

# SEISMOLOGICAL BULLETIN OF SYOWA STATION, ANTARCTICA, 1999

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## 1. Introduction

Seismic observations at Syowa Station (69.0°S, 39.6°E), East Antarctica were started using a short-period seismometer with 1.0 s natural period in 1959 (Eto, 1962). A three-component long-period seismograph was installed and phase readings of the teleseismic events, detected on the three-component short- and long-period seismograms, have been reported currently to US Coastal Geodetic Survey (USCGS), and to the International Seismological Centre (ISC) since 1967 (Kaminuma *et al.*, 1968). A three-component broadband seismometer (Streckeisen Seismometer; STS, Streckeisen and Messegeraete, 1987) was installed in April 1989, based on the recommendation from the Working Group of Solid Earth Geophysics (WG/SEG) of Scientific Committee on Antarctic Research (SCAR). Syowa Station has also an important role in the framework of the Japanese Pacific Orient Seismic Digital Observation Network (POSEIDON; now the name was changed to PACIFIC21) (Tsuboi, 1995). All of these observation systems were replaced and maintained by one of the authors (T. Nakanishi) throughout the wintering season of the 40th Japanese Antarctic Research Expedition (JARE-40) in 1999. He also scaled the events and reported to the International Seismological Centre (ISC) and the United States Geological Survey/National Earthquake Information Center (USGS/NEIC) through the season.

## 2. Observations

The whole seismic recording system including sensors at Syowa Station was replaced by the authors at the end of 1997 (Kanao, 1999). The block diagram of the new recording system is illustrated in Fig. 1.

### 2.1. Seismographic hut and seismographs

Seismic observations at Syowa Station had been carried out mainly by two types of seismometers, one called a HES-type with 1.0 s natural period of the pendulum and the other called a PELS-type with 12.0 s natural period. These three-component short-period and long-period seismographs had been operated since 1967 (Kaminuma *et al.*, 1968). The overall frequency responses and the magnifications of the short- and long-period seismometers are shown in Fig. 2. A three-component broadband seismometer (Streckeisen STS-1) with the digital recording system has been operating since May 1990 (Nagasaka *et al.*, 1992). The amplitude and phase responses for the velocity output (Broadband; BRB) are shown in Fig. 3 (after Streckeisen and Messegeraete, 1987).

The seismographic vault constructed in March 1970 (69°00'31.7"S, 39°35'31.6"E, 20 m above mean sea level ; Kaminuma and Chiba, 1973) was closed at the end of 1997 because of a superannuating for inner side of the vault by continuous flowing of water from walls in summer and its frozen in winter. Therefore, all the sensor-instruments were moved to the new seismographic hut in April 1997, which was constructed in 1996. PELS seismographs were stopped to recording in the new hut, because of its frequency response is fully covered by STS-1 BRB outputs. The new seismographic hut locates about 200 m north from the old vault, with geodetic coordinates of 69°00'24.0"S, 39°35'06.0"E and the elevation is 20 m above mean sea level. Since the broadband seismographs are largely affected by a change of temperature and atmospheric conditions, the sensor room was covered doubly by adiabatic walls, with a surface covered by titanium to keep constant temperature in the room.

Seismic signals of the short-period (HES) and broadband (STS-1) seismometers in the new hut are transmitted to the Earth Science Laboratory (ESL) via analog cable of 600 m in length. The cable was mounted on racks, which connect the main buildings of Syowa Station, and laid parallel with the other electric power cables of the Station.

## **2.2. Acquisition system at Earth Science Laboratory**

A three-component analogue output by HES is digitized at 200 Hz over sampling by a 24-bit analog-to-digital (A/D) converter, generating triggered signals of 80, 20 and 1 Hz re-sampling data. A three-component broadband signals of STS-1 are also digitized to create the triggered output of 80 Hz re-sampling data and the continuous outputs of 20, 1, 0.1 and 0.01 Hz data, respectively. The all data have a Mini\_SEED volume, which is a standard format for data exchange in the global seismology. The digitized data are automatically transmitted from A/D converter to the workstation via TCP/IP protocol (DP/UX software). All kind of the data are stored in a 8 GB hard-disk of the workstation, then copied into DAT or 8 mm tape in every five month interval. A recording condition of A/D converter has been continuously monitored by a personal computer via RS-232C serial port (kermit software).

A remote-centering operation for the STS-1 sensors can also be carried out by keyboard commands from the computer. A reference clock for the new system has also been calibrated to the Coordinated Universal Time (UTC) from a Global Positioning System (GPS). Two sets of thermal pen-recorders for HES and BRB output of STS-1, however, have now been operated for monitoring at ESL. Boom-position (POS) output of STS-1, which is proportional to the offset of the null position of the pendulum, has been analog-monitored with parallel input of temperature in the sensor room.

## **2.3. Data transmission via the satellite telecommunication system**

The digital waveform of broadband seismographs has been transmitted via the INMARSAT telecommunication link from Syowa Station to National Institute of Polar Research (NIPR) since 1993. The UUCP protocol has been used for the file transfer.

In addition, *e-mail* communication started from May 1995, and phase read-out data can be sent directly to USGS/NEIC regularly with time delay of a week.

### 3. Data

Since there is a delay time of 1-2 years between the publication of this report and the observing wintering period, the Preliminary Determination of Epicenters (PDE) reports by NEIC are referred to and only the seismograms of teleseismic events are edited. The arrival-time data and the corresponding hypocentral data of teleseismic events are presented in this report.

#### 3.1. Data priority and release schedule

The person maintained the seismic equipment through the year is basically given priority for using any data obtained at Syowa Station with time limit of two years. These data are transmitted to NIPR and then to be stored in the file server, and can be obtained upon request by Internet service (see Section 3.5) and/or UNIX media (*i.e.*, CD-R, DAT, 8 mm-tape, *etc.*) with a permission of the NIPR members. If anybody wish to use the two-year period data, please contact to *kanao@nipr.ac.jp* concerning the availability.

Archived data after two years from the JARE-period are stored and freely available from both the ftp sites in NIPR and the POSEIDON (PACIFIC21) center of the Earthquake Research Institute (ERI), the University of Tokyo. Any questions concerning data availability from ERI should be directed to *watada@eri.u-tokyo.ac.jp*.

#### 3.2. Phase read-out data

The phase arrival-time of the teleseismic events was detected on the short-period monitoring seismograms. Most phases were scaled on the vertical component, and only clear phases of shear waves were scaled on the horizontal components. These phases were identified by comparing the observed travel time with the calculated one which is within 3 s time difference. The phases which identified as *P*- and *S*- waves are listed in

Table 1. The phase *K* denotes the *PKP* phase, which can be identified within 3 s difference by comparing the observed travel time with that of calculated one. While *X* denotes the clear phase whose wave type can be identified but the travel time was within 3-10 s difference in observed and calculated times. Symbols *E* and *I* in the phase column denote emergent and sharp onsets, respectively. The initial ground motion is denoted by + for upward and - for downward direction. Arrival time is given in UTC. The accuracy of the read-out data is limited to 0.2 s. The teleseismic events identified in the PDE are labeled by the serial numbers (#-xxx) in the table. These serial numbers correspond to those in Table 2. The events without serial numbers are teleseisms whose locations have not been determined by NEIC.

### **3.3. List of teleseismic events**

Figure 4 shows the hypocenters of 914 teleseismic events whose initial phases were detected at Syowa Station. The list of hypocentral parameters of the teleseismic events is shown in Table 2, together with the same serial numbers as given in the remarks of Table 1. The seismograms of these events are available from NIPR.

Examples of digital waveforms on the BRB outputs of STS seismograph for the large ?? events are given in the Appendix. The vertical component seismograms are shown in the Appendix 1 where the scale of amplitude is arbitrary. The serial number of each output is the same as given in Table 2. The beginning time of each seismogram is given at the top left of each panel.

### **3.4. Data publication by Internet**

Hypocenters, arrival-times detected at Syowa Station, and digital waveforms for recent several years are available from Internet services upon request. They are stored in the directories under /pub/HYPO, /pub/ATIME and /pub/STS of UNIX workstation (133.57.3.2), and accessible by use of 'anonymous ftp' command. Data access by use of WWW servers is also supplied by the ftp address; <ftp://geoipx.nipr.ac.jp/pub>.

### Data Processing Staff

The seismic observation system at Syowa Station was designed by M. Kanao, K. Kaminuma and K. Shibuya of the National Institute of Polar Research. Ms. A. Ibaraki assisted preparing this data report. Readers can refer to the URL sites below for finding data directory or access; [http://geoipx.nipr.ac.jp/~kanao/seismic\\_obs](http://geoipx.nipr.ac.jp/~kanao/seismic_obs).

### References

- Eto, T. (1962): On the electromagnetic seismographs at Syowa Base. *Nankyoku Shiryô (Antarct. Rec.)*, **14**, 48-50.
- Kaminuma, K. and Chiba, H. (1973): The new seismographic vault and the detection capability of Syowa Station, Antarctica. *Nankyoku Shiryô (Antarct. Rec.)*, **46**, 67-82.
- Kaminuma, K., Eto, T. and Yoshida, M. (1968): Seismological observation at Syowa Station, Antarctica. *Nankyoku Shiryô (Antarct. Rec.)*, **33**, 65-70.
- Kanao, M. (1999): Seismological bulletin of Syowa Station, Antarctica, 1997. *JARE Data Rep.*, **236** (Seismology 33), 1-65.
- Nagasaka, K., Kaminuma, K. and Shibuya, K. (1992): Seismological observations by a three-component broadband digital seismograph at Syowa Station, Antarctica. *Recent Progress in Antarctic Earth Science*, ed. by Y. Yoshida *et al.* Tokyo, Terra Sci. Publ., 595-601.
- Streckeisen, G. and Messergeraete, A. G. (1987): Very-broad-band Feedback Seismometers STS-1V/VBB and STS-1H/VBB Manual. 34-35.
- Tsuboi, S. (1995): POSEIDON. *IRIS Newsletter*, **XIV** (1), 8-9.

## Block diagram of recording system.

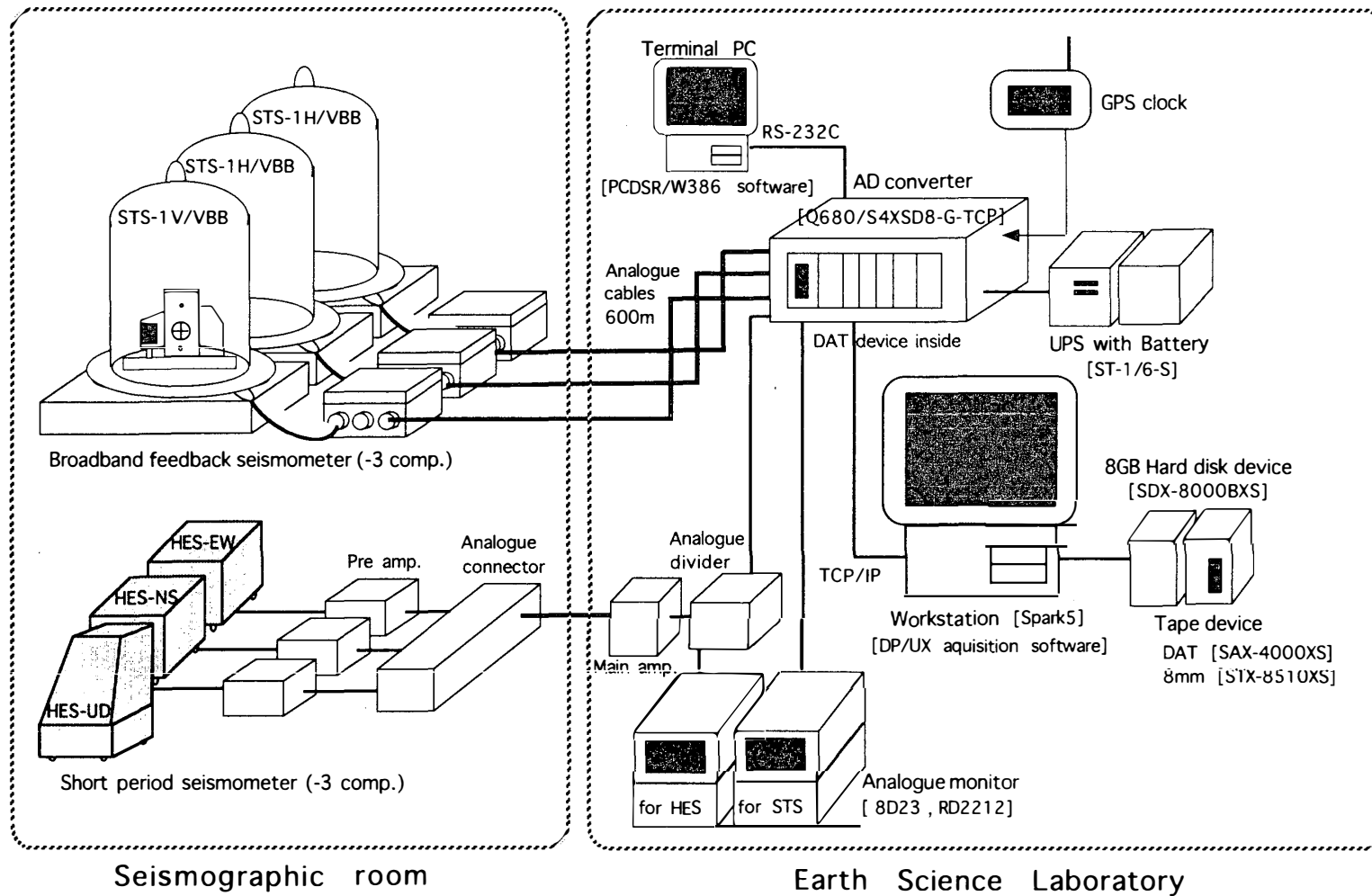


Fig. 1. Block diagram of new recording system for the STS and HES seismographs at Syowa Station. Left figure: Seismographic room; Right figure: Earth Science Laboratory.

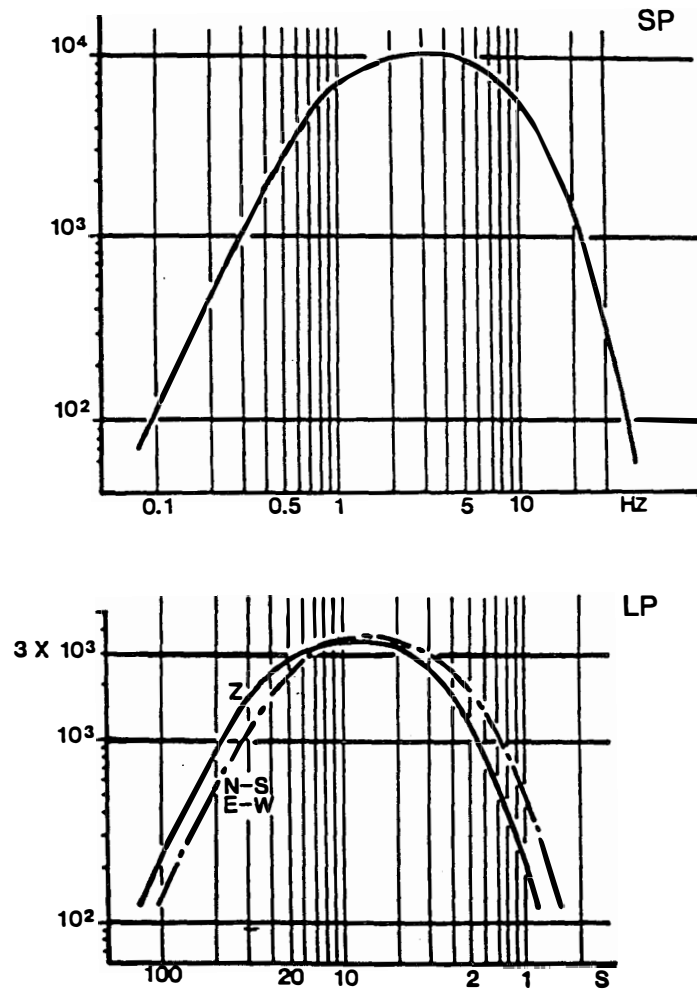


Fig. 2. Over-all frequency responses of the short- and long-period seismographs.



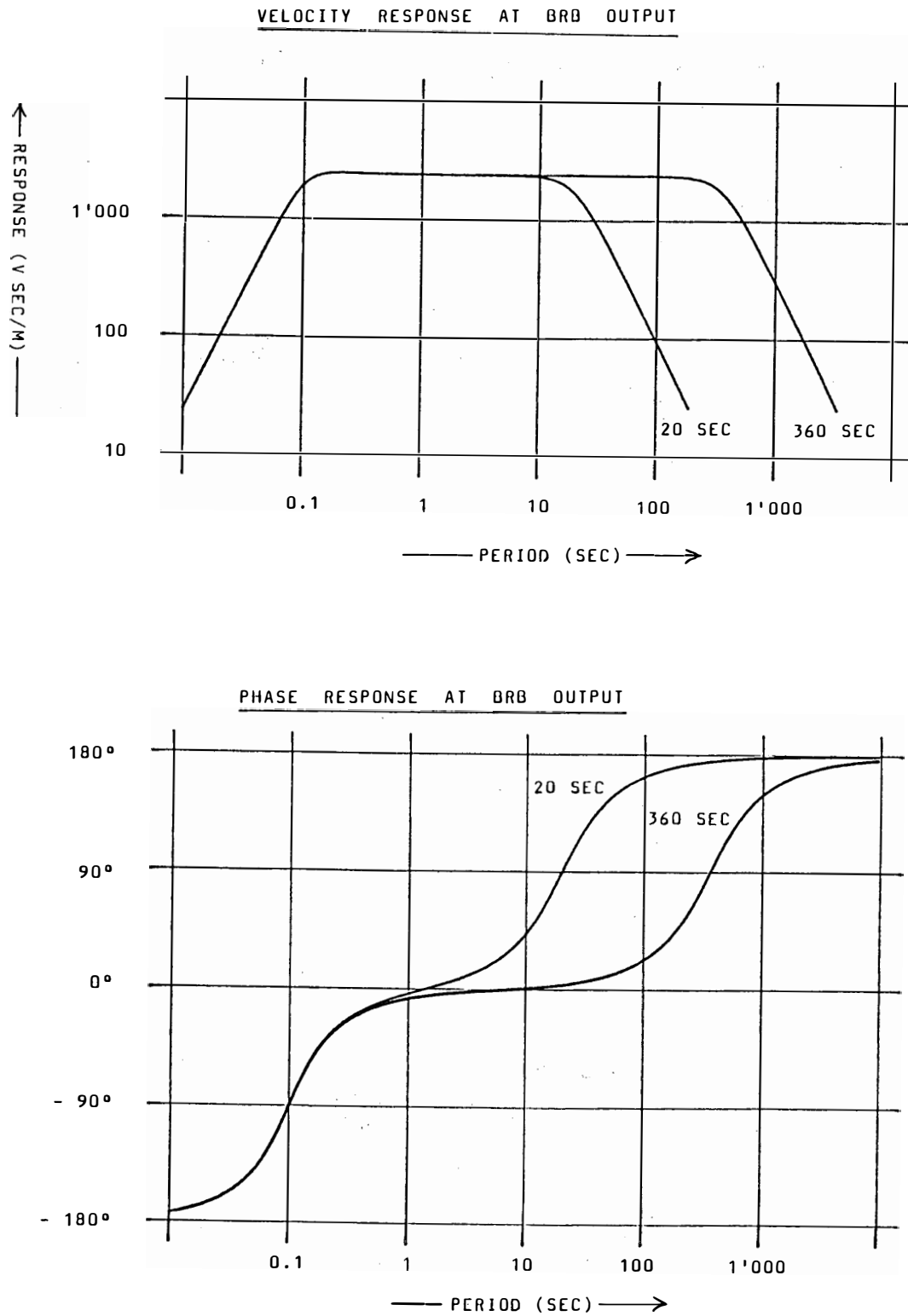


Fig. 3. Amplitude responses (upper figure) and phase responses (lower figure) for the velocity (BRB) output of the broadband seismograph (STS) in the two distinct signal modes of 20-s and 360-s (after Streckeisen and Messegeraete, 1987).

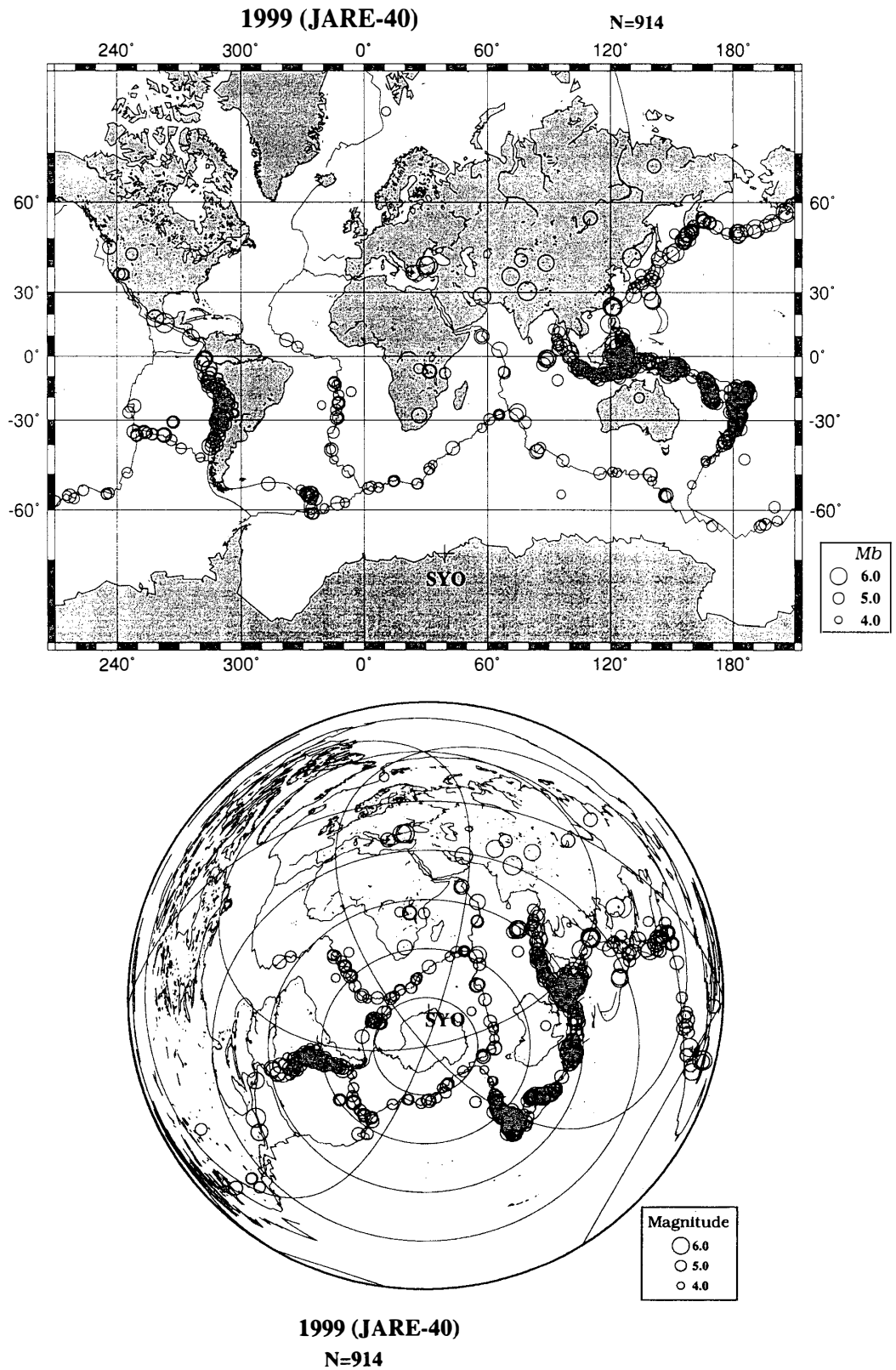


Fig. 4. Epicenters of the 914 earthquakes recorded at Syowa Station. The sizes of earth-quake circles are proportional to the body-wave magnitude ( $M_b$ ) determined by the National Earthquake Information Center (NEIC).

Table 1. List of phase arrival-time data.

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks	
		h	m s				h	m s		
Jan.	01	+EPZ	1304 7.5	#-1		-EPZ	0348 37.3	#-36		
		-EPZ	1711 27.0	#-2		+EPZ	0513 20.6	#-37		
	02	-EPZ	1744 27.2			-EPZ	0623 50.0	#-38		
		-IPZ	1939 30.8	#-3		-EPZ	0647 42.3	#-39		
	03	+EPZ	1033 20.8	#-4		+EPZ	0911 21.7	#-40		
	04	+EPZ	1346 54.2	#-5		+EPZ	1154 37.0	#-41		
	05	+EPZ	0845 41.4	#-6		-EPZ	1214 21.2	#-42		
		ESH	0856 27.0			+EPZ	1652 10.6	#-43		
		-EPKPbcZ	1031 56.4	#-7		-EPZ	1826 23.3	#-44		
		+EPZ	1816 17.4	#-8	20	+EPZ	0942 21.1	#-45		
		+EPZ	1819 29.2			-EPZ	1355 41.6	#-46		
	06	+EPZ	1210 39.5	#-9		-EPZ	2322 37.2	#-47		
		-EPZ	1723 35.2	#-10		22	+EPZ	0655 20.1	#-48	
	07	-EPKPbcZ	1833 35.7	#-11		+EPZ	1050 49.4	#-49		
	08	+EXZ	1323 3.7	#-12		24	+EPZ	0514 39.6	#-50	
		+EPZ	1420 4.5	#-13		-EPZ	0714 39.8	#-51		
		-EPZ	2128 16.8	#-14		ESH	0725 14.2			
	09	+EPZ	0658 30.7	#-15		-EPZ	0808 42.0	#-52		
		-EPZ	1219 44.2	#-16		+EPZ	1418 53.4	#-53		
		+EPZ	1806 31.5	#-17		+EXZ	2214 48.3	#-54		
	10	+EPZ	0047 35.7	#-18	25	+EPZ	0349 47.5	#-55		
	12	+EPKPdfZ	0250 19.8	#-19		+EPZ	1049 2.4	#-56		
		-EPZ	0902 27.4	#-20		-EPZ	1050 37.2	#-57		
		-EPZ	1040 4.0	#-21		+EPZ	1159 4.7	#-58		
		-EPZ	2126 2.3	#-22		+EPZ	1804 31.7	#-59		
	13	-EXZ	0833 7.2	#-23		+EPZ	2256 42.3	#-60		
		-EPZ	2024 29.6	#-24		-EPZ	2358 33.0	#-61		
	14	-EPZ	1723 2.4	#-25		-EPZ	0623 29.4	#-62		
		+EPZ	2031 36.7	#-26		+EPZ	0717 4.2	#-63		
	15	+EPZ	1132 38.1			+EPZ	1243 32.8	#-64		
	16	-EXZ	1819 17.8	#-27		-EPZ	1604 58.9	#-65		
	17	+EPZ	1356 39.7	#-28		+EPZ	2124 1.1	#-66		
		+EPZ	1515 18.8	#-29		27	+EPZ	0349 34.3	#-67	
		-EXZ	1655 37.2	#-30		+EPZ	0821 41.0	#-68		
		-IPZ	1806 56.1	#-31		+EPKPdfZ	0839 54.3	#-69		
ESH		1816 18.4			28	+EPKPdfZ	0829 54.7	#-70		
18	+EPZ	1038 51.2	#-32		29	-EXZ	0122 20.1	#-71		
	+EXZ	1227 6.3	#-33		-EPZ	1517 43.6				
	-EPcPZ	1636 48.4	#-34		+EPZ	2205 45.3				
19	+EPZ	0322 36.3	#-35		-IPZ	2303 22.6	#-72			

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks	
		h	m s				h	m s		
	30	-EPKpdfZ	0409	46.6	#-73	11	-EPZ	1338	57.3	#-104
		-EPZ	0426	22.7	#-74		-EPZ	1529	47.5	#-105
		+EPZ	0609	12.2		12	+EXZ	0707	5.2	#-106
		+EPZ	0902	27.4	#-75		-EXZ	0939	21.7	#-107
	31	+EXZ	0023	9.5	#-76	13	-EPZ	0830	47.7	#-108
		-EXZ	2139	56.3	#-77		+EPZ	1458	24.9	#-109
Feb.	01	-EPZ	0104	59.4	#-78	14	-EPZ	0909	42.7	#-110
		+EPZ	0436	22.1	#-79		-EPZ	1859	19.3	#-111
		-EPZ	0659	25.3	#-80		+EPZ	2043	9.6	#-112
		+EXZ	1647	26.8	#-81		-EPZ	2125	15.9	#-113
	02	-EPZ	1536	19.3	#-82	15	+EPZ	0346	51.8	#-114
		-EPZ	2210	28.2	#-83		+EPZ	0531	55.2	#-115
	03	+EXZ	0126	45.7	#-84		+EPZ	1859	13.3	#-116
		ESH	0137	22.4		17	+EXZ	0240	11.5	#-117
		-EPZ	0304	8.4			+EXZ	1620	6.4	#-118
		-EPZ	0647	37.3	#-85		+EPZ	2210	46.4	#-119
		+EPZ	1852	26.5	#-86		-EPZ	2314	6.3	
	04	+EPZ	0248	20.8	#-87	18	-EPZ	0447	53.5	#-120
		+EPZ	0715	42.4			-EPZ	1717	27.6	#-121
		+IPZ	1246	6.1	#-88	19	+EPZ	0457	33.6	#-122
		-EPZ	1309	5.9	#-89		+EPZ	0738	51.9	#-123
		+EPZ	1940	17.5	#-90		-EXZ	2114	4.3	#-124
	05	+EPZ	0238	26.9		20	+EPZ	0513	25.4	#-125
		-EXZ	0655	26.6	#-91		-EPZ	0739	30.2	
		-IPZ	1152	24.8	#-92		+EPZ	1439	4.6	
		-EPZ	1617	38.2	#-93		+EPZ	1513	3.1	
	06	+EPZ	0849	4.3	#-94		-EPZ	1729	6.6	#-126
		+EPZ	1207	31.2			-EPZ	1911	27.5	
		+EPKpdfZ	1355	55.9	#-95	21	+EPZ	0137	22.3	
		-IPZ	2200	51.5	#-96	22	-EPZ	0112	55.6	#-127
	07	+EPZ	1206	22.7	#-97		ESH	0123	10.2	
		+EPZ	1352	2.3			+EPZ	1415	46.0	
		-EPZ	1617	58.2	#-98	23	-EPZ	0557	42.8	#-128
		+EPZ	1912	48.8	#-99		-EPZ	0725	14.2	#-129
	08	-EPZ	0741	35.3			-EPZ	0740	37.9	#-130
		+EPZ	1100	40.4	#-100		+EPZ	1909	39.2	#-131
		-EPZ	1635	42.1	#-101	24	-EPZ	0031	41.4	#-132
	09	+EPZ	0236	37.9	#-102		+EPZ	0251	55.6	#-133
		-EPZ	0617	45.8	#-103		+EPZ	1154	48.3	#-134
	10	-EPZ	1156	42.7			+EPZ	1412	37.7	

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks	
		h	m s				h	m s		
	25	+EPZ	1324	14.7		12	-EPZ	0042	22.3	#-165
	26	+EPZ	1001	23.3			-EPZ	1128	25.1	#-166
		+EXZ	1344	22.5			+EPZ	2054	24.0	#-167
	27	+EXZ	0721	41.6		14	+EPZ	1244	38.2	#-168
		+EPZ	0730	52.3			+EPZ	1632	46.4	
		-EPZ	1301	25.3		15	+EXZ	1008	41.2	#-169
	28	+EPZ	0553	27.4		16	+EPZ	0345	9.7	#-170
		+EPZ	1339	37.8		18	+EPZ	0211	43.8	#-171
Mar.	01	-EPZ	0903	38.5			-EPZ	0321	42.4	#-172
		+EPZ	1655	23.8			+EPZ	2201	51.5	#-173
	02	+EPZ	1157	33.5		20	+EPZ	1107	44.4	#-174
		-EPZ	1301	25.3		21	-EPZ	0948	36.8	#-175
		+EPZ	1401	12.1			-EPZ	1434	11.8	#-176
		+IPZ	1757	26.0			-EPZ	1635	22.2	#-177
	03	+EPZ	0303	37.2			+EPZ	1636	26.7	#-178
	04	+EPZ	0244	2.1		22	+EPZ	0816	30.3	#-179
		+EPZ	0552	0.9		23	-EPZ	0845	21.1	#-180
		+EPZ	0905	9.7			-EPZ	1055	9.5	#-181
	05	+EPZ	0045	32.2			+EPZ	1135	25.5	#-182
		+EPZ	1924	4.1			+EPZ	1350	48.0	#-183
	06	-IPZ	2040	27.9		24	+EPZ	1951	20.0	
		ESH	2050	6.0			+EPZ	2044	0.7	#-184
	07	+EPZ	0020	19.6		25	+EPZ	0823	46.3	#-185
		+EPZ	0143	45.4		26	+EPZ	1445	10.5	#-186
		-EPZ	2048	47.6		27	-EPZ	0252	19.9	
	08	+EPZ	0559	39.4			-EPZ	0815	23.7	#-187
		+EPZ	0617	30.6			-EXZ	1123	33.1	#-188
		-EPZ	0617	47.5			+EPZ	1257	2.8	#-189
		+EPZ	1245	28.2		28	+EPZ	1353	1.5	#-190
		-EPZ	1737	36.6			+EPZ	1645	10.7	#-191
	09	+EXZ	0544	28.5			+ESKSachH	1929	48.4	#-192
		+EPZ	0946	17.1		29	+EPZ	0629	24.1	#-193
		+EXZ	1646	17.5		30	+EXZ	1033	24.7	#-194
		+EXZ	2145	51.3		Apr. 01	+EXZ	1419	19.1	#-195
		+EPZ	2307	51.3			+EPZ	2149	36.7	#-196
		+EXZ	2356	9.5		02	-IPZ	1718	20.0	#-197
	10	-EPZ	0332	52.0			+EPZ	1850	50.6	#-198
		-EPZ	0528	20.1			+EXZ	2150	14.4	#-199
		+EXZ	1003	51.3		03	-EPZ	0137	45.4	
	11	-EPZ	0842	28.1			+IXZ	0629	31.1	#-200

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
04	+EPZ	1506	8.0	#-201		+EPZ	0626	13.0	#-235
	+EPZ	2038	28.4			-EPZ	1915	41.5	#-236
	-EPZ	2045	54.9	#-202	21	+EPZ	1120	0.2	#-237
	-EPZ	2115	4.9	#-203	22	-EPZ	1420	27.2	#-238
05	+EPZ	0357	26.5	#-204		-EPZ	2227	28.9	#-239
	-EPZ	1120	55.6	#-205	23	+EPZ	1447	22.7	#-240
	+EPZ	1437	35.0			-EPZ	2116	27.2	#-241
06	-EPZ	0045	44.8	#-206		+EXZ	2228	31.5	#-242
	+EPZ	0426	58.0	#-207	24	+EPZ	0857	11.3	#-243
	-EPZ	0756	17.4	#-208		-EPZ	2027	21.5	#-244
	+EPZ	0835	12.2	#-209	25	+EPZ	0623	4.8	
	-EPZ	1139	19.3	#-210		+EPZ	0921	25.9	#-245
	-EPZ	1403	26.2	#-211		-EPKPdfZ	1246	1.5	#-246
	+EPZ	1923	32.6	#-212	26	-EPZ	1219	35.3	#-247
07	-EPZ	0656	36.1	#-213		-EPZ	1830	43.7	#-248
08	+EPZ	1142	54.1	#-214	28	-EPZ	0646	26.8	#-249
	+IPKPdfZ	1328	40.3	#-215		-EPZ	2219	15.0	
	+EPZ	2103	21.1	#-216		-EPZ	2335	30.4	#-250
09	-EPZ	0823	31.8	#-217	29	+EXZ	0503	28.3	#-251
	-IPZ	1227	9.1	#-218		-EPKPdfZ	0804	51.1	#-252
	ESH	1236	22.8			+EXZ	1513	50.4	#-253
	-EPZ	1414	56.2	#-219		+EPZ	1838	1.8	#-254
	-EPZ	1703	37.5	#-220	30	+EPZ	1939	43.5	#-255
	+EPZ	2021	46.0	#-221	May 01	+EPZ	0234	48.5	#-256
10	+EPZ	1606	34.4	#-222	03	+EPZ	0814	21.3	#-257
	+EPZ	1942	55.6	#-223	05	+EPZ	0445	36.0	#-258
11	-EPZ	1703	38.3	#-224		+EPKPaBZ	1051	11.5	#-259
12	-EPZ	0205	59.1	#-225		-EPZ	1350	45.6	#-260
	+EPZ	0953	43.5	#-226	06	+EPZ	0308	15.9	#-261
13	-IPZ	1051	11.2	#-227		+EPZ	1107	17.7	
	-EPZ	1101	19.9			-EPZ	1333	3.4	#-262
15	+EXZ	0507	25.0	#-228	07	+EPZ	0221	1.8	#-263
	-EPZ	1407	42.5	#-229		-EPZ	1417	48.8	#-264
	-EPZ	1632	53.7		08	+EPZ	0026	34.5	#-265
16	-EPZ	1101	53.4	#-230		-EPZ	1404	22.5	#-266
	-EPZ	1531	18.1	#-231		+EPKPdfZ	2004	17.7	#-267
19	-EPZ	0439	25.2		09	+EPZ	1902	58.1	#-268
	-EPKPdfZ	0932	10.9	#-232	10	+EPZ	0858	20.1	#-269
20	-EPZ	0158	8.1	#-233		+EPZ	2045	58.6	#-270
	-EPZ	0547	14.7	#-234	11	+EPZ	0112	7.4	#-271

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
	+EPZ	1607	38.5	#-272	27	+EPZ	1343	36.6	
	+EPZ	1616	38.8	#-273		+EPZ	1824	19.5	#-307
	+EPZ	1634	24.3	#-274		-EPZ	1938	16.7	#-308
	-EPZ	2024	23.2	#-275	28	+EPZ	2209	12.5	#-309
12	+EPZ	0547	7.5		29	-EPZ	0305	38.8	#-310
	+EPZ	0953	5.9	#-276		+EPZ	1648	32.8	#-311
	-EPKPdfZ	1818	30.0	#-277	30	+EPZ	0234	40.8	#-312
13	-EPZ	1407	21.7	#-278		+EPZ	1005	13.4	#-313
14	+EPZ	2049	22.9	#-279		+EPZ	1441	52.5	#-314
15	+EPKPdfZ	1341	52.8	#-280		+EPZ	1913	17.1	#-315
16	+EPZ	0104	28.7	#-281	31	+EPZ	0835	31.4	#-316
	ESH	0115	38.2		Jun. 01	+EPZ	0318	25.3	#-317
	-EPZ	1538	51.7	#-282		+EPZ	1227	4.6	#-318
	+EPZ	1539	8.5			+EXZ	1332	6.0	#-319
18	-EPZ	0432	46.5	#-283		-EPZ	1812	0.2	#-320
	+EPZ	0724	26.5	#-284	02	-EPZ	0035	52.2	#-321
	-EPZ	0930	1.6	#-285		+EPZ	0734	2.8	#-322
	+EPZ	2006	11.7	#-286		-EPZ	0741	22.0	#-323
19	+EPZ	0346	16.0	#-287		+EPZ	0746	16.3	#-324
	+EXZ	0622	17.9	#-288	03	+EPZ	1331	25.0	#-325
	+EPZ	2317	2.3			-EPZ	1350	8.0	#-326
20	-EPZ	1228	44.0	#-289	04	+EPKPabZ	0446	36.0	#-327
	+EPZ	1256	55.5	#-290		-EPZ	1241	38.7	#-328
	+EXZ	1718	14.3	#-291	06	-EXZ	2110	30.4	#-329
	-EPZ	1724	24.8	#-292	08	+EPZ	1945	4.5	#-330
21	+EsPZ	0318	13.2	#-293		-EPZ	1955	17.7	
	+EPZ	0442	54.4	#-294	09	+EPZ	0014	54.7	#-331
22	+EPZ	0142	22.1	#-295		+EPZ	0117	12.8	#-332
	-EPZ	0618	19.8	#-296		+EPZ	0413	25.9	#-333
	+EPZ	1021	19.5	#-297		+EPKPbcZ	0727	3.3	#-334
	+EXZ	1029	14.8	#-298		+EPZ	1246	55.7	#-335
24	+EPZ	0137	49.1	#-299		-EPZ	2336	14.1	#-336
	-EPZ	1448	43.7	#-300	10	-EPZ	0118	14.9	#-337
25	+EPZ	0746	48.7	#-301		+EPZ	0435	58.3	#-338
	-EPZ	1103	48.3	#-302	13	+EPZ	0840	22.7	#-339
	+IPZ	1652	58.4	#-303	14	+EPZ	1453	55.8	#-340
	ESH	1702	1.0		15	-EPZ	1910	3.2	#-341
26	-EPZ	0049	26.6	#-304	16	+EPZ	1733	9.3	#-342
	+EPZ	1429	33.4	#-305		+EPZ	1849	6.9	
	-EPZ	2024	19.3	#-306	17	-EPZ	0803	17.3	#-343

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
18	+EPZ	0303	52.2	#-344		-EPZ	1108	21.5	#-377
	-EPZ	1108	41.9	#-345		-EPZ	2015	53.3	
	+EpPZ	1438	52.2	#-346	04	-EPZ	0209	16.2	#-378
	+EPZ	1930	4.9	#-347		-EPZ	0438	3.9	
19	+EPZ	0022	24.3	#-348	05	-EPKPabZ	1900	1.1	#-379
	+EPZ	0133	47.7	#-349	07	-EPZ	1807	51.9	#-380
	+EPZ	0214	6.5	#-350		-IPKPdfZ	1912	25.9	#-381
	-EpPZ	0916	46.3	#-351	08	-EPZ	1116	33.9	#-382
20	-EPZ	0744	2.7	#-352		+ESH	1126	11.6	
21	+EpPZ	1322	44.3	#-353		+EPZ	1549	52.0	#-383
	+EPZ	1755	26.7			+EXZ	2215	9.8	#-384
	+EPKPdfZ	1801	55.0	#-354	09	-IPZ	0132	28.7	#-385
22	-EPZ	0100	28.6	#-355		-EPZ	0517	52.3	#-386
	+EPZ	0337	39.3	#-356	10	+EPZ	1205	24.8	#-387
	-EPZ	1854	31.1	#-357	11	+EPZ	1145	12.6	
	+ESH	1859	31.8			+EPZ	1505	26.2	#-388
	+EPZ	1900	53.8			+EPZ	1531	40.0	#-389
23	+EXZ	0112	40.7	#-358	12	-IPZ	0611	15.3	#-390
	-EPZ	2052	51.4	#-359		-EPZ	1136	15.3	#-391
24	-EPZ	0121	51.5	#-360	13	-EPZ	0416	13.6	#-392
	+EPZ	0339	29.7	#-361		+EPZ	0445	15.9	
25	+EPZ	0602	14.4	#-362		+EPZ	1114	43.1	#-393
26	+IPZ	2217	23.2	#-363		+EPZ	1305	41.4	
27	+EPZ	1414	27.2	#-364		-EPZ	1604	28.1	#-394
28	+EPZ	0211	28.4	#-365	14	-EPZ	1018	28.5	
	+ESH	0221	9.3			+EPZ	1212	53.3	#-395
	+EPZ	0311	1.9	#-366	15	+EXZ	0434	0.5	#-396
	+EPZ	0946	16.9	#-367		+EPZ	0751	58.3	#-397
	+ESH	0955	47.2			-EPZ	1439	1.6	#-398
	+EXZ	1233	37.5	#-368		-EPZ	1503	50.2	#-399
	-EPZ	2136	48.1	#-369		-EXZ	1557	33.8	#-400
29	+EPZ	0042	24.6	#-370		-EPZ	1618	31.8	#-401
	+EPZ	0602	54.8	#-371	17	+EPZ	0101	48.7	
	+EPZ	1107	25.5	#-372	18	-EXZ	0746	35.5	#-402
30	+EPZ	0616	3.0	#-373		-EPZ	1045	33.4	#-403
Jul. 03	-EPKPabZ	0204	11.7	#-374		-EPZ	2241	38.5	#-404
	-EpPKPbcZ	0523	48.8	#-375	19	-EPZ	0132	11.7	#-405
	+EPKPdfZ	0548	6.6	#-376		-EPZ	0229	3.7	#-406
	+ESH	0554	17.0			-ESH	0239	20.3	
	-EPZ	0558	26.8			-EPZ	0512	51.1	#-407



Date	Phase	UTC time		Remarks
		h	m s	
	+EPZ	0605	22.3	#-408
	-EPZ	1656	39.7	#-409
20	+EPZ	1207	4.6	#-410
	+EPZ	1831	36.2	#-411
	+EPZ	2055	48.9	#-412
21	+EPZ	0322	39.7	#-413
	+ESH	0332	37.3	
	+EPZ	1327	28.9	#-414
	+EPZ	1358	38.8	#-415
	+ESH	1408	45.3	
	+EPZ	1736	33.6	
23	+EPZ	0408	33.9	#-416
	-EPZ	1459	21.8	#-417
	-EPZ	2305	14.8	#-418
24	-EPZ	1029	45.9	
	+EPZ	1736	39.6	
26	+EPZ	0146	27.2	#-419
	+EPZ	2141	31.3	
27	+EPZ	0424	1.7	#-420
	-EPZ	1817	46.8	#-421
	+EPZ	2343	29.9	#-422
28	-EPZ	0028	58.4	#-423
	-EPZ	0126	40.7	#-424
	+EPZ	1020	12.5	#-425
30	-EPZ	1304	57.6	#-426
	+EPZ	1554	40.7	
	+EPZ	1600	7.4	#-427
31	-EPZ	1917	38.0	
Aug. 01	-EPZ	0850	59.4	#-428
	+EPZ	1014	7.7	#-429
	+EPKPdfZ	1307	39.3	#-430
	-EPKPdfZ	1307	51.9	#-430
	+EPKPdfZ	1626	1.8	#-431
	+EPKPdfZ	2030	42.3	#-432
	+EPKPdfZ	2030	58.9	#-432
02	-EPZ	0117	14.8	#-433
	+EPKPdfZ	0624	52.4	#-434
	-IPZ	0959	47.2	#-435
03	+EPZ	0409	51.4	#-436
	+EPZ	0825	7.2	#-437

Date	Phase	UTC time		Remarks
		h	m s	
	+EPZ	1612	18.8	#-438
	+EPZ	1635	25.5	#-439
	+EPZ	2015	50.9	#-440
04	+EPZ	0545	5.4	#-441
	-EPZ	0652	45.1	#-442
	+EPZ	1153	52.0	#-443
	+EPZ	1700	30.5	#-444
	-EPZ	2011	45.2	
06	-EPKPbcZ	0052	10.5	#-445
07	+EPZ	0320	34.9	
	+EPZ	1506	18.0	#-446
	-EPZ	1713	25.0	#-447
08	+EPZ	0257	4.1	#-448
	-EPZ	1525	4.9	#-449
09	+EPZ	2311	39.0	#-450
10	-EPZ	0908	24.3	#-451
	-EPZ	1100	56.6	#-452
	+EPZ	1233	40.8	#-453
	+EXZ	1751	24.7	#-454
	+EPZ	2037	47.6	#-455
11	-EPZ	0129	9.1	#-456
	+EPZ	1038	20.4	#-457
	+EPZ	1446	33.0	#-458
	+EPZ	1543	3.0	#-459
12	-EPZ	0037	58.7	#-460
	+EPZ	0140	37.0	#-461
	-EPZ	0557	37.5	#-462
	-EPZ	1656	31.9	#-463
13	-EPZ	0308	56.0	#-464
	+EPKPabZ	0320	55.7	#-465
	-EPZ	0725	39.9	#-466
	+EPKPabZ	0817	6.9	#-467
	+EPZ	1006	30.0	#-468
	+EPZ	1924	9.3	#-469
14	-EPZ	0028	28.7	#-470
	ESH	0038	49.0	
15	+EPZ	0354	11.5	
	-EPZ	0432	40.3	
	-EPZ	2359	27.1	#-471
16	+EPZ	0232	9.4	#-472

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
	+EPZ	0312	22.6	#-473		+EPdiffZ	1253	22.2	#-510
	+EPZ	0417	40.5	#-474		-EPZ	2041	27.3	#-511
	-EPZ	0622	41.6	#-475		+EPZ	2333	22.7	#-512
	+EPZ	2010	0.7		29	-EPZ	0057	52.9	#-513
17	+EPKiKPZ	0020	12.3	#-476		-EXZ	0357	33.7	#-514
	-EPZ	0443	42.4	#-477		+EPZ	0834	35.5	#-515
	+EPZ	2240	28.2			-EPZ	2339	51.5	#-516
18	-EPZ	0127	42.3	#-478	30	-EPZ	1239	56.1	#-517
	-ESH	0136	37.5		31	+EPZ	1533	40.0	#-518
	+EPZ	0202	4.9	#-479	Sep. 01	+EPZ	0307	35.5	#-519
	+EPZ	0801	8.8	#-480		-EPZ	0655	34.4	#-520
	+EPZ	2127	19.8	#-481		+EPZ	1916	15.0	#-521
19	+EPZ	0429	3.0	#-482		+EPZ	2007	20.1	#-522
20	-EPPZ	1021	21.4	#-483	02	-EPZ	0247	53.4	#-523
	-EPKPbcZ	1410	20.6	#-484		+EpPKPbcZ	0253	45.6	#-524
	+EPZ	1809	30.4	#-485		-EPZ	0722	26.4	#-525
	+EPZ	1913	10.8	#-486	03	+EPZ	0042	17.8	#-526
	-EPZ	2031	42.3	#-487		+EPZ	1108	27.7	
	+EPKPdfZ	2052	2.5	#-488	04	-EPZ	1422	26.2	#-527
21	-EPZ	0310	52.4	#-489	05	+EPZ	0347	14.4	#-528
	-EXZ	0347	37.0	#-490		+EPZ	0510	23.2	
	-EPZ	2156	34.8	#-491		-EXZ	0619	55.4	#-529
22	+EPZ	0945	48.6	#-492		-EPZ	1807	41.8	#-530
	+EPZ	1253	32.6	#-493	06	-EPZ	0201	55.0	#-531
	+EPZ	2355	59.9	#-494		+EPZ	0557	59.0	#-532
23	-EPZ	0658	39.1	#-495		+EPZ	1024	35.4	#-533
	-EPZ	1601	4.5	#-496		+EPZ	1129	30.7	#-534
	+EPZ	1640	30.0	#-497		+EPKPdfZ	1504	30.9	#-535
	+EXZ	2350	43.5	#-498		+EXZ	2208	2.0	#-536
24	-EPZ	0245	54.3	#-499	07	-EPdiffZ	1211	13.1	#-537
	+EPZ	0712	32.2	#-500		+EPZ	1327	44.5	#-538
25	+EPZ	0718	29.7	#-501		-EPZ	1758	29.5	#-539
	+EPZ	1423	26.6	#-502		+EXZ	2359	6.5	#-540
	-EpPZ	1950	15.6	#-503	08	-EPZ	0840	53.3	#-541
26	-EPdiffZ	0138	14.7	#-504	09	+EPZ	1018	39.9	#-542
	-EPZ	0741	3.9	#-505		+EPZ	1320	13.8	#-543
	-EPZ	0904	6.8	#-506	10	+EpPZ	0415	35.4	#-544
27	+EPZ	2331	19.5	#-507		-EPZ	0708	33.6	#-545
28	-EPZ	0334	49.5	#-508		+EPZ	1727	33.3	#-546
	+EXZ	0734	8.9	#-509		+EXZ	1949	24.7	#-547

Date	Phase	UTC time h m s		Remarks	Date	Phase	UTC time h m s		Remarks
	+EPZ	1953	19.5	#-548		+EPZ	1703	28.2	#-582
	+EPZ	2001	41.7	#-549	27	+EXZ	0246	30.0	#-583
11	+EPZ	0733	13.7	#-550		+EPZ	1057	9.5	#-584
12	-EPKpdfZ	2315	44.1	#-551		-EXZ	1455	57.4	#-585
13	-EPZ	0743	18.3	#-552		+EPZ	2131	19.0	#-586
14	-EPZ	0407	50.3	#-553		+EPZ	2226	2.6	#-587
15	-EPZ	0310	53.2	#-554		-EPZ	2234	56.9	#-588
	+EXZ	0312	53.3	#-555	28	+EPZ	0223	29.9	#-589
	+EPZ	0533	43.0			-EPZ	0253	1.2	#-590
	-EPZ	1655	8.0	#-556		-EPKpdfZ	0520	31.3	#-591
16	+EPZ	0947	58.8	#-557		-EPKpbcZ	0604	0.3	#-592
	+EPZ	1226	31.9	#-558		+EPZ	1324	57.3	#-593
17	-EPZ	1507	25.5	#-559		+EPZ	1400	44.5	#-594
	+EPZ	2112	41.9	#-560	29	-EPZ	0221	29.1	#-595
18	+EPZ	0001	20.1	#-561		+EPZ	0411	57.7	#-596
	-EPZ	0703	56.1	#-562		-EPZ	0455	38.1	#-597
	+EXZ	1304	28.3	#-563		-EPZ	0456	14.7	#-597
	+EPZ	2024	29.1	#-564		+EPZ	0728	44.8	
	-EPKpdfZ	2148	7.7	#-565		+EPZ	1625	21.8	#-598
	+EXZ	2336	32.6	#-566		-EPZ	1812	34.2	#-599
19	-EPZ	0003	53.3	#-567	30	-EPKpbcZ	0338	22.1	#-600
	-EPZ	0004	19.9	#-567		-EPZ	0559	17.2	#-601
	-ESH	0014	7.3			-EPKpdfZ	1650	1.8	#-602
	-EPZ	0331	26.4	#-568		+EPZ	1815	34.6	#-603
	-EPZ	1748	38.5			-EPZ	2054	30.0	#-604
20	+EPKiKPZ	1805	44.8	#-569		-ESH	2103	57.8	
	-EPZ	2205	38.7	#-570	Oct. 01	+EPZ	0731	2.2	#-605
21	-EPZ	0214	43.5	#-571		+EPZ	0807	0.6	#-606
	-EPZ	0250	12.2	#-572		+EPZ	0921	10.4	#-607
	+EPZ	1049	37.2			+EPZ	1043	56.5	#-608
	-EXZ	2233	11.6	#-573		+EPZ	1119	9.9	#-609
22	-EPdi ffZ	0033	8.3	#-574		-EPZ	2236	42.5	#-610
23	+EPZ	2234	45.1	#-575	03	+EPZ	0041	2.6	#-611
24	+EPZ	1445	26.5			-EPZ	0647	35.0	#-612
25	+EPZ	0531	6.4	#-576		+EPZ	1514	29.8	#-613
	-EPZ	0539	32.2	#-577	04	-EPZ	0045	59.8	#-614
	-EPZ	1612	14.3	#-578		+EPZ	1410	32.1	#-615
	+EPZ	1713	47.5	#-579		+EPZ	2032	37.5	#-616
26	+EPKiKPZ	0011	20.7	#-580	05	+EPZ	0311	25.2	#-617
	-EPZ	0933	32.8	#-581		+EPKpdfZ	0521	6.6	#-618

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
07	-EPKpdfZ	0509	52.3	#-619		-EPZ	0836	58.3	#-653
	-IPKPabZ	0510	20.4	#-619		-EXZ	2246	37.5	#-654
	+EPZ	1016	30.4	#-620	18	+EPZ	0102	46.2	#-655
	+EPZ	1240	8.5	#-621		-EPZ	0108	53.5	#-656
08	+EPZ	0334	45.9	#-622		+EPZ	0249	42.6	#-657
	+EPZ	0522	32.2	#-623		-ESH	0300	9.8	
	-EPZ	1102	48.0	#-624		+EPZ	0446	59.5	#-658
	+EPZ	1156	13.6	#-625		+EXZ	1049	29.5	#-659
	+EPZ	1254	46.3	#-626	19	-EPZ	0837	21.1	#-660
	-EPZ	2225	36.8	#-627	20	-EPZ	0255	21.6	#-661
	+EPZ	2042	41.0	#-628		-EPZ	0841	1.1	#-662
09	+EPZ	0914	19.6	#-629		ESH	0851		
	+EPZ	0957	24.5	#-630		-EPZ	1126	38.0	
	+EPZ	1001	5.9	#-631		+EXZ	1134	31.1	#-663
	-EXZ	1421	1.0	#-632		-EPZ	1344	45.9	#-664
10	-EPZ	0141	14.3	#-633		-EPZ	1707	7.2	#-665
	-EXZ	0716	4.6	#-634	21	+EPZ	0400	4.3	#-666
11	-EPZ	0227	4.1	#-635		-EPZ	1731	24.8	#-667
	-EPZ	0908	33.0	#-636		-EpPZ	1731	34.5	
	-EPZ	1343	37.2	#-637	22	-EPZ	1528	2.0	
	-EPZ	2043	0.4	#-638		+EPZ	2139	2.8	#-668
	-EPZ	2131	33.8	#-639	23	-EPZ	0225	13.9	#-669
12	+EPZ	1157	41.0			-EPZ	0325	41.3	#-670
	+EPZ	1340	28.4	#-640		+EPZ	1918	21.6	
13	+EPKpdfZ	0153	44.3	#-641	24	-EPKpdfZ	0441	3.3	#-671
	+EPKpdfZ	0423	36.4	#-642		-EPZ	0911	25.5	#-672
	-EPZ	1348	52.4	#-643		-EXZ	1050	9.7	#-673
	+EPZ	1416	27.3	#-644		-EPKpdfZ	1244	30.2	#-674
	-EPZ	1607	2.5	#-645	25	-EPZ	0014	11.6	#-675
	-EPZ	1856	47.4			+EPZ	0215	13.0	
14	-EPZ	0251	18.2	#-646		-EPZ	1321	3.3	
	+EPZ	1112	57.9	#-647		+EPZ	2042	25.1	#-676
	+EPZ	1257	50.8	#-648	27	-EPZ	0422	7.8	#-677
	-EPZ	1349	17.0	#-649	28	-EPZ	0042	4.5	#-678
	-EPKPbcZ	1753	51.3	#-650	29	-EPZ	1248	49.6	
16	-EPZ	0326	9.9	#-651		-EPZ	1537	48.1	#-679
	+EPZ	0452	16.9	#-652		-EPZ	1725	13.7	#-680
	+EPZ	1006	18.2		30	+EPKpdfZ	0107	38.5	#-681
	+EPZ	1056	5.5			-EPZ	0316	33.5	#-682
17	+EPZ	0329	2.7			-EPZ	0956	29.3	#-683

Date	Phase	UTC time		Remarks
		h	m s	
	-EPZ	2128	15.0	#-684
31	-EPZ	1032	49.9	#-685
Nov. 01	+EPKiKPZ	1811	26.3	#-686
	+EXZ	2325	53.8	#-687
02	+EXZ	0611	47.6	#-688
	-EXZ	2322	19.0	#-689
03	+EPZ	2145	15.6	#-690
04	-EPZ	0003	33.2	#-691
	-EPZ	0549	47.5	#-692
05	+EPZ	0904	3.5	#-693
	-EPZ	1715	35.9	#-694
06	-EPZ	0108	8.5	#-695
	+EPZ	0423	37.6	#-696
07	+EPZ	1210	7.8	#-697
	+EXZ	1341	17.8	#-698
	+EPZ	1624	1.4	#-699
08	-EPKiKPZ	1703	45.5	#-700
	-EPZ	1715	2.2	
	-EPZ	1932	10.7	#-701
09	+EPZ	0826	7.0	#-702
	-EXZ	1648	34.1	#-703
10	+EXZ	1130	17.3	#-704
	-EPZ	1409	28.0	#-705
11	-EPKPdfZ	0300	34.8	#-706
	+EPZ	1817	37.3	#-707
	ESH	1827	26.5	
	-EPZ	1836	10.5	
12	+EPZ	1048	52.2	#-708
	-EPZ	1259	55.2	#-709
	+EPZ	1642	33.2	#-710
	-EpPKiKPZ	1715	57.8	#-711
13	+EPZ	1009	35.7	#-712
	+EPZ	1646	27.8	
	-EPKPbcZ	1951	6.2	#-713
	+EPKPbcZ	2144	28.0	#-714
14	+EPZ	0336	34.8	
15	-EPZ	0151	47.6	#-715
	+EPKPdfZ	0153	39.8	#-716
	-EPZ	0232	20.7	#-717
	-EPZ	0411	59.4	#-718

Date	Phase	UTC time		Remarks
		h	m s	
	-EPZ	0554	27.2	#-719
	ESH	0604	6.0	
	+EXZ	1754	6.0	#-720
	-EPZ	2015	22.3	#-721
16	-EPZ	0128	1.1	#-722
	-EPZ	1353	46.8	#-723
	+EPZ	2205	11.0	#-724
	-EPZ	2333	52.4	#-725
17	-EPZ	0340	43.7	#-726
	-EPZ	0531	19.4	#-727
	-EPZ	0956	58.8	#-728
	-EPZ	1149	36.4	#-729
18	+EPZ	0306	43.6	#-730
	+EXZ	0333	26.5	#-731
	-EPZ	0555	37.8	#-732
	+EPZ	1022	58.2	#-733
	+EPZ	1059	10.9	#-734
	+EPZ	1434	24.8	
	-EPZ	1440	37.7	#-735
	-EPZ	1835	44.9	#-736
	-EPZ	2108	44.9	#-737
19	+EPZ	1054	47.2	#-738
	-EPZ	1134	44.4	
	-EPZ	1409	48.5	#-739
	-EPZ	1416	41.4	#-740
	-EPZ	1445	23.9	#-741
	+EXZ	1539	14.0	#-742
20	-EPZ	0418	9.5	#-743
	-EPZ	0610	40.8	#-744
	-EPZ	0711	38.7	
	-EPZ	2203	53.7	#-745
21	+IXZ	0402	55.3	#-746
	+EPZ	0413	48.5	#-747
	-EPZ	0419	57.1	#-748
	+EPZ	0647	8.5	#-749
	-EPZ	0811	36.6	#-750
	+EPZ	1046	15.9	#-751
	+EPZ	1458	46.7	#-752
22	-EPZ	0158	27.0	#-753
23	-EPZ	1450	5.5	#-754

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
	+EPZ	1528	6.8	#-755		-EPZ	0453	8.1	#-792
	-EPZ	1559	35.7	#-756		-EXZ	1635	59.6	#-793
	+EPZ	1616	31.5	#-757		+EPZ	2022	5.0	#-794
	+EPZ	1758	18.8			ESH	2031	50.5	
24	-EPZ	0120	54.4		Dec. 01	-EPZ	0406	35.2	#-795
	+EXZ	2004	5.4	#-758		+EpPZ	0407	23.2	#-795
25	-EpPZ	0319	44.7	#-759		+EPZ	1912	43.3	#-796
	-EPZ	0412	49.3	#-760		+EXZ	2116	31.3	#-797
	+EPZ	0821	13.9	#-761		+EpPZ	2157	52.3	#-798
	+EPZ	1024	49.5	#-762	02	-EXZ	1932	9.3	#-799
	-EPZ	1202	5.2	#-763		+EXZ	2243	14.6	#-800
	+EPZ	1948	34.0	#-764	03	+EPZ	1848	54.0	#-801
26	+EPKPbcZ	0048	53.1	#-765	04	-EPZ	0758	11.5	#-802
	-EPKPbcZ	0114	9.6	#-766		-EpPKPbcZ	0907	3.0	#-803
	-EPZ	0308	1.3	#-767		-EPZ	1718	5.1	#-804
	+EPZ	0321	40.6	#-768		+EPZ	1857	25.3	#-805
	+EPZ	1334	2.1	#-769	05	-EPZ	0104	53.7	#-806
	-EPZ	1351	20.6	#-770		+EPZ	0905	36.2	#-807
	+EPZ	1454	7.5			-EPZ	0920	27.3	#-808
	-EPKPbcZ	1617	27.6	#-771		+EPKPdfZ	2218	35.5	#-809
	+EPZ	1948	54.4	#-772		+EPZ	2221	29.9	
	+EPZ	2216	8.0	#-773	06	+EPKPdfZ	0751	50.6	#-810
	-EPZ	2247	34.9	#-774		+EPZ	1009	14.3	#-811
27	-EPZ	0244	6.6	#-775		-EPZ	2133	18.6	
	+EPZ	1212	44.3	#-776		-EPKPdfZ	2332	31.1	#-812
	-EPZ	1403	2.1	#-777	07	+EPKPdfZ	0039	48.3	#-813
	+EXZ	1446	39.7	#-778		-EPZ	1403	48.7	#-814
	-EPZ	2033	7.2	#-779		-EPZ	2142	38.4	#-815
	-EPZ	2254	19.7	#-780	08	+EPZ	1042	36.6	#-816
	-EPKPbcZ	2332	22.0	#-781		-EPZ	1219	32.6	
28	+EPZ	0106	37.4	#-782		-EXZ	1347	55.8	#-817
	-EPKPbcZ	0930	20.9	#-783		-EPZ	1718	28.8	#-818
	-EPZ	1029	3.5	#-784	09	+EPZ	0433	5.0	#-819
29	-EPZ	0358	14.2	#-785		-EpPZ	0845	42.3	#-820
	-EPZ	0407	22.7	#-786		-EPZ	1031	15.9	#-821
	-EPZ	0649	4.3	#-787		+EPZ	1921	40.9	
	-EPZ	1116	18.0	#-788	10	-EPZ	0003	31.7	#-822
	-EXZ	1119	58.6	#-789		-EPZ	0346	17.2	#-823
	+EPZ	1949	58.4	#-790		+EPZ	1208	35.7	#-824
30	-EPZ	0413	44.2	#-791		-EPZ	1706	23.5	#-825

Date	Phase	UTC time		Remarks	Date	Phase	UTC time		Remarks
		h	m s				h	m s	
	+EPZ	1849	43.0	#-826		+EPZ	2057	49.1	#-862
	+EPZ	2018	15.9	#-827	20	+EPZ	0637	17.0	#-863
11	+EPZ	0052	16.5	#-828		+EPZ	0947	47.7	#-864
	-EPZ	0731	16.8	#-829		-EPZ	1833	50.7	#-865
	+EPZ	1026	38.0	#-830		+EPZ	2122	39.1	#-866
	+EPZ	1201	58.7	#-831	21	-EPZ	0254	31.0	
	-EPZ	1232	26.5			-EPKPdfZ	1120	8.4	#-867
	+EPZ	1450	4.2	#-832		+EPZ	1133	31.2	#-868
	+EpPZ	1452	7.5	#-832		+EPZ	1136	45.0	#-869
	+EPdiffZ	1817	26.0	#-833		+EPZ	1426	35.5	#-870
	-EPZ	2140	6.8	#-834		+EPZ	1502	20.7	
	+EPZ	2341	52.6	#-835	22	+EPZ	0915	56.2	
12	-EPZ	0203	31.0	#-836		+EPKPdfZ	1136	14.8	#-871
	+EPZ	1634	19.0	#-837		-EPZ	1216	29.1	#-872
	-EpPZ	1737	48.6	#-838		+EpPZ	1345	49.2	#-873
	+EPZ	1748	5.8	#-839		-EPZ	1910	44.0	#-874
	+EpPZ	1942	29.5	#-840	23	-EPZ	0613	29.3	#-875
	-EPZ	2337	0.2	#-841		-EPZ	1135	38.2	#-876
13	-EPZ	0943	37.1	#-842	24	+EPZ	0234	15.8	#-877
	-EPZ	1908	58.3			-EPZ	1028	2.2	#-878
	-EPZ	2253	0.5	#-843		+EPZ	1057	40.5	#-879
14	+EPZ	0937	15.5	#-844		-EPZ	1934	17.7	#-880
15	-EPZ	0454	19.8	#-845		-EXZ	2025	40.5	#-881
16	-EXZ	0747	5.0	#-846		+EPZ	2243	50.8	#-882
	-EPZ	1045	15.6	#-847	25	+EPZ	0113	53.6	#-883
	+EPZ	1137	25.5	#-848		-EPZ	0803	14.3	#-884
	+EXZ	1202	57.1	#-849		+EPZ	1019	8.7	
	-EPZ	1426	29.9	#-850		-EPZ	1832	43.0	#-885
17	-EPZ	0036	5.5	#-851		-EPZ	1850	56.7	#-886
	-EpPZ	0416	46.9	#-852		-EPZ	1955	25.3	#-887
	+EXZ	0810	14.0	#-853	26	+EPZ	0855	56.8	#-888
	+EPZ	1250	52.4	#-854		+EPZ	1121	27.2	#-889
	+EPZ	1830	54.8	#-855		+EPZ	1849	46.0	#-890
18	-EXZ	0103	9.0	#-856		+EPZ	2204	19.2	#-891
	+EPZ	0353	32.2	#-857	27	-EPZ	1559	3.1	#-892
	-EPZ	1758	2.8	#-858		-EPZ	2257	55.8	#-893
19	-EPZ	0351	16.4	#-859		+EPZ	2347	16.8	#-894
	-EPZ	0859	26.8			-EPZ	2356	22.2	
	-EXZ	1228	20.7	#-860	28	+EXZ	0416	13.3	#-895
	+EPZ	1232	38.9	#-861		+EPZ	0741	8.3	#-896

Date	Phase	UTC time		Remarks
		h	m s	
	+EPZ	1017	48.9	#-897
	-EPZ	1235	23.7	#-898
	-EPZ	1704	23.4	#-899
	-EPZ	1927	29.0	#-900
	-EPKPdfZ	2044	37.4	#-901
29	+EPZ	0009	12.9	#-902
	+EPKPdfZ	0538	37.6	#-903
	-EPZ	1118	50.9	#-904
	+IPZ	1309	30.2	#-905
	-EXZ	1342	29.6	#-906
	-EPZ	1529	20.2	#-907
	-EPZ	2112	36.8	#-908
	+EXZ	2149	45.9	#-909
	-EPZ	2307	3.1	#-910
30	+EPKPbcZ	0031	26.5	#-911
	+EPZ	0852	19.3	#-912
	-EPZ	2210	58.0	
	-EPZ	2244	11.8	#-913
	+EPZ	2341	5.9	
31	+EPKPdfZ	1327	30.5	#-914



**Table 2. List of hypocenters of teleseismic events detected at Syowa Station. The total number of events are 914.**

No.	Date	Origin time			Geographic Coordinate:		Region	Depth	Epicentral distance	Magnitude
		UTC	h	m	s	Latitude (deg)				
1	1/1	12	51	28.8	0.026	127.576	HALMAHERA, INDONESIA	166	89.298	4.5
2	1/1	17	0	31.8	-29.182	-68.201	SAN JUAN PROVINCE, ARGENTINA	116	69.131	3.9
3	1/2	19	27	6.6	-15.916	168.085	VANUATU ISLANDS	226	87.796	5.2
4	1/3	10	21	25.7	-8.730	123.295	FLORES REGION, INDONESIA	130	79.646	4.8
5	1/4	13	33	37.3	5.455	126.827	MINDANAO, PHILIPPINE ISLANDS	33	94.059	4.8
6	1/5	8	32	46.8	-18.502	-174.067	TONGA ISLANDS	33	89.447	5.3
7	1/5	10	12	1.4	51.477	176.918	RAT ISLANDS, ALEUTIAN ISLANDS	33	153.326	5.0
8	1/5	18	10	23.8	-59.617	-26.018	SOUTH SANDWICH ISLANDS REGION	33	28.482	4.9
9	1/6	11	57	51.0	-5.277	146.204	EASTERN NEW GUINEA REGION, P.N.G.	149	90.994	4.6
10	1/6	17	10	27.6	5.621	125.852	MINDANAO, PHILIPPINE ISLANDS	100	93.863	5.4
11	1/7	18	13	41.4	67.768	141.306	EASTERN SIBERIA, RUSSIA	33	152.935	5.4
12	1/8	13	13	29.2	-56.050	-125.290	SOUTHERN EAST PACIFIC RISE	10	54.758	4.7
13	1/8	14	7	17.2	-20.345	-174.040	TONGA ISLANDS	33	87.656	4.7
14	1/8	21	20	43.2	-49.786	114.777	SOUTH OF AUSTRALIA	10	39.640	5.2
15	1/9	6	46	51.5	-21.484	-68.321	CHILE-BOLIVIA BORDER REGION	107	76.323	4.5
16	1/9	12	7	33.5	-7.438	128.725	BANDA SEA	140	82.798	4.8
17	1/9	17	54	24.2	-16.867	-70.465	SOUTHERN PERU	98	81.334	4.0
18	1/10	0	34	29.5	-4.428	153.428	NEW IRELAND REGION, P.N.G.	120	94.223	4.6
19	1/12	2	32	25.5	26.741	140.170	BONIN ISLANDS REGION	441	118.466	5.9
20	1/12	8	49	20.7	-5.421	151.681	NEW BRITAIN REGION, P.N.G.	43	92.714	5.5
21	1/12	10	28	13.5	-17.750	-178.820	FIJI ISLANDS REGION	607	89.220	4.9
22	1/12	21	12	49.3	4.630	126.594	TALAUD ISLANDS, INDONESIA	33	93.211	5.2
23	1/13	8	21	35.0	-22.997	-179.695	SOUTH OF FIJI ISLANDS	500	83.950	4.4
24	1/13	20	12	15.4	-20.598	169.757	VANUATU ISLANDS	125	83.769	5.5
25	1/14	17	10	22.5	-0.001	124.012	SOUTHERN MOLUCCA SEA	91	87.991	4.4
26	1/14	20	20	7.9	-23.490	-179.909	SOUTH OF FIJI ISLANDS	539	83.427	4.9
27	1/16	18	7	58.4	-31.850	-179.084	KERMADEC ISLANDS REGION	200	75.494	4.5
28	1/17	13	45	16.0	-26.576	-70.969	NEAR COAST OF NORTHERN CHILE	33	72.436	4.2
29	1/17	15	3	23.3	-20.690	-70.425	NEAR COAST OF NORTHERN CHILE	33	77.750	4.2
30	1/17	16	43	44.4	-27.142	-176.885	KERMADEC ISLANDS REGION	200	80.496	4.4
31	1/17	17	55	33.5	-29.699	-178.987	KERMADEC ISLANDS, NEW ZEALAND	330	77.599	5.1
32	1/18	10	27	4.1	1.139	120.777	MINAHASSA PENINSULA, SULAWESI	602	87.892	4.8
33	1/18	12	15	48.6	-30.419	-179.158	KERMADEC ISLANDS REGION	350	76.866	4.1
34	1/18	16	24	25.3	-22.270	170.354	LOYALTY ISLANDS REGION	33	82.324	5.0
35	1/19	3	16	44.9	-55.994	95.888	SOUTH INDIAN OCEAN	10	27.871	4.4
36	1/19	3	35	33.8	-4.596	153.235	NEW IRELAND REGION, P.N.G.	114	94.002	5.8
37	1/19	5	0	13.3	-4.481	153.503	NEW IRELAND REGION, P.N.G.	111	94.198	4.7

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38	1/19	6	10	42.4	-4.476	153.468	NEW IRELAND REGION, P.N.G.	101	94.191	4.7
39	1/19	6	34	34.8	-4.506	153.491	NEW IRELAND REGION, P.N.G.	100	94.171	5.1
40	1/19	8	58	14.3	-4.430	153.429	NEW IRELAND REGION, P.N.G.	100	94.221	4.8
41	1/19	11	41	29.8	-4.483	153.520	NEW IRELAND REGION, P.N.G.	100	94.202	4.5
42	1/19	12	1	58.7	-21.316	169.228	LOYALTY ISLANDS REGION	33	82.945	4.9
43	1/19	16	39	9.2	-12.119	166.302	SANTA CRUZ ISLANDS	33	90.920	4.7
44	1/19	18	13	15.7	-4.583	153.601	NEW IRELAND REGION, P.N.G.	100	94.135	4.9
45	1/20	9	29	14.9	-4.481	153.525	NEW IRELAND REGION, P.N.G.	116	94.205	4.7
46	1/20	13	43	48.9	-17.752	-178.930	FIJI ISLANDS REGION	600	89.195	4.6
47	1/20	23	10	4.1	-14.801	-75.865	NEAR COAST OF PERU	33	85.008	5.2
48	1/22	6	44	19.6	-27.470	-67.263	CATAMARCA PROVINCE, ARGENTINA	155	70.415	4.6
49	1/22	10	39	44.9	-30.581	-71.848	NEAR COAST OF CENTRAL CHILE	33	68.983	4.6
50	1/24	5	1	33.5	-4.549	153.575	NEW IRELAND REGION, P.N.G.	122	94.158	4.7
51	1/24	7	1	58.4	-21.132	-174.659	TONGA ISLANDS	33	86.772	5.7
52	1/24	8	0	8.5	-26.463	74.476	MID-INDIAN RIDGE	10	47.281	6.0
53	1/24	14	5	56.3	-10.264	-78.527	NEAR COAST OF PERU	33	90.114	4.7
54	1/24	22	1	51.9	0.538	126.373	NORTHERN MOLUCCA SEA	33	89.339	4.9
55	1/25	3	36	44.6	2.272	126.923	NORTHERN MOLUCCA SEA	33	91.144	5.0
56	1/25	10	37	13.4	-18.026	-178.445	FIJI ISLANDS REGION	640	89.032	5.0
57	1/25	10	38	49.4	-17.775	-178.486	FIJI ISLANDS REGION	650	89.267	4.5
58	1/25	11	45	54.0	4.229	126.398	TALAUD ISLANDS, INDONESIA	33	92.769	5.2
59	1/25	17	51	28.4	2.378	126.818	NORTHERN MOLUCCA SEA	33	91.205	5.1
60	1/25	22	48	25.7	-50.152	131.131	SOUTH OF AUSTRALIA	10	44.930	4.5
61	1/25	23	45	28.7	2.355	126.702	NORTHERN MOLUCCA SEA	33	91.142	5.1
62	1/26	6	12	19.0	-24.140	-66.608	SALTA PROVINCE, ARGENTINA	214	73.290	3.9
63	1/26	7	4	20.9	-21.100	-174.486	TONGA ISLANDS	33	86.836	4.9
64	1/26	12	30	49.1	-20.515	-174.207	TONGA ISLANDS	41	87.459	5.5
65	1/26	15	53	26.9	-8.239	108.724	JAWA, INDONESIA	96	74.939	5.0
66	1/26	21	11	55.7	-27.557	-177.132	KERMADEC ISLANDS REGION	33	80.044	5.1
67	1/27	3	37	47.4	-22.313	-179.017	SOUTH OF FIJI ISLANDS	437	84.755	5.0
68	1/27	8	9	1.9	-5.317	146.764	EASTERN NEW GUINEA REGION, P.N.G.	230	91.149	5.4
69	1/27	8	20	31.6	48.376	156.213	EAST OF KURIL ISLANDS	71	143.406	5.2
70	1/28	8	10	5.4	52.886	-169.123	FOX ISLANDS, ALEUTIAN ISLANDS	67	158.993	6.3
71	1/29	1	9	16.9	-15.859	-179.748	FIJI ISLANDS REGION	33	90.851	5.3
72	1/29	22	52	30.3	-28.054	-66.658	CATAMARCA PROVINCE, ARGENTINA	168	69.677	4.8
73	1/30	3	51	5.4	41.674	88.463	SOUTHERN XINJIANG, CHINA	23	116.127	5.9
74	1/30	4	18	35.2	-29.627	60.768	SOUTHWEST INDIAN RIDGE	10	41.294	5.0
75	1/30	8	49	29.0	1.528	126.409	NORTHERN MOLUCCA SEA	33	90.270	5.3
76	1/31	0	13	14.0	-46.304	166.218	OFF W. COAST OF S. ISLAND, N. Z.	33	58.448	4.3
77	1/31	21	28	24.5	-27.760	-178.440	KERMADEC ISLANDS REGION	354	79.589	4.2
78	2/1	0	51	53.9	-4.561	153.579	NEW IRELAND REGION, P.N.G.	125	94.148	4.5

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79	2/1	4	24	51.8	-22.160	-68.420	NORTHERN CHILE	143	75.726	4.0
80	2/1	6	46	54.3	-0.077	122.870	MINAHASSA PENINSULA, SULAWESI	164	87.511	4.7
81	2/1	16	35	31.1	-6.474	104.721	SUNDA STRAIT	33	75.222	5.2
82	2/2	15	25	1.1	-27.981	-71.406	NEAR COAST OF NORTHERN CHILE	33	71.265	4.4
83	2/2	21	59	4.6	-24.782	179.415	SOUTH OF FIJI ISLANDS	553	82.032	4.5
84	2/3	1	13	57.5	-20.305	-174.365	TONGA ISLANDS	33	87.634	5.8
85	2/3	6	35	56.6	-6.190	104.222	SUNDA STRAIT	33	75.321	5.6
86	2/3	18	39	20.0	-4.577	153.599	NEW IRELAND REGION, P. N. G.	119	94.139	4.6
87	2/4	2	35	36.1	-8.612	149.279	EASTERN NEW GUINEA REGION, P. N. G.	98	88.926	5.7
88	2/4	12	34	34.4	-8.965	110.507	JAWA, INDONESIA	101	74.882	5.2
89	2/4	12	57	24.0	-8.241	117.855	SUMBAWA REGION, INDONESIA	176	78.148	4.6
90	2/4	19	28	0.8	4.033	95.283	NORTHERN SUMATERA, INDONESIA	56	82.101	5.8
91	2/5	6	50	32.9	-47.045	33.191	PRINCE EDWARD ISLANDS REGION	10	22.261	4.4
92	2/5	11	39	45.1	-12.616	166.966	SANTA CRUZ ISLANDS	213	90.633	5.7
93	2/5	16	7	7.6	-35.016	-70.946	CHILE-ARGENTINA BORDER REGION	86	64.590	5.0
94	2/6	8	38	5.9	-28.286	-67.719	LA RIOJA PROVINCE, ARGENTINA	133	69.806	4.3
95	2/6	13	36	12.1	53.561	160.402	NEAR EAST COAST OF KAMCHATKA	38	149.178	5.2
96	2/6	21	47	59.4	-12.853	166.697	SANTA CRUZ ISLANDS	90	90.332	6.3
97	2/7	11	53	55.3	-16.713	-176.233	FIJI ISLANDS REGION	327	90.764	4.3
98	2/7	16	5	22.7	-19.328	174.118	VANUATU ISLANDS REGION	52	86.083	5.2
99	2/7	18	59	58.1	-12.459	166.633	SANTA CRUZ ISLANDS	120	90.689	4.4
100	2/8	10	47	31.6	-4.576	153.734	NEW IRELAND REGION, P. N. G.	102	94.185	4.5
101	2/8	16	22	54.3	-7.908	147.734	EASTERN NEW GUINEA REGION, P. N. G.	70	89.062	5.7
102	2/9	2	32	36.3	-53.083	25.358	SOUTH OF AFRICA	10	17.317	4.8
103	2/9	6	6	47.0	-31.430	-179.830	KERMADEC ISLANDS REGION	450	75.752	4.5
104	2/11	13	27	6.9	-8.575	120.479	FLORES REGION, INDONESIA	124	78.778	5.0
105	2/11	15	16	46.3	-6.975	150.404	NEW BRITAIN REGION, P. N. G.	33	90.834	5.5
106	2/12	6	54	24.8	-13.026	166.413	VANUATU ISLANDS	100	90.088	4.7
107	2/12	9	26	32.7	-20.709	-174.216	TONGA ISLANDS	33	87.268	4.8
108	2/13	8	17	55.3	-12.484	166.687	SANTA CRUZ ISLANDS	90	90.681	5.1
109	2/13	14	45	12.7	-3.558	144.830	NEAR N COAST OF NEW GUINEA, P. N. G.	10	92.121	5.6
110	2/14	8	56	56.6	-17.758	-174.527	TONGA ISLANDS	127	90.084	4.7
111	2/14	18	48	42.4	-32.823	-69.869	MENDOZA PROVINCE, ARGENTINA	116	66.286	4.3
112	2/14	20	30	49.8	-17.069	168.378	VANUATU ISLANDS	221	86.775	4.5
113	2/14	21	12	24.5	-15.507	167.996	VANUATU ISLANDS	10	88.162	5.9
114	2/15	3	34	26.8	0.431	123.760	MINAHASSA PENINSULA, SULAWESI	243	88.301	5.2
115	2/15	5	19	7.3	-15.540	168.001	VANUATU ISLANDS	33	88.132	5.0
116	2/15	18	47	17.4	-18.983	-178.064	FIJI ISLANDS REGION	502	88.184	4.7
117	2/17	2	27	12.3	-2.011	133.483	IRIAN JAYA REGION, INDONESIA	33	89.537	5.4
118	2/17	16	7	12.1	-10.876	165.992	SANTA CRUZ ISLANDS	61	92.014	4.7
119	2/17	21	58	54.5	-21.143	-70.040	NEAR COAST OF NORTHERN CHILE	33	77.203	5.6

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120	2/18	4	35	57.4	-2.765	101.976	SOUTHERN SUMATERA, INDONESIA	33	77.788	5.1
121	2/18	17	5	8.2	-6.524	129.926	BANDA SEA	100	84.076	4.9
122	2/19	4	45	16.2	-6.853	129.759	BANDA SEA	113	83.712	4.6
123	2/19	7	25	58.8	-5.922	147.403	EASTERN NEW GUINEA REGION, P.N.G.	102	90.803	5.2
124	2/19	21	1	5.3	5.212	126.836	MINDANAO, PHILIPPINE ISLANDS	90	93.837	4.7
125	2/20	5	0	15.1	-6.185	154.431	SOLOMON ISLANDS	33	92.903	5.2
126	2/20	17	17	8.4	-8.115	117.826	SUMBAWA REGION, INDONESIA	33	78.255	5.2
127	2/22	1	0	32.8	-21.452	169.682	LOYALTY ISLANDS REGION	33	82.933	5.8
128	2/23	5	46	1.5	-8.972	112.665	JAWA, INDONESIA	33	75.631	5.0
129	2/23	7	12	11.8	-5.647	150.947	NEW BRITAIN REGION, P.N.G.	71	92.258	5.1
130	2/23	7	27	56.4	0.200	119.541	MINAHASSA PENINSULA, SULAWESI	33	86.580	5.6
131	2/23	18	56	56.1	-20.804	-174.071	TONGA ISLANDS	36	87.203	5.3
132	2/24	0	18	45.7	2.044	127.385	NORTHERN MOLOCCA SEA	86	91.099	5.3
133	2/24	2	40	21.4	-22.799	-68.609	NORTHERN CHILE	103	75.193	4.6
134	2/24	11	43	13.5	-5.541	125.790	BANDA SEA	500	83.497	4.9
135	2/26	9	49	58.5	-21.762	-67.127	CHILE-BOLIVIA BORDER REGION	203	75.671	4.2
136	2/26	13	32	50.9	-30.030	-178.910	KERMADEC ISLANDS, NEW ZEALAND	254	77.293	4.3
137	2/27	7	13	35.9	-63.497	169.428	BALLENY ISLANDS REGION	10	43.103	5.0
138	2/27	7	18	37.7	-22.611	-176.895	SOUTH OF FIJI ISLANDS	181	84.899	4.8
139	2/27	12	55	13.1	-49.243	-7.918	SOUTHERN MID-ATLANTIC RIDGE	10	30.222	5.2
140	2/28	13	28	2.2	-22.672	-68.291	NORTHERN CHILE	76	75.207	4.5
141	3/1	8	51	0.8	-2.975	126.528	CERAM SEA	33	86.140	5.7
142	3/2	17	45	55.1	-22.717	-68.503	NORTHERN CHILE	111	75.235	5.8
143	3/3	2	50	51.1	-3.488	131.253	IRIAN JAYA REGION, INDONESIA	33	87.366	4.8
144	3/4	5	38	26.5	28.343	57.193	SOUTHERN IRAN	33	97.923	6.2
145	3/4	8	52	1.9	5.397	121.937	CELEBES SEA	33	92.256	6.4
146	3/5	0	33	46.9	-20.423	-68.901	CHILE-BOLIVIA BORDER REGION	111	77.502	5.7
147	3/6	20	28	53.6	-21.734	-179.465	FIJI ISLANDS REGION	603	85.222	5.4
148	3/7	0	8	8.7	-7.448	128.247	BANDA SEA	126	82.616	5.0
149	3/7	1	32	27.0	-5.812	107.558	JAWA, INDONESIA	325	76.802	5.0
150	3/7	20	35	44.1	-15.766	-179.526	FIJI ISLANDS REGION	33	90.990	5.4
151	3/8	5	40	0.6	52.129	159.482	OFF EAST COAST OF KAMCHATKA	50	147.692	5.4
152	3/8	5	57	52.8	52.132	159.529	OFF EAST COAST OF KAMCHATKA	55	147.712	5.3
153	3/8	12	25	48.9	52.056	159.520	OFF EAST COAST OF KAMCHATKA	57	147.647	5.7
154	3/8	17	27	23.1	-27.073	-63.359	SANTIAGO DEL ESTERO PROV., ARGENTINA	569	69.495	4.5
155	3/9	5	34	32.2	-44.498	-79.679	OFF COAST OF SOUTHERN CHILE	33	58.298	4.5
156	3/9	9	33	27.9	-16.079	-175.919	TONGA ISLANDS	135	91.444	5.0
157	3/9	16	34	48.6	-34.279	-178.786	SOUTH OF KERMADEC ISLANDS	52	73.196	4.9
158	3/9	21	32	43.7	-0.268	129.096	HALMAHERA, INDONESIA	33	89.573	4.9
159	3/9	22	56	52.9	-27.684	-67.288	CATAMARCA PROVINCE, ARGENTINA	155	70.225	5.0
160	3/9	23	44	3.5	-9.481	123.896	TIMOR REGION, INDONESIA	72	79.168	4.4

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161	3/10	3	19	53.3	2.196	127.088	NORTHERN MOLUCCA SEA	81	91.133	5.1
162	3/10	5	17	5.3	-22.067	-65.986	JUJUY PROVINCE, ARGENTINA	263	75.008	4.7
163	3/10	9	57	8.7	-54.862	-30.975	SOUTH SANDWICH ISLANDS REGION	33	33.856	4.6
164	3/11	8	29	36.4	-9.160	150.190	EASTERN NEW GUINEA REGION, P.N.G.	33	88.718	5.2
165	3/12	0	30	48.5	-7.477	123.402	BANDA SEA	380	80.845	5.2
166	3/12	11	16	39.4	-20.000	-177.765	FIJI ISLANDS REGION	587	87.259	5.2
167	3/12	20	42	35.0	-19.292	-68.847	CHILE-BOLIVIA BORDER REGION	118	78.538	5.1
168	3/14	12	32	40.7	-21.526	-177.850	FIJI ISLANDS REGION	378	85.760	4.8
169	3/15	9	56	26.1	-7.226	128.694	BANDA SEA	100	82.983	4.7
170	3/16	3	32	16.2	2.683	125.674	TALAUD ISLANDS, INDONESIA	114	91.076	5.6
171	3/18	1	59	0.9	-0.034	124.313	SOUTHERN MOLUCCA SEA	89	88.069	5.5
172	3/18	3	10	49.8	-38.777	177.388	NORTH ISLAND, NEW ZEALAND	40	68.086	4.9
173	3/18	21	49	17.1	-12.040	-75.700	CENTRAL PERU	116	87.550	5.1
174	3/20	10	47	45.9	51.587	-177.668	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	33	155.221	6.3
175	3/21	9	35	28.2	5.584	126.715	MINDANAO, PHILIPPINE ISLANDS	96	94.138	5.0
176	3/21	14	20	54.7	5.649	126.641	MINDANAO, PHILIPPINE ISLANDS	33	94.172	5.1
177	3/21	16	16	2.2	55.896	110.214	LAKE BAYKAL REGION, RUSSIA	10	134.703	5.5
178	3/21	16	17	3.6	55.942	110.272	LAKE BAYKAL REGION, RUSSIA	10	134.759	5.5
179	3/22	8	4	6.5	-7.122	128.658	BANDA SEA	33	83.066	5.4
180	3/23	8	32	34.7	1.006	120.135	MINAHASSA PENINSULA, SULAWESI	33	87.540	5.2
181	3/23	10	44	19.4	-37.875	176.797	NORTH ISLAND, NEW ZEALAND	148	68.833	5.0
182	3/23	11	23	44.3	-20.912	-178.731	FIJI ISLANDS REGION	575	86.173	5.0
183	3/23	13	38	33.1	-6.873	129.520	BANDA SEA	131	83.607	4.8
184	3/24	20	32	59.0	-7.028	117.089	BALI SEA	621	79.000	5.3
185	3/25	8	11	8.0	-15.518	167.598	VANUATU ISLANDS	111	88.043	5.0
186	3/26	14	34	8.0	-30.682	-72.147	OFF COAST OF CENTRAL CHILE	33	68.982	4.7
187	3/27	8	3	45.0	-9.682	112.790	SOUTH OF JAWA, INDONESIA	33	75.016	5.7
188	3/27	11	13	34.1	-40.045	-71.747	S. CHILE-ARGENTINA BORDER REGION	33	60.188	5.2
189	3/27	12	44	17.3	-3.857	131.430	IRIAN JAYA REGION, INDONESIA	25	87.088	5.2
190	3/28	13	40	9.6	1.528	127.221	HALMAHERA, INDONESIA	100	90.562	4.8
191	3/28	16	34	19.7	-12.324	-14.783	SOUTHERN MID-ATLANTIC RIDGE	10	66.239	4.7
192	3/28	19	5	11.0	30.512	79.403	XIZANG-INDIA BORDER REGION	15	103.438	6.4
193	3/29	6	17	58.4	-3.996	87.284	SOUTH INDIAN OCEAN	10	72.150	5.4
194	3/30	10	20	20.7	-17.145	-173.513	TONGA ISLANDS	79	90.875	4.9
195	4/1	14	12	48.8	-55.608	-27.563	SOUTH SANDWICH ISLANDS REGION	33	32.061	4.5
196	4/1	21	36	21.1	-4.357	152.707	NEW BRITAIN REGION, P.N.G.	33	94.051	5.6
197	4/2	17	5	47.1	-19.899	168.193	VANUATU ISLANDS	10	84.025	6.1
198	4/2	18	38	16.9	-19.859	167.991	VANUATU ISLANDS REGION	10	84.010	5.2
199	4/2	21	37	41.7	0.238	122.362	MINAHASSA PENINSULA, SULAWESI	144	87.622	5.4
200	4/3	6	17	18.3	-16.660	-72.662	NEAR COAST OF PERU	87	82.242	6.1
201	4/4	14	55	14.3	-11.721	94.130	SOUTH INDIAN OCEAN	10	66.858	4.9

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202	4/4	20	33	45.7	-19.389	-177.503	FIJI ISLANDS REGION	362	87.906	4.8
203	4/4	21	4	27.5	-33.625	-71.002	NEAR COAST OF CENTRAL CHILE	66	65.895	
204	4/5	3	46	14.0	-24.236	-66.977	SALTA PROVINCE, ARGENTINA	189	73.322	4.6
205	4/5	11	8	4.0	-5.591	149.568	NEW BRITAIN REGION, P.N.G.	150	91.847	6.2
206	4/6	0	33	13.3	-19.867	168.075	VANUATU ISLANDS	10	84.025	5.0
207	4/6	4	16	45.2	-8.424	39.262	TANZANIA	10	60.513	4.9
208	4/6	7	45	36.7	-34.326	-72.006	NEAR COAST OF CENTRAL CHILE	39	65.553	5.0
209	4/6	8	22	14.2	-6.527	147.007	EASTERN NEW GUINEA REGION, P.N.G.	33	90.104	5.8
210	4/6	11	26	21.4	-6.420	146.946	EASTERN NEW GUINEA REGION, P.N.G.	33	90.183	5.4
211	4/6	13	50	28.1	-6.394	147.078	EASTERN NEW GUINEA REGION, P.N.G.	33	90.252	4.8
212	4/6	19	10	34.7	-6.404	146.919	EASTERN NEW GUINEA REGION, P.N.G.	33	90.188	4.8
213	4/7	6	42	31.8	11.781	94.987	ANDAMAN ISLANDS, INDIA	33	89.362	5.0
214	4/8	11	30	15.7	-0.155	122.909	MINAHASSA PENINSULA, SULAWESI	92	87.453	5.3
215	4/8	13	10	34.0	43.607	130.350	E. RUSSIA-N.E. CHINA BORDER REGION	566	130.134	6.4
216	4/8	20	51	35.6	-21.600	-178.595	FIJI ISLANDS REGION	486	85.535	4.4
217	4/9	8	16	34.1	-42.056	84.269	SOUTHEAST INDIAN RIDGE	10	35.575	5.3
218	4/9	12	16	1.8	-26.354	178.221	SOUTH OF FIJI ISLANDS	621	80.255	5.5
219	4/9	14	3	50.0	-26.412	178.296	SOUTH OF FIJI ISLANDS	638	80.215	4.4
220	4/9	16	50	39.7	-6.442	146.900	EASTERN NEW GUINEA REGION, P.N.G.	33	90.146	4.8
221	4/9	20	10	33.7	-24.266	-66.958	SALTA PROVINCE, ARGENTINA	187	73.288	4.1
222	4/10	15	55	24.4	-28.691	-71.218	NEAR COAST OF CENTRAL CHILE	58	70.545	4.4
223	4/10	19	31	27.6	-23.794	179.995	SOUTH OF FIJI ISLANDS	550	83.112	4.5
224	4/11	16	50	39.1	-6.000	148.495	NEW BRITAIN REGION, P.N.G.	58	91.102	5.6
225	4/12	1	54	16.2	-22.864	-70.466	NEAR COAST OF NORTHERN CHILE	40	75.735	4.9
226	4/12	9	41	16.3	-20.036	168.575	LOYALTY ISLANDS	43	83.996	5.4
227	4/13	10	38	48.4	-21.422	-176.460	FIJI ISLANDS REGION	164	86.141	6.4
228	4/15	4	55	51.7	-20.104	133.992	NORTHERN TERRITORY, AUSTRALIA	10	72.976	4.7
229	4/15	13	54	43.8	-6.346	146.976	EASTERN NEW GUINEA REGION, P.N.G.	32	90.262	5.4
230	4/16	10	49	3.4	-9.501	150.793	EASTERN NEW GUINEA REGION, P.N.G.	33	88.600	5.1
231	4/16	15	19	31.9	-30.676	-178.364	KERMADEC ISLANDS, NEW ZEALAND	53	76.774	5.3
232	4/19	9	12	47.5	50.888	156.423	KURIL ISLANDS	118	145.575	5.4
233	4/20	1	46	17.1	-18.791	-177.957	FIJI ISLANDS REGION	586	88.392	5.1
234	4/20	5	34	21.4	1.909	127.261	HALMAHERA, INDONESIA	107	90.929	5.4
235	4/20	6	15	21.4	-36.396	177.863	OFF E. COAST OF N. ISLAND, N.Z.	229	70.479	5.2
236	4/20	19	4	8.3	-31.888	-179.040	KERMADEC ISLANDS REGION	96	75.465	6.2
237	4/21	11	8	28.5	-29.679	-178.474	KERMADEC ISLANDS, NEW ZEALAND	237	77.720	4.9
238	4/22	14	8	43.8	-8.259	119.678	FLORES REGION, INDONESIA	190	78.783	5.1
239	4/22	22	19	36.9	-27.953	26.635	REPUBLIC OF SOUTH AFRICA	5	41.790	5.7
240	4/23	14	34	14.1	5.481	121.984	CELEBES SEA	33	92.351	5.0
241	4/23	21	5	50.4	-14.110	-13.780	SOUTHERN MID-ATLANTIC RIDGE	10	64.244	4.2
242	4/23	22	18	24.3	-18.893	-12.468	SOUTHERN MID-ATLANTIC RIDGE	10	59.337	4.8

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243	4/24	8	45	16.8	-18.043	-178.449	FIJI ISLANDS REGION	568	89.015	5.2
244	4/24	20	15	58.7	-30.900	-179.040	KERMADEC ISLANDS REGION	240	76.424	4.9
245	4/25	9	10	44.2	-31.798	-69.255	SAN JUAN PROVINCE, ARGENTINA	116	67.043	5.3
246	4/25	12	27	5.2	36.441	140.473	NEAR EAST COAST OF HONSHU, JAPAN	82	127.339	5.3
247	4/26	12	10	11.9	-25.602	-13.802	SOUTHERN MID-ATLANTIC RIDGE	10	53.495	4.9
248	4/26	18	17	26.2	-1.648	-77.783	ECUADOR	173	97.988	5.6
249	4/28	6	34	55.0	-35.221	-106.511	SOUTHERN EAST PACIFIC RISE	10	73.099	5.2
250	4/28	23	23	50.1	-20.476	-68.660	CHILE-BOLIVIA BORDER REGION	132	77.373	4.7
251	4/29	4	51	56.9	-34.699	179.919	SOUTH OF KERMADEC ISLANDS	33	72.535	4.8
252	4/29	7	46	8.6	28.867	131.148	SOUTHEAST OF RYUKYU ISLANDS	33	117.169	5.8
253	4/29	15	1	18.6	-26.611	-114.396	EASTER ISLAND REGION	10	82.778	5.1
254	4/29	18	26	37.7	-35.781	-102.900	SOUTHERN PACIFIC OCEAN	10	71.904	5.1
255	4/30	19	28	48.9	-31.646	-71.681	NEAR COAST OF CENTRAL CHILE	52	67.941	5.1
256	5/1	2	23	49.4	-32.882	179.374	SOUTH OF KERMADEC ISLANDS	361	74.184	4.6
257	5/3	8	3	8.6	-28.113	179.687	KERMADEC ISLANDS REGION	484	78.865	4.7
258	5/5	4	33	47.6	-30.123	-177.993	KERMADEC ISLANDS, NEW ZEALAND	62	77.384	4.9
259	5/5	10	30	3.1	59.291	-151.523	KENAI PENINSULA, ALASKA	71	169.131	5.4
260	5/5	13	39	23.1	-33.608	179.866	SOUTH OF KERMADEC ISLANDS	103	73.581	4.9
261	5/6	2	55	32.6	-12.392	-76.959	NEAR COAST OF PERU	48	87.618	4.8
262	5/6	13	21	32.3	-34.019	-178.970	SOUTH OF KERMADEC ISLANDS	33	73.413	5.3
263	5/7	2	10	41.9	-7.506	31.605	LAKE TANGANYIKA REGION	10	61.651	5.2
264	5/7	14	7	28.7	-7.491	31.683	LAKE TANGANYIKA REGION	10	61.661	5.6
265	5/8	0	15	8.6	-34.392	-179.194	SOUTH OF KERMADEC ISLANDS	58	73.007	5.0
266	5/8	13	51	45.2	-14.682	167.270	VANUATU ISLANDS	151	88.750	4.2
267	5/8	19	44	35.9	45.449	151.630	KURIL ISLANDS	63	139.264	6.2
268	5/9	18	56	4.7	-42.455	83.828	MID-INDIAN RIDGE	10	35.074	5.6
269	5/10	8	47	25.0	-30.397	-69.163	CHILE-ARGENTINA BORDER REGION	65	68.312	5.2
270	5/10	20	33	2.0	-5.159	150.880	NEW BRITAIN REGION, P. N. G.	138	92.692	6.5
271	5/11	1	0	40.9	-36.102	-110.640	SOUTHERN EAST PACIFIC RISE	10	72.905	5.1
272	5/11	15	56	10.0	-36.368	-110.588	SOUTHERN EAST PACIFIC RISE	10	72.637	5.0
273	5/11	16	5	10.9	-36.310	-110.395	SOUTHERN EAST PACIFIC RISE	10	72.664	5.2
274	5/11	16	22	55.5	-36.396	-110.746	SOUTHERN EAST PACIFIC RISE	10	72.633	4.6
275	5/11	20	12	53.5	-34.380	-178.910	SOUTH OF KERMADEC ISLANDS	33	73.074	4.8
276	5/12	9	41	39.5	-34.232	-178.896	SOUTH OF KERMADEC ISLANDS	68	73.221	5.1
277	5/12	17	59	22.4	43.032	143.835	HOKKAIDO, JAPAN	103	134.370	5.9
278	5/13	13	54	39.7	-0.418	121.441	MINAHASSA PENINSULA, SULAWESI	35	86.684	5.5
279	5/14	20	36	38.2	-3.068	129.686	SERAM, INDONESIA	33	87.191	5.2
280	5/15	13	34	37.2	37.551	-118.814	CALIFORNIA-NEVADA BORDER REGION	5	146.346	-
281	5/16	0	51	20.4	-4.751	152.486	NEW BRITAIN REGION, P. N. G.	74	93.609	6.0
282	5/16	15	25	53.8	-2.642	138.217	IRIAN JAYA, INDONESIA	59	90.645	6.1
283	5/18	4	19	53.3	-5.650	148.533	NEW BRITAIN REGION, P. N. G.	127	91.442	5.5

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284	5/18	7	16	7.7	-35.077	-15.152	TRISTAN DA CUNHA REGION	10	45.231	5.1
285	5/18	9	19	34.0	-38.674	175.260	NORTH ISLAND, NEW ZEALAND	283	67.741	5.5
286	5/18	19	52	59.9	5.625	123.855	MINDANAO, PHILIPPINE ISLANDS	33	93.152	5.8
287	5/19	3	33	50.2	-14.636	-73.664	CENTRAL PERU	71	84.461	4.3
288	5/19	6	10	27.0	-5.406	102.195	SOUTHERN SUMATERA, INDONESIA	27	75.382	5.2
289	5/20	12	16	56.0	-9.812	117.810	SUMBAWA REGION, INDONESIA	37	76.677	4.9
290	5/20	12	45	44.0	-26.407	-69.078	NORTHERN CHILE	128	71.989	4.4
291	5/20	17	7	8.4	-35.530	179.580	OFF E. COAST OF N. ISLAND, N. Z.	174	71.664	4.4
292	5/20	17	12	12.0	-7.281	128.399	BANDA SEA	114	82.826	5.2
293	5/21	3	12	17.6	-60.788	-24.952	SOUTH SANDWICH ISLANDS REGION	41	27.270	4.9
294	5/21	4	31	25.2	-22.886	-68.520	NORTHERN CHILE	130	75.083	4.7
295	5/22	1	32	13.6	-36.783	-70.476	CHILE-ARGENTINA BORDER REGION	159	62.813	5.0
296	5/22	6	4	51.8	8.698	126.268	MINDANAO, PHILIPPINE ISLANDS	33	96.863	5.0
297	5/22	10	8	53.7	-20.731	169.881	VANUATU ISLANDS	33	83.674	5.5
298	5/22	10	16	45.5	-20.816	169.810	VANUATU ISLANDS	33	83.575	5.1
299	5/24	1	25	49.2	-20.820	-177.959	FIJI ISLANDS REGION	388	86.423	4.5
300	5/24	14	38	11.4	-8.183	68.053	CHAGOS ARCHIPELAGO REGION	10	63.546	5.2
301	5/25	7	34	40.7	-19.078	169.438	VANUATU ISLANDS	243	85.139	5.6
302	5/25	10	52	9.2	-30.873	-92.966	SOUTHEAST CENTRAL PACIFIC OCEAN	10	74.527	4.7
303	5/25	16	42	5.3	-27.931	-66.934	CATAMARCA PROVINCE, ARGENTINA	169	69.881	5.3
304	5/26	0	37	53.5	-6.319	106.461	JAWA, INDONESIA	136	75.955	5.0
305	5/26	14	17	59.4	-33.391	-178.651	SOUTH OF KERMADEC ISLANDS	33	74.084	4.8
306	5/26	20	12	30.8	-4.506	126.093	BANDA SEA	418	84.565	4.5
307	5/27	18	11	35.3	2.724	128.496	HALMAHERA, INDONESIA	233	92.129	5.0
308	5/27	19	25	57.8	-21.148	169.962	LOYALTY ISLANDS REGION	72	83.296	4.6
309	5/28	21	56	41.5	-14.370	-75.513	NEAR COAST OF PERU	59	85.302	4.7
310	5/29	2	59	26.8	-56.018	-27.621	SOUTH SANDWICH ISLANDS REGION	135	31.761	4.9
311	5/29	16	39	27.5	-59.203	-159.941	PACIFIC-ANTARCTIC RIDGE	10	51.307	5.0
312	5/30	2	21	43.3	1.582	126.526	NORTHERN MOLUCCA SEA	52	90.362	5.3
313	5/30	9	53	44.1	-22.210	-179.714	SOUTH OF FIJI ISLANDS	627	84.708	4.5
314	5/30	14	30	25.4	-24.012	-179.969	SOUTH OF FIJI ISLANDS	560	82.909	4.5
315	5/30	19	0	29.0	-15.814	-174.798	TONGA ISLANDS	174	91.925	4.8
316	5/31	8	22	46.4	-12.849	166.813	SANTA CRUZ ISLANDS	151	90.369	4.9
317	6/1	3	8	52.4	-55.680	-123.955	SOUTHERN EAST PACIFIC RISE	10	55.036	4.8
318	6/1	12	14	6.9	-6.446	147.037	EASTERN NEW GUINEA REGION, P. N. G.	42	90.190	4.9
319	6/1	13	20	21.9	-33.230	-178.608	SOUTH OF KERMADEC ISLANDS	33	74.248	4.7
320	6/1	17	59	49.4	-6.849	129.592	BANDA SEA	173	83.655	5.0
321	6/2	0	23	19.4	0.053	123.484	MINAHASSA PENINSULA, SULAWESI	161	87.852	5.8
322	6/2	7	21	40.0	-6.766	129.847	BANDA SEA	68	83.824	4.5
323	6/2	7	29	48.7	-25.421	-179.488	SOUTH OF FIJI ISLANDS	424	81.644	4.5
324	6/2	7	34	41.5	-20.858	-179.002	FIJI ISLANDS REGION	644	86.169	5.0

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325	6/3	13	19	38.2	-4.460	125.188	BANDA SEA	412	84.281	4.8
326	6/3	13	45	23.4	-48.371	31.459	SOUTH OF AFRICA	10	21.089	5.0
327	6/4	4	25	57.1	53.859	-164.064	UNIMAK ISLAND REGION	33	161.273	5.3
328	6/4	12	31	45.3	-23.466	-20.990	SOUTH ATLANTIC OCEAN	10	57.868	4.4
329	6/6	21	5	44.4	-48.905	31.139	SOUTH OF AFRICA	10	20.592	4.3
330	6/8	19	32	17.4	2.772	128.449	HALMAHERA, INDONESIA	210	92.157	4.8
331	6/9	0	2	4.9	-19.281	-173.557	TONGA ISLANDS	33	88.784	5.0
332	6/9	1	5	32.2	8.592	125.868	MINDANAO, PHILIPPINE ISLANDS	33	96.621	5.0
333	6/9	4	5	44.5	-53.039	-46.839	SOUTH ATLANTIC OCEAN	10	40.790	5.4
334	6/9	7	7	31.1	49.316	158.396	EAST OF KURIL ISLANDS	33	144.981	5.2
335	6/9	12	42	8.4	-54.063	6.841	BOUVET ISLAND REGION	10	21.226	4.7
336	6/9	23	25	1.1	-22.753	-66.185	JUJUY PROVINCE, ARGENTINA	250	74.437	5.3
337	6/10	1	6	41.8	-6.582	106.143	JAWA, INDONESIA	109	75.601	5.2
338	6/10	4	22	54.8	5.907	125.997	MINDANAO, PHILIPPINE ISLANDS	142	94.180	4.8
339	6/13	8	29	13.4	-27.740	-70.088	NEAR COAST OF NORTHERN CHILE	88	71.073	4.3
340	6/14	14	41	3.7	1.239	123.202	MINAHASSA PENINSULA, SULAWESI	33	88.851	4.8
341	6/15	18	58	43.7	-31.052	-178.618	KERMADEC ISLANDS REGION	293	76.360	4.4
342	6/16	17	21	25.7	-30.689	-178.653	KERMADEC ISLANDS, NEW ZEALAND	82	76.705	5.1
343	6/17	7	50	39.1	1.235	127.558	HALMAHERA, INDONESIA	216	90.412	5.1
344	6/18	2	51	19.8	-12.399	166.905	SANTA CRUZ ISLANDS	279	90.823	4.3
345	6/18	10	55	25.7	5.514	126.639	MINDANAO, PHILIPPINE ISLANDS	33	94.046	6.1
346	6/18	14	26	24.0	-22.537	169.777	LOYALTY ISLANDS REGION	18	81.921	5.1
347	6/18	19	16	47.7	5.493	126.771	MINDANAO, PHILIPPINE ISLANDS	33	94.074	5.0
348	6/19	0	10	28.7	-17.945	-178.511	FIJI ISLANDS REGION	550	89.097	4.5
349	6/19	1	21	50.1	-17.714	-178.320	FIJI ISLANDS REGION	550	89.361	4.5
350	6/19	2	1	23.5	-0.142	124.390	SOUTHERN MOLUCCA SEA	81	87.996	4.7
351	6/19	9	3	9.1	-5.414	146.879	EASTERN NEW GUINEA REGION, P.N.G.	209	91.098	5.1
352	6/20	7	38	9.8	-41.139	42.981	PRINCE EDWARD ISLANDS REGION	10	27.991	5.5
353	6/21	13	9	41.8	-19.425	-173.381	TONGA ISLANDS	33	88.676	5.0
354	6/21	17	43	4.5	18.324	-101.539	GUERRERO, MEXICO	69	123.916	6.0
355	6/22	0	47	42.9	-4.508	133.947	IRIAN JAYA REGION, INDONESIA	33	87.389	5.7
356	6/22	3	26	23.3	-24.414	-67.007	CHILE-ARGENTINA BORDER REGION	146	73.167	4.3
357	6/22	18	48	17.6	-56.274	-27.638	SOUTH SANDWICH ISLANDS REGION	96	31.569	5.4
358	6/23	1	1	3.3	-22.327	-68.864	NORTHERN CHILE	104	75.716	4.5
359	6/23	20	40	7.1	-0.324	124.466	SOUTHERN MOLUCCA SEA	62	87.855	5.2
360	6/24	1	10	35.8	-26.640	179.480	SOUTH OF FIJI ISLANDS	529	80.248	4.7
361	6/24	3	26	52.1	-13.465	-76.442	NEAR COAST OF PERU	51	86.446	4.7
362	6/25	5	56	29.6	-60.768	-25.090	SOUTH SANDWICH ISLANDS REGION	33	27.332	4.8
363	6/26	22	5	28.9	-17.956	-178.187	FIJI ISLANDS REGION	590	89.155	5.3
364	6/27	14	1	39.1	-20.105	-173.692	TONGA ISLANDS	33	87.955	4.9
365	6/28	1	59	51.1	-20.944	-178.758	FIJI ISLANDS REGION	626	86.137	4.8

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366	6/28	2	59	15.7	-20.607	-69.387	NORTHERN CHILE	99	77.490	4.3
367	6/28	9	34	50.9	-23.685	178.943	SOUTH OF FIJI ISLANDS	568	82.992	4.8
368	6/28	12	20	30.1	-10.836	164.669	SANTA CRUZ ISLANDS REGION	33	91.672	5.2
369	6/28	21	23	58.1	-3.753	152.065	NEW IRELAND REGION, P.N.G.	264	94.404	4.8
370	6/29	0	29	40.4	2.565	128.566	HALMAHERA, INDONESIA	228	92.007	5.0
371	6/29	5	50	8.9	-9.468	147.854	EASTERN NEW GUINEA REGION, P.N.G.	33	87.647	5.8
372	6/29	10	55	11.1	-15.710	-72.496	SOUTHERN PERU	118	83.078	5.1
373	6/30	6	2	54.6	4.848	127.478	TALAUD ISLANDS, INDONESIA	86	93.731	5.7
374	7/3	1	43	54.0	47.076	-123.500	WASHINGTON	41	156.428	5.4
375	7/3	5	3	43.5	56.076	164.600	KOMANDORSKY ISLANDS REGION	33	152.662	5.1
376	7/3	5	30	10.0	26.323	140.500	BONIN ISLANDS REGION	431	118.204	6.0
377	7/3	10	56	53.3	-34.423	-178.700	SOUTH OF KERMADEC ISLANDS	33	73.073	5.1
378	7/4	1	56	22.1	-18.897	-173.100	TONGA ISLANDS	33	89.243	5.1
379	7/5	18	48	10.5	-8.004	123.200	FLORES REGION, INDONESIA	195	80.284	4.8
380	7/7	17	55	46.1	-7.623	127.400	BANDA SEA	149	82.149	5.4
381	7/7	18	52	57.0	49.233	155.600	KURIL ISLANDS	33	143.905	6.0
382	7/8	11	4	49.9	-30.247	-178.100	KERMADEC ISLANDS, NEW ZEALAND	117	77.243	5.3
383	7/8	15	38	0.8	-18.049	-178.600	FIJI ISLANDS REGION	608	88.977	4.3
384	7/8	22	2	57.3	-15.110	-69.980	PERU-BOLIVIA BORDER REGION	158	82.815	4.0
385	7/9	1	20	56.9	-24.967	-70.500	NEAR COAST OF NORTHERN CHILE	41	73.786	5.5
386	7/9	5	4	42.6	-6.514	154.900	SOLOMON ISLANDS	29	92.747	5.8
387	7/10	11	58	22.3	-45.256	-14.850	SOUTHERN MID-ATLANTIC RIDGE	10	36.066	4.4
388	7/11	14	52	10.8	-4.459	153.000	NEW IRELAND REGION, P.N.G.	33	94.053	5.3
389	7/11	15	26	39.7	-53.693	3.243	BOUVET ISLAND REGION	10	22.701	4.6
390	7/12	5	57	59.0	5.513	126.700	MINDANAO, PHILIPPINE ISLANDS	33	94.067	5.6
391	7/12	11	23	36.5	-14.886	167.300	VANUATU ISLANDS	125	88.564	4.8
392	7/13	4	3	10.8	2.121	126.800	NORTHERN MOLUCCA SEA	33	90.960	5.0
393	7/13	11	5	15.7	-57.070	-140.700	PACIFIC-ANTARCTIC RIDGE	10	54.225	4.8
394	7/13	15	52	46.6	-7.094	107.100	JAWA, INDONESIA	33	75.449	5.1
395	7/14	12	1	49.8	-29.583	-71.160	NEAR COAST OF CENTRAL CHILE	65	69.697	4.8
396	7/15	4	22	49.7	-23.318	-66.220	JUJUY PROVINCE, ARGENTINA	265	73.924	4.2
397	7/15	7	41	24.0	-23.639	-63.570	SALTA PROVINCE, ARGENTINA	546	72.741	4.3
398	7/15	14	26	25.7	-18.230	168.200	VANUATU ISLANDS	33	85.620	5.2
399	7/15	14	52	57.9	-35.781	178.100	OFF E. COAST OF N. ISLAND, N.Z.	249	71.122	5.2
400	7/15	15	44	59.2	-17.813	168.100	VANUATU ISLANDS	130	85.991	5.0
401	7/15	16	5	50.6	-19.486	177.600	SOUTH OF FIJI ISLANDS	33	86.751	4.7
402	7/18	7	34	31.8	-18.859	-177.500	FIJI ISLANDS REGION	405	88.421	4.3
403	7/18	10	34	3.2	-22.546	179.400	SOUTH OF FIJI ISLANDS	591	84.193	5.4
404	7/18	22	30	5.6	-31.580	-178.700	KERMADEC ISLANDS REGION	121	75.831	4.5
405	7/19	1	24	3.8	-31.011	78.120	MID-INDIAN RIDGE	10	43.926	5.2
406	7/19	2	17	3.6	-28.629	-177.600	KERMADEC ISLANDS REGION	39	78.912	6.3

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407	7/19	5	0	52.6	-9.030	120.200	SUMBA REGION, INDONESIA	33	78.256	5.2
408	7/19	5	54	27.7	-32.067	-72.120	OFF COAST OF CENTRAL CHILE	33	67.685	4.7
409	7/19	16	45	3.0	-33.580	-176.700	SOUTH OF KERMADEC ISLANDS	33	74.270	5.5
410	7/20	11	54	26.8	-17.769	168.000	VANUATU ISLANDS	33	86.006	4.8
411	7/20	18	18	31.1	-1.027	137.000	IRIAN JAYA REGION, INDONESIA	33	91.710	5.0
412	7/20	20	42	47.2	-2.719	138.700	IRIAN JAYA, INDONESIA	33	90.746	5.3
413	7/21	3	10	44.4	-18.289	-177.900	FIJI ISLANDS REGION	561	88.891	5.4
414	7/21	13	22	48.6	-52.205	14.250	SOUTHWEST OF AFRICA	10	20.664	4.8
415	7/21	13	46	29.7	4.567	97.210	NORTHERN SUMATERA, INDONESIA	175	83.190	5.9
416	7/23	3	56	45.2	-20.857	-177.800	FIJI ISLANDS REGION	508	86.420	4.5
417	7/23	14	45	59.5	8.521	126.400	MINDANAO, PHILIPPINE ISLANDS	79	96.746	5.2
418	7/23	22	52	9.8	-6.644	154.300	SOLOMON ISLANDS	60	92.430	5.2
419	7/26	1	33	20.2	-5.151	151.900	NEW BRITAIN REGION, P.N.G.	69	93.040	5.8
420	7/27	4	12	33.9	-21.194	-67.110	CHILE-BOLIVIA BORDER REGION	198	76.193	4.4
421	7/27	18	4	40.3	-7.234	155.800	SOLOMON ISLANDS	33	92.360	5.0
422	7/27	23	30	20.0	-15.201	-173.300	TONGA ISLANDS	33	92.810	5.4
423	7/28	0	16	57.5	-28.690	-177.500	KERMADEC ISLANDS REGION	33	78.872	5.9
424	7/28	1	15	30.7	-31.168	-179.700	KERMADEC ISLANDS REGION	347	76.032	4.8
425	7/28	10	8	20.6	-30.285	-178.000	KERMADEC ISLANDS, NEW ZEALAND	25	77.225	6.1
426	7/30	12	54	32.0	-36.993	-72.850	NEAR COAST OF CENTRAL CHILE	37	63.335	4.5
427	7/30	15	48	14.8	-17.838	-178.300	FIJI ISLANDS REGION	600	89.245	4.6
428	8/1	8	39	4.9	-30.367	-177.832	KERMADEC ISLANDS, NEW ZEALAND	10	77.178	5.7
429	8/1	10	2	16.2	-30.498	-177.421	KERMADEC ISLANDS, NEW ZEALAND	33	77.130	4.9
430	8/1	12	47	50.1	51.520	-176.273	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	33	155.613	5.5
431	8/1	16	11	20.4	37.399	-117.042	CALIFORNIA-NEVADA BORDER REGION	5	145.851	4.8
432	8/1	20	10	54.3	52.303	-173.381	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	51	157.200	5.2
433	8/2	1	6	37.7	-33.023	-70.153	CHILE-ARGENTINA BORDER REGION	95	66.190	5.2
434	8/2	6	5	13.0	37.380	-117.070	CALIFORNIA-NEVADA BORDER REGION	3	145.838	5.1
435	8/2	9	47	12.0	-12.550	167.175	SANTA CRUZ ISLANDS	251	90.755	5.3
436	8/3	3	57	15.1	-5.600	131.515	BANDA SEA	33	85.504	5.0
437	8/3	8	13	16.6	-20.308	-177.806	FIJI ISLANDS REGION	508	86.951	4.4
438	8/3	15	58	57.6	-3.453	-79.162	NEAR COAST OF ECUADOR	88	96.731	5.7
439	8/3	16	24	44.8	-32.817	-70.822	CHILE-ARGENTINA BORDER REGION	80	66.588	4.3
440	8/3	20	2	38.2	6.478	126.869	MINDANAO, PHILIPPINE ISLANDS	101	95.022	5.4
441	8/4	5	40	22.9	-52.151	14.400	SOUTHWEST OF AFRICA	10	20.672	4.9
442	8/4	6	42	13.7	-6.164	26.542	ZAIRE	10	63.353	4.7
443	8/4	11	49	12.8	-52.482	14.178	SOUTHWEST OF AFRICA	10	20.434	4.7
444	8/4	16	49	50.7	-31.656	-68.079	SAN JUAN PROVINCE, ARGENTINA	115	66.802	5.4
445	8/6	0	32	41.7	49.933	156.261	KURIL ISLANDS	58	144.726	5.5
446	8/7	14	54	16.8	-17.088	-69.906	PERU-BOLIVIA BORDER REGION	125	80.944	4.7
447	8/7	17	1	55.5	-22.896	-179.694	SOUTH OF FIJI ISLANDS	600	84.048	4.2

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448	8/8	2	43	49.1	5.894	127.047	PHILIPPINE ISLANDS REGION	61	94.545	5.3
449	8/8	15	15	34.2	-56.435	-143.024	PACIFIC-ANTARCTIC RIDGE	10	54.847	5.4
450	8/9	23	0	2.1	-6.235	104.124	SUNDA STRAIT	61	75.246	5.0
451	8/10	8	56	59.3	-21.964	-67.201	CHILE-BOLIVIA BORDER REGION	194	75.507	4.4
452	8/10	10	47	44.9	7.249	126.491	MINDANAO, PHILIPPINE ISLANDS	127	95.601	5.2
453	8/10	12	21	19.7	-22.147	170.052	LOYALTY ISLANDS REGION	33	82.364	4.9
454	8/10	17	38	22.2	-2.854	138.871	IRIAN JAYA, INDONESIA	33	90.681	4.9
455	8/10	20	24	30.9	5.390	126.647	MINDANAO, PHILIPPINE ISLANDS	33	93.934	4.9
456	8/11	1	17	39.3	-24.606	-179.954	SOUTH OF FIJI ISLANDS	496	82.336	4.2
457	8/11	10	27	47.4	-40.320	174.130	COOK STRAIT, NEW ZEALAND	103	65.920	
458	8/11	14	35	11.8	-24.418	-67.585	CHILE-ARGENTINA BORDER REGION	114	73.353	4.3
459	8/11	15	32	1.4	-31.784	179.332	KERMADEC ISLANDS REGION	397	75.238	4.4
460	8/12	0	25	6.7	-18.721	-176.882	FIJI ISLANDS REGION	33	88.681	4.7
461	8/12	1	27	53.8	-14.798	167.072	VANUATU ISLANDS	98	88.584	4.8
462	8/12	5	44	59.5	-1.716	122.456	SULAWESI, INDONESIA	33	85.843	5.8
463	8/12	16	43	46.1	-0.688	127.273	HALMAHERA, INDONESIA	80	88.527	5.2
464	8/13	2	56	55.2	-9.958	123.692	TIMOR REGION, INDONESIA	33	78.653	4.9
465	8/13	3	0	29.1	52.094	-169.488	FOX ISLANDS, ALEUTIAN ISLANDS	33	158.190	5.5
466	8/13	7	13	57.4	-20.257	-68.492	CHILE-BOLIVIA BORDER REGION	143	77.522	4.5
467	8/13	7	56	40.3	52.037	-169.502	FOX ISLANDS, ALEUTIAN ISLANDS	33	158.135	5.3
468	8/13	9	54	34.6	-17.409	-69.254	PERU-BOLIVIA BORDER REGION	167	80.429	4.9
469	8/13	19	10	57.2	6.435	126.957	MINDANAO, PHILIPPINE ISLANDS	116	95.014	4.7
470	8/14	0	16	52.2	-5.885	104.711	SOUTHERN SUMATERA, INDONESIA	101	75.770	6.0
471	8/15	23	46	29.5	-18.385	-172.674	SOUTHERN SUMATERA, INDONESIA	33	89.821	6.0
472	8/16	2	19	7.0	-17.408	-172.602	TONGA ISLANDS REGION	33	90.787	5.0
473	8/16	3	3	22.5	-53.280	159.490	MACQUARIE ISLANDS REGION	10	50.351	4.4
474	8/16	4	5	28.9	-7.541	128.144	BANDA SEA	118	82.493	4.8
475	8/16	6	10	22.8	-15.465	-178.793	FIJI ISLANDS REGION	436	91.441	4.2
476	8/17	0	1	39.1	40.748	29.864	TURKEY	17	109.678	6.3
477	8/17	4	31	14.4	-21.681	-174.710	TONGA ISLANDS	147	86.228	4.8
478	8/18	1	16	48.4	-37.341	177.333	OFF E. COAST OF N. ISLAND, NEW ZEALAND	155	69.459	5.6
479	8/18	1	49	22.3	-11.435	-76.448	CENTRAL PERU	95	88.357	4.7
480	8/18	7	50	7.9	-30.855	-71.967	NEAR COAST OF CENTRAL CHILE	33	68.765	5.1
481	8/18	21	15	43.6	-10.757	113.360	SOUTH OF JAWA, INDONESIA	33	74.220	4.7
482	8/19	4	24	20.9	-52.189	13.981	SOUTHWEST OF AFRICA	10	20.751	4.8
483	8/20	10	2	21.1	9.044	-84.159	COSTA RICA	20	110.084	6.1
484	8/20	13	50	25.6	44.785	-112.788	EASTERN IDAHO	16	151.915	5.1
485	8/20	17	58	57.9	-41.285	-89.112	SOUTHERN PACIFIC OCEAN	10	63.682	4.8
486	8/20	19	1	46.8	-21.326	-66.645	SOUTHERN BOLIVIA	221	75.916	4.7
487	8/20	20	19	1.0	-21.417	-174.525	TONGA ISLANDS	33	86.520	5.0
488	8/20	20	33	10.8	34.024	135.405	NEAR S. COAST OF WESTERN HONSHU, JAPAN	66	123.357	5.5

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489	8/21	2	58	5.3	-20.389	-173.757	TONGA ISLANDS	33	87.666	5.4
490	8/21	3	36	5.9	-23.903	-69.277	NORTHERN CHILE	93	74.383	4.6
491	8/21	21	51	11.4	-58.311	-13.196	SOUTHWESTERN ATLANTIC OCEAN	10	24.864	5.4
492	8/22	9	35	39.4	-40.509	-74.756	OFF COAST OF SOUTHERN CHILE	33	60.638	6.2
493	8/22	12	40	45.9	-16.117	168.039	VANUATU ISLANDS	33	87.592	6.3
494	8/22	23	44	9.9	-30.358	-177.953	KERMADEC ISLANDS, NEW ZEALAND	57	77.163	5.1
495	8/23	6	46	59.3	-20.369	-178.659	FIJI ISLANDS REGION	632	86.715	4.4
496	8/23	15	49	19.6	-8.636	118.595	SUMBAWA REGION, INDONESIA	144	78.047	4.2
497	8/23	16	29	8.1	-24.489	178.920	SOUTH OF FIJI ISLANDS	584	82.209	4.5
498	8/23	23	44	52.6	-60.715	-26.921	SOUTH SANDWICH ISLANDS REGION	33	28.006	4.6
499	8/24	2	34	7.4	-28.792	-178.363	KERMADEC ISLANDS REGION	153	78.603	4.7
500	8/24	7	1	8.0	-21.346	-66.663	SOUTHERN BOLIVIA	224	75.903	4.4
501	8/25	7	6	22.0	-19.059	169.612	VANUATU ISLANDS	263	85.203	5.4
502	8/25	14	10	47.7	-0.150	123.055	MINAHASSA PENINSULA, SULAWESI	90	87.510	4.6
503	8/25	19	44	37.6	-59.638	-19.490	SOUTHWESTERN ATLANTIC OCEAN	10	26.162	4.5
504	8/26	1	24	42.6	10.376	126.006	PHILIPPINE ISLANDS REGION	63	98.323	5.6
505	8/26	7	29	27.0	-32.749	-179.018	SOUTH OF KERMADEC ISLANDS	33	74.635	4.9
506	8/26	8	52	31.9	-22.265	-179.630	SOUTH OF FIJI ISLANDS	573	84.673	4.8
507	8/27	23	19	15.0	-20.170	-177.781	FIJI ISLANDS REGION	385	87.091	4.4
508	8/28	3	26	24.9	-27.801	73.857	MID-INDIAN RIDGE	10	45.847	5.5
509	8/28	7	23	7.4	-31.499	179.778	KERMADEC ISLANDS REGION	450	75.605	4.7
510	8/28	12	40	6.1	-1.287	-77.549	ECUADOR	196	98.251	5.9
511	8/28	20	29	58.8	-7.722	116.382	BALI SEA	298	78.105	4.7
512	8/28	23	21	43.8	-21.030	-68.232	CHILE-BOLIVIA BORDER REGION	122	76.717	4.9
513	8/29	0	46	13.4	3.103	65.855	CARLSBERG RIDGE	10	74.188	5.8
514	8/29	3	44	52.0	8.355	93.826	NICOBAR ISLANDS, INDIA	33	85.772	4.9
515	8/29	8	22	41.5	-18.876	-178.387	FIJI ISLANDS REGION	543	88.220	4.0
516	8/29	23	27	56.0	-17.935	-178.689	FIJI ISLANDS REGION	572	89.069	4.4
517	8/30	12	28	25.7	-23.990	179.728	SOUTH OF FIJI ISLANDS	523	82.866	4.0
518	8/31	15	21	59.3	-9.923	116.229	SUMBAWA REGION, INDONESIA	78	76.010	5.0
519	9/1	2	56	21.1	-24.382	-67.118	CHILE-ARGENTINA BORDER REGION	174	73.233	4.6
520	9/1	6	42	41.6	4.676	-32.613	CENTRAL MID-ATLANTIC RIDGE	10	88.039	4.9
521	9/1	19	02	57.1	5.933	126.217	MINDANAO, PHILIPPINE ISLANDS	33	94.283	5.4
522	9/1	19	54	05.2	-5.033	153.639	NEW IRELAND REGION, P. N. G.	33	93.725	5.0
523	9/2	2	37	18.3	-33.353	-70.051	CHILE-ARGENTINA BORDER REGION	114	65.852	4.7
524	9/2	2	33	35.1	50.587	-177.650	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	33	154.367	5.4
525	9/2	7	09	40.8	-6.381	145.649	NEW GUINEA, PAPUA NEW GUINEA	131	89.774	5.0
526	9/3	0	31	21.8	-31.467	-71.653	NEAR COAST OF CENTRAL CHILE	51	68.099	4.7
527	9/4	14	10	55.5	-35.304	-105.586	SOUTHERN EAST PACIFIC RISE	10	72.857	4.8
528	9/5	3	35	36.1	-32.918	-178.471	SOUTH OF KERMADEC ISLANDS	33	74.578	5.0
529	9/5	6	08	18.1	-21.744	-68.315	CHILE-BOLIVIA BORDER REGION	128	76.079	4.8

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530	9/5	17	55	33.3	-17.248	-70.804	NEAR COAST OF PERU	81	81.088	4.9
531	9/6	1	51	15.6	-14.048	-14.483	SOUTHERN MID-ATLANTIC RIDGE	10	64.522	5.4
532	9/6	5	46	27.9	-24.439	-179.980	SOUTH OF FIJI ISLANDS	493	82.493	4.5
533	9/6	10	11	32.8	-11.908	166.115	SANTA CRUZ ISLANDS	33	91.068	4.5
534	9/6	11	17	47.8	-20.342	-178.504	FIJI ISLANDS REGION	590	86.774	4.3
535	9/6	15	04	52.8	52.096	159.152	OFF EAST COAST OF KAMCHATKA	55	147.547	5.0
536	9/6	21	55	36.4	-7.201	128.895	BANDA SEA	33	83.078	4.2
537	9/7	11	56	49.3	38.119	23.605	GREECE	10	107.472	5.6
538	9/7	13	15	27.7	-18.354	168.870	VANUATU ISLANDS	211	85.680	4.9
539	9/7	17	50	00.1	-63.289	-166.566	PACIFIC-ANTARCTIC RIDGE	10	46.685	4.8
540	9/7	23	47	05.9	-10.618	124.374	TIMOR REGION, INDONESIA	33	78.288	5.2
541	9/8	8	28	04.5	-10.742	166.169	SANTA CRUZ ISLANDS	200	92.192	4.9
542	9/9	10	05	53.9	-3.102	130.022	SERAM, INDONESIA	33	87.281	4.5
543	9/9	13	08	41.7	-22.129	-179.762	SOUTH OF FIJI ISLANDS	606	84.776	4.7
544	9/10	4	05	19.1	-40.508	-74.776	OFF COAST OF SOUTHERN CHILE	33	60.645	4.9
545	9/10	6	57	50.6	-31.708	-69.206	SAN JUAN PROVINCE, ARGENTINA	111	67.111	4.5
546	9/10	17	16	29.5	-29.744	-71.218	NEAR COAST OF CENTRAL CHILE	55	69.565	4.9
547	9/10	19	37	44.8	-32.831	-178.270	SOUTH OF KERMADEC ISLANDS	33	74.701	5.3
548	9/10	19	41	41.6	-20.819	-68.333	CHILE-BOLIVIA BORDER REGION	135	76.946	4.8
549	9/10	19	49	07.7	-20.060	-175.380	TONGA ISLANDS	143	87.678	-
550	9/11	7	21	59.1	-32.574	-179.388	SOUTH OF KERMADEC ISLANDS	250	74.731	4.4
551	9/12	22	56	46.3	35.486	139.974	NEAR S. COAST OF HONSHU, JAPAN	65	126.306	5.2
552	9/13	7	30	10.4	-15.192	-174.673	TONGA ISLANDS	33	92.555	4.8
553	9/14	4	01	25.9	-55.989	-27.809	SOUTH SANDWICH ISLANDS REGION	33	31.851	5.5
554	9/15	2	59	01.1	-20.201	-177.924	FIJI ISLANDS REGION	500	87.031	4.3
555	9/15	3	01	24.3	-20.934	-67.275	SOUTHERN BOLIVIA	218	76.490	6.0
556	9/15	16	43	07.5	-18.142	-177.755	FIJI ISLANDS REGION	500	89.064	4.1
557	9/16	9	35	06.6	-14.706	166.693	VANUATU ISLANDS	33	88.567	5.1
558	9/16	12	13	44.4	3.052	128.407	NORTH OF HALMAHERA, INDONESIA	227	92.401	4.8
559	9/17	14	54	48.7	-13.790	167.238	VANUATU ISLANDS	197	89.591	5.9
560	9/17	21	01	28.4	-22.520	-66.105	JUJUY PROVINCE, ARGENTINA	261	74.627	4.4
561	9/17	23	48	11.2	-14.408	-178.210	FIJI ISLANDS REGION	33	92.590	5.1
562	9/18	6	50	58.1	-6.443	147.799	EASTERN NEW GUINEA REGION, P.N.G.	49	90.452	5.3
563	9/18	12	52	35.2	-4.028	103.321	SOUTHERN SUMATERA, INDONESIA	33	77.045	5.1
564	9/18	20	11	38.6	1.264	122.659	MINAHASSA PENINSULA, SULAWESI	40	88.680	4.8
565	9/18	21	28	33.1	51.207	157.556	NEAR EAST COAST OF KAMCHATKA	60	146.245	5.9
566	9/18	23	25	19.5	-22.846	-66.198	JUJUY PROVINCE, ARGENTINA	262	74.355	4.4
567	9/18	23	51	30.4	-19.713	169.205	VANUATU ISLANDS	103	84.471	5.8
568	9/19	3	18	54.5	-3.624	150.875	NEW IRELAND REGION, P.N.G.	431	94.126	5.2
569	9/20	17	47	18.4	23.772	120.982	TAIWAN	33	108.935	6.5
570	9/20	21	46	42.8	23.390	120.964	TAIWAN	33	108.576	5.8

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571	9/21	2	07	09.8	-41.739	-16.251	SOUTHERN MID-ATLANTIC RIDGE	10	39.637	5.4
572	9/21	2	42	37.9	-41.673	-16.343	SOUTHERN MID-ATLANTIC RIDGE	10	39.728	4.5
573	9/21	22	24	44.0	-63.680	-167.163	PACIFIC-ANTARCTIC RIDGE	10	46.243	5.1
574	9/22	0	14	39.1	23.729	121.167	TAIWAN	26	108.959	6.2
575	9/23	22	23	15.7	-6.976	124.653	BANDA SEA	469	81.759	4.6
576	9/25	5	18	30.5	-18.959	-175.108	TONGA ISLANDS	165	88.802	5.2
577	9/25	5	27	21.4	-21.664	-177.293	FIJI ISLANDS REGION	258	85.739	4.4
578	9/25	15	59	35.7	-22.020	-175.144	TONGA ISLANDS REGION	33	85.815	5.0
579	9/25	17	01	05.2	-2.162	125.669	CERAM SEA	33	86.584	4.8
580	9/26	23	52	48.6	23.738	121.158	TAIWAN	17	108.964	6.2
581	9/26	9	27	19.4	-56.030	-27.820	SOUTH SANDWICH ISLANDS REGION	132	31.823	4.4
582	9/26	16	51	08.3	-4.650	129.368	BANDA SEA	187	85.611	4.7
583	9/27	2	36	14.5	-26.930	-63.329	SANTIAGO DEL ESTERO PROV., ARGENTINA	561	69.617	4.1
584	9/27	10	47	12.5	-38.975	-70.920	SOUTHERN ARGENTINA	158	60.926	4.4
585	9/27	14	42	49.1	2.667	127.914	NORTHERN MOLUCCA SEA	33	91.867	5.3
586	9/27	21	18	26.0	-14.509	167.678	VANUATU ISLANDS	33	89.027	4.7
587	9/27	22	17	52.1	-27.714	65.549	SOUTH INDIAN OCEAN	10	44.049	4.9
588	9/27	22	26	45.5	-27.591	65.405	SOUTH INDIAN OCEAN	10	44.139	4.7
589	9/28	2	15	18.9	-27.673	65.492	SOUTH INDIAN OCEAN	10	44.077	5.0
590	9/28	2	44	50.0	-27.611	65.492	SOUTH INDIAN OCEAN	10	44.137	4.0
591	9/28	5	00	42.9	54.590	168.263	KOMANDORSKY ISLANDS REGION	33	152.823	5.4
592	9/28	5	44	05.9	54.580	168.334	KOMANDORSKY ISLANDS REGION	33	152.840	5.2
593	9/28	13	16	47.0	-27.683	65.535	SOUTH INDIAN OCEAN	10	44.076	4.6
594	9/28	13	48	17.0	-16.179	-175.933	TONGA ISLANDS	357	91.344	5.0
595	9/29	2	13	19.5	-27.770	65.890	SOUTH INDIAN OCEAN	10	44.063	4.6
596	9/29	3	58	59.3	-12.950	166.833	SANTA CRUZ ISLANDS	33	90.278	4.8
597	9/29	4	42	51.9	1.959	125.047	NORTHERN MOLUCCA SEA	142	90.180	5.5
598	9/29	16	12	52.7	-23.713	-175.662	TONGA ISLANDS REGION	33	84.067	4.9
599	9/29	18	01	31.8	-30.738	-71.993	NEAR COAST OF CENTRAL CHILE	33	68.882	5.6
600	9/30	3	18	27.6	54.621	168.361	KOMANDORSKY ISLANDS REGION	33	152.882	4.9
601	9/30	5	52	51.4	-55.656	-29.072	SOUTH SANDWICH ISLANDS REGION	67	32.557	5.0
602	9/30	16	31	15.6	16.059	-96.931	OAXACA, MEXICO	61	120.520	6.5
603	9/30	18	03	56.9	-21.829	-68.575	CHILE-BOLIVIA BORDER REGION	104	76.085	4.5
604	9/30	20	43	04.0	-24.972	179.630	SOUTH OF FIJI ISLANDS	522	81.894	5.2
605	10/1	7	19	21.9	-5.381	104.480	SOUTHERN SUMATERA, INDONESIA	88	76.164	4.4
606	10/1	7	58	50.0	-27.642	65.549	SOUTH INDIAN OCEAN	10	44.118	4.7
607	10/1	9	08	36.8	-13.369	167.200	VANUATU ISLANDS	250	89.981	4.6
608	10/1	10	31	27.7	-14.195	167.140	VANUATU ISLANDS	250	89.178	4.8
609	10/1	11	08	54.3	-39.202	-74.584	OFF COAST OF CENTRAL CHILE	33	61.799	4.8
610	10/1	22	24	00.6	-0.279	122.702	MINAHASSA PENINSULA, SULAWESI	64	87.264	5.6
611	10/3	0	29	45.4	-7.321	120.440	FLORES SEA	515	79.925	4.7

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612	10/3	6	36	08.8	-7.138	124.987	BANDA SEA	516	81.729	4.8
613	10/3	15	06	19.4	-27.714	65.637	SOUTH INDIAN OCEAN	10	44.066	4.9
614	10/4	0	32	53.7	2.632	127.361	NORTHERN MOLUCCA SEA	33	91.635	5.4
615	10/4	13	57	38.9	-10.685	-75.635	CENTRAL PERU	33	88.802	5.5
616	10/4	20	22	22.1	-35.203	-69.523	MENDOZA PROVINCE, ARGENTINA	180	63.978	4.2
617	10/5	2	59	59.0	-35.841	-103.284	SOUTHERN PACIFIC OCEAN	10	71.918	4.9
618	10/5	5	01	35.9	51.207	157.610	NEAR EAST COAST OF KAMCHATKA	77	146.265	5.4
619	10/7	4	50	17.0	52.243	-177.720	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	149	155.763	5.2
620	10/7	10	04	06.5	5.112	94.389	NORTHERN SUMATERA, INDONESIA	33	82.858	4.8
621	10/7	12	27	07.4	-6.158	149.287	NEW BRITAIN REGION, P.N.G.	58	91.222	5.4
622	10/8	3	23	16.1	-23.559	-179.837	SOUTH OF FIJI ISLANDS	562	83.375	4.9
623	10/8	5	09	48.9	-21.054	-174.495	TONGA ISLANDS	33	86.879	5.6
624	10/8	10	49	37.9	-10.853	165.014	SANTA CRUZ ISLANDS	33	91.756	5.2
625	10/8	11	43	26.8	-16.053	-174.262	TONGA ISLANDS	200	91.796	4.7
626	10/8	12	43	07.7	-21.786	-68.804	CHILE-BOLIVIA BORDER REGION	109	76.200	4.5
627	10/8	20	29	44.9	-16.397	177.866	FIJI ISLANDS	33	89.794	4.7
628	10/8	22	13	16.6	-21.890	-176.717	FIJI ISLANDS REGION	184	85.635	5.4
629	10/9	9	02	48.1	-33.836	-179.044	SOUTH OF KERMADEC ISLANDS	33	73.576	4.8
630	10/9	9	45	54.1	-34.159	-179.254	SOUTH OF KERMADEC ISLANDS	33	73.222	4.5
631	10/9	9	49	34.5	-33.963	-179.142	SOUTH OF KERMADEC ISLANDS	33	73.433	4.8
632	10/9	14	11	25.8	-56.380	-144.220	PACIFIC-ANTARCTIC RIDGE	10	54.886	4.5
633	10/10	1	28	04.9	-15.459	-173.233	TONGA ISLANDS	33	92.571	5.0
634	10/10	7	03	04.8	-1.990	134.279	IRIAN JAYA REGION, INDONESIA	33	89.842	5.8
635	10/11	2	15	32.3	-11.100	112.445	SOUTH OF JAWA, INDONESIA	33	73.579	4.9
636	10/11	8	55	35.5	-5.540	154.253	SOLOMON ISLANDS	170	93.450	5.0
637	10/11	13	31	47.1	-30.949	-177.310	KERMADEC ISLANDS, NEW ZEALAND	33	76.713	4.7
638	10/11	20	30	09.0	-14.924	167.625	VANUATU ISLANDS	33	88.617	5.2
639	10/11	21	18	27.3	-10.854	164.801	SANTA CRUZ ISLANDS REGION	33	91.693	5.0
640	10/12	13	27	45.6	-21.116	-174.489	TONGA ISLANDS	33	86.820	5.4
641	10/13	1	33	40.1	54.657	-161.189	ALASKA PENINSULA	30	162.734	6.0
642	10/13	4	03	56.0	75.895	10.587	SVALBARD REGION	10	145.799	4.5
643	10/13	13	41	39.7	-33.333	57.109	SOUTHWEST INDIAN RIDGE	10	37.075	4.5
644	10/13	13	57	06.4	-57.720	-149.802	PACIFIC-ANTARCTIC RIDGE	10	53.388	4.8
645	10/13	15	55	32.5	-30.305	-178.313	KERMADEC ISLANDS, NEW ZEALAND	233	77.144	4.5
646	10/14	2	39	47.8	-23.910	179.744	SOUTH OF FIJI ISLANDS	524	82.946	4.8
647	10/14	11	00	49.0	-14.281	-70.484	CENTRAL PERU	202	83.757	5.0
648	10/14	12	44	50.1	1.656	126.294	NORTHERN MOLUCCA SEA	33	90.347	4.8
649	10/14	13	36	18.8	-5.303	145.659	EASTERN NEW GUINEA REGION, P.N.G.	63	90.782	5.1
650	10/14	17	35	12.1	51.410	151.144	SEA OF OKHOTSK	482	144.107	4.7
651	10/16	3	15	38.3	-45.129	-174.645	CHATHAM ISLANDS REGION	10	63.383	5.0
652	10/16	4	40	25.5	-28.181	-177.118	KERMADEC ISLANDS REGION	150	79.441	4.6

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653	10/17	8	24	59.6	-29.192	-177.187	KERMADEC ISLANDS, NEW ZEALAND	33	78.445	4.9
654	10/17	22	33	45.1	0.413	126.080	NORTHERN MOLUCCA SEA	65	89.118	5.0
655	10/18	0	50	09.2	-18.083	167.965	VANUATU ISLANDS	33	85.697	4.9
656	10/18	0	56	23.9	-17.419	-175.334	TONGA ISLANDS	291	90.257	4.6
657	10/18	2	43	23.8	-56.121	-26.578	SOUTH SANDWICH ISLANDS REGION	33	31.311	6.0
658	10/18	4	34	23.9	0.055	123.729	MINAHASSA PENINSULA, SULAWESI	149	87.942	4.3
659	10/18	10	37	06.7	-22.178	170.274	LOYALTY ISLANDS REGION	33	82.391	4.3
660	10/19	8	25	43.3	-20.906	-179.113	FIJI ISLANDS REGION	616	86.099	4.8
661	10/20	2	43	49.3	-7.815	111.162	JAWA, INDONESIA	157	76.180	4.8
662	10/20	8	28	52.4	-6.940	129.336	BANDA SEA	189	83.479	5.8
663	10/20	11	22	49.8	-9.581	111.526	SOUTH OF JAWA, INDONESIA	33	74.666	4.9
664	10/20	13	38	43.3	-57.197	-24.012	SOUTH SANDWICH ISLANDS REGION	33	29.574	5.3
665	10/20	16	55	33.4	-33.070	-179.060	SOUTH OF KERMADEC ISLANDS	33	74.315	4.9
666	10/21	3	47	01.4	5.895	125.870	MINDANAO, PHILIPPINE ISLANDS	158	94.123	4.7
667	10/21	17	18	58.5	-21.595	-176.503	FIJI ISLANDS REGION	136	85.964	4.8
668	10/22	21	28	03.6	-38.128	-93.695	WEST CHILE RISE	10	67.745	5.0
669	10/23	2	12	05.0	-4.808	153.414	NEW IRELAND REGION, P.N.G.	83	93.862	5.7
670	10/23	3	13	48.2	-18.019	-178.546	FIJI ISLANDS REGION	600	89.018	4.4
671	10/24	4	21	41.1	44.612	149.440	KURIL ISLANDS	33	137.755	6.0
672	10/24	8	59	46.4	-34.841	-112.032	SOUTHERN EAST PACIFIC RISE	10	74.350	5.3
673	10/24	10	39	18.1	-39.790	177.130	OFF E. COAST OF N. ISLAND, N.Z.	45	67.057	4.5
674	10/24	12	24	50.0	52.227	159.648	OFF EAST COAST OF KAMCHATKA	44	147.832	5.1
675	10/25	0	01	20.5	-19.442	-173.880	TONGA ISLANDS	33	88.566	5.5
676	10/25	20	31	42.3	-38.699	175.803	NORTH ISLAND, NEW ZEALAND	159	67.832	5.5
677	10/27	4	09	30.1	-23.681	-111.615	EASTER ISLAND REGION	10	85.235	5.3
678	10/28	0	37	21.7	-54.199	6.802	BOUVET ISLAND REGION	33	21.124	4.5
679	10/29	15	25	29.8	-20.293	-176.350	FIJI ISLANDS REGION	265	87.260	4.9
680	10/29	17	13	37.7	-22.961	-70.116	NEAR COAST OF NORTHERN CHILE	102	75.532	4.3
681	10/30	0	48	37.6	34.659	141.626	OFF EAST COAST OF HONSHU, JAPAN	34	126.158	5.1
682	10/30	3	03	55.1	-18.143	168.171	VANUATU ISLANDS	33	85.695	4.6
683	10/30	9	43	21.7	-15.838	-173.728	TONGA ISLANDS	33	92.108	5.2
684	10/30	21	16	40.5	-33.057	-179.540	SOUTH OF KERMADEC ISLANDS	33	74.233	5.6
685	10/31	10	21	4.2	-19.581	-178.217	FIJI ISLANDS REGION	600	87.572	3.9
686	11/1	17	53	0.1	23.378	121.520	TAIWAN	33	108.758	6.1
687	11/1	23	13	48.3	-7.662	127.495	BANDA SEA	166	82.147	4.9
688	11/2	5	58	33.7	5.433	126.743	MINDANAO, PHILIPPINE ISLANDS	65	94.009	4.9
689	11/2	23	18	18.8	-52.967	25.805	SOUTH OF AFRICA	10	17.349	5.0
690	11/3	21	38	7.5	-45.473	96.567	SOUTHEAST INDIAN RIDGE	10	36.774	5.2
691	11/3	23	50	24.9	-15.761	-172.538	SAMOA ISLANDS REGION	33	92.406	5.3
692	11/4	5	38	57.7	-32.689	-71.715	NEAR COAST OF CENTRAL CHILE	30	66.983	4.6
693	11/5	8	52	27.8	-21.612	-68.228	CHILE-BOLIVIA BORDER REGION	129	76.173	4.3

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694	11/5	17	4	2.0	-11.294	114.305	SOUTH OF BALI, INDONESIA	33	74.056	5.3
695	11/6	0	57	4.8	-29.953	-71.576	NEAR COAST OF CENTRAL CHILE	55	69.483	5.1
696	11/6	4	17	30.3	-57.367	-25.960	SOUTH SANDWICH ISLANDS REGION	33	30.136	5.0
697	11/7	11	57	23.5	-20.904	-174.319	TONGA ISLANDS	33	87.059	5.0
698	11/7	13	29	17.1	-7.929	117.774	BALI SEA	33	78.409	4.9
699	11/7	16	11	1.6	-5.900	146.466	EASTERN NEW GUINEA REGION, P.N.G.	33	90.503	4.8
700	11/8	16	45	43.0	36.522	71.240	AFGHANISTAN-TAJIKISTAN BORD REGION	228	107.799	6.2
701	11/8	19	19	18.4	-14.458	166.639	VANUATU ISLANDS	33	88.788	4.9
702	11/9	8	20	56.0	-58.248	-9.465	SOUTHWESTERN ATLANTIC OCEAN	10	23.567	4.5
703	11/9	16	35	35.3	13.111	92.265	ANDAMAN ISLANDS, INDIA	33	89.851	5.0
704	11/10	11	24	28.1	-60.847	-25.436	SOUTH SANDWICH ISLANDS REGION	33	27.397	
705	11/10	13	57	32.7	-17.714	-69.348	PERU-BOLIVIA BORDER REGION	151	80.175	4.9
706	11/11	2	41	5.0	49.315	155.633	KURIL ISLANDS	33	143.985	5.8
707	11/11	18	5	43.5	1.276	100.322	NORTHERN SUMATERA, INDONESIA	211	81.055	6.0
708	11/12	10	37	45.1	-34.338	178.992	SOUTH OF KERMADEC ISLANDS	200	72.698	4.2
709	11/12	12	48	19.9	-7.709	108.043	JAWA, INDONESIA	80	75.199	5.0
710	11/12	16	29	25.6	-6.283	154.384	SOLOMON ISLANDS	64	92.796	5.0
711	11/12	16	57	19.5	40.758	31.161	TURKEY	10	109.629	6.3
712	11/13	9	57	0.8	-5.664	130.465	BANDA SEA	33	85.067	5.0
713	11/13	19	31	12.2	53.357	171.423	NEAR ISLANDS, ALEUTIAN ISLANDS	33	152.964	5.5
714	11/13	21	24	45.9	52.513	160.062	OFF EAST COAST OF KAMCHATKA	39	148.213	5.1
715	11/15	1	39	27.1	-21.054	169.807	LOYALTY ISLANDS REGION	74	83.346	5.1
716	11/15	1	34	35.8	38.304	142.309	NEAR EAST COAST OF HONSHU, JAPAN	51	129.659	5.7
717	11/15	2	20	40.4	-24.943	-178.283	SOUTH OF FIJI ISLANDS	394	82.355	4.2
718	11/15	4	1	44.1	-38.082	-72.317	CENTRAL CHILE	65	62.169	4.8
719	11/15	5	42	43.2	-1.339	88.976	SOUTH INDIAN OCEAN	10	75.159	6.3
720	11/15	17	41	8.6	2.414	126.135	NORTHERN MOLUCCA SEA	91	90.992	4.7
721	11/15	20	2	59.1	-24.834	-175.822	SOUTH OF TONGA ISLANDS	33	82.946	4.7
722	11/16	1	15	50.8	-8.585	125.036	TIMOR REGION, INDONESIA	33	80.407	4.7
723	11/16	13	44	18.3	-55.823	-125.134	SOUTHERN EAST PACIFIC RISE	10	54.974	4.8
724	11/16	21	56	31.2	-62.446	-158.711	PACIFIC-ANTARCTIC RIDGE	10	48.183	4.6
725	11/16	23	21	59.6	-17.978	-178.665	FIJI ISLANDS REGION	610	89.032	4.3
726	11/17	3	27	42.0	-5.978	148.820	NEW BRITAIN REGION, P.N.G.	48	91.233	5.9
727	11/17	5	19	23.2	-17.859	-178.706	FIJI ISLANDS REGION	566	89.139	4.7
728	11/17	9	44	10.0	-1.075	127.347	HALMAHERA, INDONESIA	45	88.195	4.9
729	11/17	11	36	34.9	-6.004	148.803	NEW BRITAIN REGION, P.N.G.	45	91.203	5.7
730	11/18	2	53	43.5	-5.987	148.900	NEW BRITAIN REGION, P.N.G.	58	91.251	4.9
731	11/18	3	20	22.9	-6.576	148.672	NEW BRITAIN REGION, P.N.G.	55	90.624	5.0
732	11/18	5	44	10.3	-25.499	-70.202	NEAR COAST OF NORTHERN CHILE	53	73.195	5.1
733	11/18	10	10	7.9	-3.914	153.642	NEW IRELAND REGION, P.N.G.	284	94.775	5.0
734	11/18	10	46	21.5	-12.542	166.530	SANTA CRUZ ISLANDS	131	90.582	4.7

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735	11/18	14	27	42.8	0.523	126.066	NORTHERN MOLUCCA SEA	33	89.215	5.9
736	11/18	18	23	26.3	-22.419	170.137	LOYALTY ISLANDS REGION	33	82.126	4.7
737	11/18	20	57	13.5	-6.180	106.665	JAWA, INDONESIA	165	76.154	4.4
738	11/19	10	43	50.8	-30.870	-71.388	NEAR COAST OF CENTRAL CHILE	68	68.572	5.0
739	11/19	13	56	46.4	-6.351	148.763	NEW BRITAIN REGION, P. N. G.	33	90.865	5.9
740	11/19	14	3	39.7	-6.304	148.642	NEW BRITAIN REGION, P. N. G.	33	90.868	5.2
741	11/19	14	32	20.8	-6.437	148.485	NEW BRITAIN REGION, P. N. G.	33	90.691	5.4
742	11/19	15	26	41.9	0.376	122.041	HALMAHERA, PENINSULA, SULAWESI	155	87.635	4.9
743	11/20	4	5	13.0	1.589	128.290	HALMAHERA, INDONESIA	80	91.003	5.0
744	11/20	5	59	11.3	-33.482	-179.382	SOUTH OF KERMADEC ISLANDS	72	73.853	4.8
745	11/20	21	52	52.2	-30.764	-71.897	NEAR COAST OF CENTRAL CHILE	40	68.828	5.0
746	11/21	3	51	14.4	-21.750	-68.780	CHILE-BOLIVIA BORDER REGION	101	76.226	5.9
747	11/21	4	3	26.3	-37.927	-73.692	NEAR COAST OF CENTRAL CHILE	33	62.720	4.8
748	11/21	4	9	35.1	-37.933	-73.560	NEAR COAST OF CENTRAL CHILE	33	62.675	5.1
749	11/21	6	38	35.8	-63.123	-164.527	PACIFIC-ANTARCTIC RIDGE	10	47.042	5.1
750	11/21	8	5	25.6	-56.131	-27.121	SOUTH SANDWICH ISLANDS REGION	133	31.496	4.1
751	11/21	10	39	53.0	-55.726	-26.949	SOUTH SANDWICH ISLANDS REGION	33	31.750	4.8
752	11/21	14	45	58.1	-8.082	-74.467	PERU-BRAZIL BORDER REGION	149	90.869	5.0
753	11/22	1	45	20.1	-16.152	-173.057	TONGA ISLANDS	33	91.929	5.3
754	11/23	14	37	56.6	9.732	57.122	CARLSBERG RIDGE	10	79.512	5.7
755	11/23	15	15	57.8	9.716	57.054	CARLSBERG RIDGE	10	79.489	5.0
756	11/23	15	47	26.7	9.717	57.047	CARLSBERG RIDGE	10	79.489	4.9
757	11/23	16	3	52.9	-15.022	167.268	VANUATU ISLANDS	133	88.425	4.8
758	11/24	19	51	38.9	5.937	94.432	NORTHERN SUMATERA, INDONESIA	63	83.654	5.0
759	11/25	3	6	4.3	-22.160	-179.770	SOUTH OF FIJI ISLANDS	622	84.745	4.8
760	11/25	4	0	9.4	-0.944	121.487	MINAHASSA PENINSULA, SULAWESI	33	86.212	5.6
761	11/25	8	8	31.2	-21.209	-174.420	TONGA ISLANDS	33	86.742	4.8
762	11/25	10	18	34.7	-56.305	-25.720	SOUTH SANDWICH ISLANDS REGION	33	30.864	5.0
763	11/25	11	50	29.7	-21.604	-68.289	CHILE-BOLIVIA BORDER REGION	128	76.201	4.6
764	11/25	19	40	39.7	-49.327	120.813	SOUTH OF AUSTRALIA	10	42.144	4.7
765	11/26	0	29	0.2	55.133	165.364	KOMANDORSKY ISLANDS REGION	33	152.207	5.6
766	11/26	0	54	16.3	55.116	165.336	KOMANDORSKY ISLANDS REGION	33	152.184	5.1
767	11/26	2	56	7.3	-30.234	-177.678	KERMADEC ISLANDS, NEW ZEALAND	33	77.337	5.7
768	11/26	3	9	51.2	-18.059	-178.380	FIJI ISLANDS REGION	646	89.014	4.8
769	11/26	13	21	15.5	-16.423	168.214	VANUATU ISLANDS	33	87.348	6.4
770	11/26	13	38	34.4	-16.009	167.984	VANUATU ISLANDS	33	87.680	5.7
771	11/26	15	57	34.6	55.143	165.475	KOMANDORSKY ISLANDS REGION	33	152.255	5.6
772	11/26	19	36	9.4	-16.426	168.050	VANUATU ISLANDS	33	87.300	5.5
773	11/26	22	3	20.0	-15.576	167.918	VANUATU ISLANDS	33	88.075	5.5
774	11/26	22	36	22.9	-23.930	-66.678	JUJUY PROVINCE, ARGENTINA	212	73.508	4.6
775	11/27	2	31	49.4	-14.529	-71.291	CENTRAL PERU	126	83.790	5.8

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776	11/27	12	0	43.0	-28.155	-177.065	KERMADEC ISLANDS REGION	59	79.476	4.6
777	11/27	13	50	13.9	-5.818	145.902	EASTERN NEW GUINEA REGION, P.N.G.	133	90.386	5.2
778	11/27	14	36	54.6	-54.855	-136.384	PACIFIC-ANTARCTIC RIDGE	10	56.410	4.8
779	11/27	20	21	43.3	-24.782	179.790	SOUTH OF FIJI ISLANDS	550	82.112	4.2
780	11/27	22	41	11.2	-4.692	153.016	NEW IRELAND REGION, P.N.G.	89	93.840	5.8
781	11/27	23	12	29.5	54.952	165.659	KOMANDORSKY ISLANDS REGION	33	152.172	5.4
782	11/28	0	53	42.0	0.581	126.205	NORTHERN MOLUCCA SEA	33	89.319	5.1
783	11/28	9	10	28.0	55.047	165.565	KOMANDORSKY ISLANDS REGION	33	152.212	5.3
784	11/28	10	17	18.7	-1.296	88.900	SOUTH INDIAN OCEAN	10	75.178	5.2
785	11/29	3	46	30.1	-1.275	89.043	SOUTH INDIAN OCEAN	10	75.239	5.9
786	11/29	3	55	37.8	-1.343	89.099	SOUTH INDIAN OCEAN	10	75.190	5.3
787	11/29	6	37	34.9	-23.358	179.970	SOUTH OF FIJI ISLANDS	572	83.529	4.5
788	11/29	11	4	29.9	-19.246	-177.718	FIJI ISLANDS REGION	600	88.000	3.9
789	11/29	11	7	2.8	0.565	126.110	NORTHERN MOLUCCA SEA	33	89.270	5.6
790	11/29	19	37	34.6	-21.790	-176.550	FIJI ISLANDS REGION	148	85.765	4.8
791	11/30	4	1	53.2	-18.901	-69.171	NORTHERN CHILE	128	79.010	6.2
792	11/30	4	40	25.0	-21.213	-174.380	TONGA ISLANDS	33	86.746	5.1
793	11/30	16	23	34.8	-21.284	169.105	LOYALTY ISLANDS REGION	33	82.944	5.7
794	11/30	20	10	22.3	-21.325	-178.662	FIJI ISLANDS REGION	548	85.787	5.3
795	12/1	3	54	15.6	-4.885	129.573	BANDA SEA	182	85.467	5.2
796	12/1	19	1	10.2	-22.132	-68.356	NORTHERN CHILE	136	75.731	4.1
797	12/1	21	3	31.3	2.360	126.741	NORTHERN MOLUCCA SEA	72	91.160	5.1
798	12/1	21	45	22.7	-22.031	169.977	LOYALTY ISLANDS REGION	33	82.456	5.1
799	12/2	19	19	22.4	-0.164	124.965	SOUTHERN MOLUCCA SEA	64	88.182	4.7
800	12/2	22	30	27.9	-0.182	124.939	SOUTHERN MOLUCCA SEA	68	88.156	4.5
801	12/3	18	36	48.9	-27.933	-176.814	KERMADEC ISLANDS REGION	45	79.740	5.1
802	12/4	7	45	1.4	3.282	128.088	NORTH OF HALMAHERA, INDONESIA	33	92.499	5.8
803	12/4	8	46	56.6	51.473	-178.421	ANDREANOF ISLANDS, ALEUTIAN ISLANDS	33	154.879	5.2
804	12/4	17	6	51.0	-28.500	-71.221	NEAR COAST OF CENTRAL CHILE	34	70.724	5.5
805	12/4	18	45	16.6	-7.340	128.030	BANDA SEA	150	82.638	5.0
806	12/5	0	52	32.7	-16.224	-176.869	FIJI ISLANDS REGION	400	91.110	4.9
807	12/5	8	52	23.1	5.364	126.297	MINDANAO, PHILIPPINE ISLANDS	61	93.785	5.2
808	12/5	9	8	51.4	-9.304	110.337	SOUTH OF JAWA, INDONESIA	43	74.508	4.6
809	12/5	22	0	34.0	29.920	138.689	SOUTH OF HONSHU, JAPAN	449	120.824	5.7
810	12/6	7	33	11.1	42.629	76.322	LAKE ISSYK-KUL REGION	21	114.604	5.3
811	12/6	9	58	0.1	-28.467	-71.505	NEAR COAST OF CENTRAL CHILE	33	70.844	4.6
812	12/6	23	22	55.5	57.363	-154.401	KODIAK ISLAND REGION	50	166.769	5.6
813	12/7	0	19	49.6	57.362	-154.514	KODIAK ISLAND REGION	41	166.744	6.5
814	12/7	13	52	3.1	-20.423	-178.051	FIJI ISLANDS REGION	566	86.789	4.9
815	12/7	21	29	42.4	-15.871	-174.137	TONGA ISLANDS	120	91.997	5.4
816	12/8	10	29	17.3	6.073	126.463	MINDANAO, PHILIPPINE ISLANDS	33	94.501	5.5

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817	12/8	13	34	44.6	-9.843	159.965	SOLOMON ISLANDS	33	91.209	5.5
818	12/8	17	5	12.4	6.011	126.314	MINDANAO, PHILIPPINE ISLANDS	59	94.390	5.3
819	12/9	4	20	30.7	-5.125	130.323	BANDA SEA	33	85.515	4.4
820	12/9	8	34	10.0	-34.556	-106.943	SOUTHERN EAST PACIFIC RISE	10	73.822	5.1
821	12/9	10	18	17.1	-6.028	148.144	NEW BRITAIN REGION, P.N.G.	58	90.957	5.7
822	12/10	23	53	28.9	-17.315	-6.404	SOUTH ATLANTIC OCEAN	10	59.000	4.7
823	12/10	3	34	45.0	-22.303	179.613	SOUTH OF FIJI ISLANDS	600	84.474	5.3
824	12/10	11	55	26.4	-3.303	142.886	NEAR N COAST OF NEW GUINEA, P.N.G.	10	91.681	5.0
825	12/10	16	53	33.5	-7.775	-74.373	PERU-BRAZIL BORDER REGION	152	91.126	4.6
826	12/10	18	38	30.1	-36.206	-97.316	WEST CHILE RISE	10	70.379	5.7
827	12/10	20	6	59.9	-36.234	-97.422	WEST CHILE RISE	10	70.374	5.2
828	12/11	0	40	36.3	-30.865	-92.844	SOUTHEAST CENTRAL PACIFIC OCEAN	10	74.506	5.2
829	12/11	7	18	41.4	-13.912	167.188	VANUATU ISLANDS	203	89.461	5.0
830	12/11	10	15	45.1	-31.923	-71.792	NEAR COAST OF CENTRAL CHILE	61	67.718	4.7
831	12/11	11	49	25.6	-5.524	131.137	BANDA SEA	65	85.438	5.2
832	12/11	14	38	6.5	-17.715	-178.793	FIJI ISLANDS REGION	558	89.260	5.1
833	12/11	18	3	36.4	15.766	119.740	LUZON, PHILIPPINE ISLANDS	33	101.100	6.5
834	12/11	21	27	55.9	-7.369	128.519	BANDA SEA	135	82.788	4.7
835	12/11	23	29	20.5	2.435	124.546	CELEBES SEA	277	90.441	4.9
836	12/12	1	50	41.2	-1.041	127.338	HALMAHERA, INDONESIA	33	88.223	5.0
837	12/12	16	21	41.1	-13.793	-76.206	NEAR COAST OF PERU	44	86.063	4.6
838	12/12	17	28	7.6	-22.414	-12.582	SOUTHERN MID-ATLANTIC RIDGE	10	56.074	5.3
839	12/12	17	37	6.8	-29.009	-69.465	CHILE-ARGENTINA BORDER REGION	113	69.696	4.6
840	12/12	19	32	44.6	-22.366	-12.704	SOUTHERN MID-ATLANTIC RIDGE	10	56.158	4.8
841	12/12	23	24	18.3	-2.889	128.155	CERAM SEA	33	86.805	5.5
842	12/13	9	30	39.6	2.077	127.115	NORTHERN MOLUCCA SEA	85	91.033	5.8
843	12/13	22	40	13.9	-0.138	125.119	SOUTHERN MOLUCCA SEA	66	88.262	5.5
844	12/14	9	24	8.9	-3.303	142.971	NEAR N COAST OF NEW GUINEA, P.N.G.	33	91.710	5.2
845	12/15	4	41	12.3	-5.786	150.974	NEW BRITAIN REGION, P.N.G.	33	92.137	5.6
846	12/16	7	33	55.0	-5.812	151.262	NEW BRITAIN REGION, P.N.G.	33	92.208	5.3
847	12/16	10	36	17.6	-28.939	-13.342	SOUTHERN MID-ATLANTIC RIDGE	10	50.252	5.5
848	12/16	11	28	28.5	-29.102	-13.203	SOUTHERN MID-ATLANTIC RIDGE	10	50.056	4.6
849	12/16	11	53	58.2	-28.975	-13.070	SOUTHERN MID-ATLANTIC RIDGE	10	50.130	4.6
850	12/16	14	17	54.7	-50.149	138.989	SOUTH OF AUSTRALIA	10	47.443	5.4
851	12/17	0	27	28.8	-50.260	139.423	SOUTH OF AUSTRALIA	10	47.480	5.4
852	12/17	4	3	27.8	8.069	-38.026	CENTRAL MID-ATLANTIC RIDGE	10	93.071	5.5
853	12/17	7	58	1.5	-8.407	125.186	TIMOR REGION, INDONESIA	33	80.626	5.0
854	12/17	12	38	1.5	1.229	122.740	MINAHASSA PENINSULA, SULAWESI	40	88.676	5.2
855	12/17	18	22	56.0	-49.522	123.088	SOUTH OF AUSTRALIA	10	42.765	4.5
856	12/18	0	50	34.8	7.142	94.311	NICOBAR ISLANDS, INDIA	33	84.762	5.0
857	12/18	3	41	32.8	-28.705	-177.464	KERMADEC ISLANDS REGION	54	78.864	4.8

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858	12/18	17	44	55.1	-2.425	139.675	NEAR NORTH COAST OF IRIAN JAYA	16	91.365	6.0
859	12/19	3	38	32.2	-3.986	131.331	IRIAN JAYA REGION, INDONESIA	33	86.933	5.7
860	12/19	12	15	6.0	-4.548	151.102	NEW BRITAIN REGION, P.N.G.	33	93.338	5.2
861	12/19	12	19	25.9	-4.579	151.234	NEW BRITAIN REGION, P.N.G.	33	93.353	5.3
862	12/19	20	45	49.2	-8.937	123.092	FLORES REGION, INDONESIA	73	79.382	4.4
863	12/20	6	25	28.3	-7.865	122.909	FLORES SEA	219	80.308	4.9
864	12/20	9	35	30.7	-15.476	-72.611	SOUTHERN PERU	109	83.334	5.1
865	12/20	18	27	29.4	-55.654	-26.404	SOUTH SANDWICH ISLANDS REGION	33	31.613	5.2
866	12/20	21	12	10.5	-36.898	-73.226	NEAR COAST OF CENTRAL CHILE	33	63.535	4.9
867	12/21	11	0	48.8	55.830	110.029	LAKE BAYKAL REGION, RUSSIA	10	134.595	5.5
868	12/21	11	21	54.2	-21.138	-68.196	CHILE-BOLIVIA BORDER REGION	139	76.604	4.3
869	12/21	11	26	44.7	-45.530	166.200	OFF W. COAST OF S. ISLAND, N.Z.	20	59.173	4.5
870	12/21	14	14	57.6	-6.845	105.555	SUNDA STRAIT	56	75.157	6.2
871	12/22	11	17	27.1	31.969	131.583	KYUSHU, JAPAN	42	120.142	5.1
872	12/22	12	11	27.6	-54.345	1.974	BOUVET ISLAND REGION	10	22.582	5.1
873	12/22	13	32	37.5	-10.885	165.457	SANTA CRUZ ISLANDS	33	91.853	5.6
874	12/22	18	58	47.5	-17.537	-178.434	FIJI ISLANDS REGION	578	89.509	4.4
875	12/23	6	1	17.8	-22.462	171.639	LOYALTY ISLANDS REGION	108	82.464	5.2
876	12/23	11	23	33.2	-27.681	-176.628	KERMADEC ISLANDS REGION	33	80.021	4.8
877	12/24	2	21	51.7	-14.474	-74.274	CENTRAL PERU	104	84.809	4.4
878	12/24	10	16	38.7	-31.984	-179.728	KERMADEC ISLANDS REGION	186	75.235	4.8
879	12/24	10	45	46.3	-29.917	-177.950	KERMADEC ISLANDS, NEW ZEALAND	33	77.592	4.7
880	12/24	19	26	4.9	-56.211	146.723	WEST OF MACQUARIE ISLAND	10	44.410	5.6
881	12/24	20	17	27.1	-56.347	146.826	WEST OF MACQUARIE ISLAND	10	44.319	4.6
882	12/24	22	35	38.6	-56.369	147.056	WEST OF MACQUARIE ISLAND	10	44.363	5.5
883	12/25	1	2	11.4	-32.270	-178.210	SOUTH OF KERMADEC ISLANDS	33	75.257	4.9
884	12/25	7	52	27.7	-12.916	-14.503	SOUTHERN MID-ATLANTIC RIDGE	10	65.594	5.0
885	12/25	18	19	30.4	-6.130	-75.271	NORTHERN PERU	27	92.963	5.8
886	12/25	18	38	50.5	-27.992	-176.792	KERMADEC ISLANDS REGION	33	79.687	5.8
887	12/25	19	47	4.6	-52.189	139.996	WEST OF MACQUARIE ISLAND	10	45.969	4.5
888	12/26	8	44	14.7	-21.531	-68.772	CHILE-BOLIVIA BORDER REGION	93	76.427	4.4
889	12/26	11	8	25.9	-5.590	146.334	EASTERN NEW GUINEA REGION, P.N.G.	33	90.747	4.4
890	12/26	18	37	20.4	-14.084	-72.774	CENTRAL PERU	91	84.691	4.9
891	12/26	21	57	8.4	-41.088	85.427	SOUTHEAST INDIAN RIDGE	10	36.823	5.0
892	12/27	15	47	18.3	-31.486	-178.599	KERMADEC ISLANDS REGION	33	75.942	5.2
893	12/27	22	46	59.0	-31.094	-71.127	NEAR COAST OF CENTRAL CHILE	55	68.282	4.8
894	12/27	23	35	30.3	-10.521	-70.877	PERU-BRAZIL BORDER REGION	588	87.402	4.4
895	12/28	4	6	1.7	-49.660	-115.160	SOUTHERN EAST PACIFIC RISE	10	60.182	4.8
896	12/28	7	30	33.9	-7.711	67.773	MID-INDIAN RIDGE	10	63.953	5.0
897	12/28	10	6	11.1	-21.015	-179.032	FIJI ISLANDS REGION	623	86.010	4.5
898	12/28	12	24	48.0	-7.817	67.851	MID-INDIAN RIDGE	10	63.865	4.8

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899	12/28	16	51	24.5	1.674	128.288	HALMAHERA, INDONESIA	66	91.081	5.6
900	12/28	19	15	36.9	-30.353	-178.051	KERMADEC ISLANDS, NEW ZEALAND	33	77.149	5.0
901	12/28	20	25	7.3	49.301	155.560	KURIL ISLANDS	33	143.947	5.1
902	12/29	23	56	6.7	-11.150	165.543	SANTA CRUZ ISLANDS	33	91.625	5.3
903	12/29	5	19	46.9	18.244	-101.432	GUERRERO, MEXICO	70	123.812	6.1
904	12/29	11	7	12.2	-21.891	-68.888	CHILE-BOLIVIA BORDER REGION	99	76.130	4.2
905	12/29	12	58	8.4	-23.809	-67.664	CHILE-ARGENTINA BORDER REGION	134	73.944	5.6
906	12/29	13	29	19.6	-10.860	165.354	SANTA CRUZ ISLANDS	33	91.847	5.6
907	12/29	15	17	21.8	-0.446	99.634	SOUTHERN SUMATERA, INDONESIA	80	79.215	5.3
908	12/29	20	59	31.4	-11.210	165.321	SANTA CRUZ ISLANDS	33	91.505	5.3
909	12/29	21	36	37.2	-10.938	165.258	SANTA CRUZ ISLANDS	33	91.745	5.2
910	12/29	22	53	57.1	-11.165	165.330	SANTA CRUZ ISLANDS	33	91.550	5.5
911	12/30	0	11	49.1	52.152	159.199	OFF EAST COAST OF KAMCHATKA	60	147.609	5.1
912	12/30	8	39	12.8	-11.075	165.235	SANTA CRUZ ISLANDS	33	91.608	5.0
913	12/30	22	31	17.4	1.851	127.085	HALMAHERA, INDONESIA	91	90.812	5.2
914	12/31	13	9	11.6	37.269	134.664	SEA OF JAPAN	371	126.008	5.0

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