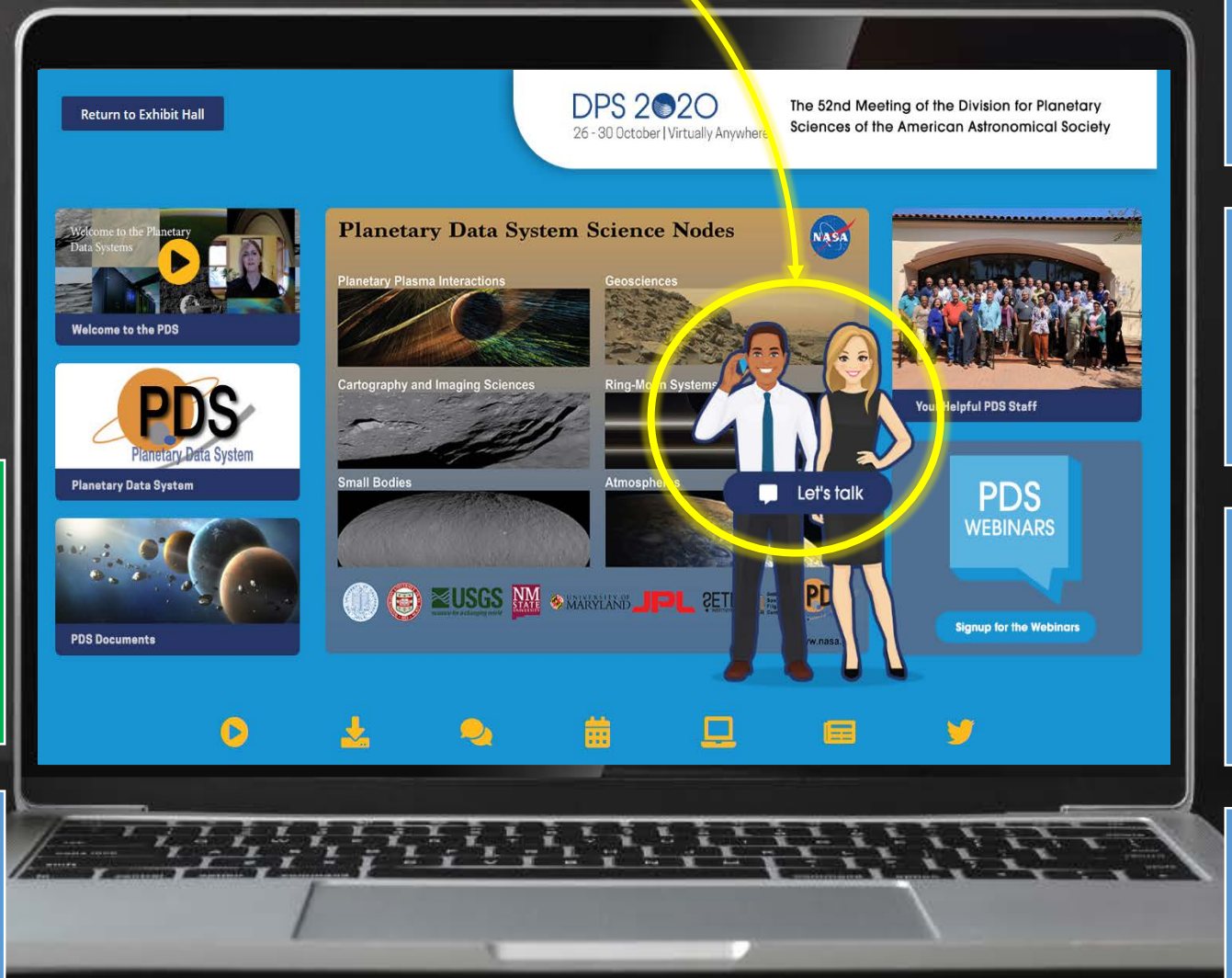
Introduction PDS Geosciences Node Data Sets and Analysis Tools

Ray Arvidson and Scott VanBommel
Washington University in Saint Louis
52nd DPS (Virtual Meeting)
Webinar
10/26/20

To enter a tutorial session, click on “Let’s talk” at the **PDS Exhibitor Booth** at the DPS web site.



Webinars

Introduction to PDS Geosciences Node Data Sets and Analysis Tools
Monday, October 26
12:00 to 12:30 PM EDT

Introduction to PDS Geosciences Node Orbital Data Explorers and Landed Mission Analyst Notebooks
Wednesday, October 28
2:00 to 2:30 PM EDT

Tutorials

MRO CRISM Hyperspectral Data Sets and Analysis Tools
Monday, October 26
2:30 to 3:30 PM EDT

Mars Rover In Situ X-ray Compositional Data Sets and Analysis Tools
Tuesday, October 27
3:00 to 4:00 PM EDT

Content and Use of PDS Geosciences Node Orbital Data Explorers
- *Wednesday, October 28*
4:00 to 5:00 PM EDT

Content and Use of PDS Geosciences Node Landed Mission Analyst Notebooks
Thursday, October 29
3:00 to 4:00 PM EDT

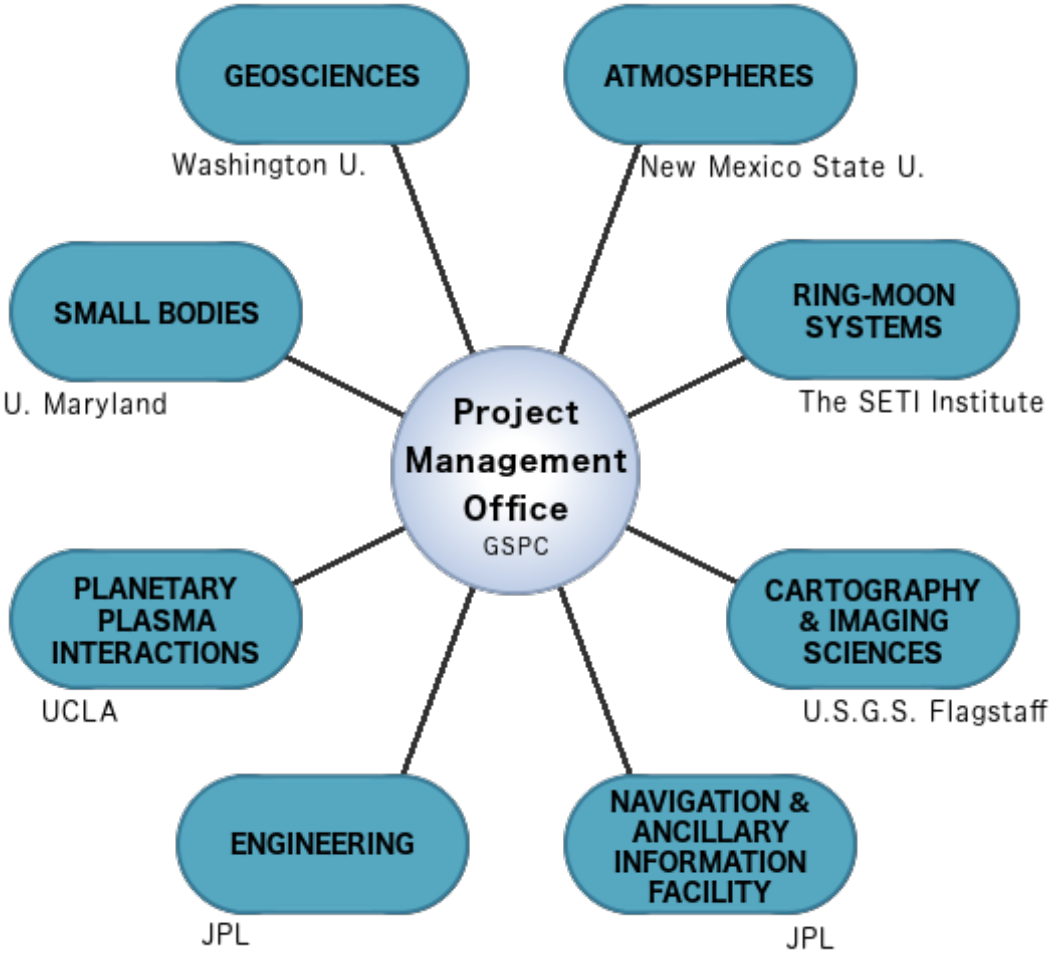
PDS: Science-Driven Distributed Data System*

PDS Program Scientist: Becky McCauley Rench, NASA HQ

PDS Program Executive: Meagan Thompson, NASA HQ

PDS Project Manager: Tim McClanahan, NASA GSFC

PDS Chief Scientist: Louise Prockter, JHU/APL



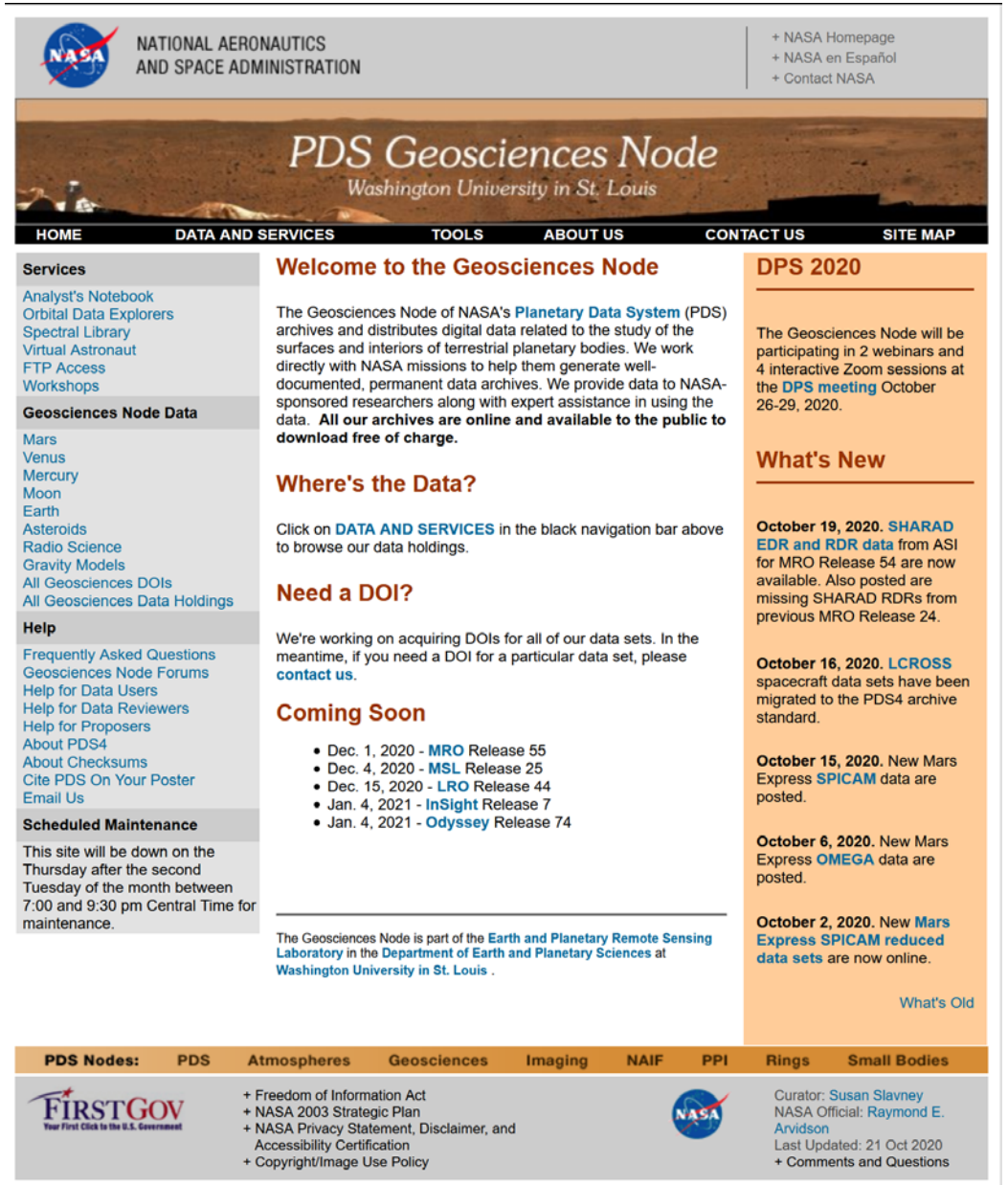
*Developed in response to recommendations from the NAS/NRC Space Science Board, Committee on Data Management and Computation, to place archives under control of scientists who use the data sets

Geosciences Node Overview

- Our charter is to archive mission and individual provider data for Mercury, Venus, Earth's Moon, and Mars, to enable users to search, access, and process the data sets, and to provide expert assistance.
- Interactions with the research community
  - Help users find and use the data by providing tools such as the Orbital Data Explorer, Analyst's Notebook, and Spectral Library.
  - Maintain an online presence with the Geosciences Node web site and user forums.
  - Meet our user community in person at conferences such as the annual Lunar and Planetary Science Conference (LPSC) to answer questions, demonstrate our tools, and receive feedback, including two webinars and four Zoom interactive tutorial sessions at this DPS meeting.
  - Host or support user workshops for data sets of high interest, such as those listed on our Workshops page.
  - Work closely with mission instrument teams and individual data providers to help them prepare their archives to meet PDS standards.
  - Provide DOIs for our PDS3 data sets and PDS4 bundles in order to ensure proper citation of these resources in scientific papers.
- Behind the scenes
  - Active in PDS internal working groups, such as the Data Design Working Group, Software Working Group, Document Authors Team, Document Review Team, Change Control Board, Data Dictionary Stewards, and PDS API Working Group.
  - Active in the International Planetary Data Alliance to encourage the adoption of PDS4 standards by other national space agencies.

Geosciences Node Web Pages and Tools

- Geosciences Node Web Page: https://pds-geosciences.wustl.edu/
- Geosciences Node User Forum: https://geoweb.rsl.wustl.edu/community/
- Orbital Data Explorer (ODE): https://ode.rsl.wustl.edu/
- Analyst's Notebook (AN): https://an.rsl.wustl.edu/
- Spectral Library: https://pds-geosciences.wustl.edu/spectrallibrary/
- Host for Brown University's RELAB spectral data and catalog
- Archive volume ~256 terabytes, ~49 million files
- Tools: CRISM and OMEGA Analysis Tools, Interactive Analyst Notebooks, Orbital Data Explorer granular search and access, Spectral Library interactive plotting, expert advice on use of non-PDS tools



Geosciences Node: Mission Archiving

Active Missions	Experiments Archived at Geo	# PDS3 Data Sets / PDS4 Bundles
***Mars Odyssey**	GRS Suite (GRS/NS/HEND), Radio Science	9
***MRO**	CRISM, SHARAD, Radio Science	14
***LRO**	Diviner, LEND, LOLA, Mini-RF, Radio Science	20
***MSL**	APXS, ChemCam, CheMin, DAN, SAM	16
***InSight**	HP3/Radiometer, IDA, RISE, SEIS	4
Mars Express (ESA)	ASPERA, HRSC, MaRS, PFS, MARSIS, OMEGA, SPICAM	23
Total accumulating data sets / bundles		86

Developing Missions	Experiments Archived at Geo	# PDS4 Bundles
***†Mars 2020 Rover**	PIXL, SHERLOC, RIMFAX, SuperCam, Returned Sample Science	5
Europa Clipper Orbiter	MISE, REASON, Radio Science, Gravity	2
***Dragonfly (Titan)**	DrACO, DraMS, DraGNS, DraGMet	4
Astrobotic Mission One (lunar)	NMLS	1
***VIPER (lunar)**	Mass spectrometer, Near-IR spectrometer, neutron spectrometer, TRIDENT drill	4
Lunar Trailblazer	MVM3 (High-resolution Volatiles and Minerals Moon Mapper) and LTM (Lunar Thermal Mapper)	3
Total accumulating bundles		21

*We are the Lead Node, responsible for coordinating archiving among all PDS nodes involved in the mission.
†At request of Mars 2020 Project (Perseverance rover), we are leading the data product design for non-imaging instruments.

Geosciences Node: Individual Data Providers

- We're working with 44 individual data providers who are at various stages of preparing their archive submissions resulting from their work under NASA programs such as PDART, MDAP, and SSW.
- We report individual data provider archiving status to NASA Headquarters on a quarterly basis.
- We help proposers understand what they need for data management plans in their proposals, and we work with selected investigators to develop plans and schedules for archive development, implementation, and peer reviews to ensure receipt of quality archival products.
- Archives are ingested into the Geosciences Node and made available to the community through our web interfaces and search engines.

Data Discoverability & Usability Example: Spectral Library

- Our Spectral Library provides a web interface for searching, displaying, and downloading laboratory-based and other spectral data.
- The initial version of the Spectral Library, developed in collaboration with Professor Ralph Milliken, Brown University, under a PDART grant, includes the large database of spectra and associated information (~18,000 entries) from the RELAB (Reflectance Laboratory) facility at Brown University.
- We are now the host for the RELAB database and catalog for existing and future spectral data from the Brown University facility, in addition to other data sets from Individual Providers.

Geosciences Node Staff

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Questions or Comments?