



STEREO In situ Data Access and Tools

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IMPACT Data Products Review

- Level 0 – telemetry files from APL, minimally processed
- Level 1 – primary science products, all science data at highest time resolution and scientific units, natively CDF format from UCB
- Level 2 – “key parameter” data, a subset of Level 1 products merged with PLASTIC and S/WAVES at lower time resolutions (minute, hour, day), available in ASCII format from UCLA
- Level 3 – event lists
- Beacon – 24/7 near real time data set processed at GSFC intended for space weather purposes

Current IMPACT Level 1 Data Holdings

Instrument	1 st Date (A)	1 st Date (B)	Last Date
MAG	2006 Nov 2	2006 Nov 2	2008 Mar 31
SWEA	2006 Oct 28	2006 Oct 28	2008 Mar 31
STE	2006 Oct 28	2006 Oct 28	2008 Mar 31
LET	2006 Nov 14	2006 Nov 13	2008 Jan 31
SEPT	2006 Dec 12	2006 Dec 12	2008 Jan 31
SIT	2007 Mar 15	2007 Mar 15	2008 Feb 29
HET	15 minutes averages through 2008 Jan 31		

Overall IMPACT Data Portal Info

- Primary site with data browsers, instrument descriptions, etc.:
<http://sprg.ssl.berkeley.edu/impact>
- Validated Level 1 data (no password required) at:
<http://stereo.ssl.berkeley.edu>
- Pre-validated Level 1 data access (password required) at:
<http://stereo.ssl.berkeley.edu/l1unvalid>

The VHO

- <http://vho.nasa.gov>
- Unified and powerful access to ACE, Wind, STEREO and other heliospheric data sets
- Complex queries possible including searches based on physical parameters as well as time, spacecraft location, etc.

VIRTUAL HELIOSPHERIC OBSERVATORY

HOME DATA QUERY DOCUMENTS CONTACT NEWS

LATEST NEWS

- [Connecting to Existing Services](#)
- [Example Applications Using VHO's API](#)
- [Talks and Presentations](#)
- [VHO CoSEC Library and Examples](#)
- [VHO Design](#)

POPULAR

- [Example Applications Using VHO's API](#)
- [VHO CoSEC Library and Examples](#)
- [Talks and Presentations](#)
- [Connecting to Existing Services](#)
- [VHO Design](#)

search...

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RELATED ITEMS

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NEWSFLASH

Home

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[Publications and Presentations](#)

Written by Tom Narock

Friday, 30 December 2005

List of VHO talks and presentations at various meetings.

Last Updated (Monday, 23 April 2007)

[Read more...](#)

[Example Applications Using VHO's API](#)

[Development](#)

Written by Tom Narock

Saturday, 30 September 2006

Several example applications are available to demonstrate how to connect to the VHO's application programming interface ([API](#)).

Last Updated (Monday, 22 January 2007)

[Read more...](#)

[VHO CoSEC Library and Examples](#)

[Development](#)

Written by Tom Narock

Saturday, 30 April 2005

The Collaborative Sun Earth Connector (CoSEC) is an effort underway at the Lockheed Martin Solar and Astrophysics Lab aiming to enable the integration and coordination of data analysis tasks across disparate data sources. Visit the [CoSEC homepage](#) for further details and the CoSEC client software.

Last Updated (Monday, 22 January 2007)

[Read more...](#)

Web Interface

- Professional web design
- Update/News info
- Collaboration tools

VHO Web Interface – Query Builder

Select query parameters

The screenshot displays the VHO Web Interface Query Builder. The top navigation bar includes 'HOME', 'DATA QUERY', 'DOCUMENTS', 'CONTACT', 'NEWS', and 'LINKS'. The main content area is titled 'Data Query' and contains a 'Query Builder' sidebar on the left and a 'Current Query' panel on the right. The 'Query Builder' sidebar lists search criteria such as 'Measurement type', 'Ephemeris', 'Magnetic field', 'HELIOS', 'Thermal plasma', and 'Restrictions'. The 'Current Query' panel shows a 'Submit Query' button and three conditions: 'Time' (From: 1998-01-01 00:00:00, To: 2007-12-07 22:37:16), 'Position in GSE, component Y' (From: -25, To: 25, Re: Re), and 'Position in GSE, component X' (From: 100, To: INF, Re: Re). An 'EXPERT MENU' is visible on the right side of the 'Current Query' panel, containing options like 'MOVE UP', 'MOVE DOWN', 'MOVE IN', 'MOVE OUT', 'JOIN', 'DELETE', and 'SUBMIT'. A 'Back' link is located at the bottom left of the 'Query Builder' sidebar.

Select time period

Searches by:

Time

- Date/Time

S/C Location

- GSE/GSM/HCI

Measurement Type

- e.g., magnetic field, thermal plasma, energetic particles

Parameter Values

Select logical operation

Query Results

The screenshot shows the Virtual Heliospheric Observatory (VHO) website. The navigation bar includes links for HOME, DATA QUERY (which is highlighted), DOCUMENTS, CONTACT, NEWS, and LINKS. Below the navigation bar, there is a "Home" link and a "Data Query" breadcrumb. A red link "[Back to Query Builder]" is visible. The main heading is "Search Results". Below this, it states "Found 1046 data files. Elapsed time: 24.203 seconds. Displaying 50 records (1-50)." There are "Next >" and "Last >]" navigation links. The main content is a table with three columns: "UTC Time Interval", "Data File", and "Product Name". The table lists 50 records, each with a row number, a UTC time interval, a data file name (e.g., "wi_or_pre_19980101_v01.cdf"), and a product name (e.g., "WIND Predicted Ephemeris").

	UTC Time Interval	Data File	Product Name
1	1998-01-01 00:00:00 — 1998-01-01 23:50:00	wi_or_pre_19980101_v01.cdf	WIND Predicted Ephemeris
2	1998-01-01 00:00:01 — 1998-01-01 23:59:58	wi_h0_mfi_19980101_v03.cdf	WIND Magnetic Field Data v3
3	1998-01-01 00:01:39 — 1998-01-01 23:58:55	wi_swe_fc_apbimax.1998001.txt	WIND/SWE Proton and Alpha Parameters
4	1998-01-02 00:00:00 — 1998-01-02 23:50:00	wi_or_pre_19980102_v01.cdf	WIND Predicted Ephemeris
5	1998-01-02 00:00:01 — 1998-01-02 23:59:58	wi_h0_mfi_19980102_v03.cdf	WIND Magnetic Field Data v3
6	1998-01-02 00:01:55 — 1998-01-02 23:57:47	wi_swe_fc_apbimax.1998002.txt	WIND/SWE Proton and Alpha Parameters
7	1998-01-03 00:00:00 — 1998-01-03 23:50:00	wi_or_pre_19980103_v01.cdf	WIND Predicted Ephemeris
8	1998-01-03 00:00:01 — 1998-01-03 23:59:58	wi_h0_mfi_19980103_v03.cdf	WIND Magnetic Field Data v3
9	1998-01-03 00:00:59 — 1998-01-03 23:57:48	wi_swe_fc_apbimax.1998003.txt	WIND/SWE Proton and Alpha Parameters
10	1998-01-04 00:00:00 — 1998-01-04 23:50:00	wi_or_pre_19980104_v01.cdf	WIND Predicted Ephemeris
11	1998-01-04 00:00:01 — 1998-01-04 23:59:58	wi_h0_mfi_19980104_v03.cdf	WIND Magnetic Field Data v3
12	1998-01-04 00:01:00 — 1998-01-04 23:58:16	wi_swe_fc_apbimax.1998004.txt	WIND/SWE Proton and Alpha Parameters
13	1998-01-05 00:00:00 — 1998-01-05 23:50:00	wi_or_pre_19980105_v01.cdf	WIND Predicted Ephemeris
14	1998-01-05 00:00:01 — 1998-01-05 23:59:58	wi_h0_mfi_19980105_v03.cdf	WIND Magnetic Field Data v3
15	1998-01-05 00:01:28 — 1998-01-05 23:58:48	wi_swe_fc_apbimax.1998005.txt	WIND/SWE Proton and Alpha Parameters
16	1998-01-06 00:00:00 — 1998-01-06 23:50:00	wi_or_pre_19980106_v01.cdf	WIND Predicted Ephemeris
17	1998-01-06 00:00:01 — 1998-01-06 23:59:58	wi_h0_mfi_19980106_v03.cdf	WIND Magnetic Field Data v3
18	1998-01-06 00:01:51 — 1998-01-06 23:59:19	wi_swe_fc_apbimax.1998006.txt	WIND/SWE Proton and Alpha Parameters
19	1998-01-07 00:00:00 — 1998-01-07 23:50:00	wi_or_pre_19980107_v02.cdf	WIND Predicted Ephemeris
20	1998-01-07 00:00:01 — 1998-01-07 23:59:58	wi_h0_mfi_19980107_v03.cdf	WIND Magnetic Field Data v3
21	1998-01-07 00:02:19 — 1998-01-07 23:58:59	wi_swe_fc_apbimax.1998007.txt	WIND/SWE Proton and Alpha Parameters
22	1998-01-08 00:00:00 — 1998-01-08 23:50:00	wi_or_pre_19980108_v02.cdf	WIND Predicted Ephemeris
23	1998-01-08 00:00:01 — 1998-01-08 23:59:58	wi_h0_mfi_19980108_v03.cdf	WIND Magnetic Field Data v3
24	1998-01-08 00:01:59 — 1998-01-08 23:57:50	wi_swe_fc_apbimax.1998008.txt	WIND/SWE Proton and Alpha Parameters
25	1998-01-09 00:00:00 — 1998-01-09 23:50:00	wi_or_pre_19980109_v02.cdf	WIND Predicted Ephemeris
26	1998-01-09 00:00:01 — 1998-01-09 23:59:58	wi_h0_mfi_19980109_v03.cdf	WIND Magnetic Field Data v3
27	1998-01-09 00:01:02 — 1998-01-09 23:58:47	wi_swe_fc_apbimax.1998009.txt	WIND/SWE Proton and Alpha Parameters
28	1998-01-10 00:00:00 — 1998-01-10 23:50:00	wi_or_pre_19980110_v02.cdf	WIND Predicted Ephemeris
29	1998-01-10 00:00:01 — 1998-01-10 23:59:07	wi_h0_mfi_19980110_v03.cdf	WIND Magnetic Field Data v3

Time periods satisfying the query are returned

Matching product identified

Links to the data granules provided

Links to the SPASE metadata provided

Instrument Metadata

[Home](#) ▾ [Data Query](#)

Instrument: WIND Magnetic Field Investigation

Instrument ID	spase://VHO/Instrument/WIND/MFI XML							
Name	WIND Magnetic Field Investigation							
Alternate name	WIND MFI							
Description	<p>The magnetic field experiment on WIND provides data for studies of a broad range of scales of structures and fluctuation characteristics of the interplanetary magnetic field throughout the mission, and, where appropriate, relate them to the statics and dynamics of the magnetosphere. The basic instrument of the Magnetic Field Investigation (MFI) on the WIND Spacecraft is a boom-mounted dual triaxial fluxgate magnetometer and associated electronics. The dual configuration provides redundancy and also permits accurate removal of the dipolar portion of the spacecraft magnetic field. The instrument provides: (1) near real-time data at nominally one vector per 92 s as key parameter data for broad dissemination, (2) rapid data at 10.9 vectors/s for standard analysis, (3) occasionally, snapshot (SS) memory data and Fast Fourier Transform data (FFT), both based on 44 vectors/s. These measurements are precise (0.025%), accurate, ultra-sensitive (0.008 nT/step quantization), and where the sensor noise level is <0.006 nT r.m.s for 0-10 Hz. The digital processing unit utilizes a 12-bit microprocessor controlled analogue-to-digital converter. The instrument features a very wide dynamic range of measurement capability, from 4 nT to 536 nT per axis in eight discrete ranges. (The upper range permits complete testing in the Earth's field.) FFT mode power spectral density elements are transmitted to the ground as fast as once every 23 s (high rate), 2.7 min of SS memory time series data, triggered automatically by pre-set command, requires typically 5.1 hours for transmission. Standard data products are the following vector field averages: 0.02 s (data from SS), 0.092 s ('detail' in standard mode), 3 s, 1 min, and 1 hour, in both GSE and GSM coordinates, as well as the FFT spectral elements. High instrument reliability is obtained by the use of fully redundant systems and extremely conservative designs. The instrument was turned on on 1994-11-12. Reference: Lepping, R. P., et al., The WIND Magnetic Field Investigation, Space Science Reviews, 71, 207-221.</p>							
Additional information	WIND Magnetic Field Investigation (MFI) Home Page	A web site hosting WIND MFI instrument information as well as web utilities for plotting and downloading data						
Acknowledgement	User will acknowledge the WIND MFI instrument team in any publication resulting from the use of these data.							
Contact	<table border="1"><thead><tr><th>Role</th><th>Person</th></tr></thead><tbody><tr><td>1. Data producer</td><td>Dr. Adam Szabo XML</td></tr><tr><td>2. Principal investigator</td><td>Dr. Ronald P. Lepping XML</td></tr></tbody></table>	Role	Person	1. Data producer	Dr. Adam Szabo XML	2. Principal investigator	Dr. Ronald P. Lepping XML	
Role	Person							
1. Data producer	Dr. Adam Szabo XML							
2. Principal investigator	Dr. Ronald P. Lepping XML							
Release date	2007-05-30 19:35:00							
Instrument type	Magnetometer							
Investigation name	Magnetic Field Investigation							
Observatory	Wind XML							

[\[Back \]](#)

Human readable, formatted metadata

Links to SPASE XML files

Product Metadata

[Home](#) ▾ Data Query

Data Product: WIND MFI Version 3 Data

Product ID	spase://VHO/NumericalData/WIND/MFI/v3_PT03S XML	
Name	WIND MFI Version 3 Data	
Description	WIND MFI composite data. The files contain multiple time resolution data: 3-second, 1-minute, and 1-hour. Calibrated science quality data.	
Additional information	WIND Magnetic Field Investigation (MFI) Home Page	A web site hosting instrument information as well as web utilities for plotting and downloading data
Acknowledgement	User will acknowledge the WIND MFI instrument team in any publication resulting from the use of these data.	
Contact	Role	Person
	1. Principal investigator	Dr. Ronald P. Lepping XML
	2. Data producer	Dr. Adam Szabo XML
Release date	2007-05-31 20:38:59	
Repository	Name	WIND Magnetic Field Investigation (MFI) Data Repository XML
	Availability	Online
	Access rights	Open
	URL	Download of WIND MFI v3 data A web site hosting the WIND MFI v3 data.
	Format	CDF
	Encoding	None
Provider processing level	Level 2	
Provider resource name	WIND MFI v3 Data	
Provider version	3	
Instrument	WIND Magnetic Field Investigation XML	
Measurement type	Magnetic field	
Temporal description	Start date	1994-11-12 16:00:00
	Relative end date	POD
Observed regions	Earth.Magnetosheath Earth.Magnetosphere Earth.Magnetosphere.Magnetotail Earth.Magnetosphere.Main Heliosphere.Inner Heliosphere.MainEarth	

[Back](#)

Parameter #28

Name	Magnetic field vector in GSE coordinates (3 sec)
Parameter key	B3GSE
Description	Magnetic field vector in GSE coordinates
Cadence	PT03S
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian GSE
Structure	Type Vector
	Size 3
	Index Name Component
	1 Bx X
2 By Y	
3 Bz Z	
Quantity	Magnetic field
Qualifiers	Average Vector



Parameter Information

Detailed information provided for all parameters inside the returned data files.

Granule Metadata

Information provided on each data granule and checksum for download integrity.

File Information (Granule)

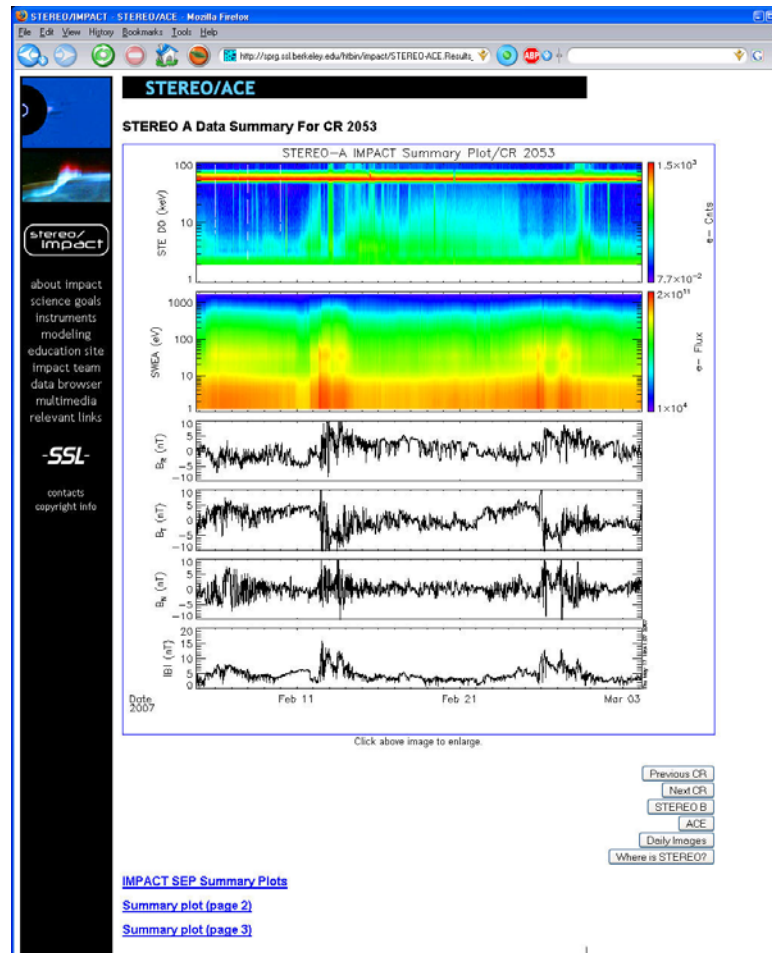
Granule ID	spase://VHO/Granule/WIND/MFI/v3_PT03S/wi_h0_mfi_19980102_v03 
Product name	WIND MFI Version 3 Data 
Release date	2007-11-20 12:23:12
Start date	1998-01-02 00:00:01
Stop date	1998-01-02 23:59:58
Data download	wi_h0_mfi_19980102_v03.cdf
MD5 checksum	79c4d4bb12f63d357d84257259e7f58e
File size	2619414 Bytes



Data Browsers

- Static plot browser currently available with connections to images, models, SWAVES, and ACE/Wind
- Level 2 browser in beta stages
- CDAWeb-like browser (but with greater functionality) is in early stages
- IMPACT data will soon be available through CDAWeb and the VHO

Static Data Browser



STEREO/IMPACT - CR Info - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://stereo.ssl.berkeley.edu/sslstings/cr_st/cr2053/

STEREO/ACE

CR2053

Carrington Rotation models based on GONG magnetograms.
 Model results and images from Gordon Petrie, NSO <http://gong.nso.edu/data/magmap/index.html>

Stills of Synoptic Images

Magnetogram Synoptic Coronal Hole Plot

Synoptic Field Plot Synoptic Ecliptic Plane Field Plot

Movies

CR Plot (STEREO A)

CR Plot (STEREO B)

CR Plot (ACE)

CR Plot (WIND)

about impact
 science goals
 instruments
 modeling
 education site
 impact team
 data
 multimedia
 relevant links

SSL

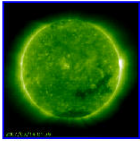
contacts
 copyright info

US Pacific Wed 13:34 US Eastern Wed 16:34 GMT/UTC Wed 20:34 Central European Time Wed 22:34 Done

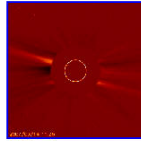
STEREO/ACE

March 14, 2007

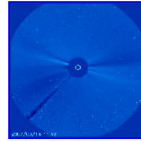
Images courtesy of SOHO <http://soho.nascom.nasa.gov>, STEREO Science Center <http://stereo-ssc.nascom.nasa.gov>, STEREO/WAVES <http://swaves.gsfc.nasa.gov>, and NOAA SEC <http://sec.noaa.gov>



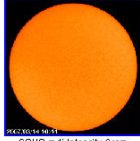
SOHO eit



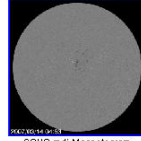
SOHO Lasco-C2



SOHO Lasco-C3



SOHO mdi-Intensity Gram



SOHO mdi-Magnetogram

stereo/impact

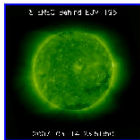
about impact
science goals
instruments
modeling
education site
impact team
data
multimedia
relevant links

SSL

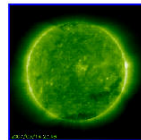
contacts
copyright info

STEREO Position

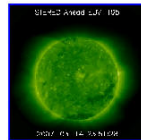
Information on STEREO location is listed at [Where is STEREO?](#)



STEREO Behind

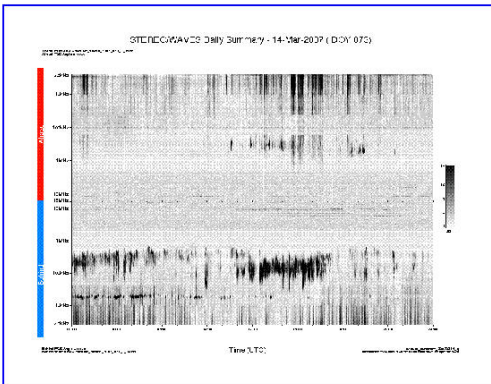


SOHO



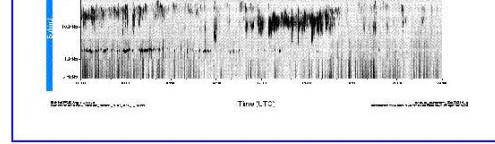
STEREO Ahead

SWAVES Daily Summary Plot

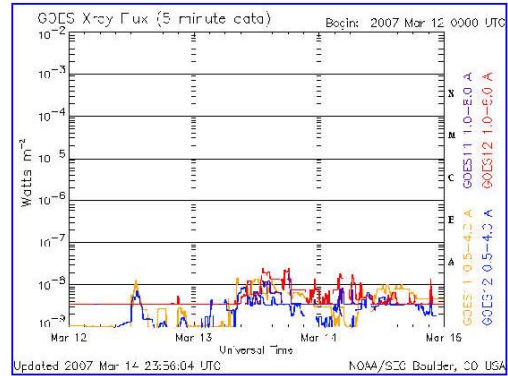


GOES Plots

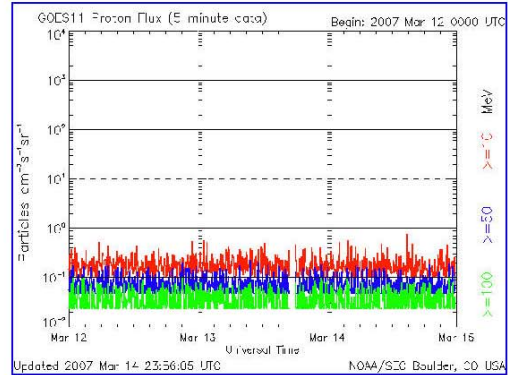
GOES X-ray Flux (5 minute data) Begin: 2007 Mar 12 0000 UTC



GOES Plots



GOES X-Rays



GOES Protons

More Links

[Daily SolarSoft Results](#) courtesy of Lockheed Martin Solar and Astrophysics Lab

[Daily SolarMonitor Results](#) courtesy of NASA Goddard Space Flight Center

[Daily Plot \(STEREO A\)](#)

[Daily Plot \(STEREO B\)](#)

[CR Plot \(STEREO A\)](#)

[CR Plot \(STEREO B\)](#)

[CR Plot \(ACE\)](#)

[CR Plot \(WIND\)](#)

[Previous Day](#)

[Next Day](#)

Built Using TPLOT

- TPLOT is a library of IDL routines used for over 12 years created at UC-Berkeley
- TPLOT and IMPACT-related libraries available at: <http://stereo.ssl.berkeley.edu>
- Optimized for in situ “line” and “spectrogram” plotting, but also includes 3D mapping capabilities (useful for SWEA or PLASTIC-like distribution functions)
- However, all our Level 1 CDF data products are self-documenting, and general CDF reading libraries are available for many kinds of data analysis environments
- Many libraries and ASCII translation tools are accessible at: <http://cdf.gsfc.nasa.gov>