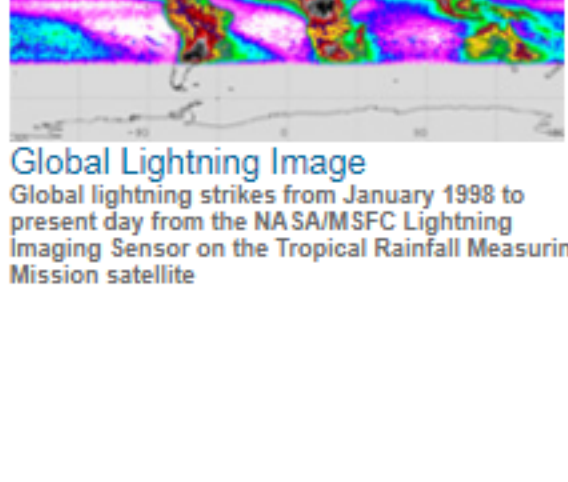


LIGHTNING & ATMOSPHERIC ELECTRICITY RESEARCH

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Dataset Information

TRMM-LIS Data Processing Anomalies

This web page lists anomalous data receipt and processing conditions for the TRMM Lightning Imaging Sensor (LIS) discovered after reprocessing with version 4.1. Please consult the documentation for determination of anomalous orbits, and the science/orbit data itself for anomaly flags, or see LIS notes.

(The page at http://branch.nasac.nasa.gov/lis_hk/LIS_notes.html is no longer being updated.)

TRMM-LIS Data Processing Missing Orbits and Anomalies

Date (Julian)	Missing orbit numbers (start/finish)	Anomalous orbit number	Comments. See specific orbits in the science data if reason is not shown below.
1998			
03/03/1998 (98062)		1514	
03/03/1998 (98062)	1515		Low power recovery
03/03/1998 (98062)		1516	
04/25/1998 (98115)		2338	
04/25/1998 (98115)	2339-2341		Low power mode recovery mode due to low sun angle.
04/25/1998 (98115)		2342	
11/17/1998 (98321)		5595	
11/17/1998 (98321)	5596-5599		Instrument powered off due to encounter with Leonid meteor stream.
11/17/1998 (98321)		5600	
1999			
01/03/1999 (99003)		6339	
01/03/1999 - 01/06/1999 (99003) - (99006)	6340-6387		Instrument powered off.
01/06/1999 - (99006)		6388	
08/24/1999 - (99236)		10001	TRMM recorder overflow
10/4/1999 - (99277)		10649	Onboard recorder overflow
11/17/1999 - (99321)		11354	
11/17/1999 - 11/18/1999 (99321) - (99322)	11355-11359		Instrument powered off due to encounter with Leonid meteor stream.
11/18/1999 - (99322)		11360	
2000			
01/10/2000 - (00010)		12196	Failed harddrive caused recorder overflow
04/22/2000 - (00113)		13816	Recorder overflow
04/22/2000 - (00113)		13817	
09/17/2000 - (00261)		16154	
09/17/2000 - 09/19/2000 (00261) - (00263)	16155-16192		Satellite power outage
09/22/2000 - 09/22/2000 (00266) - (00266)	16235-16239		
09/23/2000 - (00266)		16234	
09/23/2000 - (00266)		16240	Instrument powered down due to low battery indication
11/18/2000 - (00323)		17127	
11/18/2000 - (00323)	17128-17133		Instrument powered off due to encounter with Leonid meteor stream.
11/18/2000 - (00323)		17134	
2001			
08/13/2001 - (01225)		21355	
08/13/2001 - 08/17/2001 (01225) - (01229)	21356-21429		Instrument powered down due to spacecraft reboot.
08/17/2001 - (01229)		21430	
11/17/2001 - (01321)		22865	
11/18/2001 - 11/18/2001 (01322) - (01322)	22866-22880		Instrument powered off due to encounter with Leonid meteor stream.
11/18/2001 - (01322)		22881	
2002			
01/31/2002 - (02031)		24031	
01/31/2002 - (02031)	24032		Instrument reset
09/05/2002 - (02248)		27414	
09/05/2002 - 09/12/2002 (02248) - (02255)	27415-27525		Problem with solar array position necessitated the LIS and VIRS to be temporarily powered off to meet power balance.
09/25/2002 - (02268)		27725	
09/25/2002 - 10/04/2002 (02268) - (02277)	27726-27867		LIS powered off due to low beta angle and power issues.
10/04/2002 - (02277)		27868	
11/19/2002 - (02323)		28570	
11/19/2002 - (02323)	28571-28578		Instrument powered off due to encounter with Leonid meteor stream.
11/19/2002 - (02323)		28579	
2003			
10/29/2003 - (03302)		33940	
10/29/2003 - 11/03/2003 (03302) - (03307)	33941-34024		LIS instrument turned off during a period of intense solar activity to prevent instrument damage.
11/03/2003 - (03307)		34025	
2004			
06/04/2004 - (04156)	37349	37348 37350	The power at the ground station was turned off due to severe weather in the area. Thus, the ground station wasn't available to receive data.
2005			
09/19/2005 - (05262)		44712-44713	There was a problem with TDS (TDRS satellite anomaly) in which we lost the event scheduled at 17:41-18:01z. The data loss is as follows for all of the science data (VR 3 - VR 6): 16:06:27z - 17:42:27z. All engineering data was recovered.
12/03/2005 - (05337)	45881		Due to a late acquisition with TDRS on 05-337, some LIS and PR data was lost.
2006			
01/30/2006 - (06030)	46776		Orbit 46777 is missing data, LIS science data interruption likely caused by passage through the South Atlantic Anomaly.
04/05/2006 - (06095)		47794-47795	There was a problem at STGT with a piece of equipment that distributes the data to the various entities. The time of the missing data is 095/09:42:27z-11:14:27z
05/22/2006 - (06142)		48525-48526	The data gap was a result of a Q-channel return link that dropped out at White Sands resulting in a chain fallover. The affected times are: 2006-142T07:14:30:75330 - 2006-142T08:47:31:75334
09/14/2006 - (06257)		50320	The data gap was a result interference with the Hubble telescope. The affected times are: 2006-257 10:29:25 to 2006-257 11:53:00
11/28/2006 - (06332)		51482-51483	Late acquisition of the satellite due to problems at the down link site (White Sands, NM)
2007			
01/09/2007 - (07009)		52144-52145	Communications interference.
03/17/2007 - (07076)	53189-53190		Interruption likely caused by passage through the South Atlantic Anomaly.
07/11/2007 - (07192)	54976	54975, 54977	missing orbit 54976 orbits 54975 and 54977 are partial orbits TRMM sustained a non-recoverable data loss
2008			
05/08/2008 - (08129)	59698		Antenna equipment problem.
07/08/2008 - (08190)	60650-60651		Unknown problem, reset fixed.
09/10/2008 - (08254)		61656-61657	The MOC could not receive data due to problems with software delivery at WSGT.
12/06/2008 - (08341)		63002-63003	The ground station was down.
2009			
02/10/2009 - 02/11/2009 (09041) - (09042)		64043-64044	Missing data on day 041 2253 UTC to day 042 0222 UTC due to software problems at the downlink site.
05/18/2009 - (09138)	65553		The data could not be obtained from the satellite due to an antenna problem (downlink)
06/16/2009 - (09167)	65997	65996-65998 66000-66001	Data acquisition problem - 054026z-081525z and 112527z-130225z on day 167 (Jun 16)
06/24/2009 - (09175)	66131	66130,66132	LIS bus error - 21:39:30z - 23:16:02z on day 175 (Jun 24)
07/01/2009 - (09182)		66229	Problems with the ground station acquiring the signal from the satellite.
09/08/2009 - (09251)	67309	67308	FIFO error while in the South Atlantic Anomaly.
12/20/2009 - (09354)		68923	Data were not collected due to the ground station problems.
12/21/2009 - (09355)	68924-68930	68931	Data were not collected due to the ground station problems.
2010			
04/07/2010 - (10097)		70600-70601	Dropouts due to PSN jumps.
04/26/2010 - (10116)		70899	Dropouts due to WSGT not available to support TRMM.
06/16/2010 (10167)		71695	Pacor has informed PPS that there has been an unrecoverable gap in TRMM data for June 16, 2010 (DOY 167) spanning 2026z - 2057z. This was due to equipment failure at the White Sands facility.
07/26/2010 - (10207)		72310-72311	During the 207/10:1400z contact, the MOCC was unable to archive data on the data until 10:2400z. This caused an unrecoverable gap in the science data from 207/08:4126z to 207/10:1526z.
08/19/2010 (10231)		72688	The Precipitation Radar data recorder needed to be reset. Recorders for VIRS, TMI and LIS were stopped during the reset. There is a gap from 141125Z-141850z.
2011			
01/18/2011 - (11018)		75058	
01/18/2011 - (11018)	75059		LIS stopped recording data and needed to be reset, likely due to SEU. Missing data time range: 2011-018T16:11:49:76563 - 2011-018T19:12:37:91709 (lost 10845 secs)
01/18/2011 - (11018)		75060	
03/05/2011 - (11064)		75770-75771, 75773-75776	Power supply fault at ground station.
05/08/2011 - (11128)		76771-76772	Single Event Upset (SEU) over the South Atlantic Anomaly region
06/06/2011 - (11157)		77228	Data Dropout (No other information given.)
09/06/2011 - (11249)		78657-78658	Missing data during portions of these orbits due to failure of Automated Data Processing Equipment
10/23/2011 - (11296)		79383-79384	LIS RTEP FIFO error
11/11/2011 - (11315)		79692-79693	From about 2245 UTC on 11/11/11 to 0900 UTC on 11/12/11 Instrument in safe mode- no data collected.
2012			
05/01/2012 - (12122)		82359	LIS instrument hang-up; lost data from 01:15:42z - 02:21:23z.
06/23/2012 - 06/24/12 (12175 - 12176)		83199-83200, 83212-83213	Unrecoverable data gap 175 23:37:26 499629 UTC - 176 01:21:27 498820 UTC 176 20:06:26 498805 UTC - 176 21:21:27 498698 UTC
07/14/2012 - (12196)		83517-83518	Unrecoverable data gap due to LIS FIFO Error from 08:19:03.78064z to 10:02:53.49352z.
08/24/2012 - (12237)		84154,84160	84154 - 2012-237T05:33:29 75334 - 2012-237T07:09:30 75369 84160 - (6 intervals of missing data, each about 450 secs long, see following list) - 2012-237T14:38:05 75520 - 2012-237T14:45:37 75316 (lost 451 secs) - 2012-237T14:52:34 75357 - 2012-237T15:00:41 75350 (lost 486 secs) - 2012-237T15:07:04 75333 - 2012-237T15:14:38 75328 (lost 453 secs) - 2012-237T15:21:35 75336 - 2012-237T15:29:10 75304 (lost 454 secs) - 2012-237T15:36:08 75322 - 2012-237T15:43:42 75342 (lost 454 secs) - 2012-237T15:50:39 75253 - 2012-237T15:58:13 75311 (lost 454 secs) All due to downlink problems
09/28/2012 - (12272)		84707-84708	Computer problem at WSGT 18:08:24-19:13:26z
12/01/2012 - (12336)		85695	Data dropout... Unknown cause 2012-336T02:21:36 76837 - 2012-336T02:29:08 75302 (lost 451 secs) 2012-336T02:36:06 75327 - 2012-336T02:43:38 75313 (lost 451 secs)
2013			
01/30/2013 - (13030)		86630-86631	TDRS uplink interrupted
04/19/2013 - (13109)		87864-87865	Unpredicted mutual interference
06/02/2013 - (13052)		88551-88552	Gap in instrument data at ground station
07/03/2013 - (13184)		89031-89032	Mutual interference
08/01/2013 - (13213)		89489	LIS Level-0 product for August 1 has an unrecoverable gap due to White Sands Scheduling deleted TRMM data events during lights out operations at the TRMM MOC. Missing period: 2013-213T12:29:16 - 2013-213T12:40:42Z
11/12/2013 - (13316)	91088-91095	91087,91099, 91100-91101	No Data in Missing Orbits Intermittent Data Gaps in Anomalous Orbits Affected Period: 2013-316T02:03 - 2013-316T13:45 UTC Reason: TRMM Spacecraft Anomaly
11/19/2013 - (13323)		91200-91205	Intermittent Data Gaps Reason: Unknown
2014			
02/20/2014 - (14051)	92648	92647,92649	Data for PR1 and PR2 were unrecoverable. Reason: Unknown
04/19/2013 - (14109)		93558-93559	Intermittent Data Gaps in Anomalous Orbits Affected Period: 2014-109T14:40:25 - 2014-109T16:18:26 Reason: TRMM experienced unrecoverable data loss due to a higher priority user taking a support and issues with the Eclipse ground software
05/28/2014 - (14148)		94171-94172	Several gaps due to intermittent missing packets
06/04/2014 - (14155)		94268-94269	Several gaps due to intermittent missing packets.
07/22/2014 - (14203)	95027	95022-95026	TMI deep space calibration maneuver.
08/04/2014 (14216)		95232	Two flashes occur outside LIS Field-of-view. The alert flags are properly set to fatal.
08/10/2014 - 08/18/2014 (14222-14230)	95311 - 95443	95444	LIS turned off due to battery problems. Anomalous orbit is partial orbit when LIS turned back on.
08/29/2014 - 08/31/2014 (14241-14243)	95618 - 95653		LIS turned off due to battery problems.
09/01/2014 - 09/06/2014 (14244-14249)	95654 - 95745		LIS turned off due to battery problems.
09/14/2014 (14257)		95871	Lightning located outside LIS field of view due to time processing anomaly.
09/21/2014 - 09/30/2014 (14264-14273)	95976 - 96121		LIS turned off due to battery problems.
10/01/2014 - 10/02/2014 (14274-14275)	96122 - 96147		LIS turned off due to battery problems.
10/17/2014 - 10/24/2014 (14290-14297)	96381 - 96487	96488	LIS turned off due to battery problems.
11/16/2014 (14320)		96848	LIS stopped recording during portion of orbit.
11/23/2014 (14327)		969966	The one_second data in this file contains extra one_second data from another file (as well as the one_second data that should be in this file). This should not affect processing because the summary_alert and platform_alert flags in this extra one_second data are all set to fatal values. Therefore, this file has not been deleted
2015			
02/26/2015 (15057)		98452 - 98453, 98454 - 98455, 98456 - 98457	Deep Space Calibration Maneuver #1: Feb 26, 2015 13:54:45 to 15:26:15 UTC Orbit # Orbit Start Orbit Stop ----- 98452 2015-02-26 13:06:22 2015-02-26 14:37:40 98453 2015-02-26 14:37:41 2015-02-26 16:08:59 Deep Space Calibration Maneuver #2: Feb 26, 2015 16:57:44 to 18:29:13 UTC 98454 2015-02-26 16:09:00 2015-02-26 17:40:19 98455 2015-02-26 17:40:20 2015-02-26 19:11:38 Deep Space Calibration Maneuver #3: Feb 26, 2015 20:00:42 to 21:32:12 UTC 98456 2015-02-26 19:11:39 2015-02-26 20:42:57 98457 2015-02-26 20:42:58 2015-02-26 22:14:16 Deep Space Calibration Maneuver #4: Feb 27, 2015 14:18:28-15:49:57 UTC Orbit # Orbit Start Orbit Stop ----- 98468 2015-02-27 13:27:27 2015-02-27 14:58:45 98469 2015-02-27 14:58:46 2015-02-27 16:30:04 Deep Space Calibration Maneuver #5: February 27, 2015 17:21:25-18:52:53 UTC 98470 2015-02-27 16:30:05 2015-02-27 18:01:23 98471 2015-02-27 18:01:24 2015-02-27 19:32:42 Deep Space Calibration Maneuver #6: February 27, 2015 20:24:22-21:55:50 UTC 98472 2015-02-27 19:32:43 2015-02-27 21:04:01 98473 2015-02-27 21:04:02 2015-02-27 22:35:19
03/07/2015 - 03/12/2015 (15066-15071)	98597 - 98673	98674	Instrument off due to power issues.
03/25/2015 (15084)		98879 - 98880, 98882 - 98883	Deep Space Calibration Maneuver.
03/26/2015 (15085)		98894 - 98895, 98897 - 98898	Deep Space Calibration Maneuver.
03/30/2015 - 04/01/2015 (15089-15091)	98959 - 98990	98991	Instrument off due to power issues.
04/08/2015 (15098)		99100	End of mission...instrument turned off for last time.