SPDF Updates

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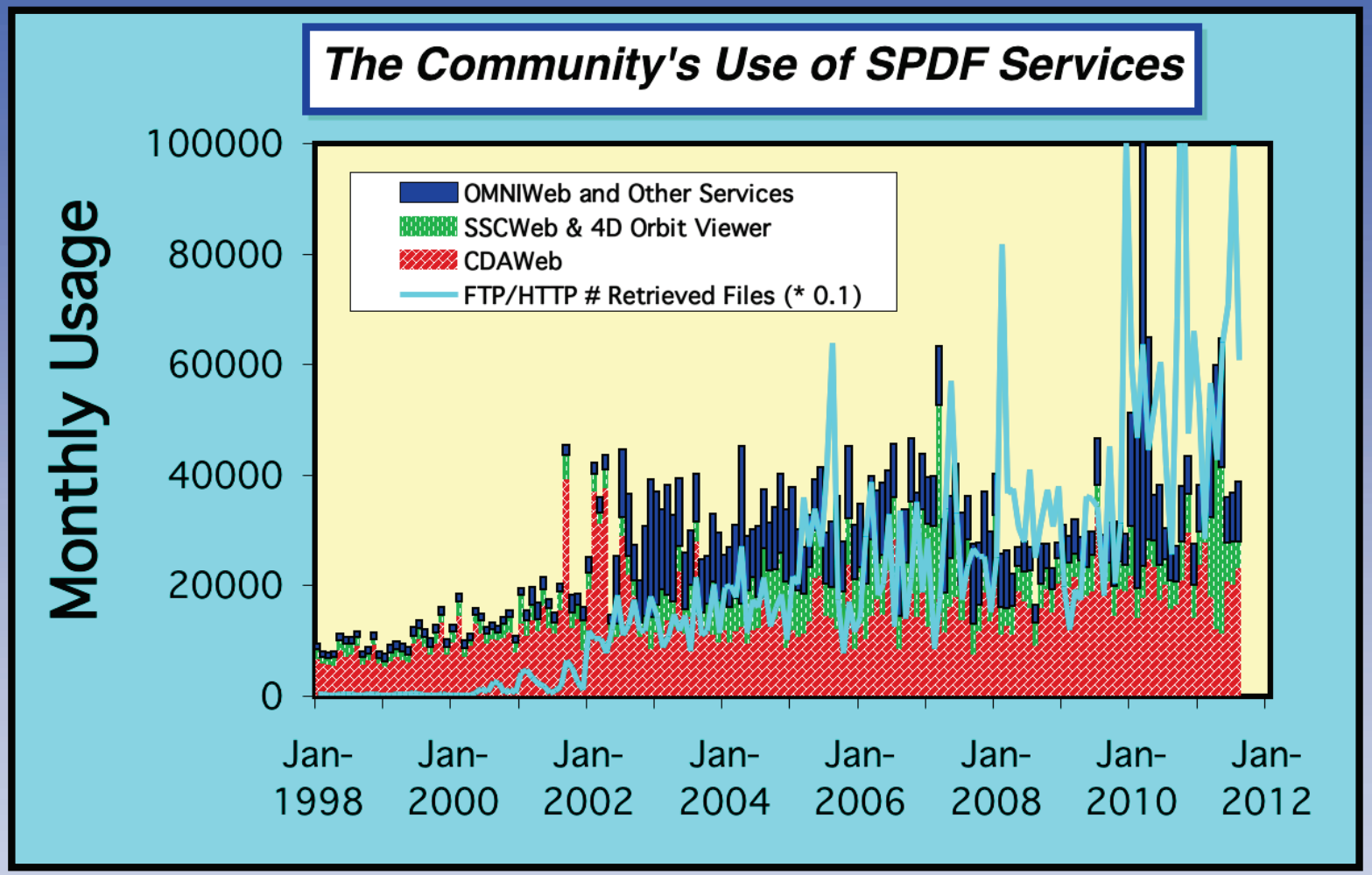
Topics

- **RBSP and MMS plans**
  - CDF, CDAWeb, SSCWeb/4D (RBSP supplying SPICE kernels)
- **Current SPDF usage**
- **CDF status**
- **Other notes**
  - “Click” CDAWeb zoom/pan
  - New spdfcdawebchooser IDL routines
  - CDAWeb links to Autoplot tool
  - Various THEMIS reprocessings (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

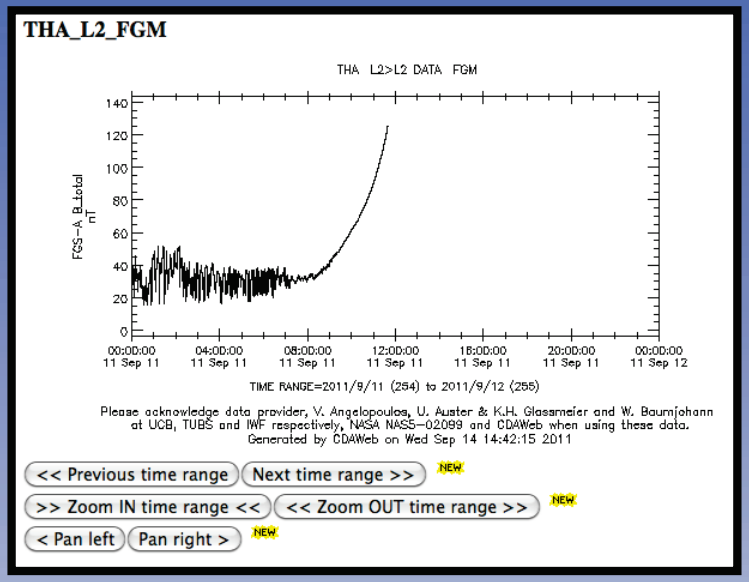


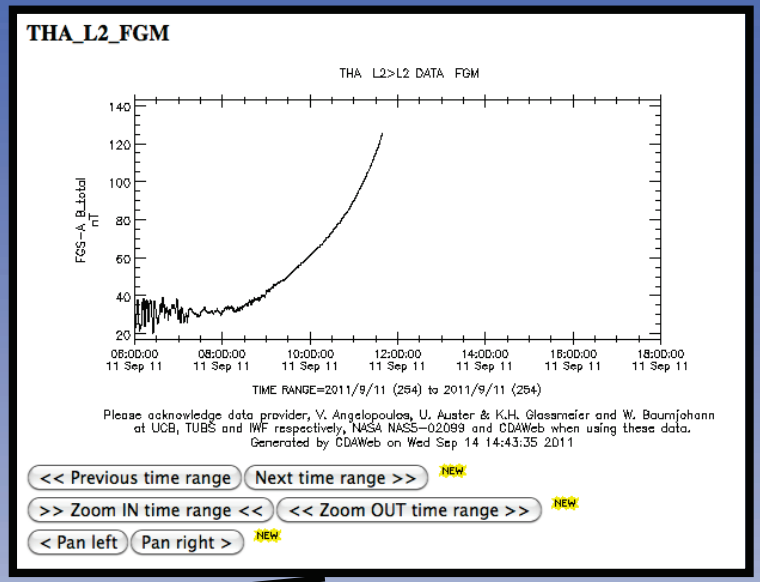
- About 22% of statistics are for THEMIS data
- In 2010 as in 2009, ~20% of space physics papers in AGU journals acknowledged SPDF services and/or data

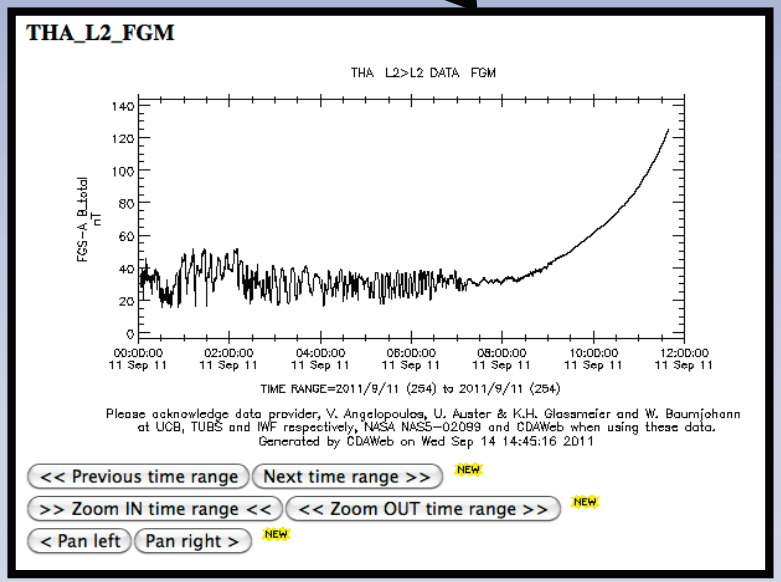
A Short CDF Status Update

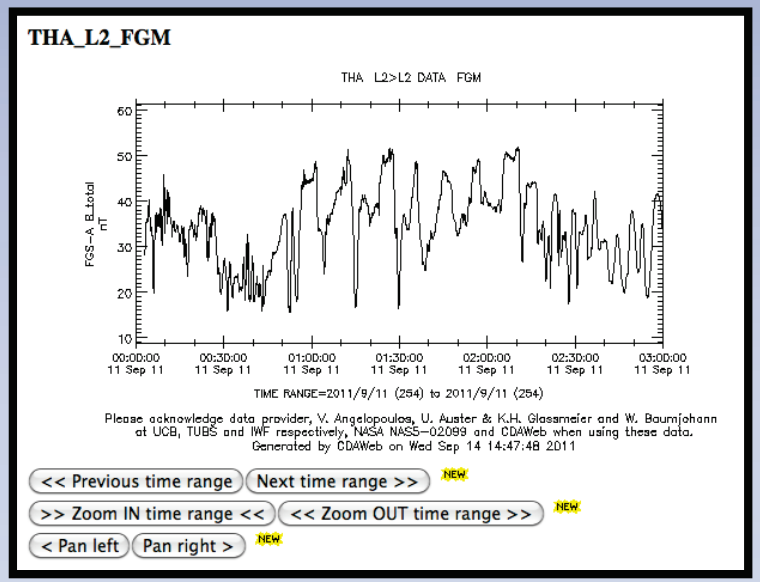
- **Current version: 3.3.1.1**
  - Multiple bug and security fixes, extended o/s and platform support, extensive pre-release (beta) test period
- **Now developing Version 3.3.2 -> 3.3.3 when completed**
  - Includes support for leap seconds via cdf_timeTT2000 datatype
  - Several incremental “alpha” 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

Simple CDAWeb Zoom and Pan



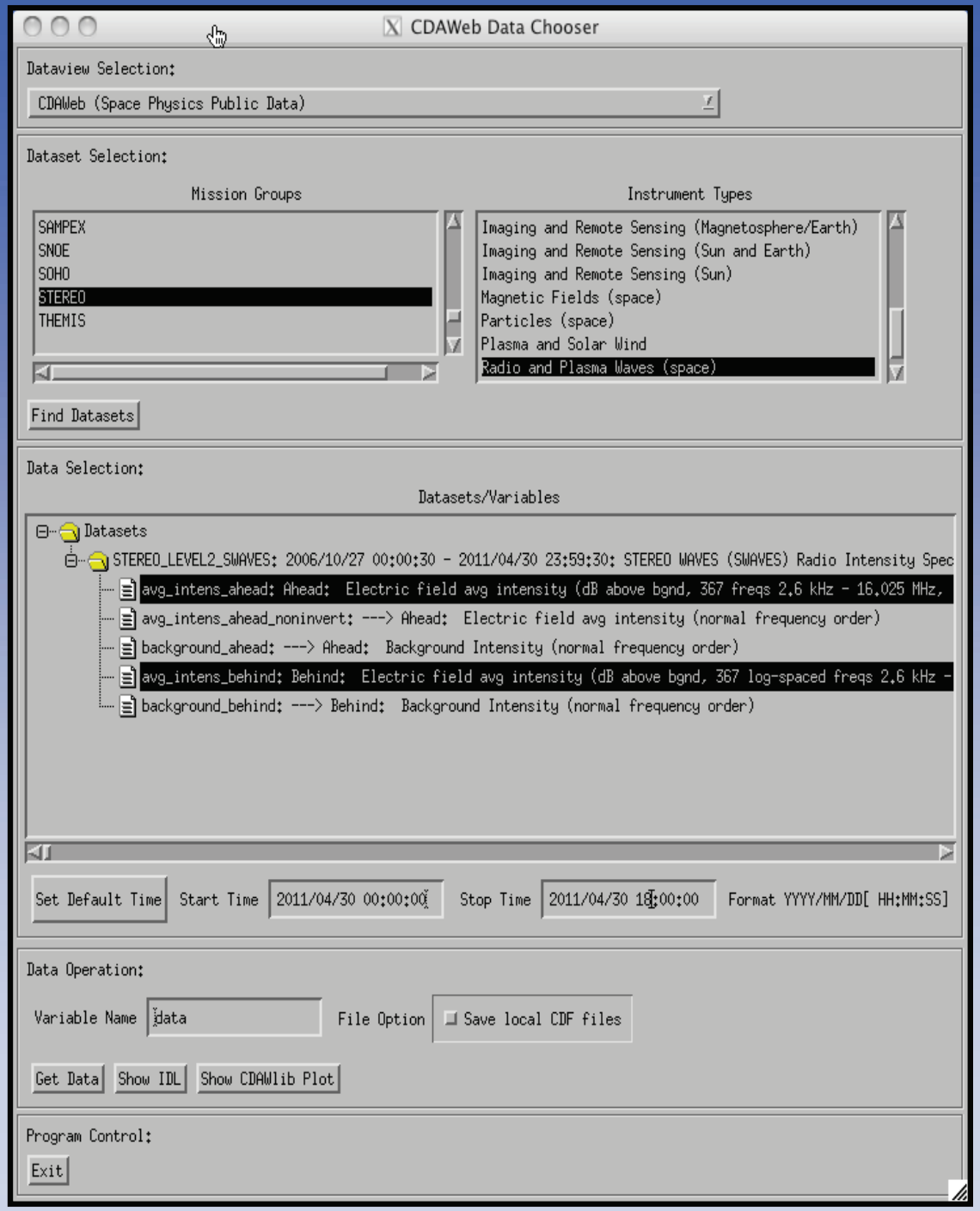






New CDAWeb Chooser

- ***Working inside IDL***
  - *At IDL command line*
- **GUI: Load/display CDAWeb data**
  - @compile_cdaweb
  - spdfcdawebchooser
  - Select mission/instrument
  - Find Datsets
  - Select variables
  - "Get Data"
    - Retrieves "created" CDF
    - Loads IDL structure
  - "IDL" or "Plot"



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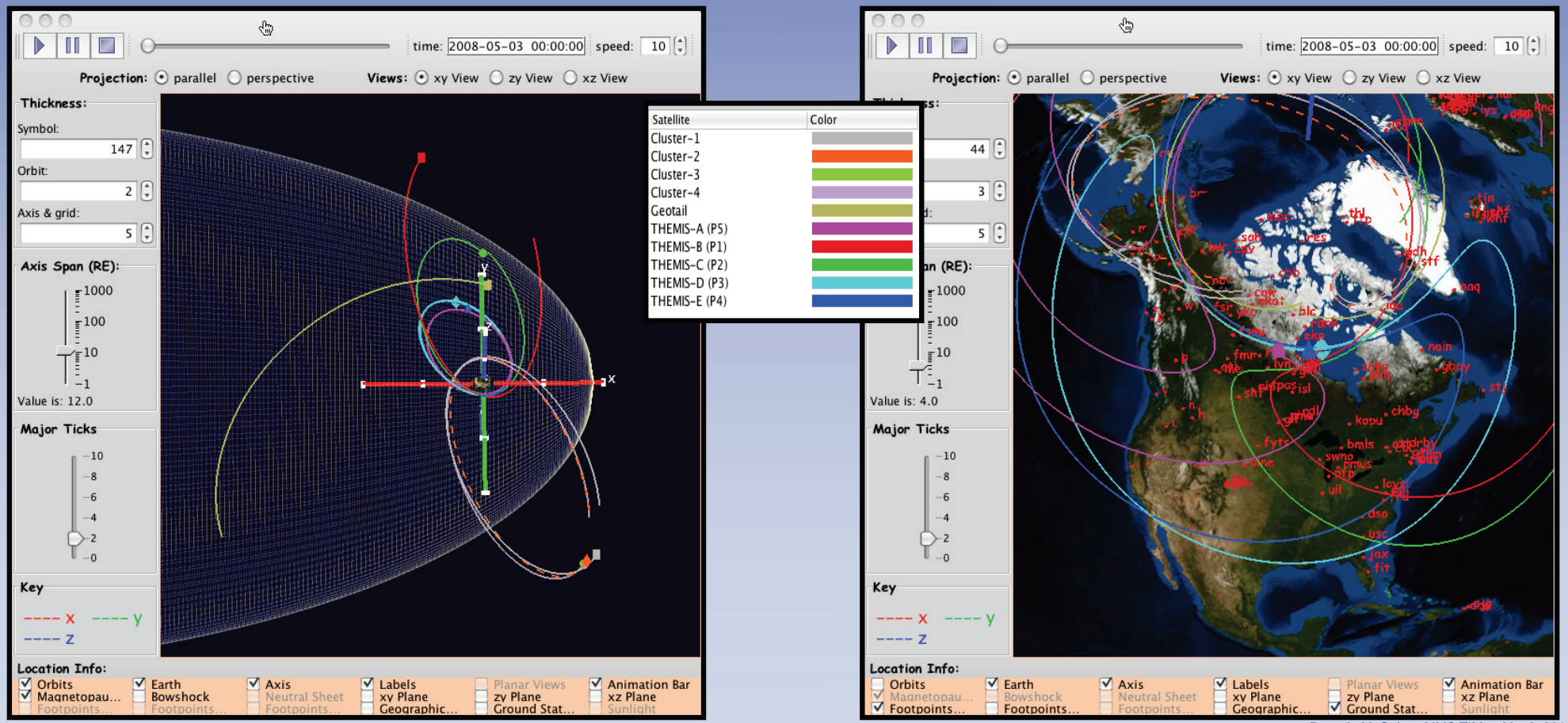
Backups and Added Details

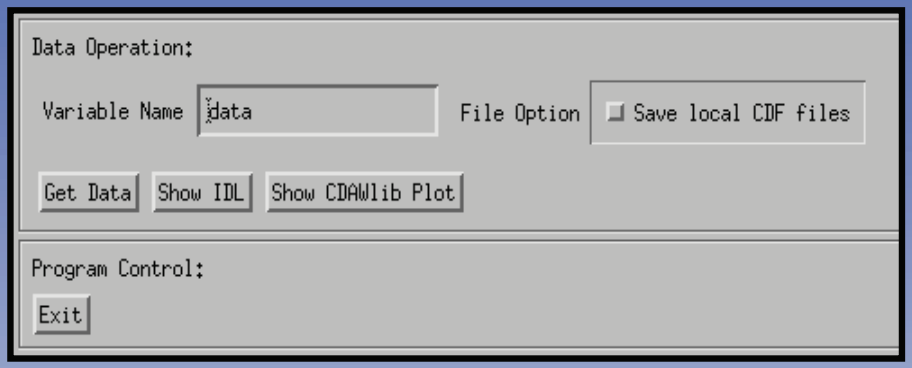
Examples/Demos of 4-D Orbit Viewer

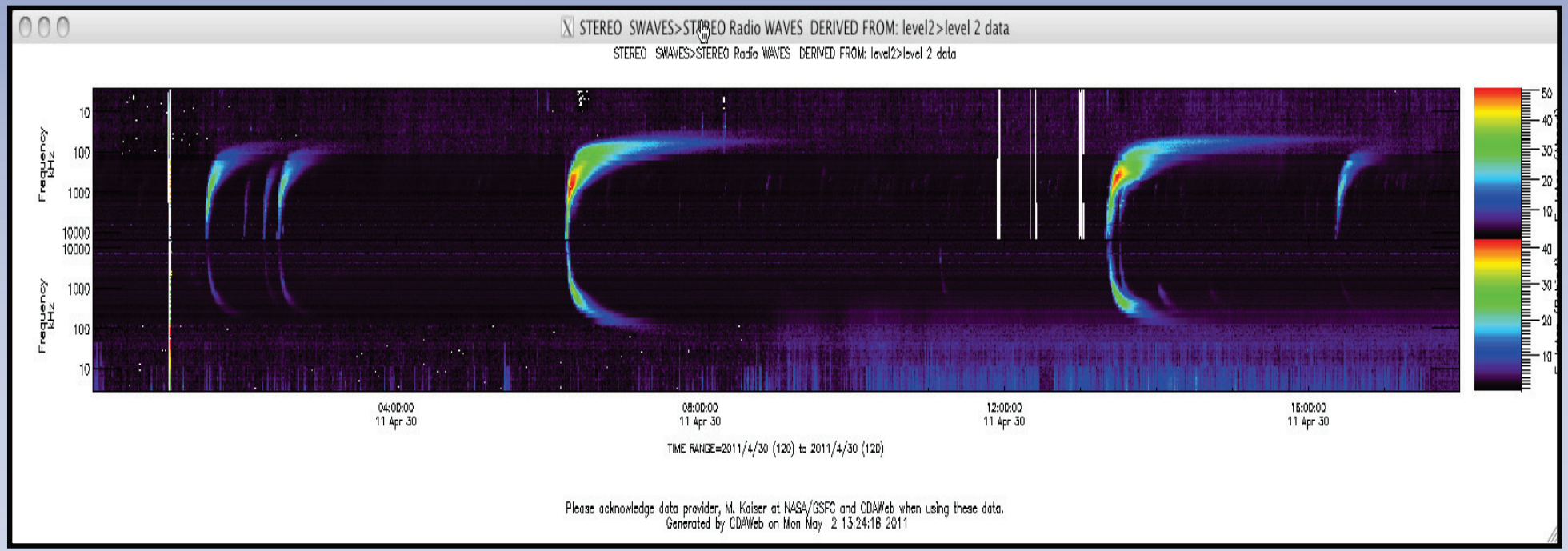
- **Orbit (GSE) view**
  - 3D Zoom, pan, animations, s/c –centered view, region overlays
- **Footpoint (GEO) view**
  - Animated footpoint traces with ground station overlays



CDAWeb Chooser

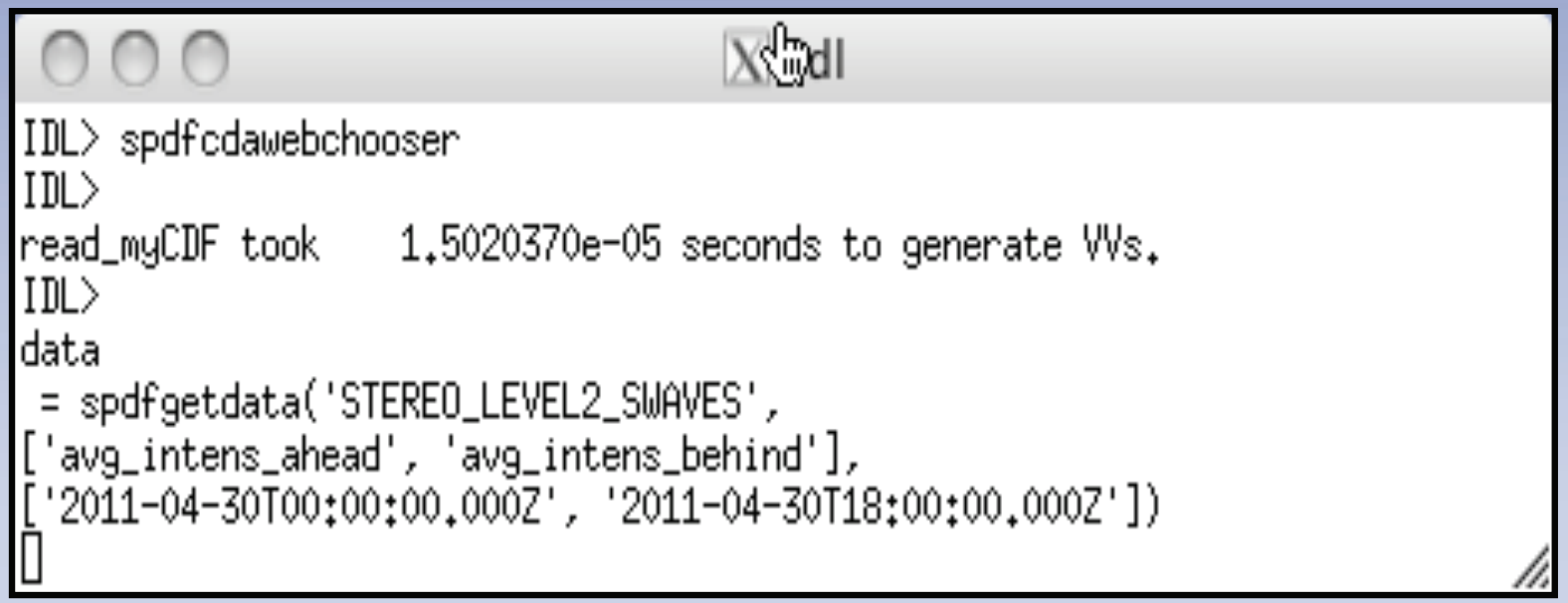
- **Load/display CDAWeb data inside IDL**
  - @compile_cdaweb
  - spdfcdawebchooser
  - Select mission/instrument etc.
  - Loaded IDL structure enables "Show CDAWlib Plot"





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



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 <15abe88>, 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 <1b9c808>, 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'
```

```
   PI_NAME         STRING    'M. Kaiser'
   PI_AFFILIATION  STRING    'NASA/GSFC'
   TEXT            STRING    'CDAWeb interface derived data on Mon M'...
   INSTRUMENT_TYPE STRING    'Radio and Plasma Waves (space)'
   MISSION_GROUP   STRING    'STEREO'
   LOGICAL_SOURCE  STRING    'STEREO_LEVEL2S_SWAVES'
   LOGICAL_FILE_ID STRING    'stereo_level2s_swaves_20110430000030_2'...
   LOGICAL_SOURCE_DESCRIPTION
                   STRING    'DERIVED FROM: STEREO WAVES (SWAVES) Ra'...
   GENERATION_DATE STRING    'Sun May  1 10:00:08 2011'
   LINK_TEXT       STRING    'Experiment and Data descriptions at'
   LINK_TITLE      STRING    'STEREO/SWAVES Investigation Site'
   HTTP_LINK       STRING    'http://swaves.gsfc.nasa.gov/index.html'
   FILE_NAMING_CONVENTION
                   STRING    'source_datatype_descriptor'
   FIELDNAM        STRING    'E-Avg Inten>Bgnd (Ahead)'
   CATDESC         STRING    'Ahead:  Electric field avg intensity ('...
   DEPEND_0        STRING    'Epoch'
   DEPEND_1        STRING    'frequency'
   DEPEND_2        STRING    ''
   DEPEND_3        STRING    ''
   DICT_KEY        STRING    ''
   DISPLAY_TYPE    STRING    'spectrogram>reverse_yaxis'
   FILLVAL         FLOAT     -1.00000e+31
   FORMAT          STRING    'f11.5'
   LABLAXIS        STRING    'E-Inten_(Ahead)'
   LABL_PTR_1      STRING    ''
   LABL_PTR_2      STRING    ''
   LABL_PTR_3      STRING    ''
   UNITS           STRING    'dB>bgnd'
   UNIT_PTR        STRING    ''
   VALIDMIN        FLOAT       1.00000e-05
   VALIDMAX        FLOAT           500.000
   VAR_TYPE        STRING    'data'
   SCALETYP        STRING    'linear'
   SCAL_PTR        STRING    ''
   VAR_NOTES       STRING    ''
   FORM_PTR        STRING    ''
   VIRTUAL         STRING    ''
   FUNCT           STRING    ''
   COMPONENT_0     STRING    ''
   DIM_SIZES       LONG                 367
   CDFTYPE         STRING    'CDF_FLOAT'
   CDFRECVARY      STRING    'VARY'
   DAT             FLOAT     Array[367, 1080]
IDL> []
```