



PDS Cartography & Imaging Sciences Node: Our Experience with PDART

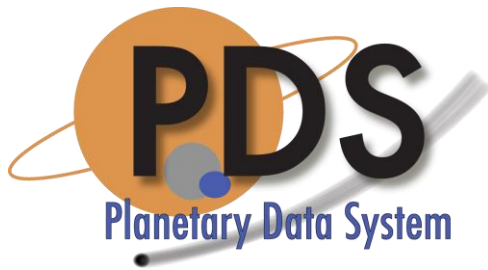
AKA “Imaging” or “PDS-IMG”

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PDS Tech Session

Caltech, Pasadena, CA

21-23 September 2016



PDART Experience

- **DAP investigations support (past 5 years)**
- **Overview of projects & archives**
- **PDS4 training materials**
- **Research products proposed**
- **PDS4 activities**
 - **Cartographic & Imaging dictionaries**
 - **Draft labels**
 - **Software used**
 - **Plans to support non-compliant products**

DAP Support

- **DAPs**
 - 2000-2013: Letters ~5-10/year, Projects ~2/year
 - 2014 to present: Letters ~5-10/year, Projects ~2/year
- **LASER**
 - 2007 to 2013: Letters ~2-6/year, Projects 7 in total
- **PDART**
 - PDART14: Letters ~5-10/year, Projects ~4 in total
 - PDART15: Letters 14, Projects ~6 in total
 - PDART16: Letters 18, Projects TBD
- **Currently supporting 17 DAPs (6 inactive)**
 - Projection of 15 – 20 /year

Overview of DAPs

- **Currently supporting 17 DAPs (6 inactive)**
 - 5 to be completed in 2017, 4 in 2018, 2 in 2019
- **Data volumes**
 - 10 GB to 1 TB to 80 TB (ave. ~5 TB)
- **Project staff**
 - PI-led, one staff member doing archiving (usually PI)
 - PI's are typically scientists (geologists, astronomers, physicists, etc.)
 - PI's are NOT usually data scientists

DAP Support

- **Support for Data Management Plans**
 - **Letter of support**
 - Reviewed by many in MC last year, vetted for current use (MDAP, LDAP, etc.)
 - **Online materials at IMG**
 - PDS4 pointers and information, archive plan template, guidance for proposers, preparers, pointer to IPAG
 - <http://pds-imaging.jpl.nasa.gov/help/proposals.html>

DAP Research Products

- **New products from research proposals**
 - ROSES 2016 requires Data Management Plans for research proposals
 - Either in text box (cover pages) or in proposal text
 - DMP must cover any data needed to validate research conclusions in publications (e.g., figures, maps, tables) as well as data needed to enable replication of results
 - Excludes preliminary or unpublished data, private communications (see SARA: <http://science.nasa.gov/researchers/sara/faqs/dmp-faq-roses/>)
 - Improvements were made to the language and archiving expectations in ROSES 2016, but we will see more need for help with DMPs
 - Proposers to PDART, LDAP, MDAP, etc. are requesting support for a wide variety of products (next slide)

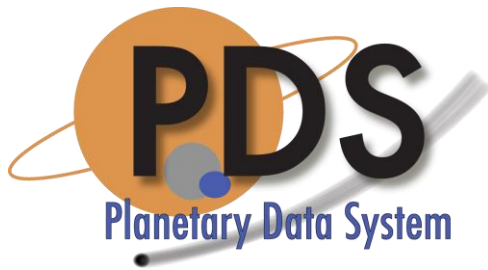
Research Products	PDS4 Information Model	PDS4 Label
Digital Terrain/Elevation Models (DTMs, DEMs)	Array_2D_Image (or _3D for multi-band)	
Reflectance Spectra	Array_2D_Spectrum (or _3D)	
Light curves	Table_Binary, Table_Character, Table_Delimited	
Images, mosaics (regional, global)	Array_2D_Image (or _3D for multi-band)	
- Camera Raw (color, bxw)	Array_2D_Image (or _3D for multi-band)	
- PNG (color, bxw)	Array_2D_Image (or _3D for multi-band)	
- Continuous byte stream	Array_2D_Image (or _3D for multi-band)	
- GeoTiff images		
- Interleaved tags, discontinuous byte stream	Non-compliant	
- Continuous byte stream	Array_2D_Image (or _3D for multi-band)	
ISIS cube		
- Interleaved "tiles" (ISIS default)	Non-compliant	
- BSQ (ISIS option)	Array_2D_Image (or _3D for multi-band)	
Most commonly requested products	Discouraged (non-compliant in PDS4)	

Research Products	PDS4 Information Model	PDS4 Label
GIS Maps and GIS "Projects" (Vector Layers)	Non-compliant	
- Drawn shapes (shapefiles), Coverages	Product_Document, Product_Native?	
- Feature class, Point databases	Table_X, Product_Native?	
- Geologic units, contacts, structure, etc.	Product_Document, Product_Native?	
PDS3 labeled image cube	Array_2D_Image (or _3D for multi-band)	
Meshes, TINS, DSKs	Non-compliant	
Point Clouds	Non-compliant (currently investigating)	
Images (GIF, J2C, JPEG, PDF, PDF/A, PNG)		
- Data products	Non-compliant	
- Browse	Product_Browse, Product_Document	
Software		
- Used for processing (referenced)	Product_Software (Software_Binary, Software_Script, Software_Source)	
- Archive product	NASA GitHub (https://github.com/nasa)	
Most commonly requested products	Discouraged (non-compliant in PDS4)	



PDS4 Activities

- **Dictionaries**
 - **Imaging and Cartography dictionary preparation & support**
- **Draft PDS4 labels**
 - Sample labels for Array_2D_Image for both Orbiter (e.g., JunoCam, MOC RDRs) and In-situ (InSight) and Array_3D_Image for In-situ (InSight). Draft labels also produced for Array_3D_Spectrum (Clem UVVIS 5-band) and Array_2D_Image for select LMMP products (single band).
 - Still need software to test these
- **Software used**
 - APPS Label Design Tool, Oxygen, PDS4 Generate Tool
- **Plans to support non-compliant products**
 - Reformat non-compliant products, also use Miscellaneous



What Do We Need/Want?

- **A label design software package to**
 - Start with existing labels and/or prepare new, PDS4-compliant labels
 - Test and/or validate modified labels from providers
- **A publicly available library of valid PDS4 labels for a variety of products**
- **Software that designs a PDS4 bundle with collections as needed**
 - Software to use labels to populate PDS4 layout
- **Software that can be deployed and used within PDS and by DAP investigators**
 - Web-based would be simplest
 - Allows users to start with a template or existing valid label
 - Based on question and guided response
 - Explains options in plain English, allows only valid selections
- **Training for users**
 - Cookbook-style, explicit instructions
 - Public events

Planetary Data Workshops

- **1st Planetary Data Workshop, 2012**

- Meeting report (USGS Open-File Report):
 - <http://pubs.usgs.gov/of/2014/1056/>

- **2nd Planetary Data Workshop, 2015**

- USGS site, agenda, abstracts, presentations:
 - <http://astrogeology.usgs.gov/groups/Planetary-Data-Workshop>
 - https://docs.google.com/spreadsheets/d/13gPNXS-W-jxhaZg-_I5UbP4WWICcjNJncOBIEa-dgz0/pubhtml
- LPI site, abstracts:
 - <http://www.hou.usra.edu/meetings/planetdata2015/>

- **3rd Planetary Data Workshop**

- High Country Conference Center, Flagstaff, AZ, June 12-15, 2017
- **We need to provide tool training for DAP investigators et al.**

