Global Data Assembly Center (GDAC) Report to the GHRSST Science Team

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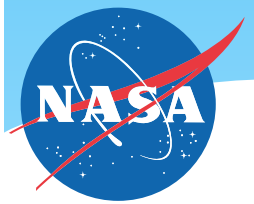
15th GHRSST Science Team Meeting

Cape Town, South Africa

2 June 2014



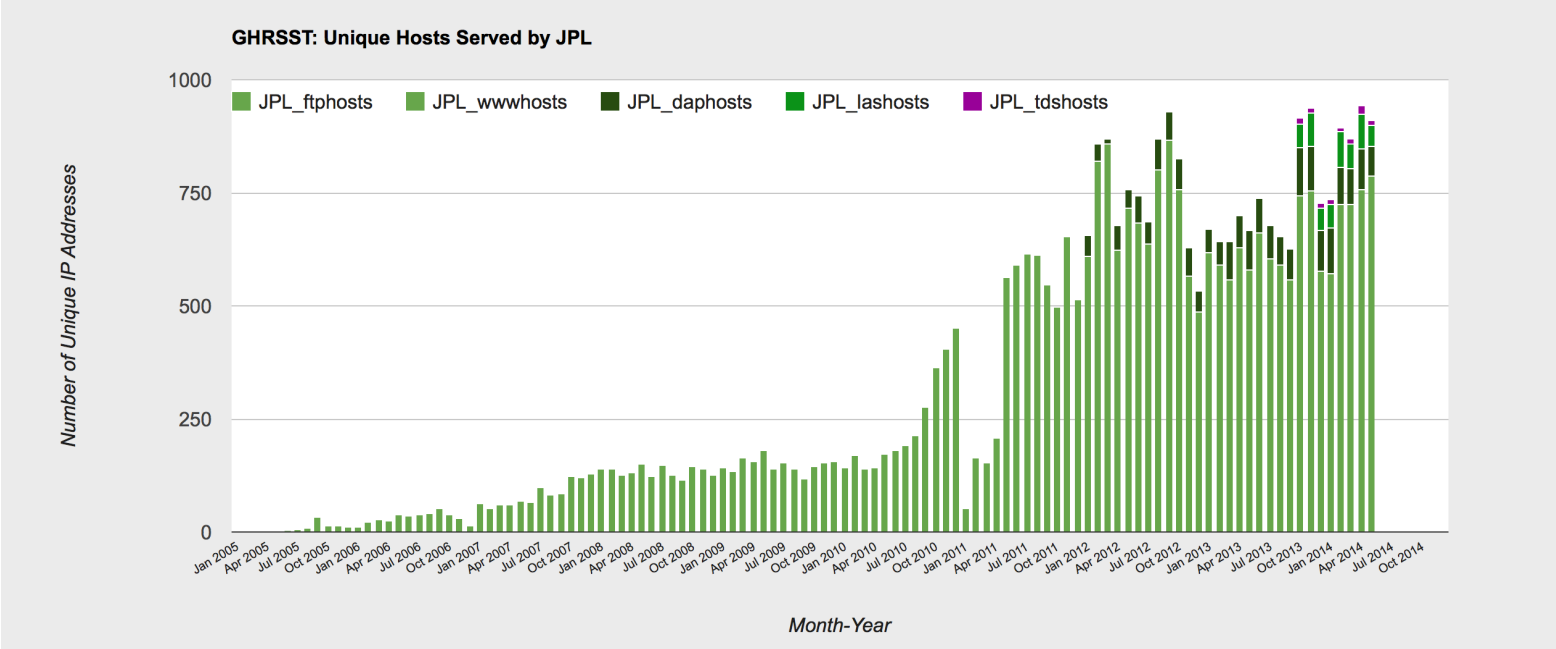
National Aeronautics and Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

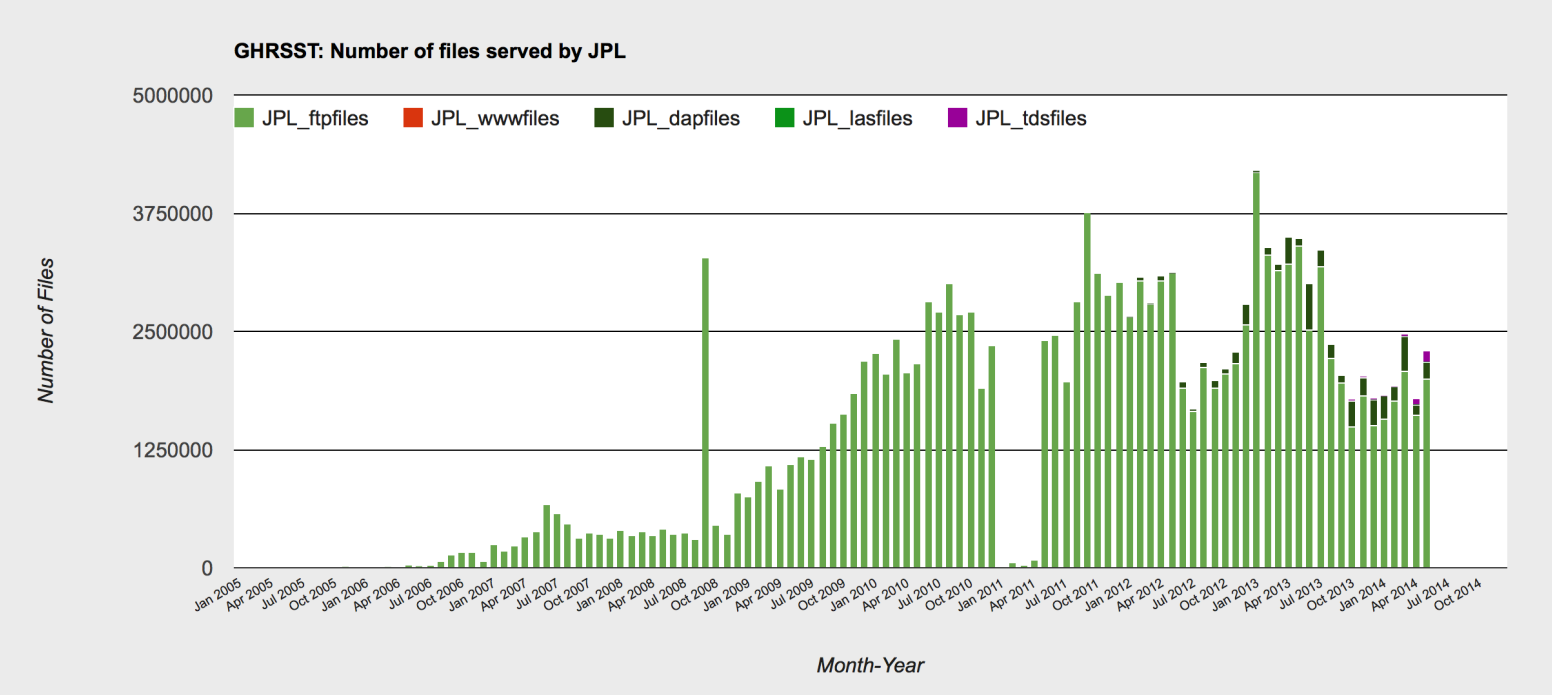
GDAC Highlights

* 2013-2014 focused on ingesting and distributing GDS2 datasets
  * Maintaining existing GDS1 datastreams
  * Support operational datastreams for L2P/L3/L4 data from 14 RDACs
    * 40-50 Gs/day; 10K granules/day
* Maintain linkages to data providers and LTSRF archive
* Develop/improve tools and services for data usage
  * Web services, Subsetting, Visualization, Data Aggregation
* User community engagement
  * GHRSST webinar and GHRSST Ocean Sciences booth.
  * Reports in the AUS-TAG
* Data management and lifecycle implementation
  * Implementation of lifecycle and its challenges
  * Reports in DAS-TAG on data management use cases

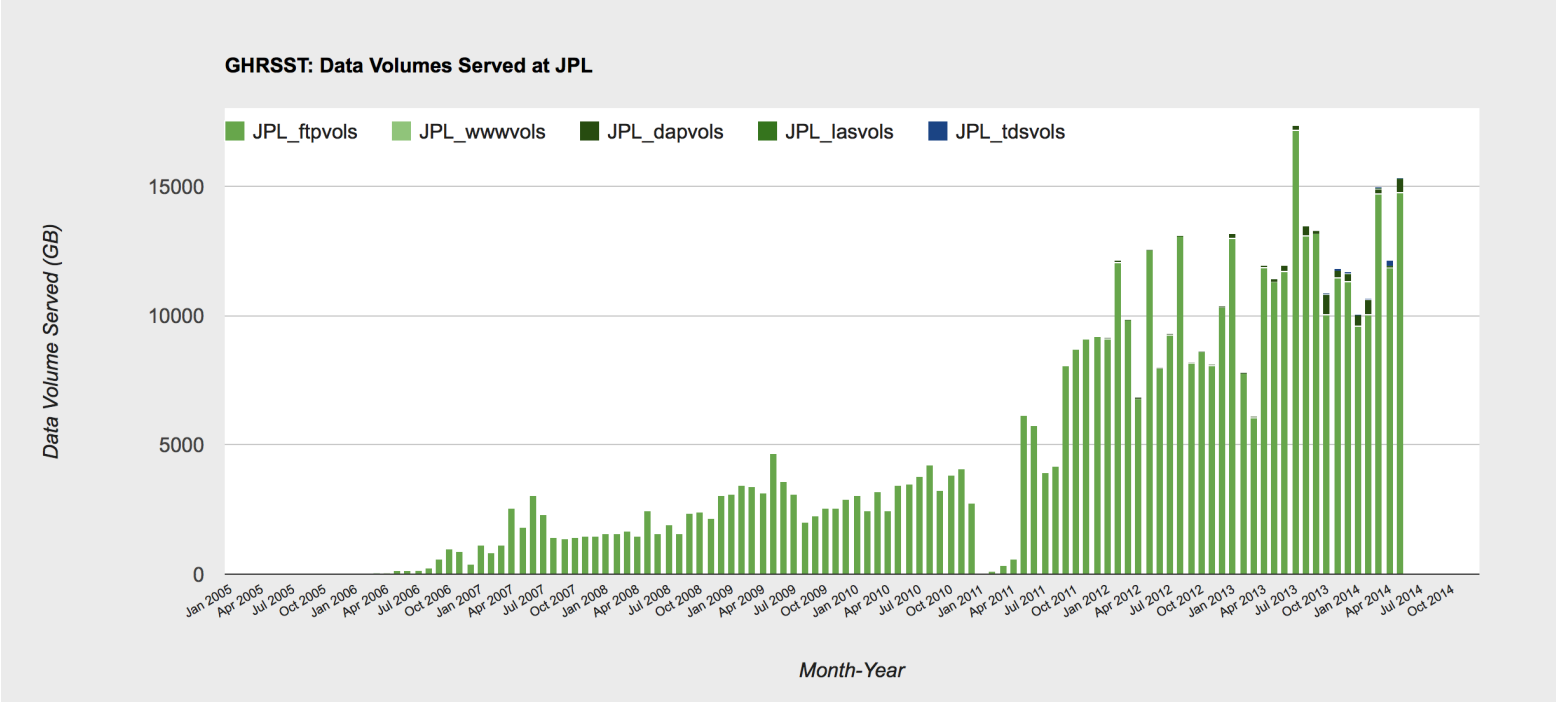
PO.DAAC Distribution metrics: Monthly Unique Users



Number of Monthly Files



Volume of Monthly Files



Top Datasets in 2013

FTP

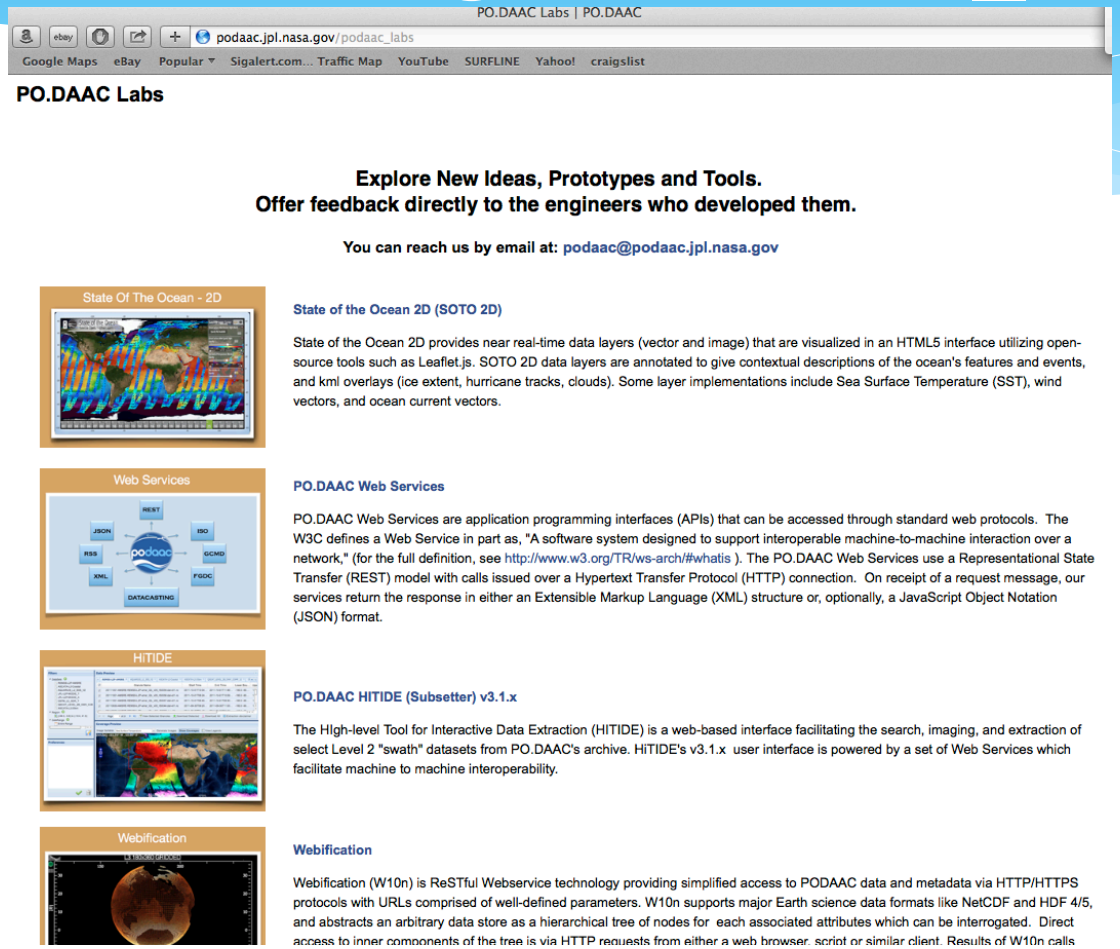
* GHRSST Level 4 MUR Global Foundation Sea Surface Temperature Analysis
* GHRSST Level 4 OSTIA Global Foundation Sea Surface Temperature Analysis
* MetOp-A ASCAT Level 2 12.5km Ocean Surface Wind Vectors

OPeNDAP

* GHRSST Level 4 MUR Global Foundation Sea Surface Temperature Analysis
* OSCAR third degree resolution ocean surface currents
* Cross-Calibrated Multi-Platform Ocean Surface Wind Vector L3.0 First-Look Analyses

Redesigned Web portal

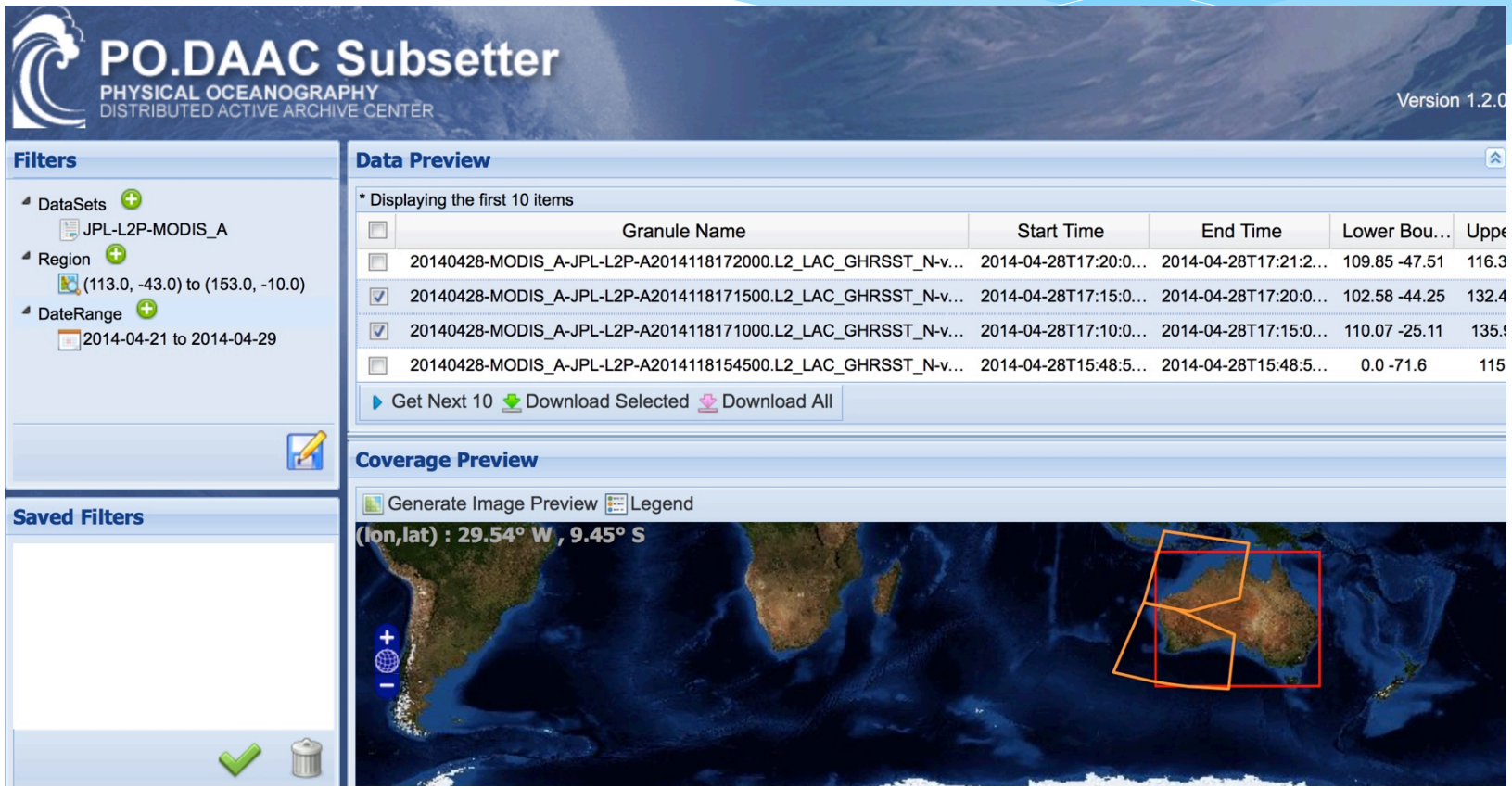
New Tools – PO.DAAC Labs podaac.jpl.nasa.gov/podaac_labs



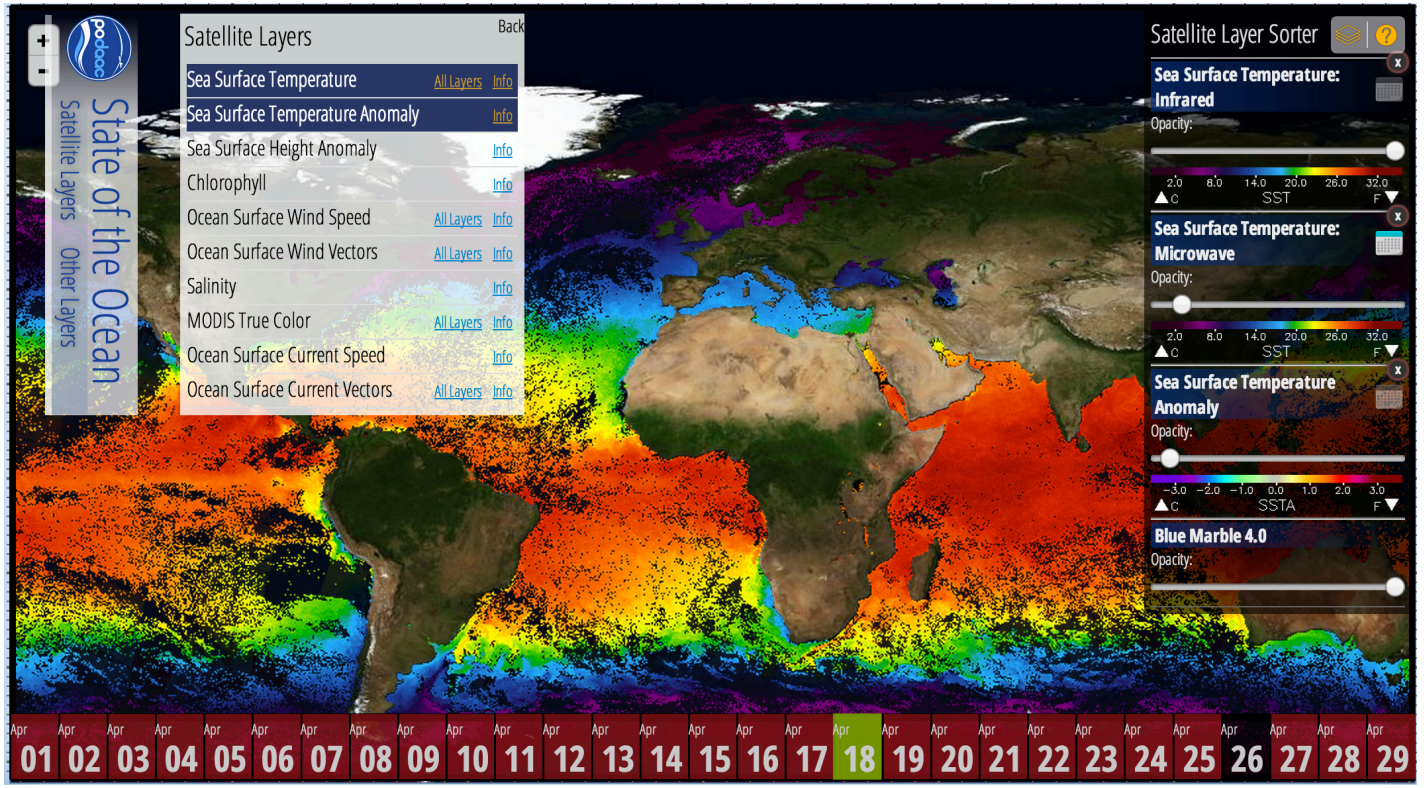
Tool summary

* **SOTO2D**: visualization including GHRSST MODIS L2P, Windsat L3, G1SST L4
* **PO.DAAC Web Services**: search, discovery, metadata, extract as "chained" services
* **HiTIDE**: GUI based L2 subsetting
* **Webification**: Arbitrary data store exposed as URLs
* **Coastal Marine Discovery Service**: GIS interface for satellite data
* **Datacasting**: RSS Informed earth science data availability
* **Live Access Server** (LAS) for L3/L4 subsetting

HiTIDE Level 2 Subsetter



SOTO 2D -- Visualization



Web services

- PO.DAAC Web Services are for software interaction
  - Discover dataset info
  - Discover granules
  - Subset and extract granules
  - Visualize
- Through Application Programming Interface
- “Chained” ….so output of one service can input to the next

Name	Description
Dataset Metadata	Dataset metadata service retrieves the metadata of a dataset on PO.DAAC's dataset catalog using the following parameters: datasetId, shortName, and format.
Granule Metadata	Granule metadata service retrieves the metadata of a granule on PO.DAAC's catalog using the following parameters: format and other optional parameters.
Search Dataset	Dataset Search service searches PO.DAAC's dataset catalog, over Level 2, Level 3, and Level 4 datasets, using the following parameters: datasetId, shortName, startTime, endTime, bbox, and others.
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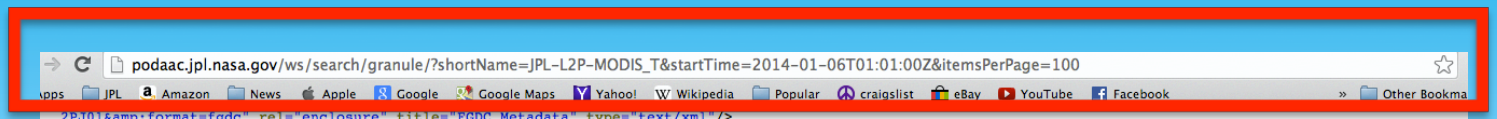
Image Granule	The PODAAC Image service renders granules in the PO.DAAC's catalog to images such as jpeg and/or png. This image service also utilizes OGC WMS protocol.
Extract Granule	Extract service subsets a granule in PO.DAAC catalog and produces either netcdf3 or hdf4 files.

Example of a search return to find MODIS SST granules

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Webification

Open specification:

http://w10n.org

Summary:

- Resource is viewed as a tree of nodes and leaves.
- They have semantic URLs, accessible through HTTP.
- Meta info exchange format is JSON, by default.
- Full ReSTful style request/response. Read/Write.

Disciplines:

Earth science (NetCDF, HDF 4/5, GRIB)

Planetary Science (VICAR/PDS)

Astronomy (FITS) and more

Use Case – Quality filtering the SST observations

* Subset a L2P granule (by value!)
  * http://host:port/path/2013/123/20130503-MODIS_T-JPL-L2P-T2013123065500.L2_LAC_GHRSST_N-v01.nc.bz2/sea_surface_temperature[**-130<lon<-120,35<lat<45**]?output=format
* Apply quality filter
  * http://host:port/path/2013/123/20130503-MODIS_T-JPL-L2P-T2013123065500.L2_LAC_GHRSST_N-v01.nc.bz2/sea_surface_temperature[**quality_flag>=4**]?output=format
* Quality filter, wind screen, subset all in one step !
  * http://host:port/path/2013/123/20130503-MODIS_T-JPL-L2P-T2013123065500.L2_LAC_GHRSST_N-v01.nc.bz2/sea_surface_temperature[**quality_flag>=4,wind_speed>6,-130<lon<-120,35<lat<45**]?output=format
* Virtual Quality Screening Service
  * NASA funded technology project to implement quality screening web service for GHRSST and SMAP data

GHRSST GDS2 datasets

* Public release of four GDS2 datasets with dataset lifecycle adherence
  * Consistency with treatment of data insured. Distribution, tools, services
  * Still need to improve quality documentation with assistance of provider
* Ingest of 13 others for L2P, L3C and L4
* Working with providers to insure data and metadata compliance

Status of GDS2 datasets

Dataset(s)	RDAC	Status
L4 OSTIA	UKMO	Released
L4 DMI_OI	DMI	Released
L4 CMC0.2deg	CMC	Released
L2p VIIRS	NAVO	Released
L2P VIIRS	OSPO	Ingested and Accessible
L2P AVHRR18, 19, MTA, MTB	NAVO	Ingested and Accessible
L2P GOES 13, 15	OSPO	Ingested and Accessible
L2P MSG	OSPO	Ingested and Accessible
L2P MTSAT2	OSPO	Ingested and Accessible
LC3 AVHRR19, MTA	OSISAF	Ingested and Accessible
L2P AVHRR MTA	OSISAF	Ingested

Summary

* Stable and growing user community
  * User engagement at Ocean Sciences and NASA webinair
* GDS2 datasets online, discoverable, available via tools and services !
  * Remaining ingested available via FTP
  * Continue to support migration of existing GDS1
* New PO.DAAC tools and services implemented for subsetting, discovery, dataset and granule web services. Try them !
* Issues for consideration:
  * Dataset lifecycle quality descriptions. Has not been stringently enforced.
  * Dataset relevance. Dataset selection. What can be done to improve this?
  * Streamline the R/G TS. GDS2 data policy. Discuss in DAS-TAG
* PO.DAAC under new management: Rob Toaz is Manager since Dec 2013
  * GHRSST is a recognized “mission” under NASA ESDIS portfolio

Backup

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Status of GDS2

Dataset	RDAC	Status
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L4 DMI_OI	DMI	Released
L2P NAVO VIIRS_NPP	NAVO	Released
L2P NOAA VIIRS_NPP	OSPO	Ingested and Accessible
Five L2P NAVO AVHRR-18, -19, MTA, MTB	NAVO	Ingested and Accessible
Two L2P GOES-13, -15	OSPO	Ingested and Accessible
L2P MSG03	OSPO	Ingested and Accessible
L2P MTSAT2	OSPO	Ingested and Accessible