ViRBO and Autoplot

ViRBO Overview

- Virtual Radiation Belt Observatory
- Facilitate **Search**, **Access**, and **Visualization** of Radiation Belt Data
- **Search** – Develop SPASE Metadata associated with RB data. *ViRBO will handle SPASE generation for RBSP data products.*
- **Access** – Collect code and tools for access; host meeting web pages
- **Visualization** – Autoplot is our primary tool

Sample SPASE Record

Instrument

Instrument ID spase://SMWG/Instrument/RBSP/RPS

Name Relativistic Proton Spectrometer (RPS)

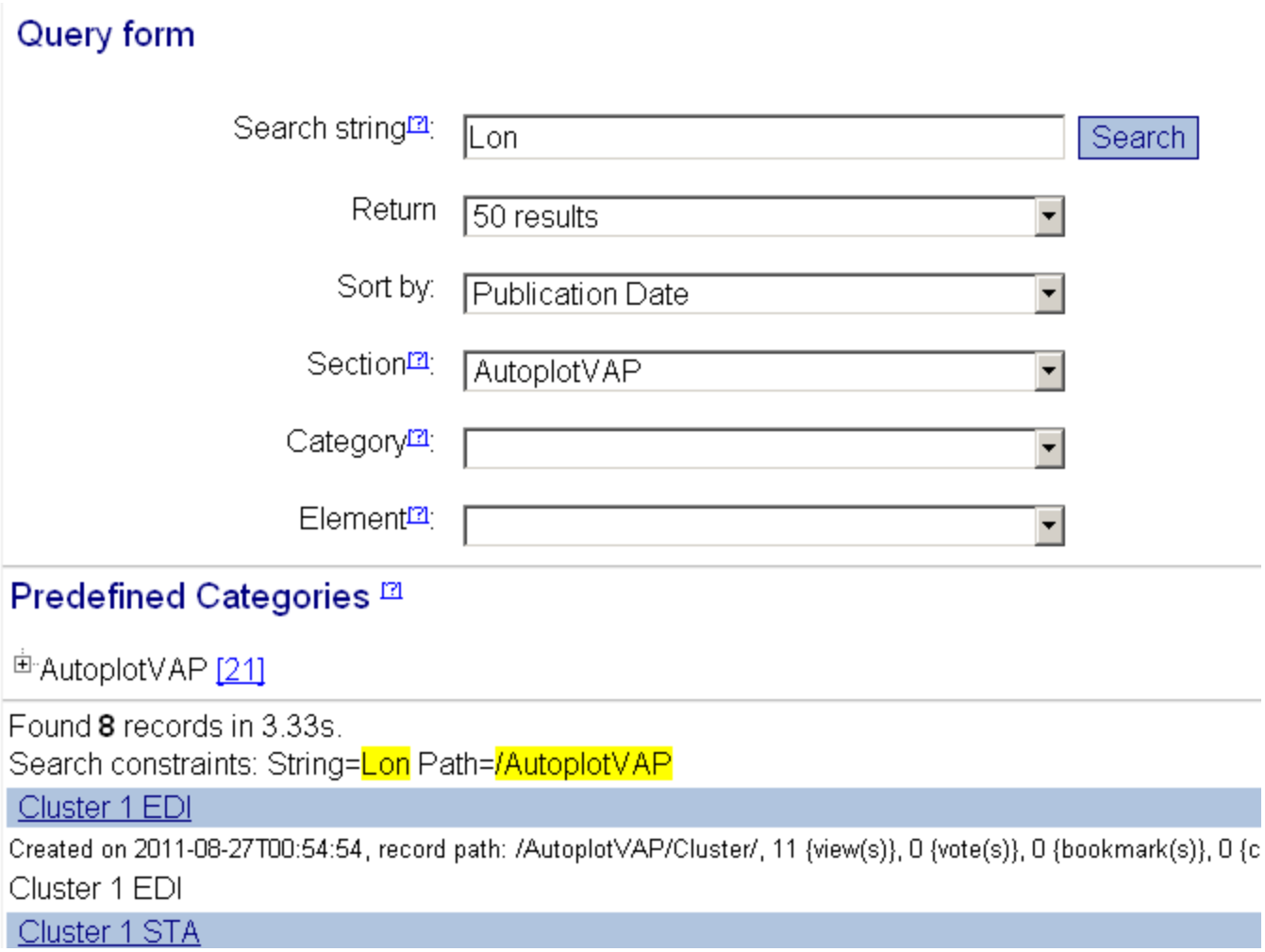
Description "The RPS will measure inner Van Allen belt protons with energies from 50 MeV to 2 GeV. Presently, the intensity of trapped protons with energies beyond about 150 MeV is not well known and thought to be underestimated in existing specification models. Such protons are known to pose a number of hazards to astronauts and spacecraft, including total ionizing dose, displacement damage, single event effects, and nuclear activation. This instrument will address a priority highly ranked by the scientific and technical community and will extend the measurement capability of this mission to a range beyond that originally planned. The project's goal is development of a new standard radiation model for spacecraft design." Measurements include: Energetic protons responsible for total dose in MEO for shielding thickness over 200 mils aluminum; Protons responsible for displacement damage; Telescope consists of 8 silicon detectors and a Cherenkov detector; Stacked Si detectors used for 50 MeV to ~400 MeV, incident angle constrained by 8-fold coincidence; Chenrenkov detector used for >400 MeV; Absolute flux accuracy: dJ/J ~10%; Energy resolution: dE/E ~30% @ 50 MeV, to 100% @ 2 GeV; Angular resolution: 30° instantaneous, 5° deconvolved " [http://rbsp.jhuapl.edu/spacecraft/instruments/instruments_rps.php]

Additional information RPS Web Page RPS Web Page

Contact

Role	Person ID
1 Principal investigator	spase://SMWG/Person/David.Rusc

Search example



Autoplot Overview

- Autoplot interface was a project originally developed for ViRBO.
- Goal: Given a URL to a data file, make a sensible plot. A browser for data on the web.
- Used existing libraries (“das2”) and tools and extended them for VxO use.
- Continued support or code contributions from HPDE, ViRBO, VMO, RBSP-ECT, and the Radio and Plasma Wave Group at The University of Iowa.

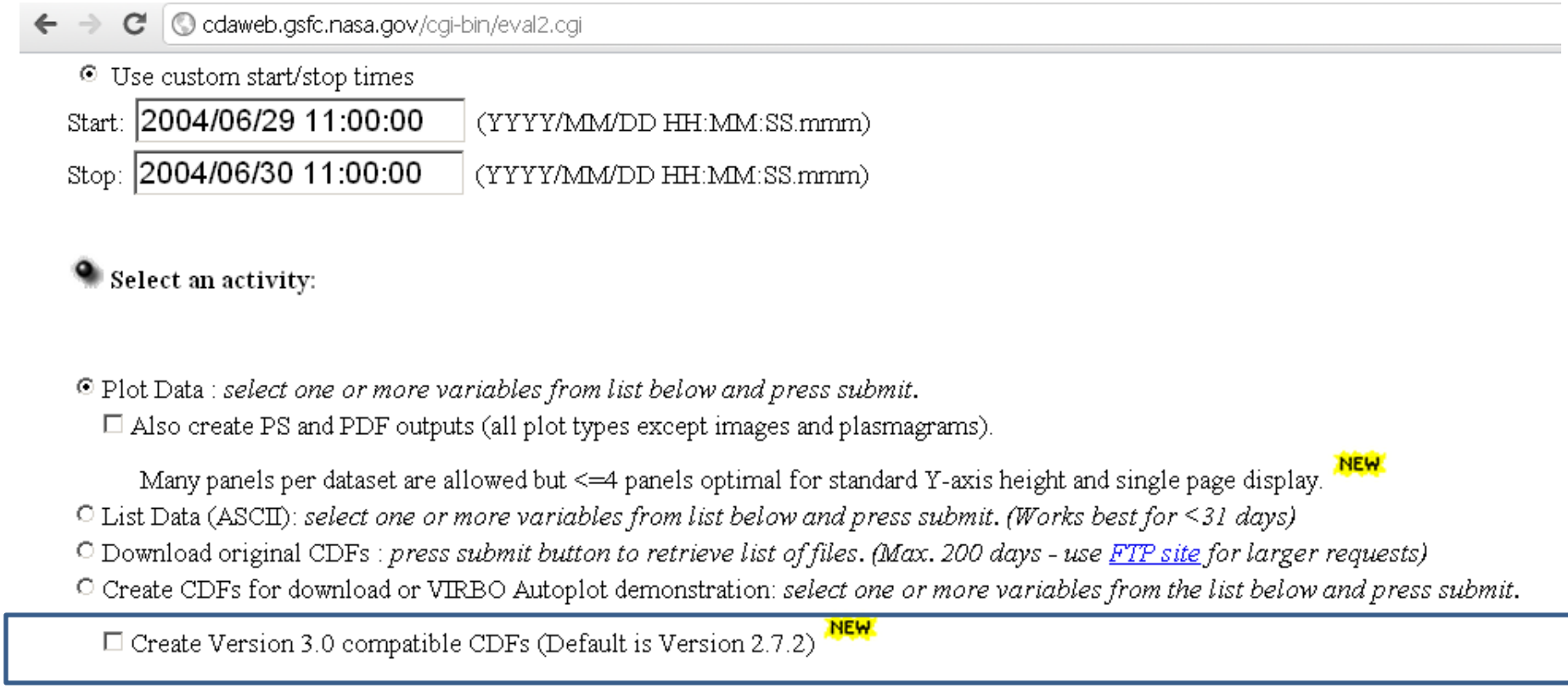
Comparison

- View many types of data from many data sources
- Works on any operating system
- Analysis possible (Python)
- No license
- One-click launch
- Bookmarks
- Configuration files

Three Access Points

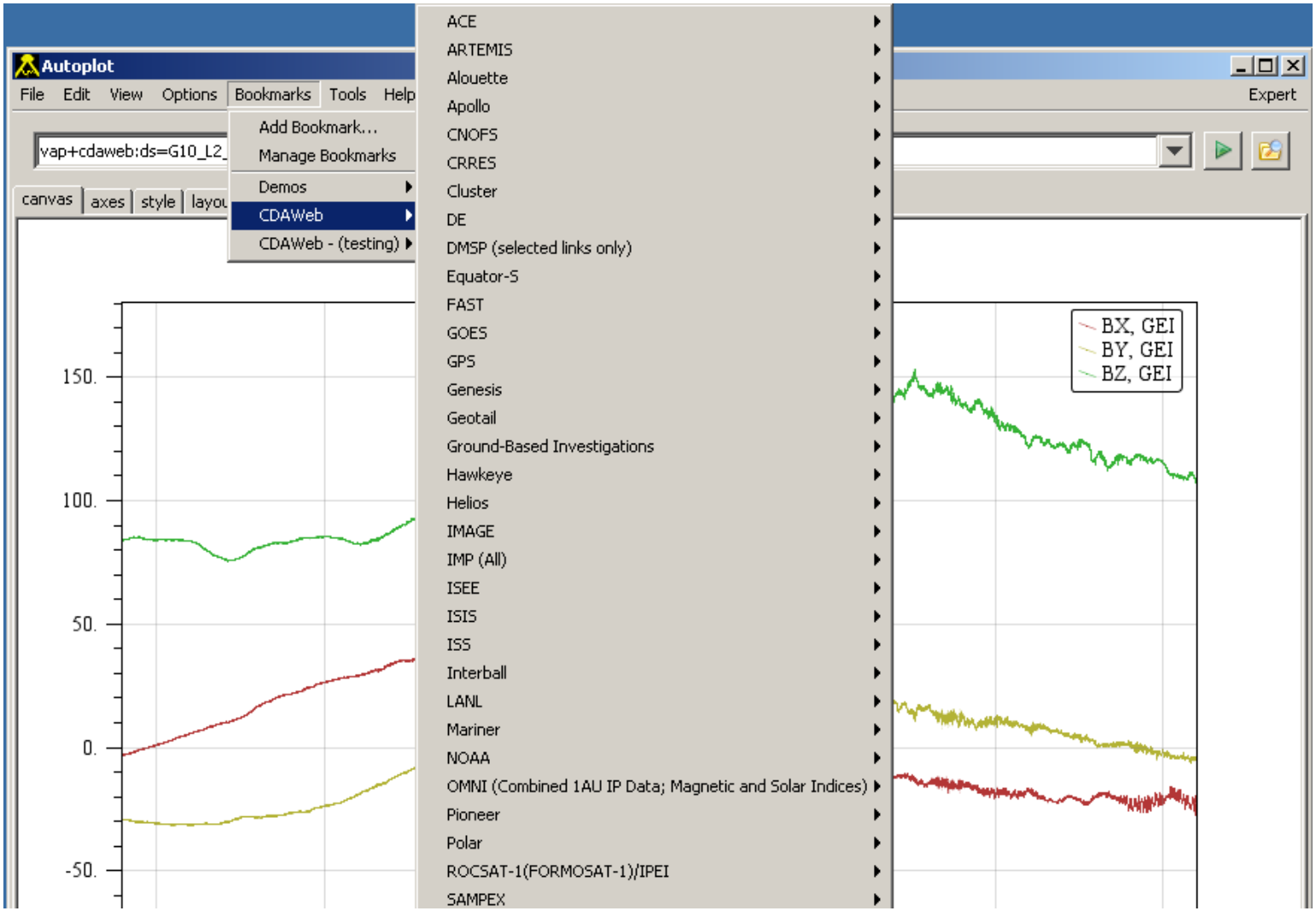
1. Through CDAWeb interface – click Autoplot link after selecting data
2. Launch Autoplot - select CDAWeb bookmarks (will be a part of default install soon)
3. Using View links on ViRBO web page

1. Through CDAWeb Interface



2. Through CDAWeb bookmarks (available soon)

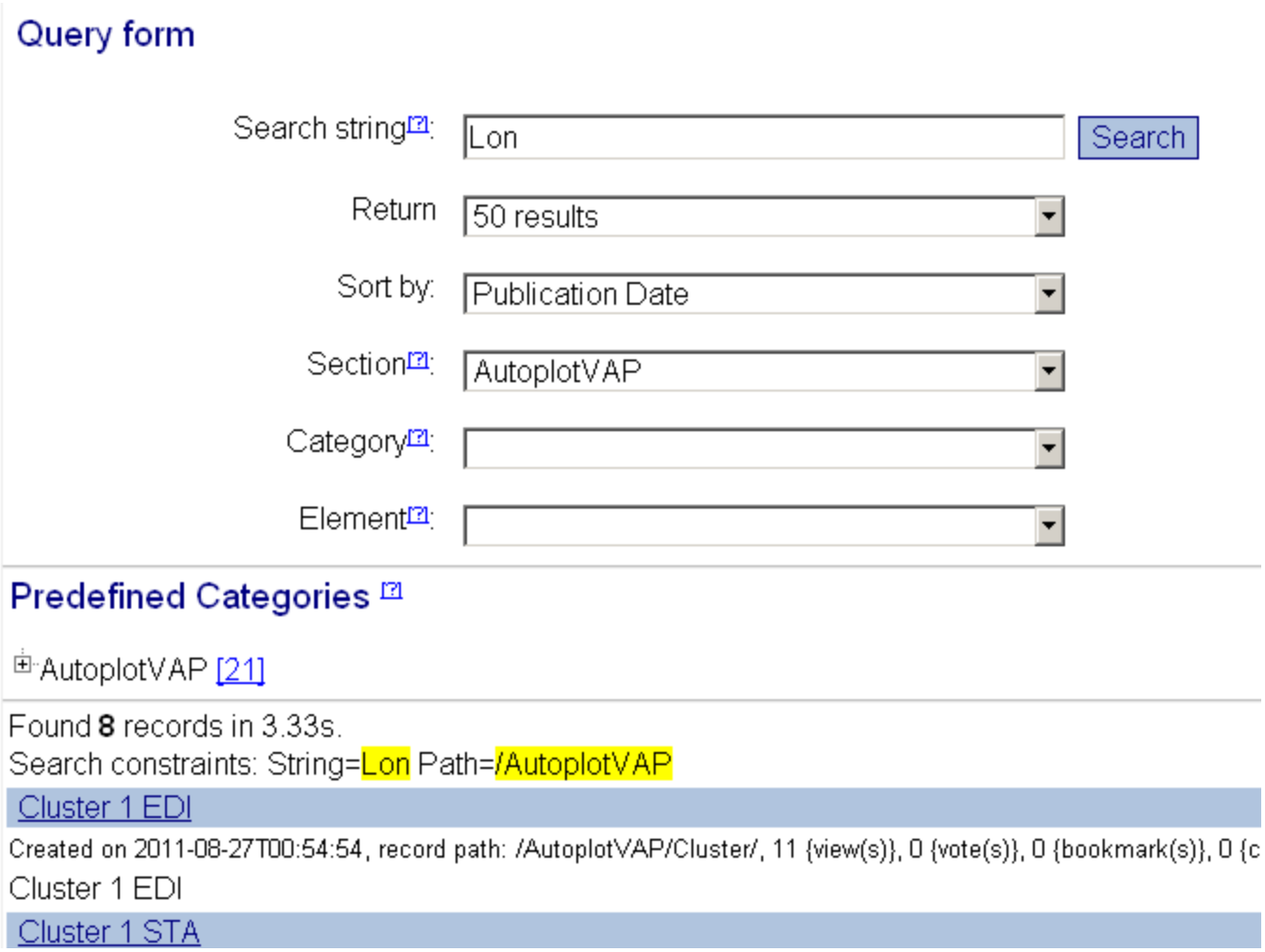
2. Through CDAWeb bookmarks (available soon)



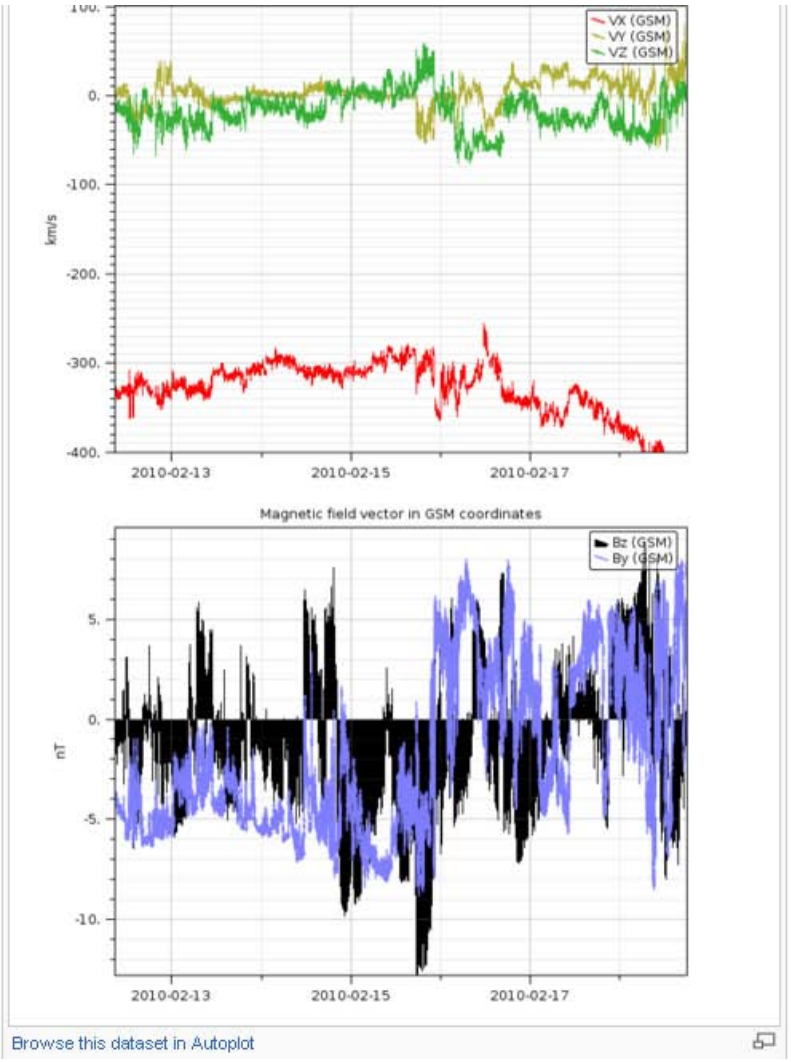
3. Using View Links

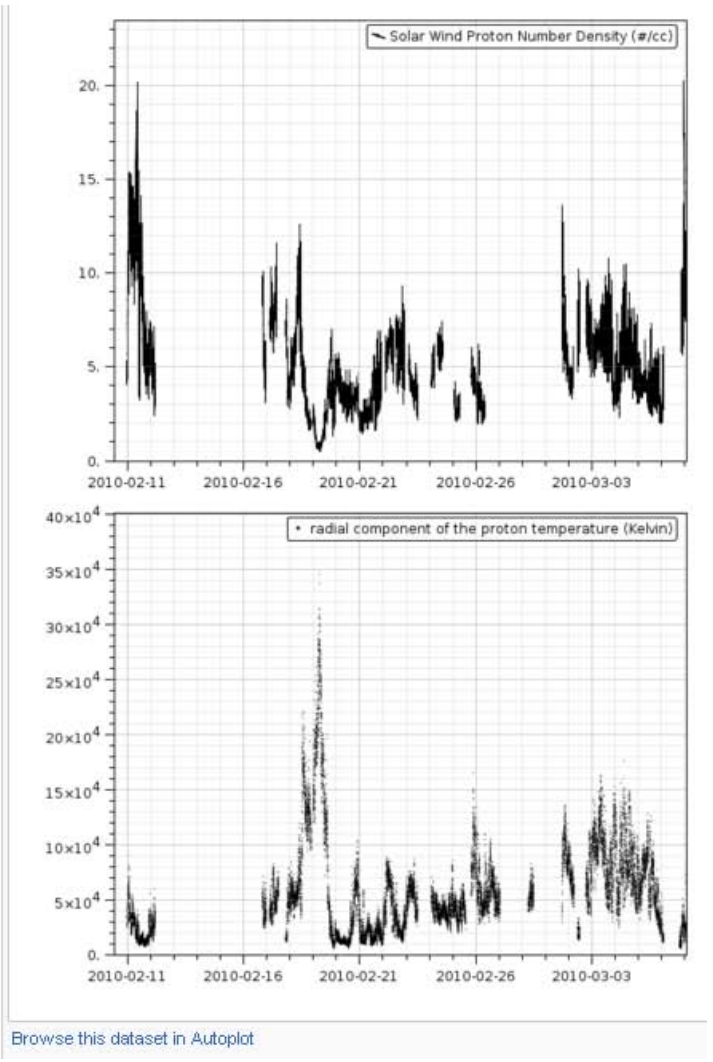
- We have extended Autoplot to allow “views” of data to be saved as a configuration (VAP=ViRBO Autoplot file).
- We are in the process of creating view pages for data products.
- View metadata will be searchable via ViRBO

Search example

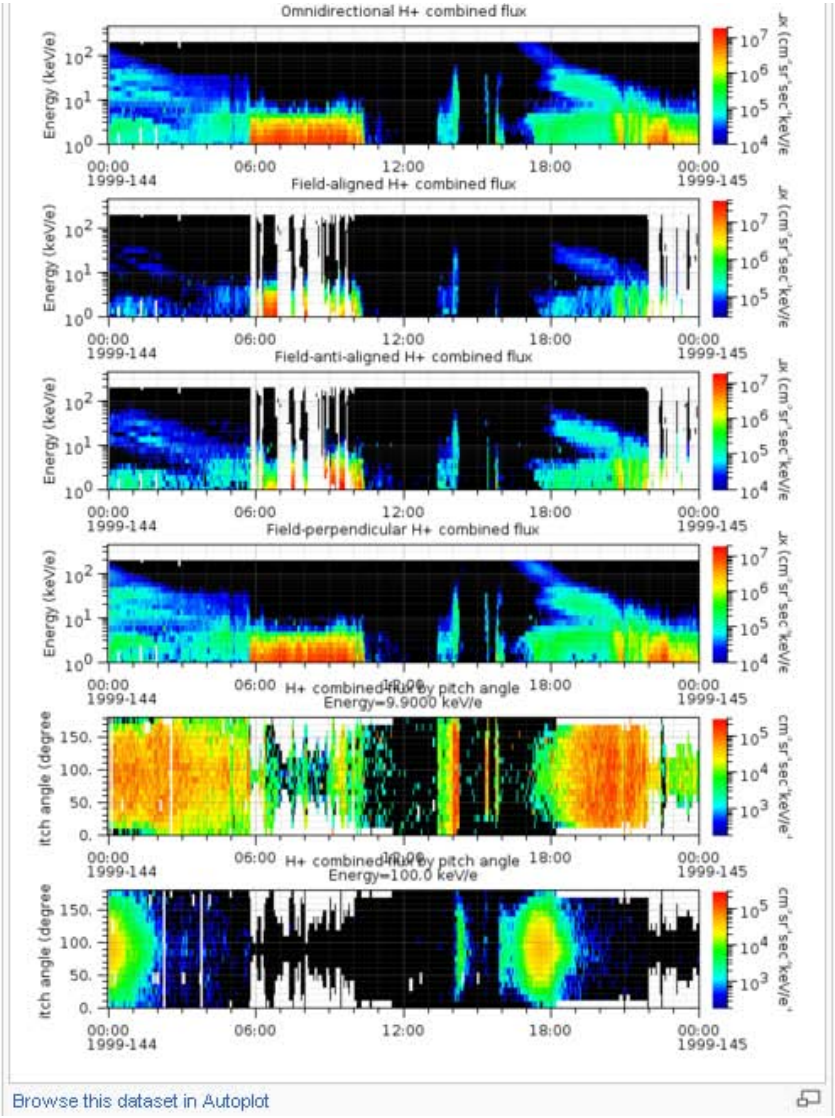


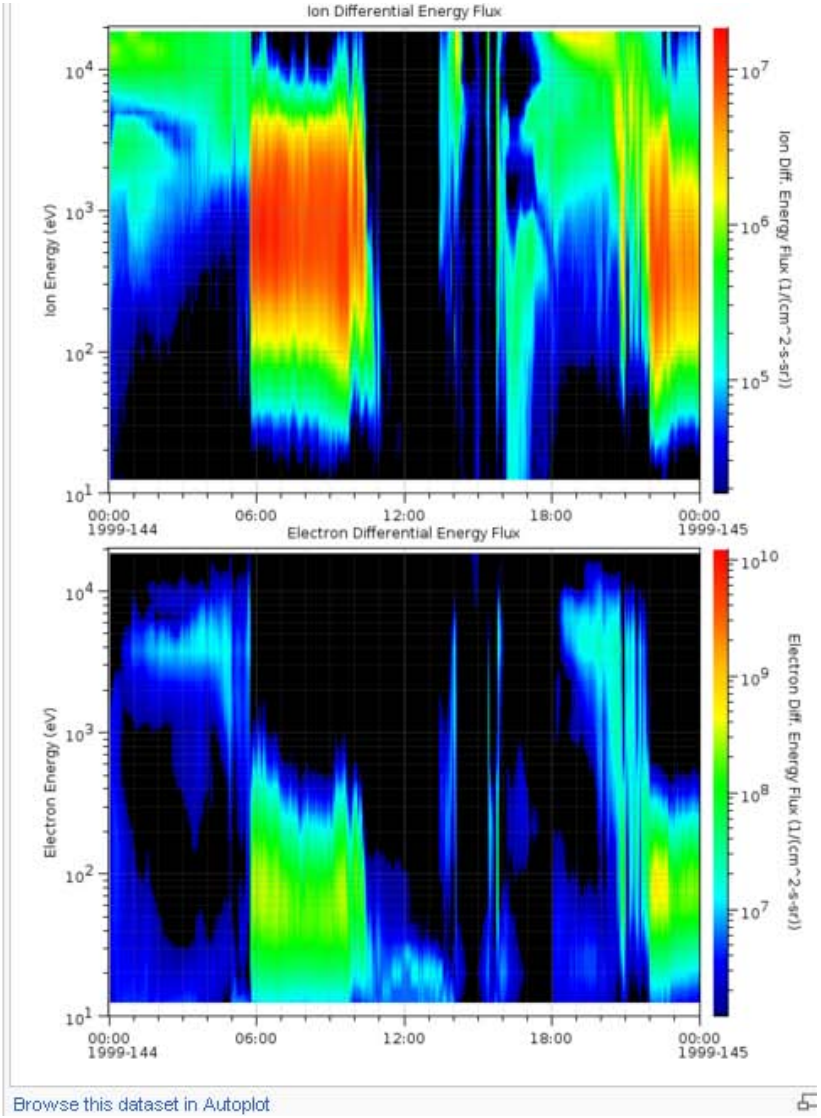
View Example Web Page





View Example Web Page





ViRBO/RBSP interaction

- We will develop views of RBSP data using Autoplot/CDAWeb interface.
- We will develop basic views and request feedback.
- We will continue to develop software that makes view development easier.