Enhanced Plasma and Charged Particle Data Support in NASA's Planetary Data System

J.N. Mafi[1], I.S. Moon[1], J. Faden[2], C. Piker[3], L. Miller[4], S.P. Joy[1], R.J. Walker[1], J.W. Manweiler[4]
[1]Earth, Planetary and Space Sciences Dept. UCLA, Los Angeles, CA, U.S.A,
[2]Cottage Systems, Iowa City, IA, U.S.A.,
[3]Physics & Astronomy, University of Iowa, Iowa City, IA, U.S.A.,
[4]Fundamental Technologies, LLC, Lawrence, KS, U.S.A.

Introduction: The NASA Planetary Data System (PDS) is currently being improved to make finding and using planetary data easier. Multidimensional plasma and charged particle data are among the most complex data that are archived in PDS. The Planetary Plasma Interaction (PPI) Node of PDS is currently engaged in several activities to improve analysis and display support for these types of data. These activities include translating the data to more easily used formats, improving the metadata, and providing better access to the data for a number of visualization and analysis tools.

Data translation and metadata migration: PPI has begun the migration of it's PDS3 metadata (labels) to PDS4. This migration includes the addition of new metadata that will enable enhanced discovery of plasma and charged particle data.

PPI has also begun a project to translate it's calibrated and derived plasma and charged particle data holdings to Common Data Format (CDF). CDF enjoys wide tool support and the archival version of CDF (CDF-A) is allowed under the PDS4 Information Model. Data translations are currently being performed by PPI at UCLA, the University of Iowa, and Fundamental Technologies. Future plasma and charged particle data providers (including both mission and independent providers) are being encouraged to deliver all of their data (raw, calibrated, and derived) in CDF-A format.

Data access protocols and visualization: PPI is in the process of implementing a number data access protocols (including EPN-TAP, HAPI, SAMP, and PDS API) to support user access to PPI holdings. These protocols will enable direct access to PPI holdings by visualization tools such as Autoplot and TOPCAT (Figure 1. PNGWalk).

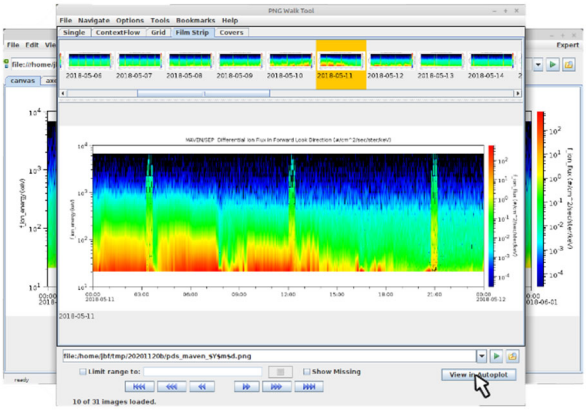

Figure 1: PNGWalk