The Interplanetary Network Supplement to the BeppoSAX Gamma-Ray Burst Catalogs

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1. Introduction

Between 1996 July and 2002 April, the Wide Field X-Ray Camera (WFC) and Gamma-Ray Burst Monitor (GRBM) aboard the *BeppoSAX* mission detected 62 and 1092 cosmic gamma-ray bursts, respectively, and localized many of them to accuracies which ranged from arcminutes to tens of degrees (Vetere et al. 2007; Frontera et al. 2009; instrument descriptions may be found in Feroci et al. 1977, Frontera et al. 1997, and Jager et al. 1997). These detections were used to initiate searches through the data of the spacecraft comprising the interplanetary network (IPN). In 475 cases localizations could be obtained by triangulation, and successful multiwavelength counterpart searches were initiated for some of them. The IPN contained between 4 and 6 spacecraft during this period. They were, in addition to *BeppoSAX* : *Ulysses,* in heliocentric orbit at distances between 670 and 3180 light-seconds from Earth (Hurley et al. 1992); *Konus-Wind* , in various orbits up to around 4 light-seconds from Earth (Aptekar et al. 1995); *HETE-II - FREGATE* , in low Earth orbit (Ricker et al. 2003; Atteia et al. 2003); the *Near-Earth Asteroid Rendezvous* mission (NEAR), at distances up to 1300 light-seconds from Earth (Trombka et al. 1999); *Mars Odyssey*, launched in 2001 April and in orbit around Mars starting in 2001 October, up to 1250 light-seconds from Earth (Hurley et al. 2006a); the *Compton Gamma-Ray Observatory* (the Burst and Transient Source Experiment, BATSE - Fishman et al. 1992); and the *Ramaty High Energy Solar Spectroscopic Imager* (RHESSI) both in low Earth orbit (Smith et al. 2002). Their timelines are presented in figure 1. In this paper, we present the localization data obtained by the IPN for these bursts.

At least three other spacecraft recorded GRB detections during this period, although they were not used for triangulation and therefore were not, strictly speaking, part of the

IPN. The *Rossi X-Ray Timing Explorer* (RXTE) All Sky Monitor detected and localized some *BeppoSAX* bursts (Smith et al. 1999). It operated in the low energy X-ray range, where the light curves of gamma-ray bursts differ significantly from the high energy range where the other IPN instruments operate. The *Defense Meteorological Satellite Program* (DMSP) (Terrell et al. 1996, 1998; Terrell and Klebesadel 2004) and the *Stretched Rohini Satellite Series* (SROSS) (Marar et al. 1994) spacecraft also detected, but did not localize bursts. As they were in low Earth orbit, they were at distances of several tens of light-milliseconds from *BeppoSAX* , and their data was redundant as far as triangulation was concerned.

2. Observations

For each gamma-ray burst detected by *BeppoSAX* , a search was initiated in the data of the IPN spacecraft. For the spacecraft within a few light-seconds of Earth, the search window was centered on the *BeppoSAX* trigger time, and its duration was somewhat greater than the event duration. For the spacecraft at interplanetary distances, the search window was twice the light-travel time to the spacecraft if the event arrival direction was unknown, which was the case for most events. If the arrival direction was known, even coarsely, the search window was defined by calculating the expected arrival time at the spacecraft, and searching in a window around it. Of the approximately 3300 events detected by one or more IPN spacecraft while *BeppoSAX* was operational, 786 were also detected by *BeppoSAX* ; these are listed in table 1, with the following abbreviations: DMS: *Defense Meteorological Satellite Program*, HET: *HETE-II*, Kon: *Konus-Wind*, MO: *Mars Odyssey*, NEA: *Near Earth Asteroid Rendezvous* mission, RHE: *Ramaty High Energy Solar Spectroscopic Imager*, SRS: *Stretched Rohini Satellite Series*, Uly: *Ulysses*, XTE: *Rossi X-Ray Timing Explorer*. The burst designation in table 1 follows that of Frontera et al. (2009) or Vetere et al.

(2007), and in some cases it differs from designations in other catalogs. Table 2 shows the number of events observed by each spacecraft in the IPN, and table 3 gives the number of bursts that were detected by a total of N spacecraft, where N is between 2 and 6. In these tables, detections by RXTE, DMSP, and SROSS have been counted for completeness.

3. Localizations

When a GRB arrives at two spacecraft with a delay δT, it may be localized to an annulus whose half-angle θ with respect to the vector joining the two spacecraft is given by

$$cos\theta = \frac{c\delta T}{D} \tag{1}$$

where c is the speed of light and D is the distance between the two spacecraft. (This assumes that the burst is a plane wave, i.e. that its distance is much greater than D.) The annulus width dθ, is

$$d\theta = \mathrm{c}\sigma(\delta\mathrm{T})/\mathrm{Dsin}\theta \tag{2}$$

where $\sigma(\delta\mathrm{T})$ is the uncertainty in the time delay. $\sigma(\delta\mathrm{T})$ is generally of the order of 100 ms or more, when both statistical and systematic uncertainties are considered; thus triangulation between two near-Earth spacecraft, for which D/c is at most $\sim$40 ms, does not constrain the burst arrival direction significantly. When D/c is of the order of several light-seconds (e.g., the distance between *Konus-Wind* and a near-Earth spacecraft), annuli with widths of several degrees or less can be obtained; when D/c is several hundred light-seconds or more (i.e. an interplanetary spacecraft and a near-Earth spacecraft), annulus widths of the order of arcminutes or less are possible. When two interplanetary spacecraft and a near-Earth spacecraft observe a GRB, a small error box can be obtained. Table 4 gives the number of events observed by 0, 1, and 2 interplanetary spacecraft.

475 bursts could be localized by the method above; table 5 gives the localization

information for them. Triangulation annuli are given in the 4 IPN columns: these are the right ascension and declination of the annulus center α, δ, the annulus radius R, and the uncertainty in the radius δR. One or two annuli are specified. In addition to triangulation annuli, several other types of localization information are included in this catalog. The 3 BATSE columns give the right ascension, declination, and 1 σ (statistical only) error radius of the BATSE localizations, where they are available. These are taken from the current catalog on the BATSE website (http://www.batse.msfc.nasa.gov/batse/grb/catalog/current/), as well as from the BATSE untriggered burst catalogs (Stern et al. 2001; Kommers et al. 2000). 3 SAX columns give the right ascension, declination, and 90 % confidence radius of the *BeppoSAX* localization, either from the GRBM or the WFC catalog (Frontera et al. 2009; Vetere et al. 2007). As the Vetere et al. (2007) catalog does not contain error radii for the WFC bursts, these have been obtained from the IAU and GCN Circulars. Although all the bursts in table 5 were detected by *BeppoSAX* , not all of them could be localized by the WFC or GRBM. The 3 HETE columns give the right ascension, declination, and radius of the Wide Field X-Ray Monitor error circle (Vanderspek et al. 2010). Combining these error circles with the IPN annuli often results in smaller error regions. IPN localizations for almost all bursts with a BATSE or HETE error circle have appeared in a previous catalog and are repeated here only for completeness.

The two Ecliptic columns give the ecliptic latitudes of the bursts, measured northward (positive) from the ecliptic plane towards the north ecliptic pole. These are derived by comparing the count rates of the two *Konus-Wind* detectors (Aptekar et al. 1995). The axis of one detector points towards the north ecliptic pole, and the axis of the other points towards the south ecliptic pole. In addition to statistical uncertainties, the ecliptic latitude determination is subject to systematic uncertainties due to, among other things, time-variable cosmic X-ray sources and absorption by other instruments aboard the spinning *Wind* spacecraft. The numbers given here can be taken to be at the 90 – 95% confidence

level. Planet-blocking is specified by the right ascension and declination of the planet's center and its radius, in the 3 Planet columns. When a spacecraft in low Earth or Mars orbit observes a burst, the planet blocks up to ≈ 3.7 sr of the sky. This is often useful for deciding which of two annulus intersections is the correct one, or for eliminating portions of a single annulus. The Other column gives the right ascension, declination, and radius of any other localization region, which may be obtained in one of several ways. In some cases, the burst was observed by four spacecraft which were separated by large enough distances to give 3 triangulation annuli, whose intersections are consistent with a single error box. In other cases, the anisotropic response of one of the IPN experiments allows the ambiguity to be resolved. In still other cases, a region may be derived from planet-blocking by a second spacecraft in addition to the data in the Planet column. In this case the error circle given is the complement of the planet-blocking circle, that is, a circle whose RA is the RA of the planet plus 180 degrees, whose declination is the negative of the planet's declination, and whose radius is 180 degrees minus the planet's angular radius. The units of the entries in table 5 are degrees, and all coordinates are J2000. The last column gives the approximate localization area in square degrees. This is the area of the region which is common to all the localizations. For bursts where the *BeppoSAX* or BATSE error circle does not intersect the IPN annulus, the area given is that of the annulus alone. Figures 2 and 3 show examples of coarse and fine IPN localizations.

For some events, no triangulation was possible, but coarse constraints on the burst arrival direction can be derived from planet-blocking, ecliptic latitudes, or both. This information is not given here, but information on these events, as well as the ones in this catalog, may be found at the IPN website: ssl.berkeley.edu/ipn3/index.html .

As for BATSE, the *BeppoSAX* GRBM localizations are derived by comparing the count rates of various detectors aboard these spacecraft. These localizations are affected by Earth

albedo and absorption by spacecraft materials, among other things, and their shapes are in general complex. The error circles are approximations to these shapes. They are centered at the point which is the most likely arrival direction for the burst, and their radii are defined so that their areas are equal to the 1 σ (BATSE) or 90 % confidence (*BeppoSAX* GRBM) statistical-only true error regions. Therefore in some cases, indicated by a footnote, the IPN annuli do not cross the error circles. This occurs for 25 of the 133 *BeppoSAX* GRBM localizations in this catalog. We have examined the true *BeppoSAX* error regions in all of these cases and have verified that they are indeed consistent with the IPN annuli. In some of these cases, an error circle has been defined in the "Other" column which limits the IPN annulus or annuli to a region which, from a consideration of all the available data, is known to define the arrival direction. Thus for those bursts where the GRBM error circle does not intersect the IPN annulus, the "Other" circle should be used in place of the GRBM circle.

4. Comments on specific events

GRB960916B at 03:56:20 may be the same event as GRB960916A in the *BeppoSAX* catalog (Frontera et al. 2009). GRB960916A occurred 312 s earlier, at 03:51:08, and it was detected by *Konus-Wind* , but not by *Ulysses* . This non-detection is consistent with the fact that the earlier event was weaker. The *Konus* ecliptic latitudes for these two events are consistent with a single origin, i.e. a very long burst.

GRB970315B at 22:09:19 may be from the same source as BATSE 6125 at 22:13:42 (http://www.batse.msfc.nasa.gov/batse/grb/catalog/current/). The IPN annulus passes through the BATSE error circle, and the duration of the BATSE event is given as 1307 s. BeppoSAX entered the SAA at 22:10:09, so it could not observe the BATSE event, and the BATSE position of the event was Earth-occulted to BATSE at the time of the BeppoSAX event. If these are indeed from a single source, the total duration would have been around

1570 s. *Ulysses* did not observe any emission which would be consistent with the BATSE burst, but this is consistent with its lower intensity.

GRB970415 was observed as a very weak event by *Ulysses* , and reliable triangulation of it is not possible.

GRB970518 has a duration of approximately 370 s. The GRBM observed only the later part of the event, at 07:12:12. However, the burst started at 07:06:23, and this is the time given in tables 1, 5, and 6.

GRB971228B at 14:53:52, GRB990516A at 20:55:15, and GRB990905 at 22:38:55 were observed as very weak events by *Ulysses* , and reliable triangulation of them is not possible.

GRB991026B has an IPN localization which is inconsistent with the final *BeppoSAX* WFC localization in Vetere et al. (2007). The minimum distance between the IPN annulus and the WFC position is about 4.8 degrees (no uncertainty is given for the WFC localization). The WFC position given in Table 5 is from in't Zand (private communication, 2004), and is consistent with the IPN localization.

GRB991030 has an IPN localization which is inconsistent with the *BeppoSAX* WFC localization in Vetere et al. (2007). The minimum distance between the IPN annulus and the WFC position is about 5.9 degrees (no uncertainty is given for the WFC localization). The WFC position given in Table 5 is from in't Zand (private communication, 2004), and is consistent with the IPN localization.

GRB000629B does not appear in the *BeppoSAX* catalog, because it was initially thought to be solar. Analysis of the Konus-Wind data, however, points to a likely cosmic origin.

GRB011221 triggered the GRBM just prior to entry into the South Atlantic Anomaly. All GRBM data were lost, and this burst does not appear in the *BeppoSAX* catalog.

5. Conclusions

This is the tenth in a continuing series of IPN catalogs, summarized in table 6; the localization data for all of them can be found in electronic form at the IPN website. The IPN is, in effect, a full-time, all-sky monitor, when the duty cycles and viewing constraints of all its instruments are considered. Its fluence and flux thresholds for 50% detection efficiency are about 6×10^{-7}erg cm^{-2} and 1 photon cm^{-2} s^{-1}, respectively. Over the *BeppoSAX* mission, 786 bursts were detected by the GRBM and/or the WFC and at least one other IPN instrument and 475 of them could be localized to some extent by triangulation. The more precise and/or rapid localizations were announced in over 50 IAU and GCN Circulars (in 1997, and in 1998 – 2002, respectively), resulting in multiwavelength counterpart searches. Regardless of the precision and speed of the localizations, however, burst data such as these are useful for numerous studies, such as searching for indications of activity from previously unknown soft gamma repeaters, associating supernovae with bursts, or searching for neutrino and gravitational radiation associated with bursts.

6. Acknowledgments

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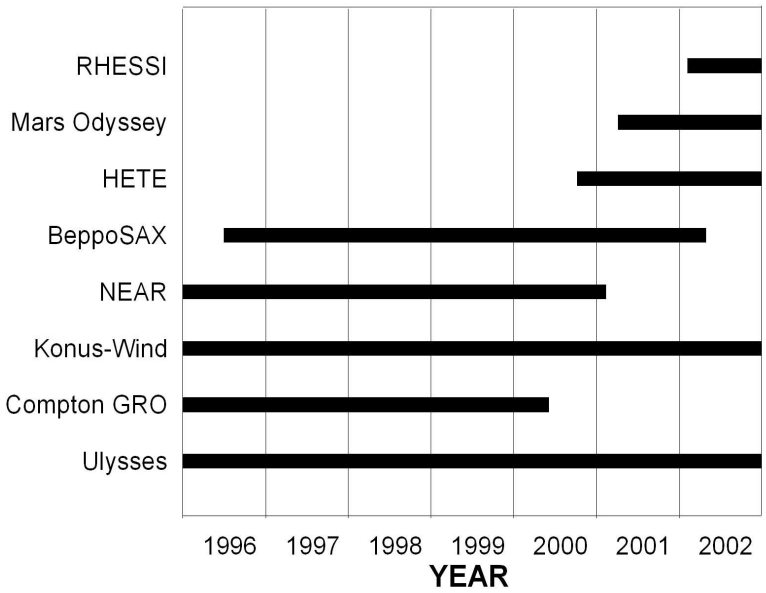

Fig. 1.— The timelines of the missions comprising the interplanetary network between 1996 and 2002. During the period when *BeppoSAX* was operational, there were a minimum of 3 and a maximum of 5 other missions in the network. There were two interplanetary spacecraft in operation for most of the *BeppoSAX* mission, *Ulysses* and either NEAR or *Odyssey* .

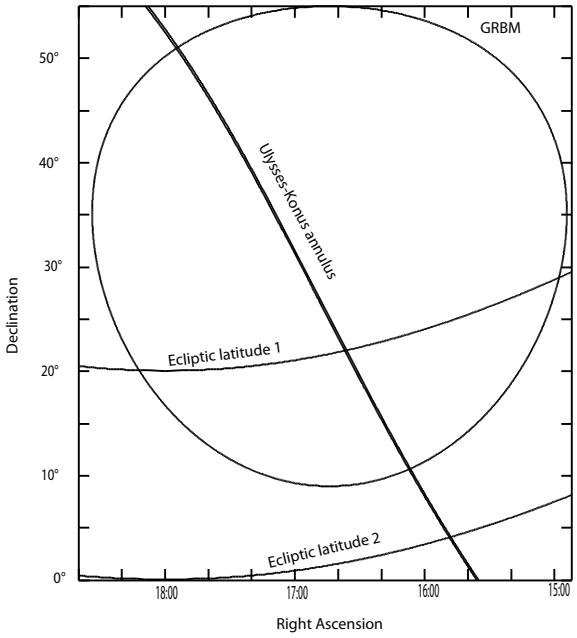

Fig. 2.— Localizations of GRB970203. The arrival direction is defined by the intersection of the 33 degree radius GRBM error circle, the 0.16 degree wide IPN annulus, and the 20 degree wide Konus ecliptic latitude band.

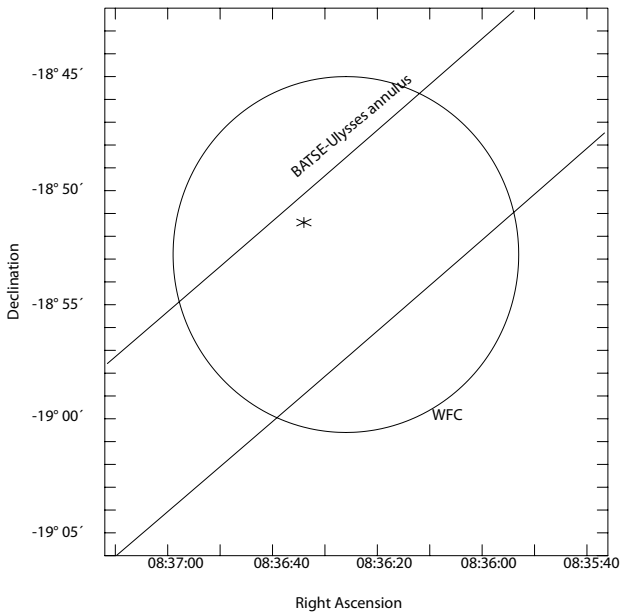

Fig. 3.— Localizations of GRB980326. The arrival direction is defined by the intersection of the 0.133 degree radius WFC error circle and the .092 degree wide BATSE-Ulysses annulus. The initial WFC and IPN localizations were announced in Celidonio et al. (1998) and Hurley et al. (1998). The optical counterpart, indicated by an asterisk, was found by Groot et al. (1998).

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Table 1. IPN/*BeppoSAX* gamma-ray bursts

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB960703A	1996 Jul 03	07:39:48	Kon
GRB960703B	1996 Jul 03	13:42:53	Uly,BAT,Kon
GRB960703C	1996 Jul 03	18:10:40	BAT,Kon,SRS
GRB960707A	1996 Jul 07	10:16:40	Uly,BAT,Kon
GRB960707B	1996 Jul 07	16:26:04	BAT
GRB960720	1996 Jul 20	11:36:53	BAT,Kon
GRB960723A	1996 Jul 23	04:46:01	BAT,Kon
GRB960725	1996 Jul 25	17:39:07	BAT
GRB960730	1996 Jul 30	19:35:08	BAT,Kon
GRB960731	1996 Jul 31	05:46:01	Uly,BAT,Kon
GRB960801A	1996 Aug 01	11:29:09	Uly,Kon
GRB960802	1996 Aug 02	22:06:59	BAT
GRB960805A	1996 Aug 05	21:29:07	BAT
GRB960805B	1996 Aug 05	21:55:57	Uly,DMS,Kon
GRB960806	1996 Aug 06	22:28:29	BAT,Kon
GRB960810A	1996 Aug 10	06:49:31	BAT,Kon
GRB960810B	1996 Aug 10	06:56:16	Uly,Kon
GRB960824	1996 Aug 24	01:43:24	BAT,Kon
GRB960825	1996 Aug 25	00:23:03	Uly,Kon
GRB960909	1996 Sep 09	20:40:42	BAT,Kon
GRB960912	1996 Sep 12	13:57:27	Uly,BAT,Kon
GRB960913	1996 Sep 13	23:05:20	Uly,BAT,Kon
GRB960916A	1996 Sep 16	03:56:20	Uly,Kon
GRB960916E	1996 Sep 16	23:48:20	BAT
GRB960917	1996 Sep 17	22:22:32	Uly,BAT,Kon
GRB960919	1996 Sep 19	22:28:00	BAT,Kon
GRB960921	1996 Sep 21	15:03:48	Uly,BAT,Kon
GRB960922A	1996 Sep 22	05:06:07	Uly,Kon
GRB960922B	1996 Sep 22	05:21:06	Uly
GRB960923	1996 Sep 23	00:38:17	BAT
GRB960927	1996 Sep 27	03:47:18	Uly,BAT,Kon
GRB960929	1996 Sep 29	06:36:22	Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB961004	1996 Oct 04	18:58:34	BAT
GRB961006	1996 Oct 06	08:56:04	Uly,BAT,Kon
GRB961008	1996 Oct 08	05:21:00	BAT
GRB961011	1996 Oct 11	19:32:15	Kon
GRB961015A	1996 Oct 15	10:36:45	Kon
GRB961015B	1996 Oct 15	11:53:00	Uly,Kon
GRB961022	1996 Oct 22	19:00:56	Uly,BAT,Kon
GRB961023	1996 Oct 23	02:09:07	BAT
GRB961026	1996 Oct 26	06:11:50	Uly,BAT,Kon
GRB961101	1996 Nov 01	16:07:43	Uly,Kon
GRB961106	1996 Nov 06	11:57:10	BAT
GRB961110	1996 Nov 10	07:29:37	BAT,Kon
GRB961120	1996 Nov 20	08:27:13	BAT
GRB961122	1996 Nov 22	21:51:04	Uly,Kon
GRB961125B	1996 Nov 25	07:39:37	BAT
GRB961126	1996 Nov 26	06:43:19	Uly,BAT,Kon
GRB961208B	1996 Dec 08	18:57:13	BAT
GRB961211	1996 Dec 11	01:56:12	Uly,BAT,Kon
GRB961220	1996 Dec 20	05:21:51	BAT,Kon
GRB961222	1996 Dec 22	12:00:08	BAT
GRB961224A	1996 Dec 24	10:11:03	BAT,Kon
GRB961224B	1996 Dec 24	17:41:48	BAT
GRB961228	1996 Dec 28	00:29:32	Uly,BAT,Kon
GRB970101	1997 Jan 01	06:22:51	BAT
GRB970108	1997 Jan 08	17:14:01	BAT
GRB970111	1997 Jan 11	09:44:00	Uly,BAT,DMS,Kon
GRB970116	1997 Jan 16	11:41:24	BAT
GRB970117A	1997 Jan 17	14:27:54	Kon
GRB970117B	1997 Jan 17	14:46:51	Uly,Kon
GRB970122	1997 Jan 22	11:41:25	Uly,Kon
GRB970123	1997 Jan 23	08:36:37	Uly,Kon
GRB970124	1997 Jan 24	12:19:07	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB970128	1997 Jan 28	23:35:09	Uly,Kon
GRB970131B	1997 Jan 31	21:46:11	BAT
GRB970203	1997 Feb 03	01:31:56	Uly,Kon
GRB970221A	1997 Feb 21	03:49:19	BAT
GRB970221B	1997 Feb 21	10:18:27	BAT,Kon
GRB970222	1997 Feb 22	23:53:28	Uly,Kon,SRS
GRB970223	1997 Feb 23	18:01:24	BAT
GRB970228	1997 Feb 28	02:58:01	Uly,Kon
GRB970302A	1997 Mar 02	12:56:17	BAT
GRB970302B	1997 Mar 02	18:42:25	BAT,Kon
GRB970306	1997 Mar 06	02:47:39	Uly,BAT,Kon
GRB970307	1997 Mar 07	19:29:06	Uly,Kon
GRB970311A	1997 Mar 11	08:24:27	BAT
GRB970313	1997 Mar 13	09:45:58	Uly,Kon
GRB970314	1997 Mar 14	04:01:12	Kon
GRB970315A	1997 Mar 15	15:40:54	Uly,BAT,DMS,Kon
GRB970315B	1997 Mar 15	22:09:19	Uly,BAT,Kon
GRB970317A	1997 Mar 17	00:29:19	BAT
GRB970317B	1997 Mar 17	23:20:27	BAT,Kon
GRB970326A	1997 Mar 26	08:16:13	BAT
GRB970326B	1997 Mar 26	18:03:17	Kon
GRB970330A	1997 Mar 30	08:58:52	Uly,BAT,Kon
GRB970330B	1997 Mar 30	12:13:11	Kon
GRB970402	1997 Apr 02	22:19:38	Uly,Kon
GRB970405A	1997 Apr 05	03:41:59	Uly,BAT,Kon
GRB970405B	1997 Apr 05	04:55:02	Kon
GRB970406A	1997 Apr 06	00:17:38	Uly,Kon
GRB970406B	1997 Apr 06	06:19:44	Uly,BAT
GRB970406C	1997 Apr 06	07:04:56	Uly,BAT,Kon
GRB970407	1997 Apr 07	11:55:54	BAT
GRB970415	1997 Apr 15	15:47:01	BAT
GRB970416	1997 Apr 16	23:13:58	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB970417A	1997 Apr 17	00:23:05	Uly,Kon
GRB970417B	1997 Apr 17	14:20:59	BAT
GRB970419	1997 Apr 19	06:12:14	Uly,BAT,Kon
GRB970420	1997 Apr 20	20:14:02	Uly,BAT,DMS
GRB970424B	1997 Apr 24	10:09:35	Uly,BAT,Kon
GRB970427	1997 Apr 27	12:41:59	BAT,Kon
GRB970429	1997 Apr 29	11:36:24	Uly,BAT,Kon
GRB970430	1997 Apr 30	19:18:38	BAT
GRB970506	1997 May 06	15:41:47	Uly,Kon
GRB970508	1997 May 08	21:41:47	Uly,BAT,Kon
GRB970509	1997 May 09	13:23:26	Uly,BAT,Kon
GRB970517A	1997 May 17	00:18:59	BAT
GRB970517B	1997 May 17	09:04:42	Uly,BAT,Kon
GRB970518	1997 May 18	07:06:23	Uly,Kon
GRB970525	1997 May 25	08:49:47	BAT
GRB970526	1997 May 26	01:52:42	BAT,Kon
GRB970527	1997 May 27	04:14:12	Kon
GRB970601	1997 Jun 01	19:19:14	Uly,Kon
GRB970603A	1997 Jun 03	09:49:05	Uly,BAT,Kon
GRB970603B	1997 Jun 03	23:35:00	Uly,BAT,Kon
GRB970604	1997 Jun 04	19:49:06	Kon
GRB970608	1997 Jun 08	13:37:13	Kon
GRB970609	1997 Jun 09	02:03:00	BAT
GRB970610	1997 Jun 10	10:04:14	BAT
GRB970611	1997 Jun 11	08:21:30	BAT,Kon
GRB970612A	1997 Jun 12	07:18:31	BAT
GRB970612B	1997 Jun 12	14:28:24	Uly,BAT,Kon
GRB970613	1997 Jun 13	05:23:31	BAT
GRB970614	1997 Jun 14	23:07:42	Uly,BAT,Kon
GRB970616	1997 Jun 16	18:09:50	Uly,BAT,Kon,XTE
GRB970617A	1997 Jun 17	17:04:26	BAT
GRB970619	1997 Jun 19	15:34:49	Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB970623	1997 Jun 23	05:23:21	BAT
GRB970624A	1997 Jun 24	05:45:05	Uly,Kon
GRB970624B	1997 Jun 24	06:30:06	Uly,Kon
GRB970625A	1997 Jun 25	06:34:42	Kon
GRB970625B	1997 Jun 25	12:13:06	Uly,Kon
GRB970626	1997 Jun 26	01:44:02	Kon
GRB970627A	1997 Jun 27	07:12:46	Uly,BAT
GRB970627B	1997 Jun 27	22:06:50	Uly,Kon
GRB970628A	1997 Jun 28	03:27:50	Uly,Kon
GRB970628B	1997 Jun 28	20:46:35	BAT
GRB970629	1997 Jun 29	14:16:39	Uly,BAT,Kon
GRB970701	1997 Jul 01	11:15:46	BAT
GRB970704	1997 Jul 04	01:08:16	Uly,BAT,Kon
GRB970705	1997 Jul 05	05:12:23	Kon
GRB970706	1997 Jul 06	21:39:57	Uly,Kon
GRB970709	1997 Jul 09	13:31:08	BAT
GRB970713A	1997 Jul 13	15:17:22	BAT
GRB970713B	1997 Jul 13	20:57:17	BAT
GRB970715	1997 Jul 15	14:21:11	Uly,DMS,Kon,SRS
GRB970718	1997 Jul 18	16:18:09	Kon
GRB970812	1997 Aug 12	03:39:21	Kon
GRB970815	1997 Aug 15	12:07:04	Uly,BAT,Kon,XTE
GRB970816	1997 Aug 16	02:17:44	Uly,BAT,Kon
GRB970817	1997 Aug 17	19:21:39	BAT
GRB970818	1997 Aug 18	18:07:07	BAT,Kon
GRB970820	1997 Aug 20	05:37:00	BAT,Kon
GRB970821	1997 Aug 21	10:59:23	Uly,Kon
GRB970824A	1997 Aug 24	17:23:14	BAT,Kon
GRB970824B	1997 Aug 24	18:34:44	Uly,Kon
GRB970825A	1997 Aug 25	11:17:14	BAT
GRB970825B	1997 Aug 25	22:02:59	Uly,BAT
GRB970827A	1997 Aug 27	07:11:41	BAT

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB970827B	1997 Aug 27	09:55:50	BAT,Kon
GRB970831	1997 Aug 31	17:39:30	Uly,BAT,Kon
GRB970903	1997 Sep 03	17:25:09	BAT
GRB970907	1997 Sep 07	06:29:21	BAT
GRB970910	1997 Sep 10	01:13:35	BAT
GRB970919A	1997 Sep 19	03:45:02	BAT
GRB970919B	1997 Sep 19	18:14:29	Uly,BAT,Kon,NEA
GRB970919C	1997 Sep 19	22:10:16	BAT,NEA
GRB970922B	1997 Sep 22	02:25:57	Uly,Kon,NEA
GRB970923	1997 Sep 23	11:39:20	Uly,Kon
GRB970924	1997 Sep 24	02:38:56	Kon
GRB970928	1997 Sep 28	02:21:47	BAT
GRB970930	1997 Sep 30	15:43:33	BAT
GRB971002	1997 Oct 02	17:41:38	BAT
GRB971005	1997 Oct 05	01:15:55	Uly,BAT,Kon
GRB971007	1997 Oct 07	15:56:02	BAT,Kon,NEA
GRB971009A	1997 Oct 09	08:13:59	BAT
GRB971009B	1997 Oct 09	18:56:55	Uly,BAT,DMS,Kon
GRB971011	1997 Oct 11	11:50:52	BAT
GRB971013	1997 Oct 13	23:57:08	BAT,Kon
GRB971014	1997 Oct 14	05:24:28	BAT
GRB971015	1997 Oct 15	03:49:42	BAT
GRB971019	1997 Oct 19	14:55:53	Uly,DMS,Kon
GRB971022A	1997 Oct 22	11:57:18	Uly,Kon
GRB971023A	1997 Oct 23	05:43:29	Kon
GRB971023B	1997 Oct 23	11:12:14	BAT
GRB971024A	1997 Oct 24	11:33:32	BAT,Kon,XTE
GRB971024B	1997 Oct 24	13:26:41	Kon
GRB971027A	1997 Oct 27	02:43:31	Uly,BAT
GRB971028	1997 Oct 28	20:52:06	BAT
GRB971029	1997 Oct 29	01:28:38	Uly,BAT,DMS,Kon,NEA
GRB971102A	1997 Nov 02	01:33:01	BAT

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB971102B	1997 Nov 02	01:49:46	Kon
GRB971103	1997 Nov 03	07:31:30	BAT
GRB971110	1997 Nov 10	18:53:26	Uly,BAT,DMS,Kon,NEA
GRB971114	1997 Nov 14	12:21:04	Uly,Kon
GRB971118	1997 Nov 18	20:43:11	Kon
GRB971127	1997 Nov 27	00:04:42	Uly,BAT,DMS,Kon,NEA
GRB971206A	1997 Dec 06	12:51:17	BAT
GRB971206B	1997 Dec 06	19:20:52	BAT,Kon
GRB971207A	1997 Dec 07	20:03:52	Uly,BAT,DMS,NEA
GRB971207B	1997 Dec 07	20:58:12	Uly,BAT
GRB971208A	1997 Dec 08	04:47:12	Uly,Kon
GRB971208B	1997 Dec 08	07:48:12	Uly,BAT,Kon,NEA
GRB971210	1997 Dec 10	07:43:33	Uly,BAT,Kon
GRB971212	1997 Dec 12	22:17:26	BAT
GRB971214B	1997 Dec 14	23:20:41	Uly,BAT,Kon,NEA,XTE
GRB971216	1997 Dec 16	15:13:46	Uly,Kon
GRB971218	1997 Dec 18	12:42:44	Kon
GRB971219B	1997 Dec 19	22:12:54	Uly,Kon
GRB971220	1997 Dec 20	04:06:33	BAT,Kon,NEA
GRB971223A	1997 Dec 23	00:38:04	BAT,Kon
GRB971223B	1997 Dec 23	09:35:00	Kon
GRB971223C	1997 Dec 23	10:36:21	Uly,Kon
GRB971227	1997 Dec 27	08:23:06	Uly,BAT,Kon
GRB971228B	1997 Dec 28	14:53:25	Uly,BAT,Kon
GRB971229	1997 Dec 29	10:11:33	BAT,Kon
GRB971230	1997 Dec 30	23:15:47	Kon,NEA
GRB980101	1998 Jan 01	03:27:23	BAT,Kon
GRB980102	1998 Jan 02	19:31:50	Kon
GRB980103A	1998 Jan 03	10:38:42	Uly,BAT,Kon,NEA
GRB980103B	1998 Jan 03	16:01:11	BAT
GRB980105	1998 Jan 05	00:44:41	Uly,BAT,NEA
GRB980109	1998 Jan 09	01:12:25	Uly,BAT,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB980124A	1998 Jan 24	06:36:03	Uly,BAT,DMS,Kon,NEA
GRB980124B	1998 Jan 24	20:56:38	BAT
GRB980127	1998 Jan 27	00:58:52	Uly,Kon
GRB980129	1998 Jan 29	15:19:43	Uly,BAT,Kon
GRB980203A	1998 Feb 03	14:21:06	Uly,Kon
GRB980203B	1998 Feb 03	22:44:24	Uly,Kon
GRB980205	1998 Feb 05	05:29:44	Uly,BAT,Kon,NEA
GRB980208A	1998 Feb 08	12:33:23	BAT,Kon
GRB980208B	1998 Feb 08	12:50:59	Uly,BAT,Kon
GRB980222	1998 Feb 22	02:25:34	Uly,BAT,Kon
GRB980223	1998 Feb 23	21:17:22	BAT
GRB980224	1998 Feb 24	20:54:14	Kon
GRB980226	1998 Feb 26	11:28:54	BAT
GRB980228	1998 Feb 28	23:11:39	Uly,Kon
GRB980304	1998 Mar 04	14:41:04	BAT,Kon
GRB980306B	1998 Mar 06	09:33:02	Uly,BAT,Kon
GRB980306C	1998 Mar 06	17:34:11	Uly,BAT,Kon
GRB980308	1998 Mar 08	14:24:48	Kon
GRB980310A	1998 Mar 10	13:57:41	Uly,BAT,Kon
GRB980310B	1998 Mar 10	15:50:47	Kon
GRB980313	1998 Mar 13	09:04:22	BAT
GRB980315A	1998 Mar 15	02:49:57	BAT
GRB980315B	1998 Mar 15	07:24:00	Uly,BAT,Kon
GRB980321	1998 Mar 21	06:06:11	Uly,BAT
GRB980326	1998 Mar 26	21:18:53	Uly,BAT,Kon
GRB980329A	1998 Mar 29	03:44:38	Uly,BAT,Kon
GRB980329B	1998 Mar 29	15:24:47	BAT
GRB980330	1998 Mar 30	00:01:33	BAT,Kon
GRB980401A	1998 Apr 01	04:31:53	Uly,BAT,Kon
GRB980401B	1998 Apr 01	09:11:02	BAT
GRB980401C	1998 Apr 01	12:46:24	BAT
GRB980403	1998 Apr 03	23:15:51	Uly,BAT,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB980404	1998 Apr 04	18:54:50	BAT
GRB980406A	1998 Apr 06	16:12:53	Kon
GRB980406B	1998 Apr 06	17:14:05	Kon
GRB980409	1998 Apr 09	02:08:32	Uly,BAT,Kon
GRB980420	1998 Apr 20	10:06:52	Uly,BAT,Kon
GRB980421	1998 Apr 21	22:44:01	BAT
GRB980424	1998 Apr 24	01:32:03	BAT
GRB980425B	1998 Apr 25	21:49:08	Uly,BAT,Kon
GRB980426	1998 Apr 26	10:49:18	BAT
GRB980428	1998 Apr 28	20:10:08	Uly,Kon
GRB980508	1998 May 08	04:07:28	Uly,BAT,Kon
GRB980511	1998 May 11	01:55:28	BAT
GRB980513	1998 May 13	21:41:25	BAT
GRB980515	1998 May 15	17:00:20	Kon
GRB980516	1998 May 16	11:23:37	Uly,Kon
GRB980518A	1998 May 18	18:44:48	BAT
GRB980519A	1998 May 19	03:43:32	Uly,Kon
GRB980519B	1998 May 19	12:20:12	Uly,BAT,Kon
GRB980520B	1998 May 20	14:26:42	BAT
GRB980520C	1998 May 20	19:12:15	Uly,BAT
GRB980523	1998 May 23	02:23:32	Uly,Kon
GRB980525	1998 May 25	02:34:47	BAT
GRB980527	1998 May 27	08:21:59	BAT
GRB980531	1998 May 31	07:42:42	Uly,Kon
GRB980605	1998 Jun 05	14:12:10	BAT,Kon
GRB980610	1998 Jun 10	19:52:28	Kon
GRB980613	1998 Jun 13	04:51:06	BAT
GRB980615B	1998 Jun 15	10:12:16	Uly,Kon
GRB980616	1998 Jun 16	13:28:55	Uly,BAT,Kon
GRB980617	1998 Jun 17	02:51:51	Uly,BAT,Kon
GRB980619	1998 Jun 19	13:12:12	Kon
GRB980622	1998 Jun 22	20:21:39	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB980624	1998 Jun 24	16:07:53	Kon
GRB980625	1998 Jun 25	13:47:40	Kon
GRB980626A	1998 Jun 26	14:21:30	Uly,Kon
GRB980626B	1998 Jun 26	22:39:46	Uly,BAT,Kon
GRB980627A	1998 Jun 27	04:20:29	Uly,BAT,Kon
GRB980627B	1998 Jun 27	12:36:35	Uly,BAT,Kon
GRB980629	1998 Jun 29	01:34:01	BAT,Kon
GRB980705	1998 Jul 05	06:26:05	BAT
GRB980706A	1998 Jul 06	15:37:57	BAT,Kon
GRB980706B	1998 Jul 06	15:59:47	Uly,BAT,DMS,Kon,XTE
GRB980706C	1998 Jul 06	17:46:27	BAT,Kon
GRB980706D	1998 Jul 06	21:40:38	Uly,Kon
GRB980709A	1998 Jul 09	04:42:52	BAT
GRB980709B	1998 Jul 09	05:40:07	Kon
GRB980712A	1998 Jul 12	05:09:43	BAT
GRB980712B	1998 Jul 12	06:04:00	BAT
GRB980713	1998 Jul 13	03:41:44	BAT,Kon
GRB980715	1998 Jul 15	09:48:05	BAT
GRB980718	1998 Jul 18	01:10:38	Kon
GRB980720	1998 Jul 20	22:16:07	Uly,Kon
GRB980724	1998 Jul 24	12:28:18	BAT
GRB980728	1998 Jul 28	08:48:35	Uly,Kon
GRB980802A	1998 Aug 02	04:30:54	BAT
GRB980802B	1998 Aug 02	08:01:15	Uly,BAT,Kon
GRB980805	1998 Aug 05	13:37:04	BAT
GRB980808A	1998 Aug 08	07:50:41	BAT,Kon
GRB980808B	1998 Aug 08	21:53:11	BAT
GRB980810A	1998 Aug 10	04:25:45	BAT
GRB980810B	1998 Aug 10	18:35:29	Uly,BAT,DMS,Kon
GRB980811	1998 Aug 11	06:45:08	Uly,BAT,Kon
GRB980812A	1998 Aug 12	04:54:06	BAT
GRB980812B	1998 Aug 12	05:16:08	Uly,BAT,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB980815	1998 Aug 15	21:21:57	Uly,BAT
GRB980819	1998 Aug 19	08:42:29	BAT
GRB980827C	1998 Aug 27	20:10:25	Uly,Kon,NEA
GRB980829A	1998 Aug 29	05:20:49	Uly,BAT,NEA
GRB980903	1998 Sep 03	03:35:03	BAT
GRB980904B	1998 Sep 04	08:42:30	BAT,Kon
GRB980907	1998 Sep 07	11:13:07	BAT
GRB980908	1998 Sep 08	00:41:32	BAT
GRB980910A	1998 Sep 10	16:57:44	BAT
GRB980910B	1998 Sep 10	20:02:21	BAT
GRB980912	1998 Sep 12	15:15:39	Uly,Kon
GRB980916	1998 Sep 16	20:22:04	BAT
GRB980917	1998 Sep 17	09:48:09	BAT
GRB980918	1998 Sep 18	13:49:57	BAT
GRB980919	1998 Sep 19	19:28:54	BAT
GRB980920B	1998 Sep 20	13:18:50	BAT
GRB980922	1998 Sep 22	05:42:12	BAT
GRB980923	1998 Sep 23	08:22:58	BAT
GRB980925	1998 Sep 25	20:04:45	Uly,Kon
GRB980929	1998 Sep 29	21:51:37	BAT,Kon
GRB981002	1998 Oct 02	01:31:06	BAT
GRB981005	1998 Oct 05	18:00:26	BAT,Kon,NEA
GRB981009	1998 Oct 09	05:45:32	Uly,Kon
GRB981018	1998 Oct 18	00:27:21	BAT
GRB981019	1998 Oct 19	22:06:45	Uly,BAT,Kon
GRB981022A	1998 Oct 22	06:01:23	BAT
GRB981022B	1998 Oct 22	18:02:02	Uly,BAT,NEA
GRB981022C	1998 Oct 22	23:08:28	BAT
GRB981030	1998 Oct 30	01:20:02	Kon
GRB981101	1998 Nov 01	05:19:32	BAT
GRB981104	1998 Nov 04	17:17:18	Kon
GRB981106	1998 Nov 06	10:41:19	BAT

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB981107	1998 Nov 07	00:12:59	Uly,Kon,SRS,NEA
GRB981110	1998 Nov 10	22:52:39	BAT
GRB981111	1998 Nov 11	11:29:31	Uly,Kon,NEA
GRB981112	1998 Nov 12	03:55:45	Uly,Kon
GRB981113	1998 Nov 13	12:38:55	Uly,NEA
GRB981121	1998 Nov 21	01:26:17	Uly,BAT,Kon,NEA
GRB981125A	1998 Nov 25	08:26:25	Uly,BAT,NEA
GRB981125B	1998 Nov 25	21:06:21	Uly,BAT
GRB981126A	1998 Nov 26	17:21:19	Uly,NEA
GRB981203A	1998 Dec 03	00:59:12	Uly,BAT,Kon
GRB981203B	1998 Dec 03	07:17:40	Uly,BAT,Kon,NEA
GRB981215A	1998 Dec 15	12:43:41	Uly,Kon
GRB981215B	1998 Dec 15	14:09:24	BAT
GRB981216A	1998 Dec 16	05:29:16	BAT
GRB981219A	1998 Dec 19	18:04:55	Uly,Kon
GRB981220	1998 Dec 20	21:52:26	Uly,Kon,XTE
GRB981221A	1998 Dec 21	02:30:57	BAT,Kon
GRB981221B	1998 Dec 21	17:37:35	BAT
GRB981222A	1998 Dec 22	17:42:05	Kon
GRB981226B	1998 Dec 26	10:47:04	Uly,BAT,Kon
GRB981228	1998 Dec 28	12:23:36	BAT
GRB981229	1998 Dec 29	09:23:05	BAT
GRB990102A	1999 Jan 02	05:06:36	Uly,BAT,Kon
GRB990102B	1999 Jan 02	13:51:58	Uly,BAT,Kon
GRB990104A	1999 Jan 04	11:00:02	BAT
GRB990104B	1999 Jan 04	16:02:33	Uly,BAT,Kon
GRB990105	1999 Jan 05	08:49:49	BAT,Kon
GRB990111B	1999 Jan 11	17:58:29	Uly,BAT,Kon
GRB990117B	1999 Jan 17	23:36:16	Uly,Kon
GRB990118A	1999 Jan 18	03:12:42	Uly,Kon
GRB990120	1999 Jan 20	09:33:40	BAT
GRB990123A	1999 Jan 23	09:46:56	Uly,BAT,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB990123B	1999 Jan 23	13:19:42	BAT
GRB990126	1999 Jan 26	14:24:03	BAT,Kon
GRB990128	1999 Jan 28	10:20:52	Uly,BAT,Kon
GRB990130	1999 Jan 30	13:27:02	Kon
GRB990131	1999 Jan 31	19:26:42	Uly
GRB990202A	1999 Feb 02	03:35:32	BAT
GRB990202B	1999 Feb 02	15:38:08	BAT
GRB990206	1999 Feb 06	15:51:01	BAT,Kon
GRB990207	1999 Feb 07	19:21:15	Kon
GRB990208A	1999 Feb 08	01:04:11	BAT
GRB990208B	1999 Feb 08	04:12:44	BAT,Kon,NEA
GRB990210	1999 Feb 10	04:28:14	Uly,BAT,Kon,NEA
GRB990213	1999 Feb 13	09:46:03	BAT
GRB990216A	1999 Feb 16	01:52:06	Kon
GRB990216B	1999 Feb 16	06:29:45	Uly,BAT,Kon,NEA
GRB990220	1999 Feb 20	12:03:17	Uly,BAT,Kon,NEA
GRB990225	1999 Feb 25	19:38:48	BAT
GRB990226	1999 Feb 26	08:34:46	Uly,BAT,Kon
GRB990301	1999 Mar 01	06:05:06	Kon
GRB990306	1999 Mar 06	16:46:30	BAT
GRB990307	1999 Mar 07	10:49:43	BAT
GRB990308A	1999 Mar 08	03:04:53	BAT,Kon
GRB990308B	1999 Mar 08	19:47:34	BAT
GRB990310	1999 Mar 10	08:34:48	Kon
GRB990311B	1999 Mar 11	22:11:45	Uly,BAT
GRB990312B	1999 Mar 12	16:35:42	Uly,Kon
GRB990313	1999 Mar 13	09:21:52	Uly,Kon
GRB990314	1999 Mar 14	20:05:12	Uly,BAT,Kon
GRB990315	1999 Mar 15	16:35:30	BAT,Kon
GRB990318A	1999 Mar 18	03:14:42	BAT
GRB990320	1999 Mar 20	23:01:59	BAT,NEA
GRB990322	1999 Mar 22	04:03:56	BAT,Kon,NEA

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB990323	1999 Mar 23	08:57:49	BAT
GRB990328	1999 Mar 28	03:24:10	BAT
GRB990330A	1999 Mar 30	18:11:05	BAT
GRB990330B	1999 Mar 30	19:26:07	BAT,NEA
GRB990403A	1999 Apr 03	02:22:32	BAT
GRB990403B	1999 Apr 03	16:34:58	BAT
GRB990405	1999 Apr 05	03:08:19	Kon,NEA
GRB990406	1999 Apr 06	20:32:55	BAT
GRB990409	1999 Apr 09	23:13:53	BAT
GRB990411	1999 Apr 11	04:25:31	Uly,BAT,Kon
GRB990502	1999 May 02	09:15:42	Uly,NEA
GRB990504A	1999 May 04	11:22:12	BAT
GRB990504B	1999 May 04	18:46:26	Kon,NEA
GRB990506	1999 May 06	11:23:31	Uly,BAT,Kon,NEA
GRB990507	1999 May 07	19:48:54	BAT
GRB990510	1999 May 10	08:49:06	Uly,BAT,Kon,NEA
GRB990513A	1999 May 13	19:48:15	BAT,Kon
GRB990516A	1999 May 16	20:55:15	Uly,BAT,Kon
GRB990516B	1999 May 16	23:24:15	BAT,Kon
GRB990516C	1999 May 16	23:54:23	Uly,BAT,NEA
GRB990518A	1999 May 18	01:27:03	BAT,Kon
GRB990518B	1999 May 18	17:18:45	Uly,BAT,Kon,NEA
GRB990520	1999 May 20	02:02:58	BAT
GRB990521	1999 May 21	23:12:50	Uly,Kon,NEA
GRB990525	1999 May 25	00:23:00	BAT,Kon
GRB990526	1999 May 26	13:07:53	BAT
GRB990603B	1999 Jun 03	18:31:26	BAT
GRB990603D	1999 Jun 03	19:19:00	BAT
GRB990604A	1999 Jun 04	16:41:34	BAT
GRB990604B	1999 Jun 04	19:59:40	Uly,BAT
GRB990610	1999 Jun 10	01:03:04	Uly,Kon,NEA
GRB990611A	1999 Jun 11	10:07:10	BAT,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB990611B	1999 Jun 11	11:57:01	Uly,BAT,Kon
GRB990618A	1999 Jun 18	03:53:56	BAT
GRB990618B	1999 Jun 18	10:27:32	BAT
GRB990620	1999 Jun 20	22:46:12	Uly,NEA
GRB990621	1999 Jun 21	12:12:22	BAT
GRB990622A	1999 Jun 22	10:30:27	Kon,NEA
GRB990622B	1999 Jun 22	20:47:30	BAT
GRB990625	1999 Jun 25	00:24:33	BAT
GRB990627B	1999 Jun 27	05:00:53	Kon
GRB990630	1999 Jun 30	15:39:18	Uly,Kon,NEA
GRB990704A	1999 Jul 04	17:30:20	Uly
GRB990704B	1999 Jul 04	19:51:59	NEA
GRB990705	1999 Jul 05	16:01:25	Uly,BAT,Kon,NEA
GRB990706	1999 Jul 06	14:27:23	BAT
GRB990707A	1999 Jul 07	15:13:21	Uly,BAT,Kon
GRB990707B	1999 Jul 07	19:39:17	Uly,BAT,NEA
GRB990708	1999 Jul 08	23:11:49	BAT
GRB990709	1999 Jul 09	15:56:28	BAT,Kon
GRB990711B	1999 Jul 11	13:38:31	BAT
GRB990711C	1999 Jul 11	21:49:53	BAT
GRB990712A	1999 Jul 12	07:45:19	Uly,BAT,Kon,NEA
GRB990712B	1999 Jul 12	16:43:02	Uly,Kon
GRB990713B	1999 Jul 13	21:38:18	Uly,BAT,Kon
GRB990714	1999 Jul 14	18:13:48	Uly,BAT,Kon,NEA
GRB990715	1999 Jul 15	23:59:35	Uly,BAT
GRB990717	1999 Jul 17	17:12:15	Kon
GRB990718	1999 Jul 18	12:06:51	Uly,BAT,Kon
GRB990719	1999 Jul 19	22:03:36	BAT
GRB990720A	1999 Jul 20	00:00:27	BAT
GRB990720B	1999 Jul 20	08:29:51	Kon
GRB990725	1999 Jul 25	11:23:36	BAT
GRB990726	1999 Jul 26	02:59:33	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB990727	1999 Jul 27	13:24:49	BAT
GRB990730A	1999 Jul 30	18:59:13	BAT
GRB990730B	1999 Jul 30	20:43:23	BAT
GRB990803	1999 Aug 03	15:59:25	BAT
GRB990806A	1999 Aug 06	00:26:13	Kon
GRB990806B	1999 Aug 06	14:28:06	Uly,BAT,Kon
GRB990810	1999 Aug 10	19:44:34	Uly,Kon,NEA
GRB990811	1999 Aug 11	18:09:23	Kon
GRB990814A	1999 Aug 14	09:17:09	BAT
GRB990814B	1999 Aug 14	21:40:24	BAT
GRB990816	1999 Aug 16	02:44:43	Uly,BAT,Kon
GRB990819	1999 Aug 19	18:28:06	NEA
GRB990821A	1999 Aug 21	06:07:28	Uly,Kon,NEA
GRB990821B	1999 Aug 21	11:02:44	Kon
GRB990822	1999 Aug 22	12:03:35	Uly,BAT,Kon
GRB990824A	1999 Aug 24	09:23:41	Kon
GRB990829A	1999 Aug 29	03:19:55	Uly,Kon
GRB990903	1999 Sep 03	05:42:10	Uly,Kon,NEA
GRB990905	1999 Sep 05	22:38:55	Uly,BAT
GRB990907	1999 Sep 07	17:35:11	Uly,BAT,Kon
GRB990913A	1999 Sep 13	06:51:56	Uly,Kon,NEA
GRB990913B	1999 Sep 13	18:49:27	Kon
GRB990915A	1999 Sep 15	10:38:57	Uly,Kon,NEA
GRB990915B	1999 Sep 15	23:15:22	Uly,BAT,Kon,NEA
GRB990917A	1999 Sep 17	14:18:09	Uly,Kon,NEA
GRB990917B	1999 Sep 17	14:35:00	BAT
GRB990917C	1999 Sep 17	19:44:59	BAT
GRB990918	1999 Sep 18	05:33:14	Uly,BAT,Kon
GRB990919	1999 Sep 19	13:42:17	BAT,Kon,NEA
GRB990923	1999 Sep 23	16:15:51	Kon
GRB990924	1999 Sep 24	20:53:14	Kon
GRB991002A	1999 Oct 02	04:10:38	BAT

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB991002B	1999 Oct 02	22:49:03	BAT,Kon
GRB991004A	1999 Oct 04	06:21:31	BAT
GRB991004B	1999 Oct 04	15:12:37	Kon,NEA
GRB991005	1999 Oct 05	03:29:52	BAT
GRB991007	1999 Oct 07	06:34:13	Uly,Kon,NEA
GRB991011A	1999 Oct 11	01:30:46	BAT
GRB991011B	1999 Oct 11	09:59:30	BAT,Kon
GRB991011C	1999 Oct 11	13:42:46	BAT
GRB991013B	1999 Oct 13	20:38:04	BAT
GRB991014	1999 Oct 14	21:52:34	Uly,BAT
GRB991018	1999 Oct 18	19:02:41	BAT,Kon,NEA
GRB991022	1999 Oct 22	18:32:34	BAT,Kon
GRB991026A	1999 Oct 26	04:33:18	Uly,Kon,NEA
GRB991026B	1999 Oct 26	13:02:17	Uly
GRB991030	1999 Oct 30	01:46:04	Uly,BAT,Kon
GRB991101	1999 Nov 01	03:46:22	Uly
GRB991103	1999 Nov 03	18:42:40	BAT
GRB991104	1999 Nov 04	17:07:07	Uly,BAT,Kon,NEA
GRB991105C	1999 Nov 05	16:40:44	BAT,Kon,NEA
GRB991106	1999 Nov 06	19:03:32	Uly,BAT,Kon,NEA
GRB991108	1999 Nov 08	06:46:05	Uly,BAT,Kon
GRB991109	1999 Nov 09	21:01:41	Kon
GRB991115	1999 Nov 15	18:48:07	Uly,BAT,Kon,NEA
GRB991116	1999 Nov 16	14:31:05	Uly,Kon,NEA
GRB991120	1999 Nov 20	05:46:49	Uly,BAT,Kon
GRB991122A	1999 Nov 22	00:06:26	Uly,Kon
GRB991124A	1999 Nov 24	06:42:02	Uly,Kon
GRB991124B	1999 Nov 24	09:31:10	Uly,Kon,NEA
GRB991129	1999 Nov 29	12:38:07	BAT,Kon
GRB991130	1999 Nov 30	13:06:58	BAT,Kon
GRB991205C	1999 Dec 05	22:57:41	BAT
GRB991209A	1999 Dec 09	15:27:26	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB991216B	1999 Dec 16	16:07:01	Uly,BAT,NEA
GRB991217	1999 Dec 17	06:03:39	BAT
GRB991221	1999 Dec 21	10:36:36	Uly,Kon,NEA
GRB991226A	1999 Dec 26	15:00:05	Uly,Kon,NEA
GRB991226B	1999 Dec 26	23:08:59	Kon
GRB000104A	2000 Jan 04	01:28:44	BAT,Kon
GRB000104B	2000 Jan 04	14:26:11	BAT
GRB000107A	2000 Jan 07	18:26:35	Uly,Kon
GRB000107C	2000 Jan 07	21:44:33	BAT
GRB000108	2000 Jan 08	16:48:07	Uly,BAT,Kon
GRB000109	2000 Jan 09	10:27:14	Uly,BAT,NEA
GRB000110	2000 Jan 10	04:38:45	Uly,Kon,NEA
GRB000115	2000 Jan 15	14:49:32	Uly,BAT,Kon,NEA
GRB000119B	2000 Jan 19	13:09:33	Kon,NEA
GRB000123	2000 Jan 23	13:49:41	Uly,BAT,Kon,NEA
GRB000126	2000 Jan 26	06:57:58	BAT
GRB000205A	2000 Feb 05	08:39:52	Uly,BAT,Kon
GRB000205B	2000 Feb 05	12:39:08	Uly,BAT
GRB000206	2000 Feb 06	02:33:03	Uly,BAT
GRB000207	2000 Feb 07	23:56:22	Uly,BAT,Kon
GRB000208A	2000 Feb 08	04:21:11	BAT
GRB000210	2000 Feb 10	08:44:05	Uly,Kon
GRB000211	2000 Feb 11	12:33:44	BAT
GRB000212	2000 Feb 12	17:06:32	Kon
GRB000214A	2000 Feb 14	01:01:00	Uly,Kon
GRB000217	2000 Feb 17	10:47:06	BAT
GRB000218B	2000 Feb 18	16:19:05	Uly,Kon
GRB000222	2000 Feb 22	13:44:26	BAT
GRB000223	2000 Feb 23	23:13:41	Uly,Kon
GRB000224	2000 Feb 24	22:50:09	BAT
GRB000225	2000 Feb 25	01:35:29	BAT,NEA
GRB000226	2000 Feb 26	12:51:08	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB000227	2000 Feb 27	21:36:02	BAT
GRB000301A	2000 Mar 01	02:33:54	Uly,BAT,Kon,NEA
GRB000302	2000 Mar 02	14:22:25	BAT
GRB000306	2000 Mar 06	18:00:31	Uly,BAT
GRB000310	2000 Mar 10	15:07:14	BAT
GRB000312	2000 Mar 12	05:23:54	Uly,BAT,Kon,NEA
GRB000314	2000 Mar 14	08:51:42	Uly,BAT,NEA
GRB000317	2000 Mar 17	08:03:27	Kon
GRB000323	2000 Mar 23	09:02:07	Uly,BAT,Kon,NEA
GRB000327	2000 Mar 27	22:37:57	Uly,Kon,NEA
GRB000330	2000 Mar 30	20:57:29	BAT
GRB000402A	2000 Apr 02	02:55:51	Kon
GRB000402B	2000 Apr 02	14:30:58	BAT,Kon,NEA
GRB000407	2000 Apr 07	03:06:38	BAT,Kon
GRB000409	2000 Apr 09	15:00:30	BAT
GRB000411	2000 Apr 11	02:14:02	Kon,NEA
GRB000412	2000 Apr 12	11:42:52	BAT,Kon
GRB000415	2000 Apr 15	00:16:10	BAT
GRB000416	2000 Apr 16	14:32:54	BAT
GRB000418	2000 Apr 18	21:30:17	BAT
GRB000419	2000 Apr 19	02:12:49	Uly,Kon,NEA
GRB000420A	2000 Apr 20	11:44:32	Kon,NEA
GRB000420B	2000 Apr 20	14:22:11	Uly,BAT,Kon,NEA
GRB000420C	2000 Apr 20	18:00:40	BAT,NEA
GRB000421	2000 Apr 21	12:23:34	Uly,BAT,Kon
GRB000424	2000 Apr 24	09:04:26	BAT,Kon,NEA
GRB000425	2000 Apr 25	05:25:31	Uly,Kon,NEA
GRB000429	2000 Apr 29	10:07:22	Uly,BAT,Kon,NEA
GRB000502B	2000 May 02	13:18:35	Kon,NEA
GRB000502C	2000 May 02	15:00:59	BAT
GRB000503	2000 May 03	22:49:45	Uly
GRB000506	2000 May 06	10:16:42	NEA

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB000511A	2000 May 11	01:11:59	Uly,BAT,Kon,NEA
GRB000511B	2000 May 11	18:02:58	BAT,Kon
GRB000516	2000 May 16	09:26:05	Uly,Kon,NEA
GRB000517A	2000 May 17	05:36:30	BAT,Kon
GRB000517B	2000 May 17	10:02:03	Uly,Kon
GRB000518	2000 May 18	05:41:51	BAT,Kon,NEA
GRB000519	2000 May 19	08:18:07	Uly,BAT,Kon,NEA
GRB000523	2000 May 23	19:01:35	Uly
GRB000528	2000 May 28	08:46:24	Uly,Kon
GRB000529B	2000 May 29	08:43:12	Uly,Kon,NEA
GRB000612	2000 Jun 12	22:54:41	Uly
GRB000614	2000 Jun 14	08:34:01	Uly,Kon,NEA
GRB000615A	2000 Jun 15	06:17:48	Kon
GRB000615B	2000 Jun 15	16:32:35	Uly,Kon,NEA
GRB000620A	2000 Jun 20	00:54:39	NEA
GRB000620B	2000 Jun 20	05:33:33	Uly,Kon,NEA
GRB000621	2000 Jun 21	02:00:51	NEA
GRB000623	2000 Jun 23	01:04:46	Kon,NEA
GRB000629B	2000 Jun 29	05:08:51	Kon
GRB000630	2000 Jun 30	00:30:59	Uly,Kon,NEA
GRB000701A	2000 Jul 01	00:19:16	Uly,Kon,NEA
GRB000701B	2000 Jul 01	07:12:40	Kon,NEA
GRB000704	2000 Jul 04	02:59:33	Kon
GRB000718B	2000 Jul 18	20:47:09	Uly,Kon,NEA
GRB000727	2000 Jul 27	19:42:41	Uly,Kon,NEA
GRB000808	2000 Aug 08	18:37:01	Kon
GRB000811	2000 Aug 11	15:30:01	Uly,Kon,NEA
GRB000818	2000 Aug 18	20:09:06	Kon,NEA
GRB000821	2000 Aug 21	02:16:52	Uly,Kon,NEA
GRB000823	2000 Aug 23	07:22:32	Uly,Kon,NEA
GRB000830C	2000 Aug 30	23:49:52	Uly,Kon,NEA
GRB000903B	2000 Sep 03	13:29:04	NEA

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB000903D	2000 Sep 03	23:35:14	NEA
GRB000904	2000 Sep 04	13:18:42	Kon,NEA
GRB000906	2000 Sep 06	21:00:49	Uly,Kon,NEA
GRB000924	2000 Sep 24	16:40:37	Kon,NEA
GRB001004	2000 Oct 04	14:51:26	Uly,Kon,NEA
GRB001011C	2000 Oct 11	15:54:48	Uly,Kon,NEA
GRB001013	2000 Oct 13	18:13:38	Uly,Kon,NEA
GRB001015A	2000 Oct 15	02:34:12	Uly,Kon,NEA
GRB001015B	2000 Oct 15	17:31:12	Kon,NEA
GRB001019	2000 Oct 19	23:59:17	Uly,Kon,NEA
GRB001020	2000 Oct 20	17:17:49	NEA
GRB001022B	2000 Oct 22	05:14:53	NEA
GRB001101	2000 Nov 01	21:52:31	NEA
GRB001105	2000 Nov 05	09:49:01	NEA
GRB001107	2000 Nov 07	02:17:09	Uly,Kon,NEA
GRB001115	2000 Nov 15	14:06:41	Kon,HET
GRB001118A	2000 Nov 18	08:19:44	Kon,NEA
GRB001118B	2000 Nov 18	20:43:36	Kon,NEA
GRB001121	2000 Nov 21	20:57:25	Kon
GRB001204B	2000 Dec 04	08:01:09	Uly,Kon,NEA
GRB001206A	2000 Dec 06	09:37:01	Uly,Kon,NEA
GRB001206B	2000 Dec 06	14:31:58	Kon
GRB001206C	2000 Dec 06	21:29:40	Uly,Kon,NEA
GRB001212A	2000 Dec 12	09:33:42	Uly,Kon,NEA
GRB001212B	2000 Dec 12	14:57:23	Uly,Kon,NEA
GRB001213	2000 Dec 13	23:07:05	Kon
GRB001214B	2000 Dec 14	21:03:05	Uly,Kon
GRB001215A	2000 Dec 15	04:56:35	Kon
GRB001215B	2000 Dec 15	14:34:34	Uly,Kon,NEA
GRB001217	2000 Dec 17	16:20:29	Kon
GRB001219A	2000 Dec 19	07:35:29	Uly,Kon,NEA
GRB001226B	2000 Dec 26	20:14:44	NEA

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB001228	2000 Dec 28	12:03:14	Kon,NEA
GRB010104B	2001 Jan 04	17:21:30	Uly,Kon,NEA
GRB010109	2001 Jan 09	02:38:06	Uly,Kon,NEA
GRB010111	2001 Jan 11	18:43:28	Kon
GRB010114	2001 Jan 14	03:43:52	Kon
GRB010119A	2001 Jan 19	00:19:55	Uly,Kon,NEA
GRB010119B	2001 Jan 19	10:19:37	Uly,Kon,NEA
GRB010121	2001 Jan 21	17:28:36	Kon
GRB010126B	2001 Jan 26	09:10:40	Uly,Kon,HET,NEA,XTE
GRB010127	2001 Jan 27	08:29:18	Uly,Kon,NEA
GRB010208A	2001 Feb 08	01:01:24	Kon,NEA
GRB010208B	2001 Feb 08	04:08:22	NEA
GRB010208C	2001 Feb 08	14:26:17	Kon,NEA
GRB010212A	2001 Feb 12	05:09:51	Uly,Kon
GRB010212B	2001 Feb 12	17:26:27	Uly,Kon
GRB010213	2001 Feb 13	02:57:23	Uly,Kon
GRB010214	2001 Feb 14	08:48:07	Uly,Kon
GRB010220A	2001 Feb 20	19:20:54	Uly
GRB010220B	2001 Feb 20	20:31:21	Kon
GRB010220C	2001 Feb 20	22:51:04	Kon
GRB010222A	2001 Feb 22	07:23:03	Uly,Kon
GRB010226A	2001 Feb 26	19:15:13	Uly,Kon
GRB010303	2001 Mar 03	15:15:28	Uly
GRB010304	2001 Mar 04	05:18:51	Uly,Kon
GRB010307	2001 Mar 07	16:27:41	Kon
GRB010308	2001 Mar 08	15:38:57	Uly,Kon
GRB010317	2001 Mar 17	06:28:07	Uly,Kon
GRB010324	2001 Mar 24	11:32:28	Uly,Kon,XTE
GRB010325	2001 Mar 25	06:38:06	Uly,Kon
GRB010326	2001 Mar 26	03:14:56	Uly,Kon,HET
GRB010408B	2001 Apr 08	06:45:22	Uly,Kon
GRB010411B	2001 Apr 11	16:06:07	Uly,Kon

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB010412	2001 Apr 12	21:46:29	Uly,Kon
GRB010420	2001 Apr 20	22:37:56	Kon
GRB010427A	2001 Apr 27	01:38:21	Kon
GRB010427B	2001 Apr 27	09:20:04	Uly
GRB010427D	2001 Apr 27	18:44:15	Kon,SRS
GRB010504	2001 May 04	02:43:46	Uly,Kon
GRB010505A	2001 May 05	06:26:28	Uly
GRB010507B	2001 May 07	09:12:11	Kon
GRB010515A	2001 May 15	02:20:32	Uly
GRB010515B	2001 May 15	18:04:32	Kon
GRB010517	2001 May 17	23:51:33	Uly,MO,Kon
GRB010522	2001 May 22	20:51:48	Uly,Kon
GRB010528	2001 May 28	03:20:25	Kon
GRB010610	2001 Jun 10	11:39:15	Kon
GRB010611B	2001 Jun 11	22:06:07	Uly,Kon
GRB010612A	2001 Jun 12	02:33:13	Uly,Kon,HET
GRB010619A	2001 Jun 19	02:58:26	Uly,Kon
GRB010619B	2001 Jun 19	15:17:01	Kon,HET
GRB010623	2001 Jun 23	03:31:15	Uly,MO,Kon
GRB010624	2001 Jun 24	13:35:30	Uly,Kon
GRB010629A	2001 Jun 29	12:21:06	Uly,Kon,HET
GRB010629B	2001 Jun 29	19:10:57	Uly,MO,Kon
GRB010703	2001 Jul 03	20:30:49	Uly,Kon
GRB010710A	2001 Jul 10	14:48:28	Kon
GRB010710B	2001 Jul 10	23:34:13	Uly,Kon
GRB010711	2001 Jul 11	02:43:50	Uly,Kon
GRB010715	2001 Jul 15	20:23:41	Uly,Kon
GRB010721	2001 Jul 21	03:56:51	Uly,MO,Kon
GRB010727C	2001 Jul 27	12:29:52	Kon
GRB010728	2001 Jul 28	19:24:42	Kon,XTE
GRB010730	2001 Jul 30	11:58:39	Kon
GRB010801	2001 Aug 01	18:30:33	Uly,Kon,HET

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB010802	2001 Aug 02	08:35:20	Uly,Kon
GRB010804	2001 Aug 04	20:13:18	Uly,MO,Kon
GRB010813	2001 Aug 13	09:43:56	Kon
GRB010818A	2001 Aug 18	13:53:10	Kon
GRB010820	2001 Aug 20	20:36:13	Kon
GRB010826	2001 Aug 26	18:06:01	Uly,Kon
GRB010910	2001 Sep 10	02:30:51	Kon
GRB010917	2001 Sep 17	07:04:33	Kon
GRB010921	2001 Sep 21	05:15:50	Uly,Kon,HET
GRB010922	2001 Sep 22	17:36:52	Uly,Kon
GRB010923	2001 Sep 23	09:24:29	Uly,Kon,HET
GRB011003	2001 Oct 03	03:34:08	Uly
GRB011104	2001 Nov 04	10:02:03	Uly,Kon
GRB011111	2001 Nov 11	18:24:03	Kon
GRB011115	2001 Nov 15	20:16:17	Uly,Kon,HET
GRB011116	2001 Nov 16	03:35:05	Kon
GRB011121	2001 Nov 21	18:47:08	Uly,MO,Kon
GRB011122	2001 Nov 22	20:51:33	Uly
GRB011214	2001 Dec 14	19:48:23	Kon
GRB011216	2001 Dec 16	02:55:23	Uly,Kon,HET
GRB011221	2001 Dec 21	01:21:00	Uly,Kon
GRB011228	2001 Dec 28	23:19:15	Uly,Kon
GRB020113A	2002 Jan 13	02:04:11	Kon,HET
GRB020113B	2002 Jan 13	11:02:44	Kon
GRB020119A	2002 Jan 19	00:09:57	Kon
GRB020119B	2002 Jan 19	04:27:10	Uly,MO,Kon
GRB020208	2002 Feb 08	14:14:12	Uly,Kon
GRB020209	2002 Feb 09	07:49:57	Uly,Kon,HET
GRB020212A	2002 Feb 12	22:45:14	Kon
GRB020212B	2002 Feb 12	23:32:01	Kon
GRB020221	2002 Feb 21	08:07:43	Uly,MO,Kon,HET
GRB020304	2002 Mar 04	01:02:26	Uly,Kon,RHE

Table 1—Continued

Designation [a]	Date	Universal Time [b]	Observed by [c]
GRB020306	2002 Mar 06	18:58:03	Kon,RHE
GRB020309	2002 Mar 09	06:58:05	Uly
GRB020311	2002 Mar 11	01:21:30	Uly,MO,Kon,RHE
GRB020315	2002 Mar 15	15:42:46	Uly,Kon,RHE
GRB020321	2002 Mar 21	04:20:43	Kon
GRB020322	2002 Mar 22	03:51:37	Kon
GRB020327A	2002 Mar 27	01:39:13	RHE
GRB020327B	2002 Mar 27	02:26:08	Uly,MO,Kon
GRB020329	2002 Mar 29	20:37:49	RHE
GRB020402	2002 Apr 02	07:54:35	Uly,Kon
GRB020405	2002 Apr 05	00:41:34	Uly,MO,Kon
GRB020409A	2002 Apr 09	09:27:18	Uly,Kon,RHE
GRB020410	2002 Apr 10	10:41:20	Kon
GRB020413	2002 Apr 13	16:20:14	Uly,MO,Kon,RHE
GRB020417	2002 Apr 17	05:36:17	Uly,Kon,RHE
GRB020418	2002 Apr 18	08:38:33	Uly,MO,Kon
GRB020419B	2002 Apr 19	22:25:49	Kon
GRB020426	2002 Apr 26	23:56:14	Kon,RHE

[a]This is the BeppoSAX designation in Frontera et al. 2009 or Vetere et al. 2007; designations in other catalogs may differ

[b]Universal time is the Earth-crossing time of the start of the event

[c]DMS: *Defense Meteorological Satellite Program*; HET: *HETE-II*; Kon: *Konus-Wind*; MO: *Mars Odyssey*; NEA: *Near Earth Asteroid Rendezvous* mission; RHE: *Ramaty High Energy Solar Spectroscopic Imager*; SRS: *Stretched Rohini Satellite Series*; Uly: *Ulysses*; XTE: *Rossi X-Ray Timing Explorer*

Table 2. Number of *BeppoSAX* bursts observed by each spacecraft

BATSE	DMSP	HETE	Konus	NEAR	Odyssey	RHESSI	RXTE	SROSS	Ulysses
426	14	14	528	152	13	10	9	5	376

Table 3. Number of *BeppoSAX* bursts in this catalog observed by a total of N experiments, regardless of their distance from Earth

N=1	2	3	4	5	6
0	324	220	196	40	7

Table 4. Number of *BeppoSAX* bursts observed by N interplanetary spacecraft, i.e., NEAR, *Mars Odyssey* , and *Ulysses*

N=0	1	2
362	309	116

Table 5. IPN localization data

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
03 Jul 1996	13:42:53	4.6	-7.8	1.0	...	...	...	...	...	...	334.713	-46.652	46.702	.136	...	...	...	...	...	...	...	...	1.09E+00
07 Jul 1996	10:16:40	321.0	82.5	1.1	...	...	...	...	...	...	155.435	45.862	50.112	.027	...	...	...	...	...	...	...	...	1.63E-01
31 Jul 1996	05:46:01	43.9	12.5	.9	...	...	...	...	...	...	340.144	-41.403	83.839	.012	...	...	...	...	...	...	...	...	9.28E+00
01 Aug 1996	11:29:09	...	...	...	...	...	...	...	...	...	340.436	-41.223	78.075	.099	-9.8	10.2	...	...	...	...	...	...	1.01E+01
05 Aug 1996	21:55:57	...	...	...	...	...	...	...	...	...	161.328	40.481	74.569	.012	57.3	77.3	223.8	3.8	66.1	...	...	...	5.83E-01
											161.301	40.450	74.588	.023									
10 Aug 1996	06:56:16	...	...	...	102.000	-11.000	33.000	...	...	...	162.208	39.772	82.350	.004	-48.5	-28.5	...	...	...	...	...	...	3.75E-02
											151.487	9.968	52.713	2.844									
25 Aug 1996	00:23:03	...	...	...	...	...	...	...	...	...	165.211	37.557	57.225	.013	72.3	90.0	...	...	...	...	...	...	1.49E+00
											165.193	37.542	57.249	.009									
12 Sep 1996	13:57:27	95.1	76.9	.6	...	...	...	...	...	...	168.864	35.168	52.499	.021	...	...	...	...	...	...	...	...	1.54E-01
13 Sep 1996	23:05:20	182.6	-23.5	.9	...	...	...	...	...	...	169.129	35.010	57.377	.066	...	...	...	...	...	...	...	...	4.32E+01
16 Sep 1996	03:56:20	...	...	...	...	...	...	...	...	...	349.567	-34.772	27.503	.194	-44.0	-24.0	...	...	...	...	...	...	8.21E+00
											349.548	-34.761	27.613	.102									
17 Sep 1996	22:22:32	313.9	-33.9	.7	...	...	...	...	...	...	349.881	-34.568	28.471	.094	...	...	...	...	...	...	...	...	5.23E-01
21 Sep 1996	15:03:48	345.3	-28.5	.2	...	...	...	...	...	...	350.571	-34.178	5.417	.030	...	...	...	...	...	...	...	...	2.20E+00
22 Sep 1996	05:06:07	...	...	...	...	...	...	...	...	...	170.693	34.141	88.302	.034	-77.8	-57.8	...	...	...	...	...	...	9.57E-01
											170.680	34.121	88.277	.016									
22 Sep 1996	05:21:06	...	...	...	...	...	...	...	...	...	350.681	-34.119	79.752	.040	...	...	84.1	2.8	63.0	...	...	...	2.01E+01
27 Sep 1996	03:47:18	199.6	74.1	1.0	...	...	...	...	...	...	171.581	33.636	43.728	.162	...	...	...	...	...	...	...	...	1.14E+00
06 Oct 1996	08:56:04	274.6	-28.9	1.7	...	...	...	...	...	...	353.186	-32.825	61.298	.077	...	...	...	...	...	...	...	...	5.25E+01
15 Oct 1996[a]	11:53:00	...	...	...	29.000	21.000	19.000	...	...	...	174.681	32.183	85.056	.114	-2.4	17.6	...	...	...	70.500	29.100	12.000	5.53E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
22 Oct 1996	19:00:56	159.6	-38.8	.7	...	...	...	...	...	...	175.763	31.721	71.880	.043	...	...	...	...	...	...	...	...	3.25E-01
26 Oct 1996	06:11:50	99.3	41.9	.8	...	...	...	...	...	...	176.250	31.545	61.197	.020	...	...	...	...	...	...	...	...	1.43E-01
01 Nov 1996	16:07:43	...	...	...	...	...	...	...	...	...	177.059	31.312	74.004	.009	62.0	90.0	...	...	...	...	...	...	4.44E-01
											177.087	31.276	73.993	.011									
22 Nov 1996	21:51:04	...	...	...	...	...	...	...	...	...	359.139	-30.955	83.956	.007	-70.0	-90.0	226.3	-.6	66.2	...	...	...	4.02E+00
26 Nov 1996	06:43:19	150.3	36.7	.5	...	...	...	...	...	...	179.381	30.963	23.565	.008	...	...	...	...	...	...	...	...	4.14E-02
11 Dec 1996	01:56:12	281.7	54.8	1.0	...	...	...	...	...	...	179.848	31.341	73.909	.053	...	...	...	...	...	...	...	...	3.96E+01
28 Dec 1996	00:29:32	160.3	-53.6	.8	...	...	...	...	...	...	179.285	32.266	85.416	.046	...	...	...	...	...	...	...	...	3.57E+01
11 Jan 1997	09:44:00	231.3	18.7	.2	232.046	19.598	.030	...	...	...	177.731	33.366	49.981	.024	...	...	...	...	...	...	...	...	1.21E-03
17 Jan 1997	14:27:54	...	...	...	...	...	...	...	...	...	280.982	-27.450	81.628	5.546	-20.9	-.9	182.0	-.9	65.9	...	...	...	2.40E+02
17 Jan 1997	14:46:51	...	...	...	101.000	-74.000	19.000	...	...	...	356.733	-33.887	53.301	.012	...	...	...	...	...	...	...	...	8.53E-01
22 Jan 1997	11:41:25	...	...	...	261.000	-45.000	34.000	...	...	...	355.722	-34.315	84.839	.156	-19.0	1.0	...	...	...	...	...	...	7.73E+00
23 Jan 1997[a]	08:36:37	...	...	...	96.000	51.000	18.000	...	...	...	355.546	-34.387	89.820	.116	24.7	44.7	...	...	...	43.500	42.400	13.000	6.00E+00
24 Jan 1997	12:19:07	...	...	...	...	...	...	...	...	...	355.305	-34.481	18.758	.027	-38.6	-18.6	...	...	...	...	...	...	1.21E+00
											355.397	-34.472	18.832	.049									
28 Jan 1997	23:35:09	...	...	...	28.000	3.000	40.000	...	...	...	354.321	-34.841	61.094	.196	-90.0	-50.0	...	...	...	90.000	-66.500	40.000	3.42E+01
03 Feb 1997	01:31:56	...	...	...	251.000	32.000	23.000	...	...	...	173.099	35.230	66.487	.080	39.7	59.7	...	...	...	...	...	...	2.31E+00
22 Feb 1997[a]	23:53:28	...	...	...	308.000	-10.000	16.000	...	...	...	167.499	36.331	86.145	.004	39.7	59.7	...	...	...	267.600	19.600	10.000	4.81E-02
											167.515	36.386	86.113	.004									
28 Feb 1997	02:58:01	...	...	...	75.488	11.773	.050	...	...	...	165.945	36.526	83.423	.009	...	...	...	...	...	...	...	...	1.33E-03
06 Mar 1997	02:47:39	18.3	21.4	.7	...	...	...	...	...	...	344.110	-36.593	67.351	.124	...	...	...	...	...	...	...	...	7.59E-01
07 Mar 1997	19:29:06	...	...	...	349.000	-42.000	25.000	...	...	...	343.624	-36.519	9.858	.084	-31.7	-51.7	...	...	...	...	...	...	3.68E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											343.596	-36.591	9.811	.128									
13 Mar 1997	09:45:58	...	...	...	179.000	6.000	20.000	...	...	...	161.982	36.457	24.540	.100	26.4	46.4	...	...	...	...	...	...	2.14E+00
15 Mar 1997	15:40:54	2.2	60.7	.2	...	...	...	...	...	...	161.286	36.483	80.076	.004	...	...	...	...	...	...	...	...	1.79E-02
15 Mar 1997	22:09:19	130.6	-52.4	1.0	...	...	...	...	...	...	341.210	-36.476	87.593	.012	-79.0	-59.0	...	...	...	...	...	...	1.38E+00
30 Mar 1997	08:58:52	347.7	-19.1	1.6	...	...	...	...	...	...	337.446	-35.814	19.353	.496	...	...	...	...	...	...	...	...	4.79E+00
30 Mar 1997	12:13:11	...	...	...	332.000	29.000	25.000	...	...	...	10.541	8.695	36.142	2.567	2.7	22.7	...	...	...	...	...	...	4.05E+01
02 Apr 1997	22:19:38	...	...	...	222.525	-69.333	.014	...	...	...	336.646	-35.576	64.726	2.694	-49.2	-90.0	...	...	...	...	...	...	6.14E-04
05 Apr 1997	03:41:59	98.8	22.8	.5	...	...	...	...	...	...	156.176	35.414	50.871	.051	...	...	...	...	...	...	...	...	3.66E-01
05 Apr 1997	04:55:02	...	...	...	...	...	...	...	...	...	194.665	-11.387	53.326	32.922	-61.1	-90.0	...	...	...	...	...	...	1.28E+03
06 Apr 1997	00:17:38	...	...	...	201.000	38.000	27.000	...	...	...	156.098	35.270	23.597	.024	53.1	73.1	...	...	...	...	...	...	1.40E+00
06 Apr 1997	06:19:44	50.8	-24.6	2.5	...	...	...	...	...	...	335.949	-35.327	60.305	.183	...	...	...	...	...	...	...	...	1.24E+02
06 Apr 1997	07:04:56	287.3	-28.2	3.8	...	...	...	...	...	...	335.943	-35.323	42.658	.277	-9.8	10.2	...	...	...	...	...	...	4.80E+00
16 Apr 1997	23:13:58	...	...	...	332.000	10.000	37.000	...	...	...	334.178	-34.321	29.735	.064	-3.2	16.8	...	...	...	...	...	...	6.48E+00
17 Apr 1997	00:23:05	...	...	...	...	...	...	...	...	...	334.171	-34.318	87.869	.102	20.3	40.3	46.2	-.6	66.1	...	...	...	1.95E+00
											334.060	-34.390	87.748	.041									
19 Apr 1997	06:12:14	240.4	-63.0	.8	...	...	...	...	...	...	333.737	-34.172	57.757	.067	...	...	...	...	...	...	...	...	4.41E+01
20 Apr 1997	20:14:02	213.0	-15.9	.3	...	...	...	...	...	...	153.524	34.015	76.007	.003	...	...	...	...	...	...	...	...	1.98E-02
27 Apr 1997	12:41:59	181.4	-8.4	1.5	...	...	...	...	...	...	212.663	-19.835	32.530	.927	-40.5	-20.5	...	...	...	...	...	...	1.32E+02
29 Apr 1997	11:36:24	34.7	27.0	1.0	...	...	...	...	...	...	332.568	-33.111	82.480	.014	...	...	...	...	...	...	...	...	4.36E-02
06 May 1997	15:41:47	...	...	...	30.000	-10.000	34.000	...	...	...	332.140	-32.259	71.256	.003	-22.7	-2.7	...	...	...	...	...	...	1.35E-01
08 May 1997[a]	21:41:47	132.4	80.6	2.3	103.367	17.290	.050	...	...	...	151.909	32.056	51.191	.159	...	...	...	...	...	...	...	...	9.09E+01
09 May 1997	13:23:26	192.4	20.1	1.0	...	...	...	...	...	...	151.878	31.981	36.353	.109	...	...	...	...	...	...	...	...	4.16E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
17 May 1997	09:04:42	112.1	-15.4	.4	...	...	...	...	...	...	151.634	31.067	59.348	.004	...	...	...	...	...	...	...	...	2.60E-02
18 May 1997	07:06:23	...	...	...	77.000	17.000	14.000	...	...	...	151.715	30.922	76.411	.056	-9.8	10.2	...	...	...	...	...	...	1.56E+00
26 May 1997	01:52:42	1.1	12.9	1.6	...	...	...	...	...	...	68.653	25.291	64.211	7.846	1.1	21.1	...	...	...	...	...	...	1.64E+01
01 Jun 1997	19:19:14	...	...	...	...	...	...	...	...	...	331.850	-29.209	70.881	.003	10.3	30.3	49.4	-1.9	66.0	...	...	...	1.26E-01
											331.797	-29.219	70.836	.005									
03 Jun 1997	09:49:05	105.3	-13.9	1.1	...	...	...	...	...	...	151.858	29.027	62.667	.085	...	...	...	...	...	...	...	...	6.89E-01
03 Jun 1997	23:35:00	177.1	62.3	1.1	...	...	...	...	...	...	151.881	28.958	37.101	.036	...	...	...	...	...	...	...	...	3.03E-01
04 Jun 1997	19:49:06	...	...	...	...	...	...	...	...	...	96.857	21.537	88.584	3.882	-64.8	-90.0	...	...	...	...	...	...	4.20E+02
08 Jun 1997	13:37:13	...	...	...	...	...	...	...	...	...	120.540	14.322	37.124	10.284	-40.5	-20.5	57.1	1.8	66.1	...	...	...	5.26E+02
11 Jun 1997	08:21:30	78.4	-3.3	1.5	...	...	...	...	...	...	354.641	1.984	78.559	24.842	-29.0	-9.0	...	...	...	...	...	...	1.52E+01
12 Jun 1997	14:28:24	290.2	43.5	.7	...	...	...	...	...	...	332.339	-27.916	80.422	.032	...	...	...	...	...	...	...	...	2.15E-01
14 Jun 1997	23:07:42	234.7	62.2	1.0	...	...	...	...	...	...	152.496	27.633	63.710	.088	...	...	...	...	...	...	...	...	4.35E-01
16 Jun 1997	18:09:50	20.4	-7.1	.4	...	...	...	...	...	...	332.625	-27.416	49.820	.004	...	...	...	...	...	...	...	...	2.81E-02
24 Jun 1997	05:45:05	...	...	...	...	...	...	...	...	...	333.234	-26.521	55.156	.026	32.3	52.3	...	...	...	...	...	...	3.75E+00
24 Jun 1997	06:30:06	...	...	...	...	...	...	...	...	...	333.272	-26.515	45.245	.043	-35.4	-15.4	268.1	-.4	65.9	...	...	...	7.50E-01
											333.237	-26.517	45.277	.017									
25 Jun 1997	06:34:42	...	...	...	...	...	...	...	...	...	100.329	18.215	82.616	3.839	-29.0	-9.0	...	...	...	...	...	...	3.33E+02
25 Jun 1997	12:13:06	...	...	...	...	...	...	...	...	...	333.381	-26.368	38.104	.011	2.7	22.7	...	...	...	...	...	...	6.86E-01
											333.348	-26.369	38.079	.021									
26 Jun 1997	01:44:02	...	...	...	...	...	...	...	...	...	103.425	17.791	13.216	13.216	-29.0	-9.0	...	...	...	...	...	...	8.80E+02
27 Jun 1997	07:12:46	120.8	42.3	.9	...	...	...	...	...	...	153.515	26.159	33.510	.183	...	...	...	...	...	...	...	...	7.86E+01
27 Jun 1997	22:06:50	...	...	...	...	...	...	...	...	...	153.600	26.086	37.584	.007	57.3	77.3	100.0	-2.1	66.2	...	...	...	3.79E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											153.574	26.085	37.598	.007									
28 Jun 1997	03:27:50	...	...	...	...	...	...	...	...	...	333.620	-26.058	56.809	.032	45.8	65.8	219.2	-1.8	66.0	...	...	...	2.76E+00
											333.596	-26.056	56.797	.018									
29 Jun 1997	14:16:39	29.6	25.0	1.7	...	...	...	...	...	...	333.737	-25.884	70.556	.106	...	...	...	...	...	...	...	...	7.77E+01
04 Jul 1997	01:08:16	74.8	-16.0	4.1	...	...	...	...	...	...	154.193	25.359	89.853	.003	...	...	...	...	...	...	...	...	4.95E-02
06 Jul 1997	21:39:57	...	...	...	...	...	...	...	...	...	334.524	-25.016	68.294	.074	-20.9	-.9	...	...	...	...	...	...	2.04E+00
											334.501	-25.023	68.332	.026									
15 Jul 1997	14:21:11	...	...	...	...	...	...	...	...	...	335.542	-24.007	36.989	.004	20.3	40.3	...	...	...	...	...	...	1.00E-01
											335.508	-24.010	36.971	.004									
15 Aug 1997	12:07:04	234.5	81.7	.8	...	...	...	...	...	...	159.651	20.562	68.519	.023	...	...	...	...	...	...	...	...	1.44E-01
16 Aug 1997	02:17:44	91.6	45.0	.4	...	...	...	...	...	...	159.735	20.499	60.834	.012	...	...	...	...	...	...	...	...	8.26E-02
21 Aug 1997	10:59:23	...	...	...	117.000	15.000	27.000	...	...	...	160.523	19.938	56.433	.122	-9.8	10.2	...	...	...	...	...	...	5.42E+00
24 Aug 1997	18:34:44	...	...	...	...	...	...	...	...	...	160.992	19.592	80.175	.010	6.5	14.5	189.5	.4	66.2	...	...	...	1.72E-01
25 Aug 1997	22:02:59	89.3	-10.2	2.7	...	...	...	...	...	...	161.146	19.463	77.923	.113	...	...	...	...	...	...	...	...	1.42E+00
31 Aug 1997	17:39:30	85.8	-47.3	.7	...	...	...	...	...	...	341.984	-18.865	84.820	.092	...	...	...	...	...	...	...	...	6.80E-01
19 Sep 1997	18:14:29	140.4	-4.7	.7	...	...	...	...	...	...	164.672	17.013	34.800	.024	...	...	...	...	...	...	...	...	2.97E-02
											65.902	20.742	76.440	.131									
19 Sep 1997	22:10:16	298.5	59.6	2.7	...	...	...	...	...	...	245.970	-20.753	89.608	.036	...	...	...	...	...	...	...	...	4.35E-01
22 Sep 1997	02:25:57	...	...	...	328.000	62.000	28.000	...	...	...	344.982	-16.803	70.239	.005	62.0	82.0	...	...	...	...	...	...	4.26E-03
											353.502	-13.231	68.192	.016									
23 Sep 1997[a]	11:39:20	...	...	...	29.000	-41.000	21.000	...	...	...	345.167	-16.676	62.964	.010	-58.3	-38.3	...	...	...	...	...	...	3.43E-03
											353.552	-13.173	57.476	.011									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
05 Oct 1997	01:15:55	331.2	-56.3	1.9	...	...	...	...	...	...	346.692	-15.650	42.650	.078	...	...	...	...	...	...	...	...	8.26E-01
07 Oct 1997	15:56:02	221.7	-17.1	1.1	...	...	...	...	...	...	252.907	-21.491	31.928	.932	...	...	...	...	...	...	...	...	1.66E+00
09 Oct 1997	18:56:55	273.5	-66.2	.4	...	...	...	...	...	...	347.276	-15.258	69.557	.006	...	...	...	...	...	...	...	...	4.30E-02
19 Oct 1997	14:55:53	...	...	...	153.000	6.000	24.000	...	...	...	168.391	14.495	25.213	.018	-7.6	-27.6	...	...	...	...	...	...	1.29E+00
22 Oct 1997	11:57:18	...	...	...	11.000	-64.000	34.000	...	...	...	348.722	-14.274	40.341	.149	-59.2	-39.2	...	...	...	...	...	...	1.46E+01
23 Oct 1997	05:43:29	...	...	...	...	...	...	...	...	...	112.269	15.277	31.258	31.258	-19.0	1.0	...	...	...	...	...	...	2.48E+03
27 Oct 1997	02:43:31	194.6	67.5	.3	...	...	...	...	...	...	169.177	13.952	58.403	.013	...	...	...	...	...	...	...	...	8.61E+00
29 Oct 1997	01:28:38	101.1	24.7	.3	...	...	...	...	...	...	169.364	13.819	65.090	.022	...	...	...	...	...	...	...	...	1.52E-01
											79.882	21.821	19.439	.260									
10 Nov 1997	18:53:26	241.7	50.4	.6	...	...	...	...	...	...	170.412	13.033	68.437	.011	...	...	...	...	...	...	...	...	1.75E-02
											262.919	-21.777	74.010	.357									
14 Nov 1997[a]	12:21:04	...	...	...	57.000	-50.000	31.000	...	...	...	350.602	-12.847	19.743	.012	-36.5	-16.5	...	...	...	8.500	-20.700	6.000	1.79E-01
											350.658	-12.829	19.693	.012									
27 Nov 1997	00:04:42	225.6	31.9	1.4	...	...	...	...	...	...	171.244	12.254	60.829	.096	...	...	...	...	...	...	...	...	5.34E-01
											265.086	-21.556	62.127	.566									
07 Dec 1997	20:03:52	133.7	-4.6	.6	...	...	...	...	...	...	171.413	11.889	45.269	.018	...	...	...	...	...	...	...	...	4.03E-02
											85.301	21.344	49.928	.211									
07 Dec 1997	20:58:12	131.4	71.1	5.3	...	...	...	...	...	...	171.412	11.887	62.197	.051	...	...	...	...	...	138.200	71.000	7.500	1.14E+00
08 Dec 1997	04:47:12	...	...	...	50.000	-12.000	20.000	...	...	...	351.318	-11.904	59.313	.076	-47.1	-27.1	...	...	...	...	...	...	3.42E+00
08 Dec 1997	07:48:12	356.5	77.9	1.2	...	...	...	...	...	...	351.411	-11.874	88.032	.326	...	...	...	...	...	...	...	...	2.58E-01
											85.270	21.320	58.716	10.050									
10 Dec 1997	07:43:33	176.9	-52.0	1.1	...	...	...	...	...	...	171.401	11.823	64.581	.051	...	...	...	...	...	...	...	...	4.07E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
14 Dec 1997	23:20:41	180.8	66.2	1.0	179.104	65.220	.017	...	...	...	171.329	11.721	53.741	.044	...	...	...	...	...	...	...	...	8.10E-04
											84.923	21.181	72.633	1.525									
16 Dec 1997	15:13:46	...	...	...	...	...	...	...	...	...	351.188	-11.718	67.590	.336	45.8	90.0	...	...	...	...	...	...	8.21E+00
											351.286	-11.689	67.625	.036									
18 Dec 1997	12:42:44	...	...	...	248.000	31.000	31.000	...	...	...	271.158	-19.234	55.288	5.518	45.8	90.0	...	...	...	...	...	...	7.22E+02
19 Dec 1997	22:12:54	...	...	...	...	...	...	...	...	...	171.076	11.670	21.070	.027	20.3	40.3	...	...	...	...	...	...	1.61E+00
											171.174	11.639	21.008	.057									
20 Dec 1997	04:06:33	33.2	-38.5	1.7	...	...	...	...	...	...	84.453	21.075	74.823	.569	...	...	...	...	...	...	...	...	3.67E+00
23 Dec 1997	09:35:00	...	...	...	75.000	-26.000	39.000	...	...	...	96.567	20.369	43.593	17.055	-90.0	-61.1	...	...	...	...	...	...	5.13E+01
23 Dec 1997	10:36:21	...	...	...	312.000	-43.000	37.000	...	...	...	351.012	-11.596	57.784	.007	...	...	...	...	...	...	...	...	1.16E+00
27 Dec 1997	08:23:06	190.0	54.3	1.7	194.387	59.257	.025	...	...	...	170.783	11.569	50.842	.060	...	...	...	...	...	...	...	...	1.96E-03
30 Dec 1997	23:15:47	...	...	...	...	...	...	...	...	...	105.705	21.843	54.559	1.855	-9.8	10.2	...	...	...	...	...	...	7.48E-01
											85.092	21.081	70.990	.582									
02 Jan 1998	19:31:50	...	...	...	...	...	...	...	...	...	289.027	-22.488	73.630	3.776	-63.1	-90.0	...	...	...	...	...	...	3.38E+02
03 Jan 1998	10:38:42	236.7	-75.0	1.9	...	...	...	...	...	...	350.224	-11.561	83.117	.112	...	...	...	...	...	...	...	...	9.44E-01
											262.621	-20.793	55.870	5.324									
05 Jan 1998	00:44:41	37.2	51.7	1.4	...	...	...	...	...	...	350.074	-11.566	73.941	.003	...	...	...	...	...	...	...	...	9.29E-03
											82.434	20.761	46.466	.647									
09 Jan 1998	01:12:25	12.2	-60.8	2.0	6.483	-63.023	.166	...	...	...	349.654	-11.593	52.771	.080	...	...	...	...	...	...	...	...	5.28E-02
24 Jan 1998	06:36:03	272.2	80.3	1.1	...	...	...	...	...	...	167.542	11.832	82.292	.006	...	...	...	...	...	...	...	...	3.14E-02
											6.799	72.491	21.435	12.385									
27 Jan 1998	00:58:52	...	...	...	36.000	-29.000	19.000	...	...	...	347.008	-11.924	55.889	.011	-90.0	-60.0	...	...	...	...	...	...	4.28E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
29 Jan 1998	15:19:43	287.4	-64.9	2.4	...	...	...	...	...	...	346.615	-11.958	62.480	.285	...	...	...	...	...	...	...	...	1.97E+02
03 Feb 1998	14:21:06	...	...	...	...	...	...	...	...	...	345.630	-12.114	72.929	.017	-83.8	-63.8	72.9	.2	65.9	...	...	...	4.35E-01
											345.682	-12.087	72.961	.015									
03 Feb 1998	22:44:24	3.5	-17.6	.3	...	...	...	...	...	...	345.613	-12.096	19.385	.010	...	...	...	...	...	...	...	...	4.48E-02
											3.060	71.952	88.453	3.250									
05 Feb 1998	05:29:44	146.4	-37.4	2.1	...	...	...	...	...	...	165.314	12.159	53.919	.008	...	...	...	...	...	...	...	...	7.69E-02
											165.299	12.779	54.500	.016									
08 Feb 1998	12:50:59	61.0	-75.5	.3	...	...	...	...	...	...	344.694	-12.225	74.529	.010	...	...	...	...	...	...	...	...	6.96E-02
22 Feb 1998	02:25:34	31.2	28.5	1.2	...	...	...	...	...	...	341.754	-12.610	63.862	.032	...	...	...	...	...	...	...	...	2.56E-01
28 Feb 1998	23:11:39	...	...	...	184.000	24.000	33.000	...	...	...	160.204	12.797	30.608	.179	1.1	21.1	...	...	...	...	...	...	7.95E+00
06 Mar 1998	09:33:02	7.1	-45.5	.3	...	...	...	...	...	...	338.978	-12.911	41.548	.027	...	...	...	...	...	...	...	...	1.29E-01
06 Mar 1998	17:34:11	341.6	-56.7	.6	...	...	...	...	...	...	338.904	-12.918	45.667	.018	...	...	...	...	...	...	...	...	1.00E+01
10 Mar 1998	13:57:41	242.4	-60.5	1.2	...	...	...	...	...	...	338.051	-12.993	81.321	.003	...	...	...	...	...	...	...	...	2.62E-02
10 Mar 1998	15:50:47	...	...	...	...	...	...	...	...	...	168.425	11.238	41.359	.881	-24.4	-4.4	...	...	...	...	...	...	8.70E+01
15 Mar 1998	07:24:00	74.7	31.6	1.5	...	...	...	...	...	...	157.031	13.069	73.938	.134	...	...	...	...	...	...	...	...	1.00E+02
21 Mar 1998	06:06:11	42.3	7.6	4.0	...	...	...	...	...	...	335.803	-13.134	69.216	.082	...	...	...	...	...	...	...	...	1.53E+00
26 Mar 1998	21:18:53	133.3	-18.6	2.1	129.108	-18.883	.133	...	...	...	154.713	13.166	40.795	.046	...	...	...	...	...	...	...	...	2.58E-02
29 Mar 1998	03:44:38	105.6	39.4	.8	105.650	38.840	.017	...	...	...	154.299	13.170	49.905	.011	...	...	...	...	...	...	...	...	5.55E-04
30 Mar 1998	00:01:33	224.9	-24.0	2.3	...	...	...	...	...	...	184.029	-.329	47.352	.805	-27.6	-7.6	...	...	...	...	...	...	3.07E+00
01 Apr 1998	04:31:53	125.7	18.3	.8	...	...	...	...	...	...	153.767	13.166	28.628	.026	...	...	...	...	...	...	...	...	1.54E-01
03 Apr 1998	23:15:51	279.5	46.4	2.5	...	...	...	...	...	...	333.374	-13.123	74.817	.149	49.3	90.0	...	...	...	...	...	...	1.52E+00
09 Apr 1998	02:08:32	206.4	9.8	1.2	...	...	...	...	...	...	152.518	13.110	55.219	.006	...	...	...	...	...	...	...	...	3.83E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
20 Apr 1998	10:06:52	292.8	26.6	.6	...	...	...	...	...	...	331.093	-12.917	54.005	.117	...	...	...	...	...	...	...	...	8.55E-01
25 Apr 1998	21:49:08	291.9	-53.1	1.7	293.725	-52.832	.133	...	...	...	330.567	-12.778	49.723	.428	...	...	...	...	...	...	...	...	5.63E-02
28 Apr 1998	20:10:08	...	...	...	...	...	...	...	...	...	150.422	12.648	35.390	.034	-31.7	-11.7	...	...	...	...	...	...	6.53E-01
											150.329	12.694	35.306	.016									
08 May 1998	04:07:28	334.1	20.5	1.8	...	...	...	...	...	...	329.773	-12.366	36.216	.007	...	...	...	...	...	...	...	...	3.22E+00
16 May 1998[a]	11:23:37	...	...	...	89.000	-4.000	15.000	...	...	...	149.610	11.971	65.194	.003	-67.5	-47.5	...	...	...	99.100	-31.700	4.000	2.21E-02
											149.524	12.017	65.165	.003									
19 May 1998	03:43:32	...	...	...	...	...	...	...	...	...	329.489	-11.890	61.978	.036	-73.1	-53.1	...	...	...	...	...	...	3.34E+00
19 May 1998	12:20:12	356.1	76.3	1.1	350.561	77.255	.050	...	...	...	329.486	-11.873	89.974	.037	...	...	...	...	...	...	...	...	6.17E-03
20 May 1998	19:12:15	353.7	-11.3	2.0	...	...	...	...	...	...	329.478	-11.810	24.911	.205	...	...	...	...	...	...	...	...	2.10E+00
23 May 1998	02:23:32	...	...	...	...	...	...	...	...	...	149.558	11.655	43.494	.009	39.7	59.7	229.8	-3.3	66.0	...	...	...	8.45E-01
31 May 1998	07:42:42	...	...	...	...	...	...	...	...	...	149.666	11.220	54.677	.049	-58.3	-38.3	187.1	-3.8	66.0	...	...	...	1.93E+00
											149.597	11.256	54.625	.043									
05 Jun 1998	14:12:10	264.3	44.5	6.2	...	...	...	...	...	...	270.978	-29.804	80.096	1.908	20.3	90.0	...	...	...	...	...	...	2.25E+01
10 Jun 1998	19:52:28	...	...	...	...	...	...	...	...	...	100.731	29.267	62.250	2.313	-43.2	-23.2	200.2	-1.1	66.2	...	...	...	1.50E+02
15 Jun 1998[a]	10:12:16	...	...	...	43.000	19.000	20.000	...	...	...	330.300	-10.306	67.614	.007	-1.8	18.2	95.5	-3.9	66.1	...	...	...	1.56E-01
											330.262	-10.328	67.661	.009									
16 Jun 1998	13:28:55	213.3	36.4	1.0	...	...	...	...	...	...	150.334	10.253	63.133	.031	...	...	...	...	...	...	...	...	2.29E-01
17 Jun 1998	02:51:51	56.0	-3.8	3.2	...	...	...	...	...	...	330.369	-10.216	82.000	.026	...	...	...	...	...	...	...	...	2.20E-01
19 Jun 1998	13:12:12	...	...	...	...	...	...	...	...	...	119.551	25.698	68.178	4.371	...	...	...	...	...	...	...	...	2.92E+03
22 Jun 1998	20:21:39	...	...	...	312.000	45.000	44.000	...	...	...	330.788	-9.810	24.312	.031	16.7	36.7	...	...	...	...	...	...	2.21E+00
											330.771	-9.821	24.306	.033									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
24 Jun 1998	16:07:53	...	...	...	...	...	...	...	...	...	317.096	-19.535	78.606	2.678	-74.8	-54.8	...	...	...	...	...	...	2.48E+02
26 Jun 1998	14:21:30	...	...	...	...	...	...	...	...	...	151.072	9.552	50.793	.151	20.3	90.0	95.3	-.4	66.0	...	...	...	2.64E+01
26 Jun 1998	22:39:46	17.6	-73.0	.9	...	...	...	...	...	...	331.097	-9.529	70.259	.084	...	...	...	...	...	...	...	...	5.22E-01
27 Jun 1998	04:20:29	159.7	-.2	3.2	...	...	...	...	...	...	151.118	9.514	16.198	.140	...	...	...	...	...	...	...	...	9.97E-01
27 Jun 1998	12:36:35	180.2	22.8	2.0	...	...	...	...	...	...	151.146	9.488	28.702	.162	...	...	...	...	...	...	...	...	9.57E-01
06 Jul 1998	15:59:47	159.7	57.8	2.3	...	...	...	...	...	...	151.981	8.801	49.644	.003	...	...	...	...	...	...	...	...	3.59E-02
06 Jul 1998	21:40:38	...	...	...	308.000	-37.000	29.000	...	...	...	332.022	-8.774	30.620	.013	-34.2	-14.2	...	...	...	...	...	...	5.90E-01
											332.004	-8.780	30.616	.012									
13 Jul 1998	03:41:44	119.7	-28.2	5.8	...	...	...	...	...	...	133.888	15.571	42.922	23.675	-33.9	-53.9	...	...	...	...	...	...	1.15E+02
20 Jul 1998	22:16:07	...	...	...	36.000	-28.000	36.000	...	...	...	333.505	-7.647	74.427	.023	-71.1	-51.1	...	...	...	...	...	...	1.42E+00
28 Jul 1998	08:48:35	...	...	...	88.000	-56.000	33.000	...	...	...	154.392	7.010	79.779	.024	-90.0	-76.9	43.6	.3	66.1	...	...	...	1.15E+00
02 Aug 1998	08:01:15	252.6	-32.2	1.4	...	...	...	...	...	...	335.007	-6.571	77.726	.066	...	...	...	...	...	...	...	...	5.01E+01
10 Aug 1998	18:35:29	349.9	24.6	.3	...	...	...	...	...	...	336.088	-5.803	26.197	.005	...	...	...	...	...	...	...	...	1.72E+00
11 Aug 1998	06:45:08	266.8	3.5	1.2	...	...	...	...	...	...	336.154	-5.758	67.189	.079	...	...	...	...	...	...	...	...	5.66E+01
12 Aug 1998	05:16:08	337.3	33.9	2.7	...	...	...	...	...	...	336.276	-5.670	38.173	.061	39.7	59.7	...	...	...	...	...	...	7.27E-01
15 Aug 1998	21:21:57	210.9	-32.2	2.4	...	...	...	...	...	...	156.760	5.329	63.841	.101	...	...	...	...	...	...	...	...	1.25E+00
27 Aug 1998	20:10:25	...	...	...	...	...	...	...	...	...	338.369	-4.178	82.650	.002	-3.2	16.8	...	...	...	...	...	...	6.63E-03
											147.064	9.568	84.911	.003									
29 Aug 1998	05:20:49	240.0	-54.2	1.5	...	...	...	...	...	...	158.546	4.047	89.502	.036	...	...	...	...	...	...	...	...	4.54E-02
											239.713	-25.432	30.837	.652									
04 Sep 1998	08:42:30	126.0	-53.7	1.9	...	...	...	...	...	...	160.357	4.390	67.146	.932	...	...	...	...	...	...	...	...	3.36E+00
12 Sep 1998	15:15:39	...	...	...	...	...	...	...	...	...	351.379	-.534	81.918	1.923	-9.8	10.2	...	...	...	...	...	...	1.34E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											160.480	2.608	88.014	.031									
25 Sep 1998	20:04:45	...	...	...	323.000	14.000	29.000	...	...	...	5.780	4.498	57.023	11.534	-53.0	-9.0	...	...	...	349.900	-38.500	5.000	9.69E-01
											342.166	-1.258	37.951	.090									
05 Oct 1998	18:00:26	275.2	44.0	1.2	...	...	...	...	...	...	260.540	-24.703	71.356	.041	...	...	...	...	...	...	...	...	2.74E-01
09 Oct 1998	05:45:32	...	...	...	...	...	...	...	...	...	343.780	.140	66.200	.004	4.6	24.6	...	...	...	...	...	...	1.26E-01
											343.818	.149	66.166	.005									
19 Oct 1998	22:06:45	318.7	-36.7	2.8	...	...	...	...	...	...	344.985	1.273	45.039	.029	...	...	...	...	...	...	...	...	4.04E-01
22 Oct 1998	18:02:02	14.9	48.9	1.0	...	...	...	...	...	...	345.270	1.570	52.890	.010	...	...	...	...	...	...	...	...	1.60E-03
											90.234	23.926	63.901	.027									
04 Nov 1998	17:17:18	...	...	...	351.000	41.000	49.000	...	...	...	227.077	-11.081	32.561	86.858	20.3	40.3	...	...	...	...	...	...	6.80E+02
07 Nov 1998[a]	00:12:59	...	...	...	317.000	20.000	25.000	...	...	...	346.558	3.155	49.654	.004	34.5	54.5	...	...	...	12.500	47.100	1.000	2.33E-04
											330.829	-4.398	63.457	.003									
11 Nov 1998	11:29:31	...	...	...	173.000	-62.000	21.000	...	...	...	166.876	-3.614	62.912	.027	-70.7	-50.7	...	...	...	...	...	...	1.12E-02
											151.110	4.056	72.647	.026									
12 Nov 1998	03:55:45	...	...	...	203.000	7.000	22.000	...	...	...	166.940	-3.690	35.901	.138	10.3	30.3	...	...	...	...	...	...	8.97E+00
13 Nov 1998	12:38:55	...	...	...	...	...	...	...	...	...	167.023	-3.829	42.774	.149	...	...	...	...	...	...	...	...	3.80E-01
											151.241	3.898	50.461	.110									
21 Nov 1998	01:26:17	15.5	42.3	1.1	...	...	...	...	...	...	347.408	4.590	44.186	.209	...	...	...	...	...	...	...	...	5.16E-01
											107.104	21.530	78.692	.720									
25 Nov 1998	08:26:25	254.6	29.9	.9	...	...	...	...	...	...	347.565	5.013	86.140	.063	...	...	...	...	...	...	...	...	7.29E-02
											289.575	-21.055	60.057	.116									
25 Nov 1998	21:06:21	202.3	61.9	.9	...	...	...	...	...	...	167.581	-5.064	73.880	.088	...	...	...	...	...	...	...	...	6.53E-02

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
26 Nov 1998	17:21:19	...	...	...	65.000	55.000	39.000	...	...	...	347.606	5.147	83.352	.007	...	...	...	...	...	...	...	...	2.36E-02
											152.101	2.865	79.410	.018									
03 Dec 1998	00:59:12	161.5	32.9	.5	...	...	...	...	...	...	167.723	-5.751	40.026	.067	...	...	...	...	...	...	...	...	4.15E-01
03 Dec 1998	07:17:40	293.3	-27.2	.6	...	...	...	...	...	...	347.726	5.778	65.532	.031	...	...	...	...	...	...	...	...	6.68E-02
											294.147	-20.082	7.862	.117									
15 Dec 1998	12:43:41	...	...	...	...	...	...	...	...	...	167.607	-6.883	45.578	.088	7.1	27.1	...	...	...	...	...	...	9.11E+00
19 Dec 1998	18:04:55	...	...	...	...	...	...	...	...	...	167.452	-7.240	18.297	.030	-47.1	-27.1	...	...	...	...	...	...	2.27E-01
											209.622	-4.614	33.557	13.025									
20 Dec 1998	21:52:26	...	...	...	...	...	...	...	...	...	347.373	7.334	67.143	.007	-10.6	9.4	...	...	...	55.754	17.150	1.000	2.52E-02
											347.398	7.338	67.120	.006									
21 Dec 1998	02:30:57	283.7	3.6	2.8	...	...	...	...	...	...	210.950	-11.474	70.415	1.932	...	...	...	...	...	...	...	...	7.81E+00
26 Dec 1998	10:47:04	267.1	-24.4	1.8	...	...	...	...	...	...	347.077	7.778	81.380	.003	...	...	...	...	...	...	...	...	2.31E+00
02 Jan 1999	05:06:36	277.4	39.3	.6	...	...	...	...	...	...	346.532	8.275	69.597	.256	...	...	...	...	...	...	...	...	1.59E+00
02 Jan 1999	13:51:58	203.5	2.7	.6	...	...	...	...	...	...	166.498	-8.299	40.544	.185	...	...	...	...	...	...	...	...	9.35E+01
04 Jan 1999	16:02:33	130.0	1.2	.9	...	...	...	...	...	...	166.293	-8.441	37.073	.005	...	...	...	...	...	...	...	...	3.84E-02
11 Jan 1999	17:58:29	173.6	27.8	1.7	...	...	...	...	...	...	165.474	-8.885	38.466	.040	...	...	...	...	...	...	...	...	3.78E-01
17 Jan 1999	23:36:16	...	...	...	188.000	41.000	21.000	...	...	...	164.596	-9.210	38.676	.037	16.7	36.7	...	...	...	...	...	...	1.90E+00
18 Jan 1999	03:12:42	...	...	...	...	...	...	...	...	...	164.575	-9.220	82.685	.129	...	...	...	...	...	...	...	...	9.21E+01
23 Jan 1999	09:46:56	229.1	42.3	.4	231.369	44.758	.033	...	...	...	163.719	-9.464	81.344	.011	...	...	...	...	...	...	...	...	1.52E-03
26 Jan 1999	14:24:03	321.1	-24.3	2.0	...	...	...	...	...	...	30.000	18.515	79.659	4.527	-9.8	10.2	...	...	...	...	...	...	1.58E+01
28 Jan 1999	10:20:52	304.9	-41.9	.5	...	...	...	...	...	...	342.818	9.649	62.260	.007	...	...	...	...	...	...	...	...	5.06E-02
31 Jan 1999	19:26:42	...	...	...	303.000	-21.000	22.000	...	...	...	342.166	9.749	53.562	.018	...	...	...	...	...	...	...	...	1.73E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
06 Feb 1999	15:51:01	112.1	60.4	3.6	...	...	...	...	...	...	193.682	20.665	66.381	3.770	...	...	...	...	...	...	...	...	3.83E+01
07 Feb 1999	19:21:15	...	...	...	166.000	51.000	25.000	...	...	...	199.192	8.384	36.948	4.502	7.1	27.1	...	...	...	...	...	...	5.29E+01
08 Feb 1999	04:12:44	296.1	-39.4	2.3	...	...	...	...	...	...	332.365	-7.147	46.571	.026	...	...	...	...	...	...	...	...	3.04E-01
10 Feb 1999	04:28:14	108.1	50.1	1.5	...	...	...	...	...	...	160.198	-9.924	75.939	.167	...	...	...	...	...	...	...	...	1.23E-02
											153.511	6.639	57.736	.364									
16 Feb 1999	01:52:06	...	...	...	316.000	4.000	22.000	...	...	...	35.830	28.606	44.920	44.920	20.3	40.3	...	...	...	...	...	...	6.01E+02
16 Feb 1999	06:29:45	274.9	-40.3	.6	...	...	...	...	...	...	338.818	9.955	78.916	.103	...	...	...	...	...	...	...	...	9.86E-02
											336.993	-5.070	67.265	.096									
20 Feb 1999	12:03:17	163.1	55.6	1.6	...	...	...	...	...	...	157.825	-9.939	63.651	.123	...	...	...	...	...	...	...	...	2.87E-01
											159.427	3.950	49.577	.151									
26 Feb 1999	08:34:46	244.5	10.7	.8	...	...	...	...	...	...	336.427	9.869	88.595	.194	...	...	...	...	...	...	...	...	7.88E-01
08 Mar 1999	03:04:53	48.2	69.2	5.1	...	...	...	...	...	...	41.695	38.799	27.101	6.997	...	...	...	...	...	...	...	...	8.41E+01
11 Mar 1999	22:11:45	44.0	19.3	.4	...	...	...	...	...	...	333.213	9.519	69.514	.067	...	...	...	...	...	...	...	...	4.28E-01
12 Mar 1999	16:35:42	...	...	...	189.000	9.000	24.000	...	...	...	153.030	-9.500	29.236	.071	-41.0	-20.0	...	...	...	...	...	...	6.97E+00
13 Mar 1999	09:21:52	...	...	...	338.000	52.000	23.000	...	...	...	332.862	9.477	51.888	.004	39.7	90.0	...	...	...	...	...	...	4.43E-01
14 Mar 1999	20:05:12	184.0	-12.9	1.8	...	...	...	...	...	...	152.549	-9.413	31.146	.054	...	...	...	...	...	...	...	...	5.67E-01
15 Mar 1999	16:35:30	5.7	-63.0	2.6	...	...	...	...	...	...	23.942	3.767	64.032	4.242	-61.1	-90.0	...	...	...	...	...	...	3.22E+02
20 Mar 1999	23:01:59	5.7	6.7	3.0	...	...	...	...	...	...	356.075	4.037	12.090	.888	...	...	...	...	...	...	...	...	1.07E+01
22 Mar 1999	04:03:56	12.5	-68.3	1.7	...	...	...	...	...	...	356.803	4.393	75.151	.066	...	...	...	...	...	...	...	...	4.94E-01
30 Mar 1999	19:26:07	160.6	34.3	.9	...	...	...	...	...	...	182.064	-6.936	45.284	.072	...	...	...	...	...	...	...	...	5.22E-01
05 Apr 1999[a]	03:08:19	...	...	...	166.000	-16.000	19.000	...	...	...	185.406	-8.484	34.325	.036	-35.4	-15.4	...	...	...	...	...	...	1.91E+00
											52.785	-21.587	89.452	14.695									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
11 Apr 1999	04:25:31	329.8	-83.4	.5	...	...	...	...	...	...	147.380	-8.231	87.393	.160	...	...	...	...	...	...	...	...	9.72E-01
02 May 1999	09:15:42	...	...	...	...	...	...	...	...	...	145.188	-7.432	27.815	.033	...	...	...	...	...	...	...	...	1.39E-01
											164.088	-11.859	17.311	.338									
04 May 1999	18:46:26	...	...	...	...	...	...	...	...	...	264.942	46.763	75.413	7.880	...	...	...	...	...	...	...	...	1.89E+00
											25.045	17.157	68.429	.027									
06 May 1999	11:23:31	178.9	-26.2	.2	...	...	...	...	...	...	144.962	-7.322	37.432	.012	...	...	...	...	...	...	...	...	3.71E-03
											206.256	-17.631	27.010	.045									
10 May 1999	08:49:06	207.5	-80.2	.6	204.525	-80.493	.050	...	...	...	144.802	-7.234	78.069	.005	...	...	...	...	...	...	...	...	6.86E-04
											209.072	-18.699	61.828	.029									
16 May 1999	23:54:23	253.6	-3.6	.8	...	...	...	...	...	...	324.654	7.122	76.968	.004	...	...	...	...	...	...	...	...	2.76E-03
											214.006	-20.457	40.158	.040									
18 May 1999	17:18:45	343.3	-38.7	.3	...	...	...	...	...	...	324.641	7.102	48.881	.032	...	...	...	...	...	...	...	...	1.50E-02
											35.316	20.898	73.423	.053									
21 May 1999	23:12:50	...	...	...	206.000	25.000	21.000	...	...	...	144.643	-7.071	70.166	.304	14.0	73.0	...	...	...	...	...	...	9.97E-01
											165.521	-14.079	59.448	.269									
04 Jun 1999	19:59:40	91.1	38.0	1.2	...	...	...	...	...	...	145.007	-7.094	69.939	.073	...	...	...	...	...	...	...	...	5.33E+01
10 Jun 1999	01:03:04	...	...	...	...	...	...	...	...	...	53.531	25.853	42.559	.020	-13.5	6.5	...	...	...	...	...	...	1.79E+00
11 Jun 1999	11:57:01	343.2	-47.1	.7	...	...	...	...	...	...	325.370	7.194	55.415	.041	...	...	...	...	...	...	...	...	2.34E-01
20 Jun 1999	22:46:12	...	...	...	133.000	-3.000	15.000	...	...	...	146.070	-7.430	21.835	.012	...	...	...	...	...	...	...	...	4.06E-02
											167.332	-17.655	44.823	.030									
22 Jun 1999[a]	10:30:27	...	...	...	116.000	24.000	34.000	...	...	...	64.649	27.744	32.105	.026	13.6	33.6	...	...	...	...	...	...	1.21E+00
											84.002	21.853	27.385	15.767									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
30 Jun 1999	15:39:18	...	...	...	115.000	-26.000	31.000	...	...	...	147.052	-7.840	58.870	.033	-50.0	-90.0	...	...	...	...	...	...	2.00E-02
											167.753	-18.855	65.369	.059									
04 Jul 1999	17:30:20	...	...	...	184.864	-3.839	.016	...	...	...	147.411	-7.984	37.459	.035	...	...	...	...	...	...	...	...	8.12E-04
04 Jul 1999	19:51:59	...	...	...	...	...	...	...	...	...	76.406	28.792	39.435	.071	...	...	...	...	...	...	...	...	3.25E+01
05 Jul 1999	16:01:25	79.1	-72.3	.7	77.489	-72.132	.033	...	...	...	147.515	-8.031	76.306	.004	...	...	...	...	...	...	...	...	3.23E-04
											167.925	-19.482	71.632	.008									
07 Jul 1999	15:13:21	102.7	-53.0	.9	...	...	...	...	...	...	147.737	-8.132	56.409	.010	...	...	...	...	...	...	...	...	5.48E-02
07 Jul 1999	19:39:17	72.4	21.8	1.5	...	...	...	...	...	...	147.758	-8.142	77.589	.088	...	...	...	...	...	...	...	...	3.18E-01
											79.321	28.900	7.885	2.350									
12 Jul 1999	07:45:19	126.5	8.6	3.6	...	...	...	...	...	...	148.289	-8.391	28.976	.006	...	...	...	...	...	...	...	...	2.72E-02
											83.755	28.947	43.539	.042									
12 Jul 1999	16:43:02	...	...	...	337.957	-73.407	.033	...	...	...	328.333	8.417	82.049	.052	...	...	...	...	...	...	...	...	3.56E-03
13 Jul 1999	21:38:18	310.5	-27.3	.8	...	...	...	...	...	...	328.481	8.488	38.529	.010	...	...	...	...	...	...	...	...	5.28E-02
14 Jul 1999	18:13:48	231.2	19.7	.6	...	...	...	...	...	...	148.587	-8.538	88.209	.032	...	...	...	...	...	...	...	...	1.03E-02
											266.180	-28.914	59.250	.034									
15 Jul 1999	23:59:35	154.4	44.5	2.3	...	...	...	...	...	...	148.743	-8.615	56.966	.253	...	...	...	...	...	...	...	...	1.65E+02
18 Jul 1999	12:06:51	286.9	1.3	.9	...	...	...	...	...	...	329.062	8.778	43.828	.275	...	...	...	...	...	...	...	...	1.58E+00
20 Jul 1999	08:29:51	...	...	...	189.000	-41.000	35.000	...	...	...	116.515	23.492	70.154	45.058	7.0	25.0	...	...	...	...	...	...	3.44E+03
26 Jul 1999	02:59:33	...	...	...	289.000	77.000	46.000	...	...	...	330.109	9.354	73.907	.109	39.7	90.0	...	...	...	...	...	...	2.18E+01
06 Aug 1999	00:26:13	...	...	...	...	...	...	...	...	...	328.427	-17.060	51.640	51.640	39.7	90.0	...	...	...	...	...	...	7.98E+03
06 Aug 1999	14:28:06	34.0	-74.0	2.5	47.648	-68.114	.050	...	...	...	151.716	-10.254	85.648	.125	...	...	...	...	...	...	...	...	8.00E-03
10 Aug 1999	19:44:34	...	...	...	...	...	...	...	...	...	332.344	10.639	88.412	.033	-63.0	-43.0	...	...	...	...	...	...	6.94E-03

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											293.167	-25.661	50.671	.032									
11 Aug 1999	18:09:23	...	...	...	...	...	...	...	...	...	349.323	-8.892	59.900	59.900	-55.5	-35.5	244.2	-3.8	66.2	...	...	...	3.49E+03
16 Aug 1999	02:44:43	188.0	6.7	.9	...	...	...	...	...	...	153.146	-11.148	29.188	.087	...	...	...	...	...	...	...	...	3.30E+01
19 Aug 1999	18:28:06	...	...	...	225.000	50.000	33.000	...	...	...	121.848	23.458	66.901	.070	...	...	...	...	...	...	...	...	8.76E+00
21 Aug 1999	06:07:28	...	...	...	...	...	...	...	...	...	153.950	-11.684	67.023	.039	53.1	73.1	...	...	...	...	...	...	3.43E-02
											167.178	-25.265	75.662	.061									
21 Aug 1999	11:02:44	...	...	...	70.000	34.000	17.000	...	...	...	115.775	16.577	42.820	42.820	-2.3	7.5	12.8	3.1	66.3	...	...	...	8.28E+01
22 Aug 1999	12:03:35	111.6	-38.1	.7	...	...	...	...	...	...	154.131	-11.807	45.287	.146	...	...	...	...	...	...	...	...	9.75E-01
29 Aug 1999[a]	03:19:55	...	...	...	261.000	27.000	28.000	...	...	...	335.162	12.556	39.219	.827	39.7	90.0	...	...	...	...	...	...	1.77E+02
03 Sep 1999	05:42:10	...	...	...	237.000	52.000	43.000	...	...	...	335.952	13.146	85.853	.008	62.0	90.0	...	...	...	...	...	...	1.56E-03
											345.854	26.728	85.604	.013									
07 Sep 1999	17:35:11	113.4	-69.8	1.5	112.699	-69.406	.100	...	...	...	156.674	-13.687	62.108	.071	...	...	...	...	...	...	...	...	2.58E-02
13 Sep 1999	06:51:56	...	...	...	153.000	46.000	18.000	...	...	...	144.349	15.132	38.971	.014	47.5	67.5	...	...	...	...	...	...	4.40E-02
											157.557	-14.410	68.030	.226									
15 Sep 1999	10:38:57	...	...	...	...	...	...	...	...	...	157.890	-14.696	58.354	.063	-9.8	10.2	...	...	...	...	...	...	1.80E-02
											164.011	-27.937	52.271	.018									
15 Sep 1999	23:15:22	97.1	71.9	.6	...	...	...	...	...	...	337.964	14.753	86.375	.008	...	...	...	...	...	...	...	...	9.65E-03
											146.672	14.063	63.089	.012									
17 Sep 1999	14:18:09	...	...	...	42.000	61.000	22.000	...	...	...	338.217	14.972	60.666	.029	...	...	...	...	...	...	...	...	3.91E-01
											343.622	28.132	46.931	.104									
18 Sep 1999	05:33:14	262.1	2.0	1.5	...	...	...	...	...	...	338.315	15.059	74.579	.022	...	...	...	...	...	...	...	...	1.37E-01
19 Sep 1999	13:42:17	69.4	74.0	2.2	...	...	...	...	...	...	149.773	12.594	74.222	.082	...	...	...	...	...	...	...	...	8.90E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
02 Oct 1999	22:49:03	25.2	3.8	2.3	...	...	...	...	...	...	300.510	-16.284	89.271	2.761	...	...	...	...	...	...	...	...	1.02E+01
04 Oct 1999[a]	15:12:37	...	...	...	146.000	18.000	16.000	...	...	...	162.369	6.124	87.440	.020	21.0	63.0	...	...	...	75.000	51.000	10.000	6.57E-01
											135.294	15.067	59.140	6.631									
07 Oct 1999	06:34:13	...	...	...	...	...	...	...	...	...	161.174	-17.863	83.398	.026	-9.0	-29.0	...	...	...	...	...	...	2.08E-02
											159.196	-29.475	83.694	.038									
14 Oct 1999	21:52:34	101.6	12.6	1.7	102.762	11.601	.025	...	...	...	162.232	-19.069	66.132	.011	...	...	...	...	...	...	...	...	1.14E-03
18 Oct 1999	19:02:41	224.0	-3.7	1.5	...	...	...	...	...	...	173.680	-.150	51.459	.080	...	...	...	...	...	...	...	...	6.75E-01
26 Oct 1999	04:33:18	...	...	...	...	...	...	...	...	...	343.666	21.009	81.588	.034	28.2	48.2	...	...	...	...	...	...	2.80E-02
											333.694	29.885	78.344	.041									
26 Oct 1999	13:02:17	...	...	...	248.979	-89.502	.027	...	...	...	163.713	-21.052	68.711	.244	...	...	...	...	...	...	...	...	1.66E+02
30 Oct 1999	01:46:04	123.0	-47.5	1.0	122.580	-48.430	.043	...	...	...	164.123	-21.680	42.338	.341	...	...	...	...	...	...	...	...	1.69E+02
01 Nov 1999	03:46:22	...	...	...	25.000	5.000	33.000	...	...	...	344.354	22.060	32.843	.064	...	...	...	...	...	...	...	...	7.93E+00
04 Nov 1999	17:07:07	53.1	55.1	.8	...	...	...	...	...	...	344.730	22.714	59.060	.068	...	...	...	...	...	...	...	...	2.87E-02
											6.893	7.520	58.963	.073									
05 Nov 1999	16:40:44	167.8	-64.2	2.4	180.754	-66.814	.060	...	...	...	187.654	-7.933	59.028	.030	...	...	...	...	...	...	...	...	4.43E-03
06 Nov 1999	19:03:32	39.2	60.6	.9	...	...	...	...	...	...	344.939	23.101	53.740	.073	...	...	...	...	...	...	...	...	4.62E-02
											8.506	8.396	56.932	.220									
08 Nov 1999	06:46:05	3.6	-54.9	1.0	...	...	...	...	...	...	345.081	23.380	80.688	.036	...	...	...	...	...	...	...	...	2.70E-01
15 Nov 1999	18:48:07	294.2	40.4	.6	...	...	...	...	...	...	345.725	24.826	45.196	.041	...	...	...	...	...	...	...	...	1.34E-01
											15.459	12.071	75.420	.096									
16 Nov 1999	14:31:05	...	...	...	267.000	-71.000	19.000	...	...	...	165.806	-24.986	66.022	.017	-61.2	-41.2	...	...	...	...	...	...	9.71E-03
											146.839	-29.170	69.056	.042									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
20 Nov 1999	05:46:49	51.2	-56.6	.5	...	...	...	...	...	...	166.038	-25.706	78.626	.018	...	...	...	...	...	...	...	...	1.37E+01
22 Nov 1999	00:06:26	...	...	...	...	...	...	...	...	...	166.164	-26.082	64.889	.074	-90.0	-45.0	...	...	...	...	...	...	1.35E+01
											166.146	-26.059	64.900	.076									
24 Nov 1999	06:42:02	...	...	...	142.000	84.000	38.000	...	...	...	166.271	-26.519	82.038	.038	10.3	30.3	...	...	...	...	...	...	3.98E+00
24 Nov 1999	09:31:10	...	...	...	...	...	...	...	...	...	346.286	26.571	15.090	.038	49.3	69.3	...	...	...	...	...	...	2.97E-02
											324.402	28.639	27.483	.126									
09 Dec 1999	15:27:26	...	...	...	...	...	...	...	...	...	346.668	29.749	89.739	.066	-71.1	-51.1	...	...	...	...	...	...	6.41E+00
16 Dec 1999	16:07:01	77.9	10.9	1.0	...	...	...	...	...	...	346.505	31.225	84.910	.007	...	...	...	...	...	...	...	...	3.19E-03
											39.504	22.787	37.867	.015									
21 Dec 1999	10:36:36	...	...	...	...	...	...	...	...	...	166.300	-32.269	43.796	.014	-35.9	-15.9	...	...	...	...	...	...	8.65E-03
											137.102	-26.134	68.304	.027									
26 Dec 1999	15:00:05	...	...	...	...	...	...	...	...	...	165.878	-33.365	44.019	.016	-3.2	16.8	...	...	...	...	...	...	5.40E-03
											135.963	-25.605	64.705	.029									
26 Dec 1999	23:08:59	...	...	...	269.000	11.000	29.000	...	...	...	331.844	-22.402	66.308	5.962	...	...	...	...	...	...	...	...	7.27E+02
07 Jan 2000	18:26:35	...	...	...	...	...	...	...	...	...	344.379	35.966	75.910	.031	-12.0	-90.0	106.0	.6	66.4	...	...	...	2.31E+00
											344.346	35.930	75.896	.015									
08 Jan 2000	16:48:07	236.4	-78.8	.7	...	...	...	...	...	...	164.295	-35.974	49.485	.015	...	...	...	...	...	...	...	...	8.87E+00
09 Jan 2000	10:27:14	248.9	-28.5	1.1	...	...	...	...	...	...	164.063	-36.270	68.034	.049	...	...	...	...	...	...	...	...	5.40E-02
											238.208	-28.431	8.715	.518									
10 Jan 2000	04:38:45	...	...	...	312.000	70.000	42.000	...	...	...	343.949	36.466	9.248	.029	55.2	75.2	...	...	...	...	...	...	2.71E-03
											313.241	24.157	35.989	.013									
15 Jan 2000	14:49:32	116.6	-15.8	1.7	...	...	...	...	...	...	162.849	-37.500	41.932	.007	...	...	...	...	...	...	...	...	4.83E-02

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											63.063	29.491	72.728	.021									
19 Jan 2000	13:09:33	...	...	...	203.000	-12.000	33.000	...	...	...	246.124	-30.076	31.798	.057	-35.4	-15.4	...	...	...	...	...	...	1.98E+00
23 Jan 2000	13:49:41	318.1	14.1	1.4	...	...	...	...	...	...	340.896	38.972	31.501	.092	...	...	...	...	...	...	...	...	1.85E-01
											249.248	-30.606	81.281	.098									
05 Feb 2000	08:39:52	8.4	30.2	1.1	...	...	...	...	...	...	336.858	40.937	29.095	.146	...	...	...	...	...	...	...	...	8.30E-01
05 Feb 2000	12:39:08	203.0	14.6	1.2	...	...	...	...	...	...	156.800	-40.955	70.209	.128	...	...	...	...	...	...	...	...	1.10E+00
06 Feb 2000	02:33:03	28.1	18.2	1.4	...	...	...	...	...	...	336.592	41.031	51.005	.395	...	...	...	...	...	...	...	...	2.27E+00
07 Feb 2000	23:56:22	289.7	59.3	.7	...	...	...	...	...	...	335.899	41.262	36.343	.032	...	...	...	...	...	...	...	...	1.47E+01
10 Feb 2000	08:44:05	...	...	...	29.812	-40.669	.033	...	...	...	155.005	-41.525	83.994	.004	...	...	...	...	...	...	...	...	5.55E-04
12 Feb 2000	17:06:32	...	...	...	329.000	72.000	24.000	...	...	...	323.953	-9.980	81.969	10.220	...	...	...	...	...	...	...	...	1.02E+03
14 Feb 2000	01:01:00	...	...	...	283.613	-66.458	.014	...	...	...	153.562	-41.884	65.116	.005	...	...	...	...	...	...	...	...	2.76E-04
18 Feb 2000	16:19:05	...	...	...	...	...	...	...	...	...	151.675	-42.151	57.034	.005	-59.2	-39.2	...	...	...	...	...	...	1.23E-01
											151.662	-42.238	56.949	.005									
23 Feb 2000	23:13:41	...	...	...	...	...	...	...	...	...	149.466	-42.412	44.584	.506	-42.3	-22.3	202.3	-3.8	66.3	...	...	...	1.16E+01
											163.639	2.805	59.420	5.514									
25 Feb 2000	01:35:29	110.6	.5	2.3	...	...	...	...	...	...	93.185	32.496	35.172	.193	...	...	...	...	...	...	...	...	2.26E+00
26 Feb 2000	12:51:08	...	...	...	327.000	-10.000	20.000	...	...	...	328.374	42.487	62.518	.008	-1.5	-6.5	...	...	...	...	...	...	8.48E-04
											308.682	20.707	42.614	.010									
01 Mar 2000	02:33:54	3.7	72.7	1.0	...	...	...	...	...	...	326.770	42.614	35.343	.016	...	...	...	...	...	...	...	...	8.30E-03
											96.604	32.460	61.436	.033									
06 Mar 2000	18:00:31	226.1	40.9	1.5	...	...	...	...	...	...	324.346	42.529	68.987	.033	...	...	...	...	...	...	...	...	3.07E-01
12 Mar 2000	05:23:54	320.3	37.9	.7	...	...	...	...	...	...	322.063	42.288	4.894	.130	...	...	...	...	...	...	...	...	1.01E-01

Table 5—Continued

		BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			
Date	UT	α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	Area
											α_2	δ_2	R_2	δR_2									sq. deg.
											283.768	-32.141	77.432	.027									
14 Mar 2000	08:51:42	137.7	50.7	1.7	...	...	...	...	...	...	141.197	-42.150	89.988	.073	...	...	...	...	...	...	...	...	5.68E+01
23 Mar 2000	09:02:07	190.7	48.1	1.0	...	...	...	...	...	...	317.802	41.365	77.623	.112	...	...	...	...	...	...	...	...	1.35E-01
											110.381	31.548	62.193	.259									
27 Mar 2000	22:37:57	...	...	...	316.000	55.000	25.000	...	...	...	316.394	40.841	4.501	3.378	57.3	90.0	...	...	...	...	...	...	2.20E+01
											308.190	19.811	26.137	.694									
02 Apr 2000	14:30:58	343.5	6.7	.8	...	...	...	...	...	...	314.550	40.141	41.782	.109	...	...	...	...	...	...	...	...	4.58E-02
											295.871	-30.839	57.853	.096									
11 Apr 2000	02:14:02	...	...	...	...	...	...	...	...	...	299.970	-30.167	45.385	.098	1.1	21.1	...	...	...	...	...	...	9.35E+00
12 Apr 2000	11:42:52	201.4	-59.8	3.7	...	...	...	...	...	...	192.120	-1.258	64.437	10.700	-53.0	-90.0	...	...	...	...	...	...	8.00E+02
19 Apr 2000	02:12:49	...	...	...	...	...	...	...	...	...	311.003	37.799	17.437	.144	...	...	...	...	...	...	...	...	3.08E-01
											308.584	19.768	33.293	.092									
20 Apr 2000	11:44:32	...	...	...	36.000	27.000	26.000	...	...	...	303.761	-29.409	89.635	.045	4.6	24.6	...	...	...	...	...	...	6.13E-01
											34.108	8.111	25.912	3.341									
20 Apr 2000	14:22:11	129.3	-14.6	.4	...	...	...	...	...	...	130.682	-37.577	22.393	.042	...	...	...	...	...	...	...	...	2.39E-01
											124.020	29.375	44.927	.102									
20 Apr 2000	18:00:40	313.8	-63.0	2.8	...	...	...	...	...	...	304.076	-29.366	33.914	.161	...	...	...	...	...	...	...	...	2.21E+00
21 Apr 2000	12:23:34	174.9	17.0	3.1	...	...	...	...	...	...	130.548	-37.446	67.930	.346	...	...	...	...	...	...	...	...	5.08E+00
24 Apr 2000	09:04:26	233.1	71.8	1.4	...	...	...	...	...	...	125.454	29.060	67.301	.197	...	...	...	...	...	...	...	...	1.75E+00
25 Apr 2000	05:25:31	...	...	...	315.000	-47.000	34.000	...	...	...	130.156	-36.926	67.168	.077	-79.0	-59.0	...	...	...	...	...	...	1.25E+00
29 Apr 2000	10:07:22	100.2	-4.8	.6	...	...	...	...	...	...	129.641	-36.327	42.960	.036	-39.6	-19.6	...	...	...	...	...	...	9.06E-03
											127.210	28.643	43.169	.056									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
02 May 2000[a]	13:18:35	...	...	...	252.000	-41.000	47.000	...	...	...	128.197	28.391	72.551	.101	-2.4	17.6	...	...	...	...	...	...	8.82E+00
03 May 2000	22:49:45	...	...	...	...	...	...	...	...	...	129.308	-35.719	37.899	.123	...	...	...	...	...	...	...	...	5.44E+01
06 May 2000	10:16:42	...	...	...	258.000	-9.000	17.000	...	...	...	309.311	-28.090	47.627	.144	...	...	...	...	...	...	...	...	9.96E+00
11 May 2000	01:11:59	331.2	-36.1	.9	...	...	...	...	...	...	309.043	34.837	76.354	.191	...	...	...	...	...	...	...	...	1.13E+00
											310.458	-27.749	22.991	.526									
16 May 2000	09:26:05	...	...	...	...	...	...	...	...	...	129.119	-34.250	84.964	.017	...	...	...	...	...	...	...	...	1.85E-02
											129.684	-20.341	89.075	.029									
17 May 2000	05:36:30	108.0	76.7	1.0	...	...	...	...	...	...	43.210	10.957	72.793	5.170	35.0	90.0	...	...	...	...	...	...	1.16E+01
17 May 2000	10:02:03	...	...	...	...	...	...	...	...	...	309.130	34.147	28.822	.213	62.0	90.0	...	...	...	...	...	...	4.63E+01
18 May 2000	05:41:51	71.3	53.9	1.8	...	...	...	...	...	...	131.860	27.255	49.611	.100	...	...	...	...	...	...	...	...	8.17E-01
19 May 2000	08:18:07	346.0	3.3	1.0	...	...	...	...	...	...	309.092	33.938	47.691	.046	...	...	...	...	...	...	...	...	3.19E-02
											312.026	-27.187	43.331	.080									
23 May 2000	19:01:35	...	...	...	...	...	...	...	...	...	129.265	-33.519	53.020	.256	...	...	28.5	2.0	66.7	...	...	...	1.14E+02
28 May 2000	08:46:24	...	...	...	161.276	-33.983	.033	...	...	...	129.572	-33.141	26.312	.090	...	...	...	...	...	...	...	...	3.41E-03
29 May 2000	08:43:12	...	...	...	2.348	-61.531	.066	...	...	...	129.603	-33.077	76.204	.054	...	...	...	...	...	...	...	...	1.05E-02
12 Jun 2000	22:54:41	...	...	...	...	...	...	...	...	...	131.115	-32.298	57.935	.077	...	...	103.2	-3.8	66.8	...	...	...	2.47E+01
14 Jun 2000	08:34:01	...	...	...	...	...	...	...	...	...	311.350	32.249	77.636	.067	-3.7	16.3	...	...	...	...	...	...	4.10E-02
											311.403	21.638	79.853	.026									
15 Jun 2000	16:32:35	...	...	...	...	...	...	...	...	...	131.540	-32.215	85.383	.004	-38.6	-18.6	...	...	...	...	...	...	9.86E-04
											131.494	-21.713	88.676	.009									
20 Jun 2000	00:54:39	...	...	...	276.000	-59.000	40.000	...	...	...	310.538	-25.846	73.411	.465	...	...	298.8	2.4	66.6	...	...	...	5.54E+01
20 Jun 2000	05:33:33	...	...	...	113.821	69.193	.060	...	...	...	312.137	32.151	77.784	.043	...	...	...	...	...	...	...	...	8.78E-03

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
											130.495	25.840	44.508	.213									
21 Jun 2000	02:00:51	...	...	...	247.000	-3.000	68.000	...	...	...	310.259	-25.819	27.802	1.225	...	...	...	...	...	...	...	...	2.23E+02
23 Jun 2000	01:04:46	...	...	...	296.000	6.000	19.000	...	...	...	309.480	-25.796	36.898	.118	...	...	...	...	...	...	...	...	9.99E+00
29 Jun 2000	05:08:51	...	...	...	...	...	...	...	...	...	189.657	1.111	60.370	13.238	-60.0	-90.0	312.1	-2.8	66.7	...	...	...	2.89E+02
30 Jun 2000	00:30:59	...	...	...	...	...	...	...	...	...	313.778	32.183	70.779	.007	...	...	...	...	...	...	...	...	5.06E-03
											127.274	25.554	76.670	.063									
01 Jul 2000	00:19:16	...	...	...	...	...	...	...	...	...	134.008	-32.192	53.533	.014	-38.0	-18.0	...	...	...	...	...	...	4.86E-02
											132.604	-22.686	58.939	.133									
01 Jul 2000	07:12:40	...	...	...	...	...	...	...	...	...	126.764	25.512	80.317	.031	-64.6	-44.6	...	...	...	...	...	...	9.54E-01
											201.097	-2.745	64.241	7.019									
18 Jul 2000	20:47:09	...	...	...	111.000	-3.000	18.000	...	...	...	137.603	-33.071	27.770	.054	-40.5	-20.5	...	...	...	...	...	...	1.35E-01
											134.047	-24.056	19.339	.114									
27 Jul 2000	19:42:41	...	...	...	...	...	...	...	...	...	139.729	-33.865	62.002	.006	6.6	26.6	...	...	...	...	...	...	9.76E-04
											134.829	-24.842	58.463	.007									
11 Aug 2000	15:30:01	...	...	...	...	...	...	...	...	...	323.507	35.756	24.037	.010	45.8	65.8	...	...	...	...	...	...	2.85E-03
											316.212	26.293	15.356	.024									
18 Aug 2000	20:09:06	...	...	...	...	...	...	...	...	...	286.699	-21.417	50.738	.139	-36.5	-56.5	262.7	-.9	66.0	...	...	...	1.47E+01
21 Aug 2000[a]	02:16:52	...	...	...	359.000	22.000	17.000	...	...	...	326.126	37.315	71.935	.069	...	...	...	...	...	337.000	-33.800	2.000	1.08E-01
											317.158	27.317	64.055	.066									
23 Aug 2000	07:22:32	...	...	...	...	...	...	...	...	...	326.782	37.735	61.639	.338	20.3	40.3	359.0	-2.4	66.8	...	...	...	2.69E+01
30 Aug 2000	23:49:52	...	...	...	...	...	...	...	...	...	329.101	39.319	39.668	.011	...	...	...	...	...	...	...	...	6.08E-03
											318.204	28.482	40.087	.024									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
03 Sep 2000	13:29:04	...	...	...	...	...	...	...	...	...	105.529	19.743	66.498	.125	...	...	...	...	...	...	...	...	8.26E+01
03 Sep 2000[a]	23:35:14	...	...	...	11.000	-23.000	21.000	...	...	...	105.529	19.743	66.498	.125	...	...	...	...	...	49.300	-17.100	10.000	5.40E+00
04 Sep 2000	13:18:42	...	...	...	12.000	5.000	22.000	...	...	...	105.331	19.706	77.630	.048	-20.0	-37.0	...	...	...	31.200	-7.100	10.000	8.85E-01
06 Sep 2000	21:00:49	...	...	...	272.000	47.000	34.000	...	...	...	331.254	40.901	32.324	.034	67.0	87.0	...	...	...	...	...	...	1.22E-02
											318.968	29.348	34.864	.039									
24 Sep 2000	16:40:37	...	...	...	48.000	-39.000	40.000	...	...	...	288.130	-17.871	63.065	.116	-35.0	-90.0	...	...	...	...	...	...	5.87E+00
04 Oct 2000	14:51:26	...	...	...	...	...	...	...	...	...	160.954	-48.930	45.700	.010	-49.2	-29.2	...	...	...	...	...	...	4.79E-02
											142.413	-33.358	66.500	.007									
11 Oct 2000	15:54:48	...	...	...	275.768	-50.899	.033	...	...	...	163.577	-51.280	62.840	.039	...	...	...	...	...	...	...	...	2.33E-03
											143.394	-34.531	84.881	.035									
13 Oct 2000	18:13:38	...	...	...	203.000	-44.000	22.000	...	...	...	164.663	-52.181	19.869	.208	-25.6	-45.6	...	...	...	...	...	...	7.78E-02
											143.704	-34.884	33.562	.059									
15 Oct 2000	02:34:12	...	...	...	...	...	...	...	...	...	345.041	52.547	64.447	.128	1.1	21.1	...	...	...	...	...	...	1.34E+00
											323.899	35.121	41.561	.099									
15 Oct 2000	17:31:12	...	...	...	...	...	...	...	...	...	114.292	16.000	62.188	.142	-64.8	-90.0	...	...	...	...	...	...	6.69E+00
19 Oct 2000	23:59:17	...	...	...	...	...	...	...	...	...	347.422	54.578	61.609	.007	72.3	90.0	...	...	...	...	...	...	1.02E-03
											324.638	35.994	53.066	.014									
20 Oct 2000	17:17:49	...	...	...	...	...	...	...	...	...	116.047	15.475	24.422	2.165	...	...	...	...	...	...	...	...	6.44E+02
22 Oct 2000[a]	05:14:53	...	...	...	275.000	-79.000	23.000	...	...	...	116.612	15.324	80.562	.351	...	...	...	...	...	96.500	-59.000	16.000	2.35E+01
01 Nov 2000[a]	21:52:31	...	...	...	119.000	42.000	27.000	...	...	...	120.929	14.154	87.370	.527	...	...	220.2	-.6	66.7	...	...	...	2.59E+02
05 Nov 2000	09:49:01	...	...	...	...	...	...	...	...	...	302.436	-13.740	33.950	.751	...	...	...	...	...	...	...	...	3.02E+02
07 Nov 2000	02:17:09	...	...	...	...	...	...	...	...	...	357.074	62.257	70.971	.054	-20.9	-.9	...	...	...	...	...	...	3.97E-02

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
											327.673	39.536	87.304	.070									
15 Nov 2000[a]	14:06:41	...	...	...	34.000	-7.000	21.000	...	...	...	35.476	10.449	57.783	9.966	-49.2	-29.2	...	...	...	...	...	...	1.00E+03
18 Nov 2000	08:19:44	...	...	...	42.000	-2.000	22.000	...	...	...	128.329	12.043	64.919	.225	-29.0	-9.0	...	...	...	...	...	...	1.57E+00
18 Nov 2000[a]	20:43:36	...	...	...	171.000	-76.000	22.000	...	...	...	308.578	-11.970	55.681	.431	-54.5	-34.5	...	...	...	318.000	-45.000	36.000	6.10E+01
04 Dec 2000	08:01:09	...	...	...	...	...	...	...	...	...	25.338	74.774	62.454	.013	-3.2	16.8	...	...	...	...	...	...	1.90E-03
											333.554	45.945	64.670	.022									
06 Dec 2000	09:37:01	...	...	...	49.000	-36.000	33.000	...	...	...	317.270	-9.207	75.200	.099	...	...	...	...	...	...	...	...	1.31E+01
06 Dec 2000	21:29:40	...	...	...	209.000	-49.000	27.000	...	...	...	210.215	-75.837	15.857	.875	-51.7	-31.7	...	...	...	...	...	...	1.47E+00
											317.455	-9.103	84.056	.389									
12 Dec 2000	09:33:42	...	...	...	7.000	-74.000	43.000	...	...	...	320.281	-8.127	49.880	.116	-47.1	-27.1	...	...	...	291.300	-52.000	5.000	4.91E-01
											223.321	-77.840	35.000	.315									
12 Dec 2000	14:57:23	...	...	...	102.400	36.440	.100	...	...	...	43.975	77.912	48.055	.008	-1.0	19.0	...	...	...	...	...	...	1.77E-03
											335.835	48.194	82.960	.016									
14 Dec 2000	21:03:05	...	...	...	...	...	...	...	...	...	230.574	-78.552	69.540	.073	-60.0	30.0	238.0	-1.9	66.8	...	...	...	5.76E+00
											169.926	7.807	89.668	18.203									
15 Dec 2000	14:34:34	...	...	...	298.000	-17.000	13.000	...	...	...	232.872	-78.732	73.658	.286	-9.8	10.2	...	...	...	...	...	...	1.25E-01
											336.729	49.035	67.133	.059									
19 Dec 2000	07:35:29	...	...	...	50.000	56.000	36.000	...	...	...	65.588	79.393	17.186	.579	65.0	90.0	...	...	...	...	...	...	4.85E-01
											337.920	50.116	23.437	.215									
26 Dec 2000	20:14:44	...	...	...	350.000	-39.000	26.000	...	...	...	328.179	-5.297	52.074	.146	...	...	...	...	...	...	...	...	1.59E+01
28 Dec 2000	12:03:14	...	...	...	...	...	...	...	...	...	148.909	4.959	72.102	.048	-63.3	-43.3	...	...	...	...	...	...	1.30E+00
											186.842	1.360	64.409	4.055									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
04 Jan 2001	17:21:30	...	...	...	340.000	58.000	40.000	...	...	...	120.139	76.462	39.607	.023	20.3	40.3	...	...	...	317.369	63.512	1.000	1.04E-02
											344.357	55.248	15.860	.102									
09 Jan 2001	02:38:06	...	...	...	...	...	...	...	...	...	309.478	-74.474	25.610	.014	-41.4	-21.4	...	...	...	...	...	...	1.57E-02
											166.516	-56.710	72.031	.010									
19 Jan 2001	00:19:55	...	...	...	150.000	12.000	21.000	...	...	...	144.761	69.068	41.330	.089	-1.0	19.0	...	...	...	...	...	...	1.56E-01
											352.424	60.131	86.769	.278									
19 Jan 2001	10:19:37	...	...	...	...	...	...	...	...	...	324.620	-68.945	85.955	.006	28.2	48.2	...	...	...	...	...	...	9.40E-04
											352.700	60.273	69.372	.025									
21 Jan 2001	17:28:36	...	...	...	141.000	-45.000	40.000	...	...	...	211.931	-8.674	82.099	1.771	-56.9	-36.9	...	...	...	...	...	...	7.92E+01
26 Jan 2001	09:10:40	...	...	...	...	...	...	...	...	...	151.507	64.894	20.901	.221	57.3	77.3	...	...	...	...	...	...	1.29E-01
											358.044	62.712	67.295	.077									
27 Jan 2001	08:29:18	...	...	...	...	...	...	...	...	...	152.797	64.225	85.096	.049	-22.7	-2.7	...	...	...	...	...	...	2.84E-02
											358.877	63.047	72.762	.104									
08 Feb 2001	01:01:24	...	...	...	...	...	...	...	...	...	353.657	5.149	83.444	.248	39.7	90.0	...	...	...	...	...	...	7.14E+01
08 Feb 2001	04:08:22	...	...	...	33.000	48.000	35.000	...	...	...	353.741	5.184	69.972	.260	...	...	...	...	...	...	...	...	3.77E+01
08 Feb 2001[a]	14:26:17	...	...	...	131.000	39.000	48.000	...	...	...	354.008	5.298	62.842	.105	-12.3	7.7	...	...	...	56.500	17.000	11.000	4.60E+00
12 Feb 2001	05:09:51	...	...	...	...	...	...	...	...	...	342.922	-54.826	21.892	.543	-46.4	-26.4	...	...	...	...	...	...	5.54E+01
12 Feb 2001	17:26:27	...	...	...	219.000	47.000	30.000	...	...	...	163.196	54.510	20.791	.281	55.2	75.2	...	...	...	...	...	...	1.18E+01
13 Feb 2001	02:57:23	...	...	...	257.300	39.260	.250	...	...	...	163.409	54.275	61.086	.057	67.0	90.0	...	...	...	...	...	...	6.03E-02
14 Feb 2001	08:48:07	...	...	...	265.242	48.577	.017	...	...	...	164.063	53.532	58.287	.208	49.3	90.0	...	...	...	...	...	...	8.64E-04
20 Feb 2001	19:20:54	...	...	...	315.000	2.000	26.000	...	...	...	347.308	-49.753	59.914	.596	...	...	...	...	...	...	...	...	6.75E+01
22 Feb 2001	07:23:03	...	...	...	223.051	43.012	.042	...	...	...	167.911	48.821	37.940	.010	46.5	66.5	...	...	...	...	...	...	9.38E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
26 Feb 2001	19:15:13	...	...	...	242.000	-64.000	30.000	...	...	...	349.839	-46.273	69.107	.058	-47.1	-27.1	...	...	...	...	...	...	2.98E+00
03 Mar 2001	15:15:28	...	...	...	294.000	55.000	35.000	...	...	...	171.708	43.498	52.091	.644	...	...	...	...	...	...	...	...	7.63E+01
04 Mar 2001	05:18:51	...	...	...	316.590	53.210	1.000	...	...	...	172.052	43.088	78.976	.051	57.3	90.0	...	...	...	...	...	...	2.20E-01
08 Mar 2001	15:38:57	...	...	...	37.000	-60.000	30.000	...	...	...	353.696	-40.581	30.819	.015	-61.2	-81.2	...	...	...	27.800	-58.900	4.200	2.18E-01
17 Mar 2001	06:28:07	...	...	...	33.000	-5.000	24.000	...	...	...	356.603	-35.755	53.931	.008	-22.7	-2.7	...	...	...	...	...	...	3.46E-01
24 Mar 2001	11:32:28	...	...	...	...	...	...	...	...	...	178.537	31.825	63.602	.070	-3.6	16.4	...	...	...	107.774	20.091	.130	3.48E-02
25 Mar 2001	06:38:06	...	...	...	19.000	25.000	19.000	...	...	...	358.769	-31.391	58.792	.096	1.1	21.1	...	...	...	...	...	...	5.39E+00
26 Mar 2001	03:14:56	...	...	...	...	...	...	...	...	...	179.284	30.842	81.704	.010	-64.6	-44.6	...	...	...	...	...	...	7.53E-02
											179.013	30.912	81.620	.007									
08 Apr 2001	06:45:22	...	...	...	...	...	...	...	...	...	2.826	-23.575	27.619	.017	-24.4	-4.4	...	...	...	...	...	...	2.26E+00
11 Apr 2001	16:06:07	...	...	...	218.000	-11.000	36.000	...	...	...	183.383	21.740	49.294	.059	-9.8	10.2	...	...	...	...	...	...	2.93E+00
12 Apr 2001	21:46:29	...	...	...	294.913	13.618	.100	...	...	...	3.687	-21.050	75.857	.015	39.7	59.7	...	...	...	...	...	...	6.13E-03
20 Apr 2001	22:37:56	...	...	...	159.000	-3.000	33.000	...	...	...	125.020	20.419	40.909	13.865	-1.0	19.0	...	...	...	...	...	...	6.09E+02
27 Apr 2001	09:20:04	...	...	...	319.000	24.000	23.000	...	...	...	7.025	-12.705	57.994	.022	...	...	...	...	...	...	...	...	2.17E+00
27 Apr 2001	18:44:15	...	...	...	...	...	...	...	...	...	312.167	-19.130	50.584	.707	-54.5	-34.5	...	...	...	...	...	...	1.05E+02
04 May 2001	02:43:46	...	...	...	16.000	-33.000	17.000	...	...	...	8.675	-8.574	9.260	.223	-26.1	-6.1	...	...	...	...	...	...	3.23E+00
05 May 2001	06:26:28	...	...	...	41.000	10.000	39.000	...	...	...	8.701	-7.914	51.021	.159	...	...	...	...	...	...	...	...	2.89E+01
15 May 2001	02:20:32	...	...	...	22.000	-7.000	27.000	...	...	...	10.680	-1.558	10.400	.115	...	...	...	...	...	...	...	...	1.61E+01
15 May 2001	18:04:32	...	...	...	...	...	...	...	...	...	338.552	-12.003	59.172	59.172	...	...	...	...	...	...	...	...	3.04E+04
17 May 2001	23:51:33	...	...	...	...	...	...	...	...	...	191.241	-.424	69.867	.203	2.0	12.0	151.0	-2.0	67.0	...	...	...	4.38E+00
22 May 2001	20:51:48	...	...	...	257.000	-39.000	26.000	...	...	...	192.166	-3.867	77.723	.134	-28.5	-48.5	...	...	...	...	...	...	3.85E+00
11 Jun 2001	22:06:07	...	...	...	...	...	...	...	...	...	15.501	19.932	87.945	.067	-77.8	-57.8	266.0	-4.0	65.0	...	...	...	2.90E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
											117.662	21.864	77.061	10.011									
12 Jun 2001	02:33:13	...	...	...	...	...	...	270.823	-32.134	1.200	195.706	-20.176	67.085	.037	-20.9	-.9	...	...	...	...	...	...	1.91E-01
19 Jun 2001[a]	02:58:26	...	...	...	123.000	-64.000	20.000	...	...	...	196.609	-26.592	31.844	.110	-37.0	-51.0	...	...	...	163.000	-42.600	4.000	1.57E+00
											151.631	14.654	58.218	3.277									
19 Jun 2001	15:17:01	...	...	...	...	...	...	...	...	...	333.322	-13.980	54.064	1.092	2.3	22.3	84.7	-1.3	66.2	267.600	-25.100	60.000	4.83E+01
23 Jun 2001	03:31:15	...	...	...	321.000	28.000	44.000	...	...	...	17.196	30.517	56.140	.764	49.3	69.3	...	...	...	...	...	...	3.31E+01
24 Jun 2001[a]	13:35:30	...	...	...	38.000	-83.000	22.000	...	...	...	197.394	-31.950	35.041	.017	-64.0	-44.0	...	...	...	160.000	-54.750	5.000	1.75E-01
											197.581	-32.129	34.998	.017									
29 Jun 2001	12:21:06	...	...	...	...	...	...	248.158	-18.723	.250	198.213	-37.276	47.033	.094	-9.8	10.2	...	...	...	...	...	...	6.35E-02
29 Jun 2001	19:10:57	...	...	...	94.000	11.000	20.000	...	...	...	18.079	37.344	62.818	.092	-16.9	3.1	...	...	...	...	...	...	3.15E+00
											23.370	38.130	58.650	.135									
03 Jul 2001	20:30:49	...	...	...	...	...	...	...	...	...	18.693	41.942	30.699	.259	49.3	90.0	...	...	...	...	...	...	4.85E+01
10 Jul 2001	23:34:13	...	...	...	149.000	27.000	25.000	...	...	...	19.150	49.527	80.931	.011	7.1	27.1	...	...	...	...	...	...	2.40E-01
											19.257	49.859	80.646	.018									
11 Jul 2001	02:43:50	...	...	...	...	...	...	...	...	...	19.158	49.671	55.059	.622	57.3	90.0	...	...	...	...	...	...	1.58E+02
15 Jul 2001	20:23:41	...	...	...	...	...	...	...	...	...	19.398	55.349	47.271	.243	...	...	...	...	...	...	...	...	1.29E+02
21 Jul 2001	03:56:51	...	...	...	118.000	17.000	29.000	...	...	...	19.179	61.337	76.157	.018	-10.0	8.0	...	...	...	...	...	...	3.91E-02
											32.631	57.679	69.058	.014									
01 Aug 2001	18:30:33	...	...	...	...	...	...	...	...	...	195.532	-73.857	87.355	.013	17.8	37.8	318.0	-1.0	67.0	...	...	...	5.45E-01
											195.901	-73.436	86.920	.010									
02 Aug 2001	08:35:20	...	...	...	177.000	12.000	19.000	...	...	...	195.517	-74.035	78.991	.023	-.3	19.7	278.0	-3.0	67.0	...	...	...	4.52E-01
											195.110	-74.455	79.396	.017									

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
04 Aug 2001	20:13:18	...	...	...	...	...	...	...	...	...	13.425	76.516	62.501	.093	.6	20.6	149.0	-1.0	67.0	...	...	...	1.46E-01
											44.729	69.670	61.088	.079									
13 Aug 2001	09:43:56	...	...	...	...	...	...	...	...	...	216.731	-10.806	82.382	7.343	-63.0	-43.0	...	...	...	...	...	...	6.73E+02
18 Aug 2001	13:53:10	...	...	...	328.000	-2.000	19.000	...	...	...	40.870	12.258	58.473	1.798	14.6	34.6	...	...	...	...	...	...	3.89E+01
26 Aug 2001	18:06:01	...	...	...	299.000	41.000	34.000	...	...	...	245.530	82.247	39.533	.580	37.0	79.0	...	...	...	...	...	...	1.06E+01
											49.583	15.317	46.751	22.715									
21 Sep 2001	05:15:50	...	...	...	...	...	...	343.923	40.951	2.150	232.347	67.603	59.998	.151	...	...	...	...	...	...	...	...	1.40E+00
22 Sep 2001	17:36:52	...	...	...	...	...	...	...	...	...	232.767	66.963	82.296	.010	5.0	15.0	...	...	...	...	...	...	3.26E-01
											232.460	66.941	82.315	.008									
23 Sep 2001[a]	09:24:29	...	...	...	320.000	24.000	25.000	...	...	...	232.819	66.685	65.321	.024	30.0	90.0	...	...	...	...	...	...	1.29E+00
											232.521	66.660	65.430	.012									
03 Oct 2001	03:34:08	...	...	...	...	...	...	...	...	...	233.859	62.949	28.380	.569	...	...	...	...	...	...	...	...	1.95E+02
04 Nov 2001	10:02:03	...	...	...	190.000	-5.000	32.000	...	...	...	241.227	55.915	76.062	.271	...	...	...	...	...	...	...	...	3.76E+01
15 Nov 2001	20:16:17	...	...	...	...	...	...	...	...	...	244.359	55.057	59.481	.007	45.0	72.0	...	...	...	...	...	...	8.18E-01
											244.316	55.082	59.445	.007									
21 Nov 2001	18:47:08	...	...	...	173.606	-76.027	.033	...	...	...	320.591	-17.068	84.758	.020	-68.8	-48.8	...	...	...	...	...	...	2.56E-03
22 Nov 2001	20:51:33	...	...	...	...	...	...	...	...	...	246.267	54.962	25.264	.046	...	...	257.5	3.6	67.5	...	...	...	5.03E+00
14 Dec 2001	19:48:23	...	...	...	...	...	...	...	...	...	182.542	4.031	38.524	18.295	39.7	59.7	283.0	-3.9	68.0	...	...	...	1.32E+03
16 Dec 2001	02:55:23	...	...	...	...	...	...	...	...	...	253.050	56.662	66.185	.121	12.0	52.0	284.9	.7	66.0	...	...	...	2.18E+00
											4.524	-2.966	65.798	3.633									
21 Dec 2001	01:21:00	...	...	...	...	...	...	...	...	...	254.424	57.445	47.325	.054	30.2	50.2	236.4	-3.9	66.5	...	...	...	4.30E+00
28 Dec 2001	23:19:15	...	...	...	...	...	...	...	...	...	256.637	58.956	43.122	.017	57.3	90.0	...	...	...	...	...	...	6.46E-01

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	sq. deg.
											α_2	δ_2	R_2	δR_2									
											256.237	58.837	42.942	.017									
13 Jan 2002	02:04:11	...	...	...	84.000	52.000	41.000	...	...	...	29.920	8.403	87.953	1.104	20.3	40.3	...	...	...	...	...	...	4.78E+01
13 Jan 2002	11:02:44	...	...	...	...	...	...	...	...	...	209.984	-8.569	66.692	13.680	39.7	90.0	101.2	-3.3	67.9	...	...	...	3.42E+03
19 Jan 2002	00:09:57	...	...	...	...	...	...	...	...	...	213.975	-10.032	61.994	41.245	20.3	40.3	312.1	-1.1	67.8	...	...	...	2.26E+03
19 Jan 2002	04:27:10	...	...	...	125.000	4.000	33.000	...	...	...	211.072	47.352	84.269	.068	-8.3	-28.3	...	...	...	...	...	...	2.00E-02
											81.696	-64.603	73.682	.027									
08 Feb 2002	14:14:12	...	...	...	...	...	...	...	...	...	264.063	71.840	61.899	.018	28.2	48.2	...	...	...	...	...	...	8.91E-01
											263.532	71.595	61.678	.022									
09 Feb 2002	07:49:57	...	...	...	205.000	-51.000	42.000	...	...	...	84.040	-72.126	29.284	.091	-80.0	-50.0	...	...	...	...	...	...	6.26E-01
											228.401	-15.435	74.240	1.400									
21 Feb 2002	08:07:43	...	...	...	...	...	...	...	...	...	261.985	76.891	64.953	.024	4.6	24.6	...	...	...	48.700	36.300	1.000	7.79E-03
											35.840	-45.406	82.517	.022									
04 Mar 2002	01:02:26	...	...	...	...	...	...	...	...	...	253.956	81.071	18.113	.048	45.0	75.0	155.7	1.4	68.3	...	...	...	7.69E-01
											253.892	80.871	17.950	.041									
06 Mar 2002	18:58:03	...	...	...	...	...	...	...	...	...	225.347	-22.113	59.314	.752	...	...	161.8	2.9	68.0	...	...	...	2.87E+02
09 Mar 2002	06:58:05	...	...	...	351.000	-56.000	19.000	...	...	...	65.267	-82.730	33.911	.756	...	...	...	...	...	...	...	...	6.36E+01
11 Mar 2002	01:21:30	...	...	...	57.000	54.000	20.000	...	...	...	240.648	83.431	35.343	.018	42.6	62.6	...	...	...	...	...	...	4.09E-03
											217.917	45.150	71.065	.018									
15 Mar 2002	15:42:46	...	...	...	...	...	...	...	...	...	226.336	84.444	55.259	.159	...	...	...	...	...	...	...	...	9.41E+01
27 Mar 2002[a]	02:26:08	...	...	...	337.000	60.000	32.000	...	...	...	175.897	84.164	55.624	.033	26.4	46.4	...	...	...	...	...	...	3.49E-01
											39.489	-45.369	83.970	.077									
02 Apr 2002	07:54:35	...	...	...	...	...	...	...	...	...	339.861	-82.462	46.424	.043	-42.3	-22.3	279.6	.8	68.3	...	...	...	1.76E+00

Table 5—Continued

Date	UT	BATSE			SAX			HETE			IPN				Ecliptic		Planet			Other			Area
		α	δ	R	α	δ	R	α	δ	R	α_1	δ_1	R_1	δR_1	β_1	β_2	α	δ	R	α	δ	R	
											α_2	δ_2	R_2	δR_2									sq. deg.
											339.311	-82.485	46.493	.032									
05 Apr 2002	00:41:34	...	...	...	...	...	...	...	...	...	220.227	45.674	77.678	.020	-6.8	-26.8	316.6	5.9	64.0	...	...	...	4.24E-03
											334.811	-81.573	63.719	.013									
09 Apr 2002	09:27:18	...	...	...	151.000	53.000	46.000	...	...	...	149.794	80.004	49.175	.397	...	...	...	...	...	...	...	...	9.21E+01
13 Apr 2002	16:20:14	...	...	...	3.000	...	30.000	...	...	...	327.093	-78.480	75.263	.005	-2.7	-22.7	...	...	...	...	...	...	5.37E-04
											40.831	-46.090	44.921	.014									
17 Apr 2002	05:36:17	...	...	...	349.000	-44.000	27.000	...	...	...	325.339	-77.154	35.955	.046	-55.0	-35.0	100.7	-3.1	68.5	...	...	...	6.60E-01
											325.022	-77.048	36.034	.052									
18 Apr 2002	08:38:33	...	...	...	...	...	...	...	...	...	324.911	-76.733	53.616	.023	-60.0	-90.0	199.4	3.3	68.5	...	...	...	1.96E-03
											41.114	-46.366	50.913	.016									
26 Apr 2002	23:56:14	...	...	...	143.000	76.000	27.000	...	...	...	130.600	21.352	45.414	1.908	1.1	90.0	...	...	...	...	...	...	1.95E+02

[a]IPN annulus does not include *BeppoSAX* localization

Table 6. IPN catalogs of gamma-ray bursts

Years covered	Number of GRBs	Description
1990–1992	16	*Ulysses, Pioneer Venus Orbiter,* WATCH, SIGMA, PHEBUS GRBs[a]
1990–1994	56	*Granat*-WATCH supplement[b]
1991–1992	37	*Pioneer Venus Orbiter, Compton Gamma-Ray Observatory, Ulysses* GRBs[c]
1991–1994	218	BATSE 3B supplement[d]
1991–2000	211	BATSE untriggered burst supplement[e]
1992–1993	9	*Mars Observer* GRBs[f]
1994–1996	147	BATSE 4Br supplement[g]
1996–2000	343	BATSE 5B supplement[h]
1996–2002	475	*BeppoSAX* supplement[i]
2000–2006	226	HETE-2 supplement[j]

[a]Hurley et al. 2000a

[b]Hurley et al. 2000c

[c] Laros et al. 1998

[d]Hurley et al. 1999a

[e]Hurley et al. 2005

[f] Laros et al. 1997

[g]Hurley et al. 1999b

[h]Hurley et al. 2006b

[i]present catalog

[j]Hurley et al. 2009