SPDF Updates

Bob McGuire
NASA Goddard

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Topics

• RBSP and MMS plans
  – CDF, CDAWeb, SSCWeb/4D (RBSP supplying SPICE kernels)

• Current SPDF usage

• CDF status

• Other notes
  – “Click” CDAWeb zoom/pan
  – New spdfrdawebchooser IDL routines
  – CDAWeb links to Autoplot tool
  – Various THEMIS reprocessing (and e.g. STEREO)
  – Very soon: Wind MFI V5 and extended SWE H1 (ions) data sets
  – SSCWeb/4D Orbit Viewer on much faster server “any day now”
  – ARTEMIS data now included in “lunasox” service
    (John Cooper, VHO/VEPO, data services through OMNIWeb)
Use and Acknowledgements of SPDF

- About 22% of statistics are for THEMIS data
- In 2010 as in 2009, ~20% of space physics papers in AGU journals acknowledged SPDF services and/or data
A Short CDF Status Update

- **Current version: 3.3.1.1**
  - Multiple bug and security fixes, extended o/s and platform support, extensive pre-release (beta) test period

- **Now developing Version 3.3.2 -> 3.3.3 when completed**
  - Includes support for leap seconds via cdf_timeTT2000 datatype
  - Several incremental “alpha” releases for additional languages
    - C, Fortran, Java, IDL, C# (now available as alpha release)
    - Perl, MATLAB (10/11)

- **Version 3.4**
  - 3.3.3 plus re-implementation of several data compression functions
    - ZLib library license to match NASA open source license (vs GNU license)
  - Full and fully tested release in Winter 2012

- **1-second offset in CDAWeb UTC times**
  - THEMIS time is mission elapsed time initialized to UNIX time
New CDAWeb Chooser

- **Working inside IDL**
  - At IDL command line
- **GUI:** Load/display CDAWeb data
  - @compile_cdaaweb
  - spdfcdawebchooser
  - Select mission/instrument
  - Find Datsets
  - Select variables
  - “Get Data”
    - Retrieves “created” CDF
    - Loads IDL structure
  - “IDL” or “Plot”
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• Other notes
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Backups and Added Details
Examples/Demos of 4-D Orbit Viewer

• Orbit (GSE) view
  – 3D Zoom, pan, animations, s/c –centered view, region overlays

• Footpoint (GEO) view
  – Animated footpoint traces with ground station overlays
• Load/display CDAWeb data inside IDL
  – @compile_cdaweb
  – spdfcdawebchooser
  – Select mission/instrument etc.
  – Loaded IDL structure enables “Show CDAWlib Plot”

Data Operation:

Variable Name: data
File Option: [ ] Save local CDF files

Get Data | Show IDL | Show CDAWlib Plot

Program Control:
[Exit]
CDAWeb Chooser

- Load/display CDAWeb data inside IDL
  - `@compile_cdaweb`
  - `spdfcdawebchooser`
  - Select mission/instrument etc.
  - "Show IDL"
    - Detailed command line syntax for given GUI request

```
IDL> spdfcdawebchooser
IDL>
read_myCDF took 1.5020370e-05 seconds to generate WVs.
IDL>
data
= spdfgetdata('STEREO_LEVEL2_SWAVES',
['avg_intens_ahead', 'avg_intens_behind'],
['2011-04-30T00:00:00.000Z', '2011-04-30T18:00:00.000Z'])
```
CDAWeb Chooser

• Load/display CDAWeb data inside IDL
  – @compile_cdaweb
  – spdfcdawebChooser
  – Select mission/instrument etc
  – help, data
    • Variables in IDL
    – help, /struct, data.tag
    • Metadata in IDL

IDL> help, data
** Structure <15abe8b>, 4 tags, length=3183976, data length=3183944, refs=1:
  AVG_INTENS_AHEAD
    STRUCT -> <Anonymous> Array[1]
  AVG_INTENS_BEHIND
    STRUCT -> <Anonymous> Array[1]
  EPOCH
    STRUCT -> <Anonymous> Array[1]
  FREQUENCY
    STRUCT -> <Anonymous> Array[1]

IDL> help,/struct,data_avg_intens_ahead
** Structure <1b9c80b>, 50 tags, length=1586184, data length=1586176, refs=2:
  VARNAME
    STRING 'avg_intens_ahead'
  PROJECT
    STRING 'STP>Solar Terrestrial Probes'
  SOURCE_NAME
    STRING 'STEREO>Solar Terrestrial Relations Obs'...
  DISCIPLINE
    STRING 'Solar Physics>Heliospheric Physics'
  DATA_TYPE
    STRING 'DERIVED FROM level2>level 2 data'
  DESCRIPTOR
    STRING 'SWAVES>STEREO Radio WAVES'
  DATA_VERSION
    STRING '1'

IDL> []