Cassini and the PDS Ring-Moon Systems Node

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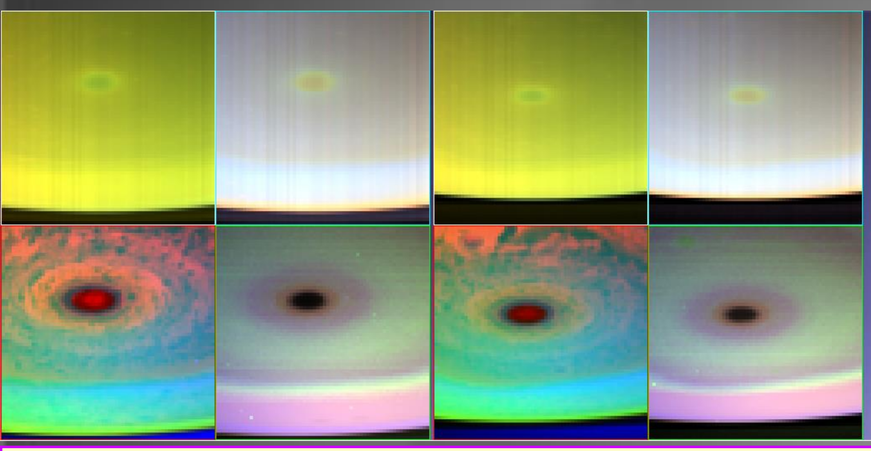
RINGS NODE Planetary Data System

T-17

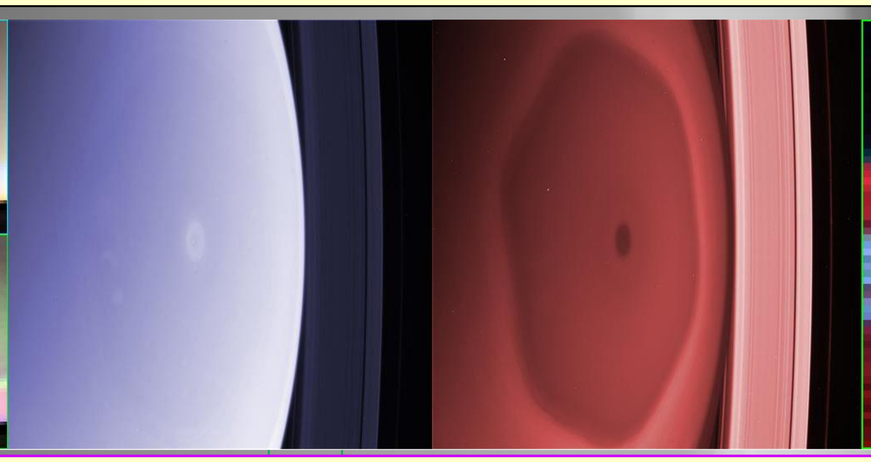
OPUS – Outer Planets Unified Search

https://tools.pds-rings.seti.org/opus

The Ring-Moon Systems Node (RMS Node) hosts the complete sets of data submitted to the PDS by the Cassini remote sensing instruments – more than one million data products from CIRS, ISS, UVIS, and VIMS combined. The RMS Node hosts OPUS – an accurate, comprehensive search tool for spacecraft remote sensing observations beyond the asteroid belt. For Cassini, OPUS currently supports ISS, UVIS, and VIMS. We produce and incorporate into OPUS detailed geometric metadata for every object in the instrument field of view for all three instruments for both the Jupiter and Saturn encounters. Search results include preview images for all products returned by a search, and calibrated images for Cassini ISS.

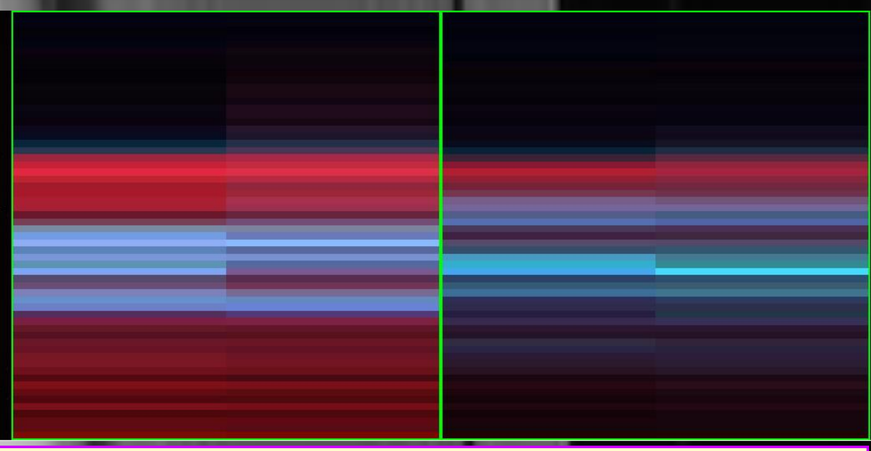


UVIS – four tiles per observation, borders indicate detector: blue EUV, green FUV, red HSP, yellow HDAC.



ISS short wavelength filer combo

ISS long wavelength filter combo



VIMS – green border: enhanced for methane. Blue the mean of two methane peaks near 1 &1.3 microns. Green maps to~2.01 microns, and red to ~2.8 microns

OPUS supports planetary systems – planets, satellites, and rings. Cassini data of ALL objects in the Jupiter and Saturn systems are supported with expanded sets of metadata, enabling powerful searches. The expanded metadata includes high resolution geometric metadata based on the best available spice kernels for every target in the field of view.

I decided to search for data obtained of Saturn's north polar hexagonal storm intended to be used for movies – preferably with observations from multiple instruments.

I could have used the enhanced geometry metadata generated at the RMS Node (e.g., latitude range, resolution, illumination geometry), but I wanted to use Cassini-specific parameters.

A selection in the left column opens a box on the right and reveals more options in the left column.

I started with Mission = Cassini and then searched for CIMS Observation IDs (Observation Name in OPUS) which contain 'npol' and 'mov', and then narrowed the search using Orbit Number.

This shows how quickly the search results are refined.

Parameter	Entry	#of Observations Returned
Mission	Cassini	1,368,024
Observation Name	npolmov	4,756
Orbit Number	271	497

Click on the Browse Tab

Note that the results include ISS, UVIS, and VIMS.

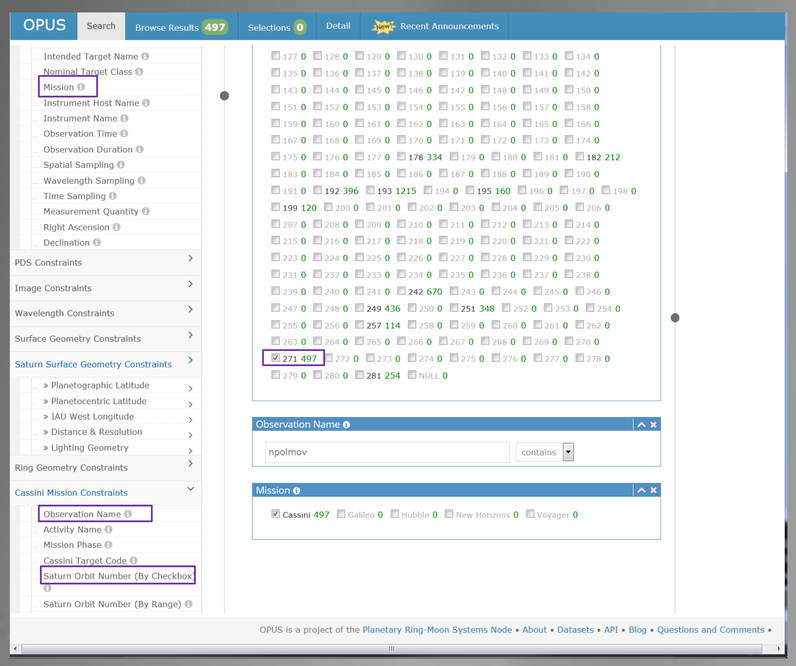
On the Browse Tab

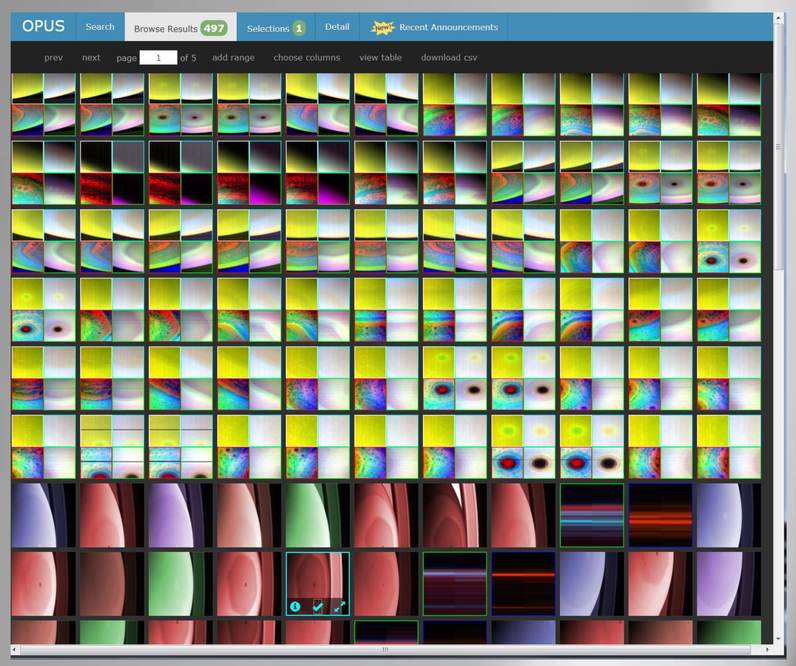
- Select the ones you want to download.
- Click on a thumbnail for a higher resolution browse view and details of the observation.

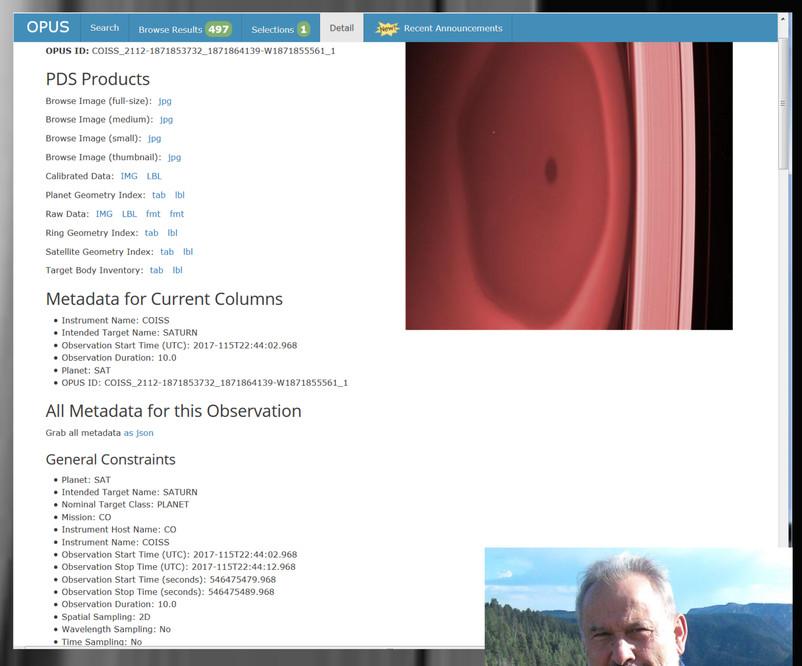
Keys to interpreting the browse products are available here:
https://pds-rings.seti.org/cassini/enhanced.html

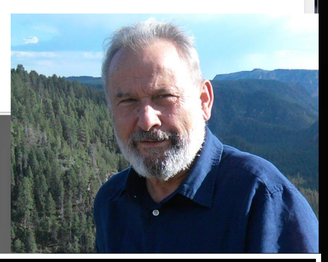
To download your selections, click on "Selections"

- The download includes a csv table of metadata.
- You can select or deselect columns for the table.
- Results are packaged in a zip file for download.









OPUS includes enhanced geometry for:

- Cassini ISS, UVIS, VIMS
- New Horizons LORRI
- Voyager ISS (all six encounters)

OPUS supports, without enhanced geometry:

- New Horizons MVIC
- Galileo SSI
- HST ACS, NICMOS, STIS, WFC3, WFPC2

Plans for future OPUS expansion include:

- Ring occultations – Cassini, Voyager, Earth based
- Full Cassini CIRS data set w/ geometry
- F-Ring mosaics
- VIMS reflectance spectra

The RMS Node maintains a suite of tools, including Cassini-specific versions of:

- Saturn Viewer
- Saturn Moon Tracker
- Saturn Ephemeris Generator
- Jupiter Viewer
- Jupiter Moon Tracker
- Jupiter Ephemeris Generator

Contact me to discuss OPUS, the RMS Node, or to discuss archiving in PDS, or using PDS4.
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Also available to discuss all aspects of PDS is Emily Law from the PDS Engineering Node.
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