_p	T_g		
Hiller-Stuttgart	Z(ZH)	1,61	1,3	7,326	Critical

2.º) Seismographs with mechanic recording:

Type	Component	Mass Kg.	Period (s) T_0	Damping ϵ	Friction $r/T \sigma^2$	Amplification V
Mainka	N-S (NM)	141	5,6	1,94	0,045	52,5
Mainka	E-W (EM)	144	9,3	1,78	0,029	51,7
Vicentini	Z (ZV)	56	0,9	—	—	125



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Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
3 Jan	ZH	iP	14	18	27,7		Ep.: 10,0 S; 21,9 W; H = 14:09:50 h = 10 km; M = 5,8 (GS) Central mid-Atlantic ridge.
	ZH	e	14	20	15,7		
4	ZH	eP	06	22	20,7	12.400	Ep.: 18,0 N; 145,6 E; H = 06:05:01 h = 590 km; M = 6,1 (GS) Mariana islands.
4	ZH	iP	06	33	25,7		Ep.: 18,0 N; 145,5 E; H = 06:15:16 h = 602 km; M = 5,4 (GS) Mariana islands.
4	ZH	ePKP	22	40	32,6	17.980	Ep.: 23,2 S; 177,3 W; H = 22:20:54 h = 195 km; M = 6,0 (GS) South of Fiji islands.
	ZH	iPKKP	22	41	19,6		
5	ZH	eP	13	53	19,9	5.290	Ep.: 0,9 S; 21,9 W; H = 13:44:43 h = 10 km; M = 5,2 (GS) Central mid-Atlantic ridge.
	ZH	ePP	13	55	10,9		
6	ZH	iPn	16	33	36,4		Ep.: 43,2 N; 1,0 W; H = 16:32:50 h = 10 km; M = 4,9 (SSIS) Tardets, France.
	ZH	iPg	16	33	44,4		
	ZH	eSn	16	34	19,4		
6	ZH	e	17	22	57,3	325	Ep.: 43,2 N; 1,0 W; H = 17:22:12 h = 18 km; M = 3,9 (SSIS) Manteou Licharre France. See fig. 3.
	ZH	iSn	17	22	42,8		
7	ZH	iP	08	23	12,1		Ep.: 12,1 S; 166,7 E; H = 08:03:45 h = 156 km; M = 5,8 (GS) Santa Cruz islands.
8	ZH	iPg	16	52	38,2		Ep.: Local.
9	ZH	iP	13	02	30,3		Ep.: 47,0 N; 66,7 W; H = 12:53:52 h = 10 km; M = 5,7 (GS) New Brunswick.
11	ZH	e	06	27	31,3	11.510	Ep.: 13,5 N; 124,4 E; H = 06:10:06 h = 46 km; M = 6,0 (GS) Luzon, Philippine islands.
11	ZH	eL	11	59	24,0		Ep.: Local.
12	ZH	eP	01	58	17,5		Ep.: 52,5 S; 28,0 E; H = 01:44:48 h = 10 km; M = 5,8 (GS) South of Africa.
12	ZH	eP	06	00	—		Ep.: 13,2 N; 87,6 W; H = 05:48:18 h = 6 km; M = 5,8 (GS) Honduras.
12	ZH	iSg	12	55	41,1		Ep.: Local.



SEISMIC OBSERVATIONS

1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
18 Jan	ZH	iP	19	31	22,6		Ep.: 40,0 N; 24,3 E; H = 19:27:24 h = 10 km; M = 5,8 (GS) Aegean sea.
20	ZH	eP	07	22	01,5		Ep.: 7,1 N; 93,9 E; H = 07:09:17 h = 27 km; M = 5,7 (GS) Nicobar islands region.
25	ZH	iP	05	42	04,5		Ep.: 53,2 N; 165,7 W; H = 05:29:33 h = 60 km; M = 6,1 (GS) Fox islands, Aleutian islands.
27	ZH	eP	00	19	26,0		Ep.: 43,3 N; 0,5 W; H = 00:18:59 h = 10 km; M = 3,2 (SSIS) Momein, France.
30	ZH	eP	02	44	45,9	6.590	Ep.: 16,7 N; 61,4 W; H = 02:35:11 h = 63 km; M = 6,0 (GS) Leeward islands.
1 Feb	ZH	eL	12	28	38,0		Ep.: Local.
2	ZH	iPg	14	00	39,9		Ep.: Local.
3	ZH	eSg	11	55	27,9		Ep.: Local.
8	ZH	eSg	11	59	38,6		Ep.: Local.
10	ZH	eP	20	50	39,8		Ep.: 22,6 S; 66,5 W; H = 20:38:01 h = 196 km; M = 5,9 (GS) Jujulg province, Argentina.
	ZH	epP	20	51	38,8		
	ZH	iPP	20	54	17,8		
12	ZH	iP	15	07	30,6		Ep.: 37,2 N; 116,5 W; H = 14:55:00 h = 0 km; M = 5,4 (GS) Southern Nevada.
12	ZH	eP	15	34	29,6		Ep.: 37,3 N; 116,3 W; H = 15:25:00 h = 0 km; M = 5,6 (GS) Southern Nevada.
12	ZH	iP	19	41	30,6		Ep.: 13,1 S; 167,5 E; H = 19:21:44 h = 33 km; M = 5,4 (GS) Vanuatu islands.
13	ZH	ePg	12	24	53,5		Ep.: Local.
	ZH	eSg	12	24	55,0		
13	ZH	ePg	22	46	26,4		Ep.: 41,8 N; 1,8 E; H = 22:46:23,8 M = 2,9 (LDG) Lleida, Spain. See pag. 97.
23	ZH	e	18	00	19,6		Ep.: 40,6 N; 2,7 W; H = 17:59:14 h = 5 km; M = 4,1 (SSIS) Gascueña, Guadalajara.
	ZH	e	18	00	45,6		



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1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
27 Feb	ZH	iP	16	35	27,9		Ep.: 22,3 N; 143,5 E; H = 16:16:54 h = 127 km; M = 5,9 (GS) Volcano islands region.
11 Mar	ZH	iP	10	51	11,6	12.870	Ep.: 9,4 S; 118,4 E; H = 10:32:26 h = 33 km; M = 6,0 (GS) Sumbaya islands region.
11	ZH	iPn	14	49	14,4		Ep.: 42,9 N; 1,9 W; H = 14:49:38 h = 7 km; M = 3,8 (SSIS) Pamplona, Navarra.
	ZH	Sn	14	50	28,4		
21	ZH	iP	02	45	00,1	9.900	Ep.: 42,2 N; 142,5 E; H = 02:32:06 h = 33 km; M = 6,5 (GS) Hokkaido, Japan.
	ZH	eS	02	56	48,1		
10 Apr	ZH	iP	04	54	53,7		Ep.: 40,0 N; 24,5 E; H = 04:50:54 h = 26 km; M = 4,8 (GS) Aegean sea.
10	ZH	eP	07	01	00,8		Ep.: 33,9 S; 58,0 E; H = 06:47:52 h = 10 km; M = 5,6 (GS) South Indian ocean.
10	ZH	iP	07	13	14,8		Ep.: 33,8 S; 58,1 E; H = 07:00:09 h = 10 km; M = 5,6 (GS) South Indian ocean.
10	ZH	eP	09	55	48,1		Ep.: 7,1 N; 35,7 W; H = 09:47:04 h = 10 km; M = 5,0 (GS) Central mid-Atlantic ridge.
10	ZH	iP	11	42	17,3		Ep.: 39,4 N; 25,5 E; H = 11:38:04 h = 10 km; M = 4,6 (GS) Aegean sea.
10	ZH	iP	16	37	22,7		Ep.: 17,4 N; 83,5 W; H = 16:25:33 h = 10 km; M = 5,7 (GS) Caribbean sea.
11	ZH	ePg	20	21	58,1	92	Ep.: See pag. 94.
	ZH	eSg	20	22	06,1		
12	ZH	ePKP	00	55	47,5		Ep.: 30,2 S; 177,9 W; H = 00:34:44 h = 35 km; M = 5,7 (GS) Kermadec islands.
	ZH	iPKIKP	00	56	00,5		
16	ZH	ePKP	14	24	40,6	17.120	Ep.: 15,8 S; 173,0 W; H = 14:04:51 h = 33 km; M = 6,0 (GS) Samoa islands region.
17	ZH	eP	09	34	09,5		Ep.: 19,9 N; 120,5 E; H = 09:20:58 h = 10 km; M = 6,2 (GS) Philippine islands region.
	ZH	e	09	38	10,5		



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1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
18 Apr	ZH	e	09	14	50,6		Ep.: 28,9 N; 142,2 E; H = 08:57:08 h = 22 km; M = 5,6 (GS) Bonin islands region.
21	ZH	iPg	11	00	44,4		Ep.: Local.
21	ZH	ePg	11	56	34,5		Ep.: Local.
2 May	ZH	iP	07	17	49,8		Ep.: 43,6 N; 28,9 W; H = 07:12:44 h = 10 km; M = 5,4 (GS) North Atlantic ridge.
3	ZH	ePg	15	56	03,9		Ep.: Local.
3	ZH	ePg	21	18	18,6		Ep.: Local.
6	ZH	iPg	12	00	01,6		Ep.: Local.
14	ZH	eSg	10	19	12,7		Ep.: Local.
18	ZH	iPg	12	34	29,6		Ep.: Local.
18	ZH	eSg	13	14	19,0		Ep.: Local.
20	ZH	eP	21	49	05,4		Ep.: 20,3 S; 168,2 E; H = 21:29:15 h = 38 km; M = 5,9 (GS) Loyalty islands.
22	ZH	iPn	04	03	52,0	346	Ep.: 42,7 N; 1,7 W; H = 04:03:03 h = 10 km; M = 4,6 (SSIS) Pamplona, Navarra.
	ZH	iPg	04	04	01,0		
	ZV	eSn	04	04	45,0		
22	ZH	iPn	04	38	41,0		Ep.: 42,8 N; 1,7 W; H = 04:37:51 h = 5 km; M = 4,2 (SSIS) Pamplona, Navarra.
	ZH	eSn	04	39	34,0		
22	ZH	eSn	06	01	01,0		Ep.: 42,9 N; 2,0 W; H = 05:59:24 h = 15 km; M = 3,9 (SSIS) Echarrri - Aranaz, Navarra.
29	ZH	e	03	56	05,6		Ep.: 43,0 N; 2,0 W; H = 03:55:08
	ZH	iS	03	56	44,1		h = 15 km; M = 3,4 (SSIS) Leiza, Navarra.
29	ZH	iP	12	33	56,6		Ep.: 42,8 N; 143,1 E; H = 12:21:08
	ZH	ePP	12	37	24,6		h = 75 km; M = 5,8 (GS) Hokkaido, Japan region.
29	ZH	e	13	01	41,6		Ep.: Local.
29	ZH	e	13	35	49,6		Ep.: Local.



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1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
31 May	ZH	eP	10	33	38,9	9.160	Ep.: 55,1 N; 165,4 E; H = 10:21:15 h = 33 km; M = 6,0 (GS) Komandorsky islands region.
31	ZH	eP	20	26	13,9		Ep.: 38,7 N; 142,1 E; H = 20:13:09 h = 51 km; M = 5,7 (GS) Near east coast of Honshu, Japan.
1 Jun	ZH	eSg	11	19	14,0		Ep.: Local.
1	ZH	ePg	12	53	26,0		Ep.: Local.
	ZH	iSg	12	53	29,7		
2	ZH	ePKP	12	57	26,0	17.360	Ep.: 18,1 S; 172,5 W; H = 12:37:34 h = 33 km; M = 6,4 (GS) Tonga islands region.
	ZH	ePKKP	12	57	54,0		
2	ZH	iPg	13	40	36,5		Ep.: Local.
	ZH	iSg	13	40	39,3		
3	ZH	eP	10	35	44,3		Ep.: 12,6 S; 165,8 E; H = 10:16:00 h = 33 km; M = 5,2 (GS) Santa Cruz islands.
3	ZH	iPg	11	06	54,3		Ep.: Local.
4	ZH	iP	19	36	36,3		Ep.: 44,4 N; 148,3 E; H = 19:23:42 h = 33 km; M = 5,6 (GS) Kuril islands.
6	ZH	eP	10	26	38,4		Ep.: 35,4 N; 36,0 W; H = 10:20:31 h = 10 km; M = 5,3 (GS) North Atlantic ridge.
7	ZH	eP	00	36	03,7		Ep.: 36,9 N; 28,0 E; H = 00:31:25 h = 10 km; M = 4,6 (GS) Dodecanese islands.
7	ZH	iP	07	05	19,3		Ep.: 16,6 N; 98,1 W; H = 06:52:37 h = 41 km; M = 6,0 (GS) Near coast of Guerrero, Mexico.
7	ZH	iP	11	12	21,9	9.610	Ep.: 16,6 N; 98,4 W; H = 10:59:40 h = 34 km; M = 6,7 (GS) Near coast of Guerrero, Mexico.
	ZH	ipP	11	12	39,9		
	ZH	ePP	11	15	36,9		
7	ZH	iSg	15	57	52,4		Ep.: Local.
9	ZH	ePKP	03	27	31,7		Ep.: 5,7 S; 150,9 E; H = 03:08:35 h = 84 km; M = 5,9 (GS) New Britain region.
	ZH	ePKKP	03	27	45,2		



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Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
9 Jun	ZH	e	10	10	33,9		Ep.: 43,1 N; 0,3 E; H = 10:09:26 h = 10 km; Bagneres Bigorre, France.
11	ZH	iP	00	57	50,3	17.330	Ep.: 17,6 S; 174,4 W; H = 00:38:10 h = 123 km; M = 6,3 (GS) Tonga islands.
11	ZH	ePn	16	16	54,2		Ep.: See pag. 95.
12	ZH	e	09	59	55,9		Ep.: 43,2 N; 0,3 W; H = 09:59:16 h = 14 km; M = 4,4 (SSIS) Pau, France.
15	ZH	eP	23	36	11,6		Ep.: 31,9 N; 99,9 E; H = 23:24:29 h = 10 km; M = 5,6 (GS) Sichuan province, China.
	ZH	ePP	23	39	08,6		
18	ZH	iPg	12	46	54,0		Ep.: Local.
19	ZH	iP	06	34	13,2		Ep.: 13,3 N; 89,3 W; H = 06:21:58 h = 82 km; M = 6,2 (GS) El Salvador.
	EM	ePP	06	37	54,2		
	EM	ePPS	06	47	44,2		
19	ZH	iP	23	06	00,0		Ep.: 14,7 S; 167,9 E; H = 22:46:09 h = 33 km; M = 5,6 (GS) Vanuatu islands.
20	ZH	eP	08	36	25,1		Ep.: 30,7 N; 41,7 W; H = 08:29:15 h = 10 km; M = 5,1 (GS) North Atlantic ridge.
21	ZH	eP	19	32	—		Ep.: 10,8 S; 164,2 E; H = 19:15:56 h = 48 km; M = 5,6 (GS) Santa Cruz islands region.
22	ZH	e	03	05	—		Ep.: 37,2 N; 21,3 E; H = 03:04:29 h = 40 km; M = 5,1 (GS) Southern Greece.
22	ZH	iP	04	33	—	13.320	Ep.: 7,3 S; 126,0 E; H = 04:18:40 h = 450 km; M = 6,3 (GS) Banda sea.
22	ZH	iSg	12	22	—		Ep.: Local.
22	ZH	ePn	19	48	—		Ep.: 42,9 N; 1,9 W; H = 19:50:24 h = 7 km; M = 5,9 (SSIS) Pamplona, Navarra.
23	ZH	ePg	17	33	29,6		Ep.: Local.
23	ZH	ePn	22	15	33,0		Ep.: 42,8 N; 1,8 W; H = 22:14:40,5 h = 5 km; M = 3,8 (SSIS) Pamplona, Navarra.
	ZH	iSn	22	16	18,0		



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1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
24 Jun	ZH	eP	09	29	28,0		Ep.: 44,0 S; 16,0 W; H = 09:16:44 h = 10 km; M = 5,6 (GS) South Atlantic ridge.
24	ZH	eP	14	27	27,4		Ep.: 37,2 N; 116,4 W; H = 14:15:00 h = 0 km; M = 5,6 (GS) Southern Nevada.
25	ZH	ePg	13	15	21,5		Ep.: Local.
	ZH	iSg	13	15	28,5		
27	ZH	eP	16	37	40,0		Ep.: 55,5 S; 160,2 E; H = 16:17:13 h = 10 km; M = 5,9 (GS) Macquarie islands region.
28	ZH	eP	10	02	27,5		Ep.: 50,7 N; 7,8 E; H = 09:57:30 h = 10 km; M = 5,2 (GS) Germany.
30	ZH	iP	02	10	30,5	9.950	Ep.: 44,7 N; 151,1 E; H = 01:57:34 h = 33 km; M = 6,6 (GS) Kuril islands.
30	ZH	ePg	11	35	22,8		Ep.: Local.
	ZH	eSg	11	35	29,8		
5 Jul	ZH	iPKP	21	41	15,7		Ep.: 20,8 S; 178,8 W; H = 21:22:27 h = 615 km; M = 5,5 (GS) Fiji islands region.
	ZH	ipPKP	21	41	58,7		
7	ZH	eP	02	04	43,8		Ep.: 11,5 N; 86,4 W; H = 01:52:41 h = 68 km; M = 5,3 (GS) Near coast of Nicaragua.
7	ZH	ePKP	11	03	04,7	18.030	Ep.: 51,2 S; 160,5 E; H = 10:43:04 h = 10 km; M = 6,3 (GS) North of Macquarie islands.
	ZH	iPKKP	11	03	52,7		
	ZH	ePP	11	07	40,7		
7	ZH	iPg	15	56	57,7		Ep.: Local.
	ZH	iSg	15	56	59,7		
11	ZH	eP	02	26	34,9		Ep.: 16,6 S; 73,2 W; H = 02:13:37 h = 39 km; M = 5,3 (GS) Near coast of Peru.
11	ZH	iP	10	47	72,3		Ep.: 23,7 N; 44,9 W; H = 10:40:12 h = 10 km; M = 5,1 (GS) North Atlantic ridge.
23	ZH	eSKS	14	47	—	10.450	Ep.: 36,2 N; 141,7 E; H = 14:23:53 h = 37 km; M = 6,2 (GS) Near east coast of Honshu, Japan.



SEISMIC OBSERVATIONS

1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
31 Jul	ZH	eP	06	41	57,8	9.640	Ep.: 51,7 N; 176,1 E; H = 06:29:15 h = 38 km; M = 6,2 (GS) Rat islands, Aleutian islands.
	ZH	ipP	06	43	06,8		
5 Aug	ZH	eP	14	12	29,6		Ep.: 37,1 N; 116,0 W; H = 14:00:00 h = 0 km; M = 5,7 (GS) Southern Nevada.
5	ZH	iPKP	20	52	35,2	16.430	Ep.: 12,6 S; 165,9 E; H = 20:32:53 h = 31 km; M = 6,2 (GS) Santa Cruz islands.
9	ZH	iP	11	05	59,7		Ep.: 12,7 S; 166,2 E; H = 10:46:15 h = 33 km; M = 5,5 (GS) Santa Cruz islands.
12	ZH	ePP	02	35	52,1		Ep.: 4,3 S; 153,2 E; H = 02:13:08,6 h = 45 km; M = 5,9 (GS) New Ireland region.
12	ZH	eP	08	50	39,7		Ep.: 1,6 S; 24,3 W; H = 08:41:49 h = 10 km; M = 5,2 (GS) Central mid-Atlantic ridge.
17	ZH	iP	22	26	37,9	2.010	Ep.: 33,8 N; 22,9 E; H = 22:22:24 h = 31 km; M = 6,0 (GS) Mediterranean sea.
	NM	eS	22	30	02,2		
6 Sep	ZH	eP	02	00	20,4	11.050	Ep.: 29,3 N; 140,4 E; H = 01:47:03 h = 176 km; M = 6,5 (GS) South of Honshu, Japan.
	ZH	ePP	02	04	06,4		
11	ZH	eP	04	50	07,7	650	Ep.: 35,6 N; 1,4 E; H = 04:48:43 h = 29 km; M = 4,2 (SSIS) Algeria.
11	ZH	eP	21	37	06,9		Ep.: 36,3 N; 1,7 E; H = 21:35:52 h = 19 km; M = 4,3 (SSIS) Les Avats, Algeria.
28	ZH	ePKP	15	34	—	18.100	Ep.: 24,3 S; 176,7 W; H = 15:14:37 h = 40 km; M = 6,0 (GS) South of Fiji islands.
2 Oct	ZH	e	08	45	53,0		Ep.: 14,7 S; 167,3 E; H = 08:26:25 h = 149 km; M = 5,6 (GS) Vanuatu islands.
4	ZH	ePn	19	38	45,3		Ep.: See pag. 96.
	ZH	eSn	19	39	00,3		
5	ZH	iPKP	09	34	26,4		Ep.: 15,6 S; 168,0 E; H = 09:14:32 h = 18 km; M = 5,8 (GS) Vanuatu islands.



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1982

Date	Comp.	Phase	Time TU			Δ km	Remarks
			h	m	s		
25 Oct	ZH	eP	17	19	29,9		Ep.: 3,0 N; 62,8 E; H = 17:08:29 h = 10 km; M = 5,5 (GS) Carlsberg ridge.
10 Nov	ZH	eSg	16	30	08,4		Ep.: Local.
11	ZH	eP	01	01	39,0	11.270	Ep.: 6,6 S; 101,6 E; H = 00:43:45 h = 33 km; M = 6,1 (GS) Southwest of Sumatera.
12	ZH	e	10	56	45,8		Ep.: Local.
12	ZH	iSg	11	51	53,9		Ep.: Local.
15	ZH	eS	20	10	28,0	650	Ep.: 35,6 N; 1,3 E; H = 20:07:47 h = 10 km; M = 5,0 (GS) Algeria.
18	ZH	iP	15	09	54,6	9.200	Ep.: 1,7 S; 76,7 W; H = 14:57:52 h = 195 km; M = 6,0 (GS) Ecuador.
19	ZH	eP	04	39	59,8	9.660	Ep.: 10,0 S; 74,7 W; H = 04:27:14 h = 14 km; M = 6,3 (GS) Perú.
	ZH	ipP	04	30	08,8		
20	ZH	iP	08	08	01,0		Ep.: 34,6 N; 70,5 E; H = 07:58:45 h = 25 km; M = 5,7 (GS) Afghanistan.
5 Dec	ZH	iPKP	06	07	47,5		Ep.: 9,9 S; 161,2 E; H = 05:48:25 h = 97 km; M = 5,8 (GS) Solomon islands.
5	ZH	iP	14	01	53,1		Ep.: 11,8 S; 165,1 E; H = 13:42:12 h = 33 km; M = 5,4 (GS) Santa Cruz islands.
16	ZH	iP	00	49	48,4	5.680	Ep.: 36,1 N; 69,0 E; H = 00:40:49 h = 36 km; M = 6,2 (GS) Hindu Kush region.

