

# THEMIS User's Guide: Software Web Interface

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# **Distribution List**

See: http://themis.ssl.berkeley.edu/team.shtml



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# 1. Introduction

### 1.1 Purpose and Scope.

The purpose of this document is to present to the worldwide scientific community the available tools for viewing, downloading, processing, calibrating and plotting THEMIS data and how to use these tools.

### 1.2 Supplementary Documents.

Various supplementary documents can be found on the THEMIS website. These include but are not limited to documentation for:

- Coordinate Systems
- Time Conventions
- Instrument Calibration
- Data Calibration and Processing
- Variable Naming (for data products)
- Software Documentation (including this user's guide)

These documents may be accessed from the THEMIS home page by selecting Documentation under the Software menu.

http://themis.ssl.berkeley.edu/index.shtml

They may also be accessed directly via the link below:

ftp://apollo.ssl.berkeley.edu/pub/THEMIS/3%20Ground%20Systems/3.2%20Science%20Operations/Science%20Operations/ %20Documents/



# 2. THEMIS Web Page Interface

### 2.1 THEMIS Web Site - Home Page

The THEMIS Home Web Page can be displayed by using the following URL: <u>http://themis.ssl.berkeley.edu/</u>. Across the top portion of this web page are a series of drop down menus (Home, The Mission, Data, Software, Publications, News & Events, Contact Us and For the Public). In this document we will be discussing the Data, Software and Contact Us Web Pages.

The THEMIS Data Drop Down Menu allows you to select the following options: *Overview, Data Policy/Credits, Summary Plots, Data Retrieval, Data Descriptions, Data Products, Event List, Data Processing* and *Collaboration Tools*. These options will be discussed in more detail in Section 2.2.

The THEMIS Software Drop Down Menu allows you to Select the following options: *Software, Documentation, Developers* and *Enhancements*. These options will be discussed in more detail in Section 2.3.

The THEMIS Contact Us automatically links you to a web page that allows you to send email to the THEMIS PI or THEMIS Instrument Scientists or send a Help Request to the THEMIS Science Support Team with Comments, Observations, Problems or Questions concerning data, a document, download, GUI, Plot, Software, Web Interface or any other issue not listed. This Help Request option will be discussed in more detail in Section 2.4.

<u>Please note:</u> Differences between the screen displays presented in this document and what you may see online are due to Web Page Upgrades not yet reflected in this document. The screen displays incorporated into this document are to give the reader a sense of the functionality of the Web Interface to THEMIS Science Software. Please see copy of the THEMIS Home Web Page on the Next Page.



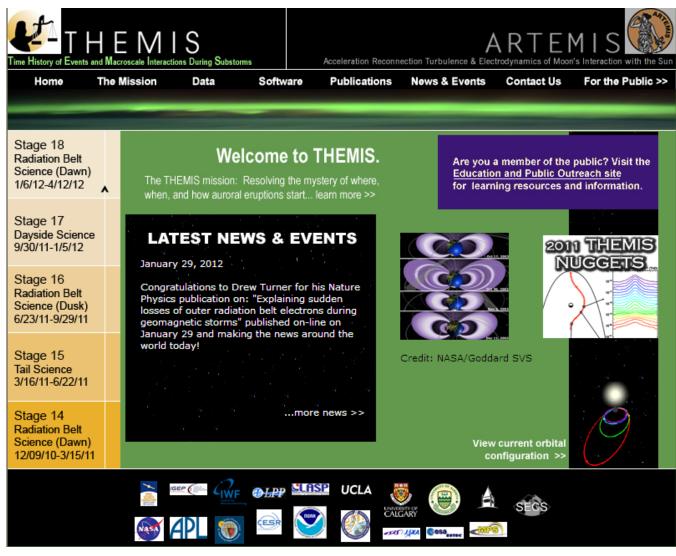


Figure 2.1a THEMIS Web Site - Home Page



### 2.2 THEMIS Data Web Pages

The THEMIS Data Drop Down Menu has the following options.

- Overview A Data Overview and convenient location to Instruments, Orbits, Data Descriptions and more.
- Data Policy/Credits displays the Rules for using the THEMIS Data website (Rules of the Road).
- *Summary Plots* which will allow you to look at Summary Plots of one Probe, Multiple Probes, Ground Magnetometer, All Sky Imager or Orbits Data. *Download Data* to Download THEMIS Data.
- Data Retrieval Menu of the following options: Data Files All -ftp site of all THEMIS data directories and data files Data Files By Platform - allows selection to either a probe, gmag or flatsat data files Data Files By Group - allows selection by Probe and Instrument
- *Data Descriptions* which will lead you to the documentation ftp site where the 'Science Data Variable Descriptions' document can be found.
- Data Products which has descriptions of Level 2 data products, and status of the data products.
- *Event List* which will display the Events ftp site.
- Data Processing containing descriptions of the data processing and status of the data processing.
- Collaboration Tools Menu of the following options: SSCWeb 3-D Orbit Viewer – NASA GSFC Plots of orbital position in 3-D. CDAWeb – NASA SPDF Data Access page. THEMIS Wiki Pages – Useful THEMIS information in Wiki format. Magnetopause Crossing Database – CDAWeb plots of data for Magnetopause crossings.

<u>Please note</u>: If using THEMIS Science Software Data Analysis Tools there is no need to use the Data Retrieval - Data Files By Group Option. Please see screen displays below for all options.



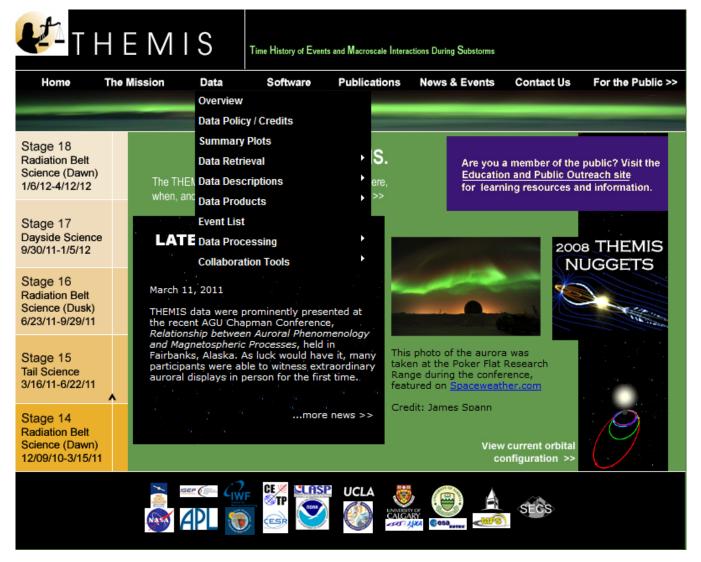
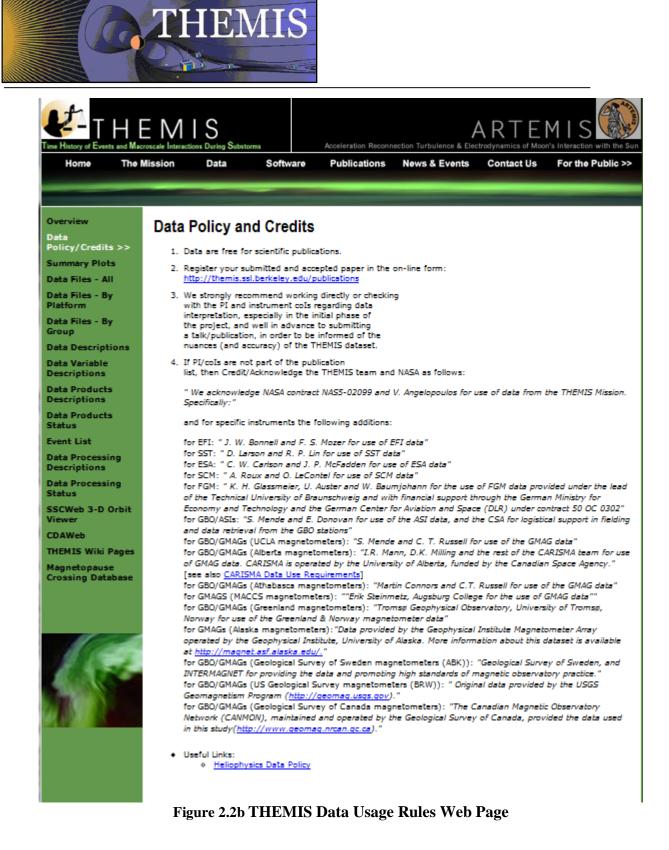


Figure 2.2a THEMIS Data Dropdown Menu





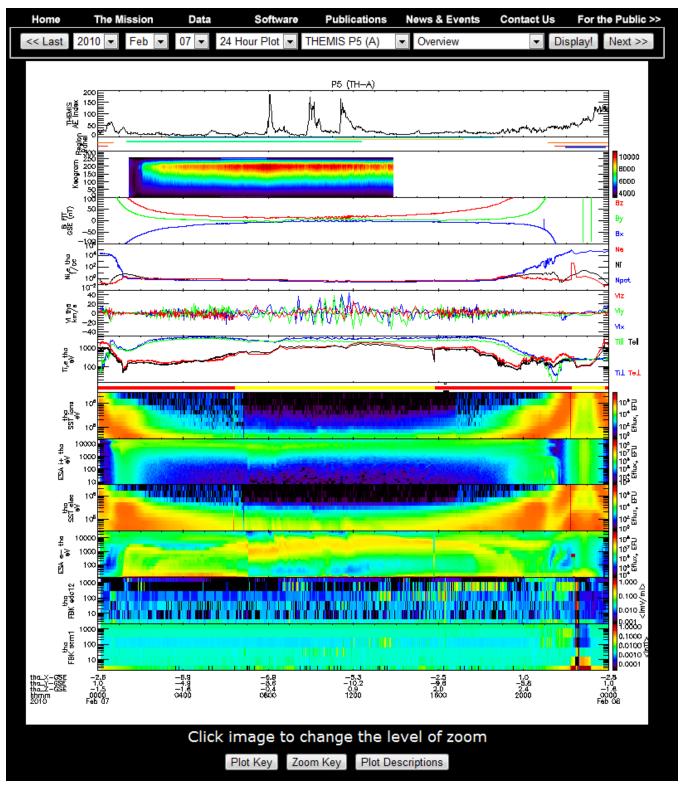


Figure 2.2c THEMIS Data Summary Plot Web Page



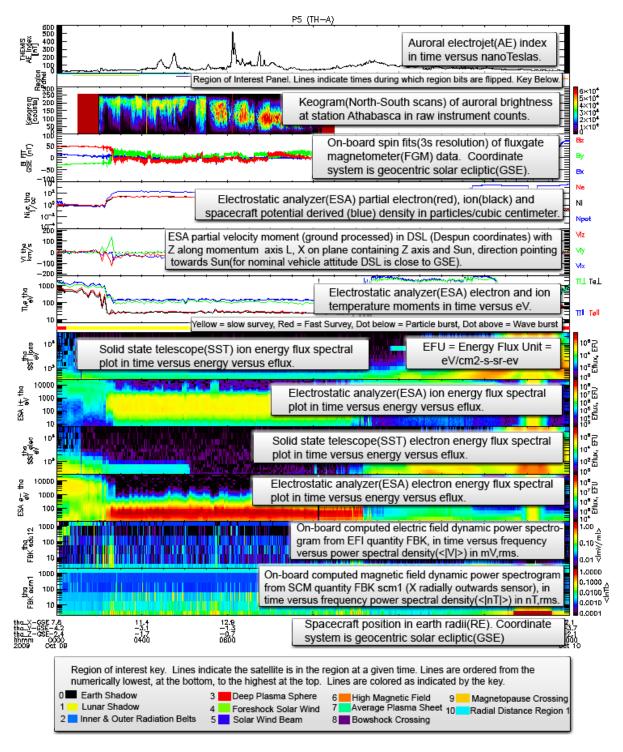


Figure 2.2d THEMIS Summary Web Page - View Plot Key Button



### **THEMIS Online Summary Plot Descriptions.**

### Found at: http://themis.ssl.berkeley.edu/summary.shtml?autoload=1

Plot Type/Name	Description	Observatories	Time Intervals		
Overview <sup>1</sup>	verview <sup>1</sup> General snapshot of THEMIS spacecraft instruments and ground data.		24hr,6 hr,2 hr		
Space ESA moments.	ts. Electron/Ion velocity, pressure, field aligned temperature vector, and energy eflux. <sup>4</sup> Values derived from high resolution ESA data on spacecraft before down sampling for transmission		24hr,6 hr,2 hr		
Ground ESA moments.	Electron/Ion velocity, pressure, field aligned temperature vector, and energy eflux. <sup>5</sup> Values derived from ESA reduced <sup>6</sup> distribution during ground processing.	emperature vector, and energy eflux. <sup>5</sup> Values erived from ESA reduced <sup>6</sup> distribution			
ESA burst	Electron/Ion energy eflux spectrograms derived from ESA burst <sup>7</sup> distribution during ground processing and spacecraft mode indicator plots.	All Spacecraft	24 hr,6 hr,2 hr		
ESA Full	Electron/Ion energy eflux spectrograms derived from ESA full <sup>8</sup> distribution during ground processing and spacecraft mode indicator plots.	All Spacecraft	24 hr,6 hr, 2 hr		
ESA Reduced	Electron/Ion energy eflux spectrograms derived from ESA reduced distribution during ground processing and spacecraft mode indicator plots.	All Spacecraft	24 hr, 6 hr, 2 hr		
SST Full	Electron/Ion energy eflux spectrograms derived from SST full <sup>9</sup> distribution during ground processing and spacecraft mode indicator plots.	All Spacecraft	24 hr, 6 hr, 2 hr		

<sup>1.</sup> Detailed description at http://themis.ssl.berkeley.edu/key.png

<sup>2.</sup> All single spacecraft plots are available for all THEMIS spacecraft when data is available, but displayed on separate plots.

<sup>3.</sup> Aggregated using an algorithm like AE-index, but using THEMIS gmags rather than standard AE ground stations.

<sup>4.</sup> Also for reference E = -VxB, spacecraft measured spin resolution magnetic field, and t89 model predicted magnetic field.

<sup>5.</sup> Also for reference E=-VxB, spacecraft measured spin resolution magnetic field, and t89 model predicted magnetic field.

<sup>6.</sup> ESA Reduced distribution has high temporal (~3 second) resolution but low angle (1-6 bins) resolution.

<sup>7.</sup> ESA Burst distribution has high temporal (~3 second) and high angle (88 bins) resolution but limited availability.

<sup>8.</sup> ESA Full distribution has low temporal (~395/~98 seconds) and high angle (88 bins) resolution.

<sup>9.</sup> SST Full distribution has low temporal and high angle(128 bins) resolution.



SST Reduced	Electron/Ion energy eflux spectrograms derived from SST reduced <sup>10</sup> distribution during ground processing and spacecraft mode indicator plots.	All Spacecraft	24 hr, 6 hr, 2 hr
FGM	Fluxgate Magnetometer FGS <sup>11</sup> and FGL <sup>12</sup> data. Spacecraft mode indicator plots.	All Spacecraft	24 hr,6 hr, 2 hr
FGM Wave Survey	Fluxgate Magnetometer FGL <sup>12</sup> and FGE <sup>13</sup> data.	All Spacecraft	24 hr,6 hr, 2 hr
FFF, FBK	Fast-Survey FFT <sup>14</sup> data, and FBK <sup>15</sup> data.	All Spacecraft	24 hr,6 hr, 2 hr
Burst Memory	Burst memory segment fill level.	All Spacecraft	24 hr, 6 hr, 2 hr
Survey Memory	Survey memory segment fill level.	All Spacecraft	24 hr, 6 hr, 2 hr
GMAG High-H	Stacked plot of H component of HDZ ground magnetometer readings.	High Latitude THEMIS- GBO sites.	24 hr
GMAG High-D	Stacked plot of D component of HDZ ground magnetometer readings.		
GMAG High-Z	Stacked plot of Z component of HDZ ground magnetometer readings.	High Latitude GBO sites.	24 hr
GMAG Low-H	Stacked plot of H component of HDZ ground magnetometer readings.	Low Latitude GBO sites.	24 hr
GMAG Low-D	Stacked plot of D component of HDZ ground magnetometer readings.	Low Latitude GBO sites.	24 hr
GMAG Low-Z	Stacked plot of Z component of HDZ ground Low Latitude GBO sit magnetometer readings.		24 hr
ASI-Summary <sup>16</sup>	Interactive grid of station versus hour/minute/second ASI thumbnails.	20 THEMIS ASI sites.	1 hr/1 minute/3 second.
ASI-Keograms	Interactive grid of station versus hour ASI Keograms.	20 THEMIS ASI sites.	1 hr

<sup>10.</sup> SST Reduced distribution has high temporal (~3 second) and low angle (1-6 bins) resolution.

<sup>11.</sup> FGS data is at spin resolution (~3 second) and is continuously available for most of the mission.

<sup>12.</sup> FGL data is at 1/4 second resolution and is available during configured regions.

<sup>13.</sup> FGE data is engineering data, occasionally available.

<sup>14.</sup> FFT data is On Board Fast Fourier Transform (FFT) power spectra of Electric (EFI) and Magnetic (SCM) field.

<sup>15.</sup> FBK data is on-board, digitally computed filter bank spectra for EFI and SCM.

<sup>16.</sup> Map indicating ASI site locations and field of view provided for reference



ASI-Averages	Interactive grid of station versus hour ASI averages.	20 THEMIS ASI sites.	1 hr
ASI-Mosaic	Map showing ASI station mosaic overlayed on map.	20 THEMIS ASI sites.	3 second.
Orbits-GSM	3 plots of THEMIS orbits over X/Y/Z axis of GSM coordinates, in an earth centered frame and 40 Re range in each dimension.	All Spacecraft	24 hr/6 hr
Orbits-GSE	3 plots of THEMIS orbits over X/Y/Z axis of GSE coordinates, in a moon centered frame and 120 Re range in each dimension.	All Spacecraft	24 hr/6 hr
Ground Tracks North	Plot of THEMIS footprints on map of northern polar region. Generated by tracing field lines from spacecraft position to the north using the T89 model.	All Spacecraft	24 hr/6 hr
Ground Tracks South	Plot of THEMIS footprints on map of southern polar region. Generated by tracing field lines from spacecraft position to the south using the T89 model.	All Spacecraft	24 hr/6 hr



# Index of /data/themis

Name		Last modifie	<u>ed</u>	<u>Size</u>	Description
Parent Directory				_	
FAST_Images/		04-Feb-2009	12:04	-	
LZP/		03-May-2007	09:53	-	
backup_apr16/		16-Apr-2008	16:36	-	
bad_files		21-Mar-2008	17:29	48K	
bfds/		26-Mar-2007	11:27	-	
cronwatch/		10-Jul-2008	10:18	-	
despike_preserve/		08-Jul-2008	15:11	-	
ephem/		16-Jul-2008	17:16	-	
events/		27-Jan-2009	22:08	-	
idl_ctables/		30-Jul-2007	23:27	-	
incoming/		21-Nov-2008	15:30	-	
index.html.091508		08-Aug-2008	16:27	1.3K	
int_rebuild_7feb07	7	03-Feb-2007	05:35	-	
<u>10/</u>		03-Apr-2008	16:54	-	
11_reprocess_backu	p_20081020/	20-Oct-2008	20:26	-	
12_offline/		25-Apr-2008	12:16	-	
		09-Apr-2007	16:59	-	
<u>nios/</u>		05-Mar-2007	10:55	-	
old_production/		09-Jun-2008	10:39	-	
overplots/		31-Dec-2008	23:43	-	
process_logs/		04-Feb-2009	13:38	-	
🛄 <u>ga/</u>		16-Jul-2008	11:55	-	

Figure 2.2e THEMIS Data Retrieval - ALL



<b>₽</b> T H	E M I S Time History of Events and Macroscale Interactions During Substorms
Home Th	e Mission Data Software Publications News & Events Contact Us For the Public >>
Overview	THEMIS Data Files by Platform
Data Policy/Credits	·
Summary Plots	Which set of data files would you like to access?
Data Files - All	Probes: P5 (A) P1 (B) P2 (C) P3 (D) P4 (E)
Data Files - By Platform > >	Flatstat (Satellite Simulator Data)
Data Files - By Group	
Data Descriptions	Ground Station Data (ground mags, all-sky imagers, and keograms)
Data Variable Descriptions	



🐔 т н е	E MIS Time History of Events and Macroscale Interactions During Substorms
Home The I	Mission Data Software Publications News & Events Contact Us For the Public >>
Overview Data Policy/Credits	Data Files by Group
Summary Plots	Reminder: If you are using the Themis Science Software there
Data Files - All Data Files - By Platform	is no need to use this downloader. Data Selection Criteria (please limit to 1 day for Mosaic Movies, 3 hours for High Res. ASI, 10 days for all other):
Data Files - By Group >> Data Descriptions	Segment         Probe/GBO         Instrument         Product           Space         THEMIS A (P5)         Electric Field Instrument         Level 1 CDF
Data Variable Descriptions Data Products Descriptions	From mm/dd/yyyy To mm/dd/yyyy Download Data
Data Products Status	
Event List	Check Data Availability
Data Processing Descriptions	Level 1 CDF         Level 2 CDF         Mosaics           Space Probe         YES         YES         N/A
Data Processing Status	Ground ASI Hi-Res Lo-Res
SSCWeb 3-D Orbit Viewer	YES         YES           NO YES Ground MAG NO YES N/A
CDAWeb THEMIS Wiki Pages Magnetopause Crossing Database	Data FAQ L1 data is raw, uncalibrated data in CDF format. L2 data is calibrated data in physical units, also in CDF format. Ground ASI Mosaic Movies are in MPG format L1/L2 CDF files are 1 day in duration, ASI Mosaics are 10 minutes

Figure 2.2g THEMIS Data Retrieval - By Group



Selecting Data Descriptions will display this web page. Click on the instrument or data type you wish to see. Note links at the bottom of the web page.

🐔 T H E	EMIS	Time History of Event	s and Macroscale Int	ractions During Substorms		
Home The I	Mission Data	Software	Publications	News & Events	Contact Us	For the Public >>
		-	_		_	_
Overview	THEMIS Data	Description	IS			
Data Policy/Credits	Which set of data	would you like	to see info al	out:		
Summary Plots						
Data Files - All	ESA SST EF	T MOM SO	CM FGM	FBK FFT FIT	ASI GM	IAG STATE
Data Files - By Platform	THEMIS Level 2 E	5A file info:				
Data Files - By Group		· · ·		file contains groun		
Data Descriptions >>				6 eV to 30 keV) a ncludes FULL, REDU		
Data Variable Descriptions	5 5		· · · · ·	e resolution. REDUC n. BURST mode: hid		, 3
Data Products Descriptions	time resolution, bu	it only short bu	rsts of data.	The ESA L2 values ne boom deploymer	are calculated	from Level 0
Data Products Status	the fluxes, and no	t the moments.	Velocity mor	nents are given in D	)espun Spaceo	craft (DSL),
Event List	Geocentric Solar E	clipse (GSE) an	d Geocentric	Solar Magnetosphe	ric (GSM) coo	rdinates.
Data Processing Descriptions						
Data Processing Status	Link to the ESA (	Data Variable De	escriptions	Link to ESA Instr	rument Informa	ation
SSCWeb 3-D Orbit Viewer	Link to the ESA (	Data Processing	History	Link to L2 ESA D	ata Quality Fla	ags Description

Figure 2.2h



Selecting GMAG on the Data Descriptions page will display information about the GMAG data, together with a list of available GMAG sites (partial list only shown below).

	ΞM			Acceleration Rec	oppection Tu	rbulence & I		RTE Arraics of Mr		
	lission	Data	Software	Publications		& Events		ntact Us		Public >>
Overview	THEM	IIS Data D	escripti	ons						
Data Policy/Credits				i like to see i	nfo abo	ut:				
Summary Plots Data Files - All	ESA	SST EFI	мом	SCM FGM	FBK	FFT	FIT	ASI	GMAG	STATE
Data Files - By Platform	THEMIS	ELevel 2 GI	MAG file in	nfo:						
Data Files - By Group Data Descriptions >> Data Variable Descriptions Data Products Data Products Status Event List Data Processing Descriptions Data Processing Status	from 84 GMAG s installe program same t Also ind Univers Athaba in Norw Geolog	4 different s stations in t ad with the ( d in school m. These m ype of mag tic field with cluded in th sity of Alber sca, the Te ay, the US ical Survey the GMAG ptions	sites acros the Northe Ground-Bas and are magnetom the top of the ta, the M/ chnical Ur Geologica of Sweden		n hemis tes and tory (GB HEMIS E as the E uilt for th 2 samp ations f at Augst mmark, Geologi	sphere. Canadi O() syst ducatio E/PO ma he GBOs les/seco rom the burg Co the Tro	There a. Ten ems fo n and agneto s. Thes ond. U e Unive llege, f emsø G rey of GMAG	are 22 of the protection public protection are GMA nits are arsity of the Uni Beophy: Canada	cofficial 1 se syster 11S. Twel Outreach s, are the Gs meas a nanotes f Alaska, iversity o sical Univ a, and	THEMIS ms are ve are (E/PO) e exact sure the sla, the f
	• THEM chbg - gbay - inuv - kapu - kapu - kian - kuuj - mcgr - snap -		CLA sites mou, QC, , NL, Can , Canada ing, ON, C QC, Cana QC, Cana AK a, NT, Car	aada Canada da nada						
				Figure 2.2i						



### Clicking on Data Variable Descriptions will display the current Data Variables Description Documents on the ftp site

To view this FTP site in Windows Explorer, click Page, and then click Open FTP Site in Windows Explorer.

You are user #1 of 50 simultaneous users allowed.

Up to higher level directory

01/26/2010	12:57PM	Directory	Previou	as Versio	ons		
01/26/2010	12:54PM	11,289	THEMIS	Science	Data	Variables	Descriptions.pdf
01/26/2010	12:55PM	39,936	THEMIS	Science	Data	Variables	Descriptions.xls

Figure 2.2j



Selecting Data Products Descriptions will display this web page and then click on data product you wish to see. Note links at the bottom of the web page.

	E M I S Time History of Events and Macroscale Interactions During Substorms
Home The M	/lission Data Software Publications News & Events Contact Us For the Public >:
Overview	THEMIS Data Products Descriptions
Data Policy/Credits	Which data products would you like to see info about?
Summary Plots	
Data Files - All	Level 2 CDF's Summary Plots ASI Keograms & Mosaics Other Services
Data Files - By Platform	
Data Files - By Group	Level 2 THEMIS CDF files contain THEMIS calibrated data quantities in physical units. These data can be used by scientists directly; the instrumental details have been accounted for in
Data Descriptions	the calibration process. Level 2 data files are stored in the permanent archive at UCB and are
Data Variable Descriptions	distributed to mirror sites and the SPDF. Level 2 data files are created daily using Level 1 data and calibration data and are updated and reprocessed when necessary. For example, updates
Data Products Descriptions >>	in calibration data for a given instrument/time period will result in new Level 2 data files for that instrument and time period. Currently (as of June 2008), there are Level 2 files for ESA,
Data Products Status	SST, FBK, MOM, FIT (onboard), GMAG and FGM data. By December 2008, daily processing of EFI, FFT (onboard), STATE, and SCM Level 2 data files will commence. By the end of the
Event List	mission there will be an L2 ASK cdf as well.
Data Processing Descriptions	
Data Processing Status	Users wishing to view L2 THEMIS data within the context of observations by other missions should employ <u>http://cdaweb.gsfc.nasa.gov/</u> . Users wishing to view THEMIS orbits within the
SSCWeb 3-D Orbit Viewer	context of other missions should employ <u>http://sscweb.gsfc.nasa.gov/</u> .

Figure 2.2k



# Selecting Data Products Status will display this web page

	Mission	Data	Software	Publications	News & Events	Contact Us	For the Public >>
Overview	THEN	/IS Data	(CDF) State	us			
Data Policy/Credits	Data	Status	. ,				
Summary Plots	EFI	L2 cdf files	are available for	all probes for the	full mission.		
Data Files - All	ESA		with omnidirection for the full mission		ograms, ground-pro	ocessed moment	ts are available for
Data Files - By Platform	FBK		with on-board, d		filter bank spectra f	orelectric (EFI) a	and magnetic
Data Files - By	FFT	L2 cdf files	with on-board FF	T's of electric (EFI	) and magnetic (SC	M) fields.	
Group	FGM	L2 cdf files	are available for	all probes for the	full mission.		
Data Descriptions	FIT	L2 cdf files full missior		netic (FGM) and e	lectric (EFI) fields a	re available for a	all probes for the
Data Variable	GMAG	L2 cdf files	with ground mag	netometer data fr	om 41 stations are	available.	
Descriptions	MOM	L2 cdf files	with ESA momen	nt, (not SST mome	ents) are available f	or all probes for	the full mission.
Data Products	SCM	L2 cdf files	are available for	all probes for the	full mission.		
Descriptions	SST		with omnidirection	onal energy spectr	ograms are availab	le for all probes	for the full
Data Products Status >>	STATE	mission. L1 cdf files	contain position,	attitude, sun puls	e data for each prot	be.	
Event List	Users wi	shina to view	THEMIS L2 data	within the context	of observations by	other missions	should employ
Data Processing Descriptions		qsfc.nasa.qov					,
Data Processing Status							
SSCWeb 3-D Orbit Viewer							
CDAWeb							
THEMIS Wiki Pages							
- Magnetopause Crossing Database							

Figure 2.2l



Selecting Event List will display this web page

# FTP directory /events/ at justice.ssl.berkeley.edu

To view this FTP site in Windows Explorer, click Page, and then click Open FTP Site in Windows Explorer.

You are user #1 of 50 simultaneous users allowed.

Up to higher level directory

L				
	01/27/2009	12:00AM	784,560	Cluster 1 GBO conjunctions 2006.log
	01/27/2009	12:00AM	1,145,760	Cluster 1 GBO conjunctions 2007.log
	01/27/2009	12:00AM	1,353,576	Cluster 1 GBO conjunctions 2008.log
	01/27/2009	12:00AM	723,492	Cluster 3 GBO conjunctions 2006.log
	01/27/2009	12:00AM	1,121,148	Cluster 3 GBO conjunctions 2007.log
	01/27/2009	12:00AM	1,324,092	Cluster 3 GBO conjunctions 2008.log
	01/21/2009	12:00AM	22,344	FAST-GB0_conjunctions_2005_fall.log
	01/21/2009	12:00AM	17,220	FAST-GB0_conjunctions_2005_spring.log
	01/02/2008	12:00AM	98,363	FAST-GBO_conjunctions_2006_fall.log
	01/02/2008	12:00AM	51,743	FAST-GBO_conjunctions_2006_spring.log
	01/02/2008	12:00AM	153,887	FAST-GBO_conjunctions_2007_fall.log
	01/02/2008	12:00AM	58,883	FAST-GBO conjunctions 2007 spring.log
	01/13/2009	12:00AM	231,504	FAST-GBO_conjunctions_2008_fall.log
	10/10/2008	12:00AM	99,119	FAST-GBO conjunctions 2008 spring.log
	01/12/2009	12:00AM		FAST-GBO conjunctions 2008 summer.log
	12/26/2007	12:00AM	25,950	REIMEI_themis-gbo_conjunctions.txt
	01/22/2009	12:00AM	2,104	THEMIS GBO Station List.txt
	12/19/2007			THEMIS_GBO_Station_Map-2008-02.gif
	04/15/2008		30,234	THEMIS_GBO_Station_Map-2008-03.gif
	02/13/2009	12:00AM	29,855	THEMIS_GBO_Station_Map-2009-01.gif
	04/15/2008		55,990	THEMIS_Substorm_2007-2008.log
	04/27/2009	12:00AM		THEMIS_Substorm_2008-2009.log
	01/25/2010	03:13PM	11,386	THEMIS_Substorm_2009-2010.log

Figure 2.2m THEMIS Event List - ftp site



Selecting Data Processing Descriptions will display this web page and then click on data processing description you wish to see.

E H E	EMIS	Time History	of Events and Mad	croscale Interac	tions During Substorms		
Home The	Mission Da	ta Softw	are Publ	lications	News & Events	Contact Us	For the Public >>
			_	_			
Overview	THEMIS D	ata Proces	sina Des	criptio	ns		
Data Policy/Credits			-	•	see info about?	,	
Summary Plots							
Data Files - All	Space-Bas	ed Groun	d-Based	ASI	GMAG E	phemeris	
Data Files - By Platform	Autonomous	TUEMIC Colors	o Operation	c Contor	(SOC) scripts o	htain achadulin	a information
Data Files - By Group	from the Miss	ion Operations	Center (MC	OC) and us	se this informat	ion to retrieve	and validate
Data Descriptions					during ground		
Data Variable Descriptions					d in a MySQL d es are archived		is accessed by nt Array of
Data Products Descriptions					processing and tion of numerou		p onto CD-R ts. Initially, the
Data Products Status					. This includes : data files on t	1 0	data by packet n, which gives
Event List			-	-	tware. The Lev	-	-
Data Processing Descriptions >>					DF). During Lev uctures. All kno		
Data Processing Status	during this ph	ase of process	sing. L1 CDF	's have al	l samples time	stamped and th	ne Mission
SSCWeb 3-D Orbit Viewer	commands to	keep timing e	rors below (	0.5 sec ad		ellation of prob	es. At this point
CDAWeb							and is platform
THEMIS Wiki Pages		-			iles, Level 2 da Ilso in CDF form		
- Magnetopause Crossing				-	reception of th pleted within 1	-	tation data files
	-						

### Figure 2.2n



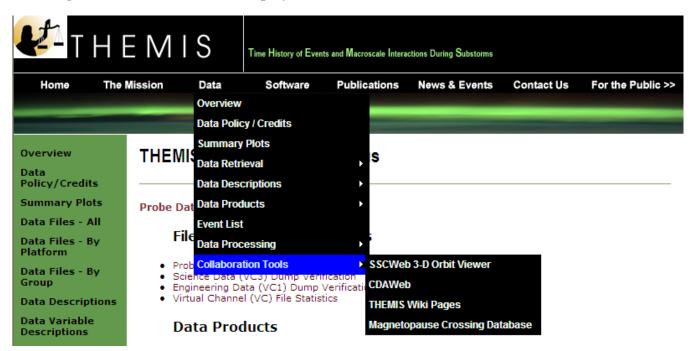
# Selecting Data Processing Status will display this web page

	EMIS ARTEMIS
	Acceleration Reconnection Turbulence & Electrodynamics of Moon's Interaction with the Sun Mission Data Software Publications News & Events Contact Us For the Public >>
Overview Data Policy/Credits Summary Plots Data Files - All Data Files - By Platform Data Files - By Group Data Descriptions Data Variable Descriptions Data Products Data Products Status Event List Data Processing Data Processing Status >> SSCWeb 3-D Orbit Viewer CDAWeb THEMIS Wiki Pages Magnetopause Crossing Database	THEMIS Data Processing Status         Probe Data Processing         File Recovery and Statistics            a DDPS Description             b DDPS Reports          Data Products             Level 0 (L0) Latest VC->L0 Processing Results             Level 1 (L1) CDF File Inventory             Level 2 (L2) CDF File Inventory             Level 2 (L2) CDF File Inventory             Level 2 (L2) CDF File Inventory             Summary Plot Inventory             Subbrds (GMA) Latest             Ubbrds (CARISMA) Latest             Wagnetometers             Summary Plot Inventory             Udatest (CARISMA) Latest             Wagnetometers             Subprox (AMACS) Latest             Wagnetometers             Wagnetometers             Wabsers (AUTUNN) Latest             Augborg (MACCS) Latest             Ball Inventory             Level 1 (L2) CDF File Inventory             Level 1 (L1) CDF File Inventory             Level 1 (L1) CDF File Inventory             Level 1 (L1) CDF File Inventory
	Mission Operations Status Pages   Probe Bus and Instrument Health  Current Pass Support Schedule  Sequence of Events  Tohban Links  Main Tohban Webpage Tohban Reports

Figure 2.20



Selecting Collaboration tools will display this list of links







## 2.3 THEMIS Science Software Web Page

The THEMIS Science Software Drop Down Menu has the following options. *Software* displays a web page for downloading the latest release of the THEMIS Science Software Data Analysis Tools, Documentation, Registering to be notified of Future Releases of the Software, Download not yet released Software and Contacting the THEMIS Science Support Team with Help Requests. *Developers*, options to read about how to develop and contribute Software to THEMIS Science Software. *Documentation* which provides a link to the THEMIS Science Software Documentation ftp site. Enhancements, which will display the latest Accomplishments and Enhancements (A&E). The previous month's A&E is available as well. **Please note:** If you download the not yet released Software, this Software may not have been tested (you are on your own). Please see screen displays below.

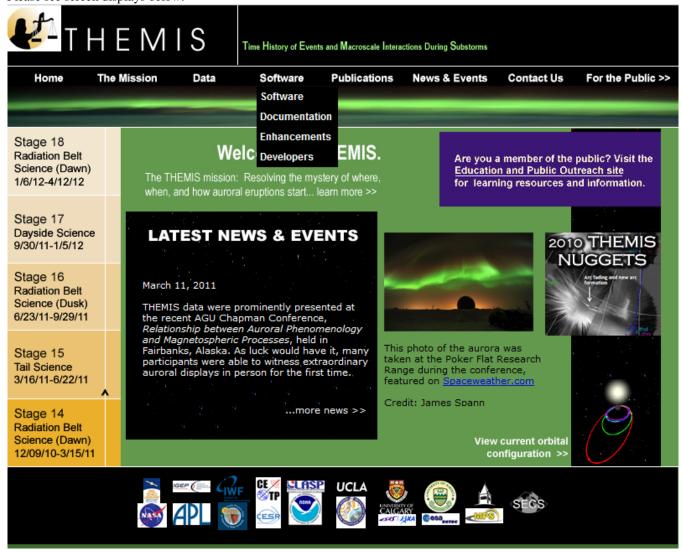


Figure 2.3a THEMIS Science Software Drop Down Menu





The Mission

Software

Publications



Home

News & Events

Contact Us For the Public >>

Software >> Documentation Enhancements Developers

### THEMIS Software

Data

The THEMIS Data Analysis Software Suite consists of IDL routines which read data in CDF format, as well as other less refined data sets. IDL routines can be used to download, open, analyze, and plot Level 1 (L1) and Level 2 (L2) data quantities. They can also be used transform L1 data into L2 data. L1 data is raw, uncalibrated data in CDF format. L2 data is calibrated in physical units These IDL routines were derived from those used by the Cluster, Wind, Polar, and FAST missions. In addition to command line invoked IDL routines, the software provides a graphical user interface for opening, analyzing, and plotting data. This interface was designed to facilitate use of the most useful IDL routines.



#### To begin:

- Download the latest release of the Software (TDAS Version 7.00, April 2012) 1. Download the Quick Reference Guide directly from this website as a DOC or PDF. Download the THEMIS Software Web Interface Users' Guide as a DOC or PDF. Download the THEMIS Science Data Analysis Software (TDAS) Users' Guide as a DOC or PDF.
- 2. After downloading a version of the software and the user's guide, open up the users guide and follow the instructions provided.
- You may also find the HTML Docs for the latest released version of the Software. You can also browse 3. the IDL source.

#### Future Releases:

- 1. You can receive emails notifying you of New Software Releases by Registering on the THEMIS Science Support Distribution List.
- 2. Download not yet released future Software. Please Note this Software may not yet be fully tested and is not supported by the THEMIS Science Support Team.

#### IDL Geopack DLM:

To use the Tsyganenko Model extensions to the THEMIS software you need to Download and install the interface between Tsyganenko's Fortran code and IDL. This interface was developed and provided for THEMIS as a courtesy by Haje Korth. Installation instructions can be found here.

For comments, observations, problems or questions about data access, software or web site content please contact the Themis Science Support Team.

### Figure 2.3b THEMIS Science Software Web Page



When you click on Download the latest release on a Windows machine A File Download dialogue box will be displayed. Click on 'Open' and the WinZip box will appear. Select the Extract icon to download the unzipped versions of the THEMIS Science Software to your computer. Notice the Extract display will ask you where to put the downloaded files. Please see Screen displays on this and the next page.

		☑ Always asl ☑ Whi	t to open Name: tda Type: Wi From: th before op be files from	or save this as_5_20.zip nZip File, 4.03M emis.ssl.berk Open ening this type o the Internet car	4B <b>celey.edu</b> ) <u>S</u> ave				
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<u>Eile A</u> ctions	<u>V</u> iew	<u>]</u> obs <u>O</u> ptions	<u>H</u> elp						
New	- Open	Favorites	Add	Extract	Encrypt	Solution View	CheckOu	ut Wizard	View Style
Name		Type	Modified		Size	Ratio	Packed P	ath.	
	eanef	IDL Source file		9 3:33 PM	1,283	53%		las_5_20\idl\ti	nemis\exa
🖹 thm_crib_dp	proc	IDL Source file		10:11 PM	5,097	70%	1,539 to	las_5_20\idl\tl	hemis\exa
🖹 thm_crib_m		IDL Source file		9 8:03 AM	1,628	61%		las_5_20\idl\ti	
🖹 thm_crib_fft		IDL Source file		10:11 PM	3,126	58%		las_5_20\idl\tl	
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Figure 2.3c THEMIS Science Software - Download Software

Recommendation: put the Software where you can easily find it as you will need to set the IDL path.



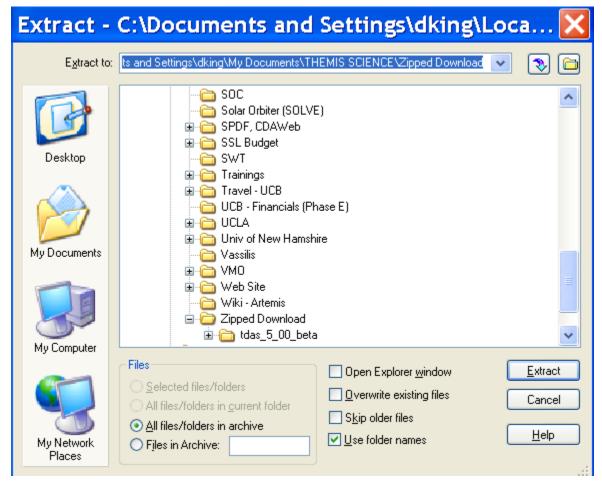


Figure 2.3d THEMIS Science Software - Download Software



THEMIS SW Help for tdas_2_00qa_r1187_2007-07-19 - Windows Internet Explorer
🕞 🕞 👻 🛃 http://themis.ssl.berkeley.edu/socware/tdas_2_00qa0/idl/_tdas_doc.html
File Edit View Favorites Tools Help
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THEMIS SW Help for tdas 2 00qa r1187 2007-07-19
1112/115 5 W 11clp 101 (das_2_00qa_1110/_2007-07-17
This page was created by the IDL library routine mk html help2.
Last modified: Fri Jul 20 01:17:09 2007.
2 A D C D E E C H L L M N O D D S T H V W V V 7
$\underline{3.\underline{A},\underline{B},\underline{C},\underline{D},\underline{E},\underline{F},\underline{G},\underline{H},\underline{I},\underline{J},\underline{L},\underline{M},\underline{N},\underline{O},\underline{P},\underline{R},\underline{S},\underline{T},\underline{U},\underline{V},\underline{W},\underline{X},\underline{Y},\underline{Z},\_}$
Directories Searched:
Directories Searcheu:
<ul> <li><u>ssl_general/CDF</u></li> <li>ssl_general/cotrans</li> </ul>
<ul> <li>ssi general/davin/wind</li> </ul>
• ssl general/examples
• ssl_general/key_param
• ssl general/misc
• ssl_general/misc/SSW
• ssl_general/misc/system
ssl_general/science
ssl_general/tools/fitting
ssl_general/tools/misc
ssl_general/tools/tplot
11/ 1/ 1/1/

Figure 2.3e THEMIS Science Software - HTML Docs



Eile Edit	View Insert Format Tools Table Window Help Type a question
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<b>-</b> 8 · ·	· · · · · · · · · · · · · · · · · · ·
	se add me to the Themis Science Support Distribution list

### Figure 2.3f THEMIS Science Software - Registration for Notification



Parent Directory		-	
tdas_2_00ga_r1039_2007-07-0	9.zip 09-Jul-2007 14:40	3.4M	
tdas_2_00ga_r1046_2007-07-0	9.zip 10-Jul-2007 01:17	3.4M	
tdas_2_00qa_r1057_2007-07-1	0.zip 10-Jul-2007 13:11	3.4M	
	0 min 11_Tul_2007 01.17	3 4M	
		5. m	
tdas_2_00ga_r1068_2007-07-1		5.11	

Figure 2.3g THEMIS Science Software - Download Not Yet Released Software

**a** 100%

😝 Internet



## 2.4 THEMIS Science Software - For Developers Web Page

The THEMIS Science Software for Developers Web Page has links to aide software developers in developing and contributing software to the THEMIS Science Software library. The 'Additional Documentation' option will link you to the ftp site where current THEMIS Science Software documentation can be found.



Figure 2.4a THEMIS Software - For Developers Web Page



When you click on the Documentation Option on the THEMIS Software Dropdown menu you will be transferred to the THEMIS Document ftp site.

Index of ftp://apollo.ssl.berkeley.edu/pub/THEMIS/3 Ground Systems/3.2 Science Operations/Science Operations Documents/

### 1 Up to higher level directory

Name	Size	Last Mo	odified
Science Data Variable Descriptions		1/26/2010	12:00:00 AM
📕 Science Software Data Analysis Releases		1/13/2010	12:00:00 AM
Science Software Data Analysis Software Presentation - 200707		9/28/2007	12:00:00 AM
Science Software Data Analysis Software Presentation - 200712 GEM		12/7/2007	12:00:00 AM
📕 Science Software Data Analysis Software Presentation - 200806 GEM		6/20/2008	12:00:00 AM
📕 Science Software Data Analysis Software Presentation - 200809 SWT UNH		9/22/2008	12:00:00 AM
Science Software Data Analysis Software Presentation - 200812 GEM		12/11/2008	12:00:00 AM
Science Software Data Analysis Software Presentation - 201006 GEM		6/16/2010	12:00:00 AM
Science software Data Analysis Software Presentation - 200906 GEM		6/23/2009	12:00:00 AM
Science software Data Analysis Software Presentation - 200912 GEM		12/8/2009	12:00:00 AM
Software Developers Guide		5/24/2007	12:00:00 AM
Software Users Guides		3/22/2011	11:33:00 AM
Software Users Quick Reference Guides		3/22/2011	11:31:00 AM
SpinFits Documents		6/15/2007	12:00:00 AM
THEMIS - ARTEMIS Instrument Information Available on Web Pages		3/3/2010	12:00:00 AM
THEMIS Documentation Status Lists		2/26/2010	12:00:00 AM
THEMIS Science Parameters		3/3/2010	12:00:00 AM
THEMIS Science Software (TDAS) Release Enhancement Lists		3/21/2011	2:26:00 PM
THEMIS Summary Plot Description Tables		2/23/2010	12:00:00 AM
THEMIS Tips of the Month		4/7/2010	12:00:00 AM
THEMIS-ARTEMIS Adminstrators Guide		3/21/2011	2:51:00 PM
magstations.txt	5 KB	8/29/2008	12:00:00 AM
thm_oqs_431m_ephemeris_format_definition.doc	145 KB	4/24/2007	12:00:00 AM
thm_ogs_431m_ephemeris_format_definition.pdf	204 KB	6/15/2007	12:00:00 AM
Ithm_soc_101_TIME_20070120.doc	128 KB	6/15/2007	12:00:00 AM
thm_soc_101_TIME_20070120.pdf	226 KB	6/15/2007	12:00:00 AM
thm_soc_102_STATEFILE_20070420.doc	127 KB	6/15/2007	12:00:00 AM
thm_soc_102_STATEFILE_20070420.pdf	226 KB	6/15/2007	12:00:00 AM
thm_soc_103_HSK_VARNAMES_20070129.doc	227 KB	6/15/2007	12:00:00 AM
thm_soc_103_HSK_VARNAMES_20070129.pdf	351 KB	6/15/2007	12:00:00 AM
thm_soc_105_FIELDS_VARNAMES_20060929.doc	172 KB	6/15/2007	12:00:00 AM
thm_soc_105_FIELDS_VARNAMES_20060929.pdf	199 KB	6/15/2007	12:00:00 AM
thm_soc_106_PARTICLES_VARNAMES_20061102.doc	115 KB	6/15/2007	12:00:00 AM
thm_soc_106_PARTICLES_VARNAMES_20061102.pdf	149 KB	6/15/2007	12:00:00 AM
thm_soc_108_GMAG_L2_VARNAMES_20060929.doc	535 KB	6/15/2007	12:00:00 AM

### Figure 2.4b THEMIS Documentation ftp site



## 2.5 THEMIS Contact Us Web Page

The THEMIS Contact Us Web Page lists the contact information for the THEMIS Principal Investigator as well as the Co-Investigators for each THEMIS Instrument. In addition there is an option to send a Help Request to the THEMIS Science Support Coordinator with comments, observations, problems or questions. The Help Request form and process will be explained in more detail in Section 3. Please see the screen display below.

<b>₹</b> -TH	E M I S Time History of Events and Macroscale Interactions During Substorms						
Home The	Mission Data Software Publications News & Events Contact Us For the Public >>						
Contact Us >>	Contact Us						
Help Request	For guestions about the THEMIS mission:						
	Vassilis Angelopoulos ( <u>vassilis@ssl.berkeley.edu</u> )						
	For questions about data from specific instruments, please contact the instrument leads below or the PI:						
	Vassilis Angelopoulos ( <u>vassilis@ssl.berkeley.edu</u> )						
	Electric Field Instrument (EFI): J. Bonnell ( <u>ibonnell@ssl.berkeley.edu</u> ) or F. Mozer ( <u>fmozer@ssl.berkeley.edu</u> )						
	Search Coil Magnetometer (SCM): A Roux ( <u>Alain.roux@cetp.ipsl.fr</u> ) or O. LeContel ( <u>Olivier.lecontel@cetp.ipsl.fr</u> )						
ANY	Flux Gate Magnetometer (FGM): K. H. Glassmeier ( <u>kh.glassmeier@tu-braunschweig.de</u> ) or U. Auster ( <u>uli.auster@tu-braunschweig.de</u> )						
	Electrostatic Analyzer (ESA): C. W. Carlson ( <u>cwc@ssl.berkelev.edu</u> ) or J. P. McFadden ( <u>mcfadden@ssl.berkelev.edu</u> )						
	Solid State Telescope (SST): D. Larson ( <u>davin@ssl.berkelev.edu</u> ) or R. P. Lin ( <u>boblin@ssl.berkelev.edu</u> )						
	Ground-Based Observatories/All Sky Imagers: S. Mende ( <u>mende@ssl.berkelev.edu</u> ) or H. Frey ( <u>hfrey@ssl.berkelev.edu</u> ) or E. Donovan ( <u>eric@phys.ucalgary.ca</u> )						
	Ground-Based Observatories/Ground Magnetometers: C.T. Russell ( <u>ctrussell@igpp.ucla.edu</u> ) or I. Mann( <u>imann@phys.alberta.ca</u> )						
	For comments, observations, problems or questions about data access, software or web site content please contact the <u>Themis Science Support Team.</u>						

### Figure 2.5 THEMIS Software Contact Us Web Page



# 3. THEMIS Science Support Help System

### 3.1 THEMIS Science Support Help Process

The THEMIS Science Support Help Process exists for users who have Comments, Observations, Problems or Questions concerning data, a document, download, GUI, Plot, Software, Web Interface or any other issue not listed. The Help Process is a bit different for <u>Step 1</u> if you are using the Web or the GUI Interface.

### For the Web to Help Request Form Interface:

From either the Software or Contact Us Web Pages (example on previous page) the user will see the following: For comments, observations, problems or questions about data access, software or web site content please contact the <u>THEMIS Science Support Team</u>.

If you click on <u>THEMIS Science Support Team</u> a THEMIS Science Support Help Request Form (example in Section 3.2) will be displayed. The user fills out the form and hits 'Submit'. Depending on your computer and email application the processing will be different for the email to be sent. For some computers the form is sent automatically. If you have a PC running Windows a box asks you which email Application you use. If you use a desktop email application like Outlook, Outlook Express, select that button, hit OK and the Form will be automatically sent to the Support Coordinator. If you choose either of the two other options (Internet Email or Other) Windows will guide you through a three step process to send your email. Again, if not using windows (e.g. Mac, Linux or Unix) the process maybe different. Yet the main goal is for the Help Request Form to be sent to THEMIS\_Science\_Support@ssl.berkeley.edu.

### For the GUI to the Help Request Form Interface:

If you select the "HELP" drop down menu on the THEMIS Science Software GUI Main window or if the GUI detects an error, a Help Request Form is displayed (see example in Section 3.3). Fill out the form and then click on 'Save'. (Be sure to save it somewhere you can find it.) If reporting a bug please save and send your history file. Do this by first selecting "History Window" on the "View" drop down menu and then clicking on "Save" at the bottom of the History window. We suggest that you put your Help Request Form and Saved History file in the same location. At this point you can address your email to <u>THEMIS Science Support Team</u>, attach your Help Request Form and your History file and send.

### The remaining steps are the same for either the Web or GUI Interface.

Step 2: User sends any additional information (logs, error messages, etc) to THEMIS Science Support@ssl.berkeley.edu.

<u>Step 3</u>: The Support Coordinator logs in your help request, and sends back an email confirming receipt of your help request with your Help Request Number. The Support Coordinator will also forward your Help Request and any attachments to the person (Actionee) who will investigate and answer your Help Request.

Step 4: The Actionee will contact the User to respond to the comment, observation, problem or question.

Step 5: Feel free at any time to send an email to the Support Coordinator requesting status of your request.



# 3.2 THEMIS Science Support Help Form - Web Form

🛃 THE	MIS	Time History of E	vents and Macroscale Inte	ractions During Substorms		
Home The M	ission Data	Software	Publications	News & Events	Contact Us	For the Public >>
Contact Us	THEMIS Scie	nce Help I	Request			
Help Request>>	Request Type:	· · ·	•			
	Comment Ob	servation 🔘 P	roblem 🔘 Questio	n		
	Category: Data Docume	nt 🔘 Downlan	d O Cui O Insta			
	Plot Software					
	Request Title:					
Luff.						
- ANY	Requestor Info:					
The second second	Name:		Office Phone:			
	Email:					
	Help Request Deta If Problem or Obse		e fill in an complet			
	Date Occurred:	rvation(rieas	e nii in as complet			
	Operating System:			(e.g. Linux,Unix,Wi	ndows)	
	CDF Version:			(If known,otherwise	e leave blank)	
	Version of Software:			(See Software dow	nload zip file na	me)
	Version of IDL:			(See IDL help butto	on)	
	For all types, plea	se include a d	letailed descript	ion below:		
				or lines of code used	to run, and the	GUI history file)
				in researching your r elp Request Title from		ubject line.
	Submit Reset					
	Cancel					



# 3.3 THEMIS Science Support Help Form – GUI Interface

🕼 THEMIS: Help Request Form	x
	•
THEMIS Science Help Request Form	
thm_sci_help_request_xxxx (xxxx number will be sent back to you)	
Date Submitted:	
Request Type: (C-Comment, O-Observation, P-Problem, Q-Question)	
Category: (Data, Document, Download, Gui, Instrument, Plot, Software, Web Content, Other, Not Sure)	
Title:	
Requestor Info: Name: Office Phone: Email:	
Help Request Details (fill in as much as you can):	=
If a Problem or Observation: Date Occurred: Operating System (e.g. Linux, Unix, Windows) CDF Version Version of Software Version of IDL	
Detail Description of Comment, Observation, Problem or Question:	
(before starting a new GUI session, please also attach the GUI history file located here on your system: C:\Users\lphilpott\thm_gui_running_history.txt )	
Please email any supportive materials that would help in researching your request to:THEMIS_Science_Support@ssl.berkeley.edu with the Help Request Title above in the subject line.	
Save Close	

Figure 3.3