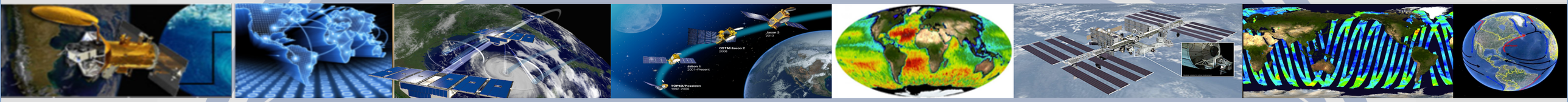

CYGNSS Data Distribution, Tools and Services at the PO.DAAC

https://podaac.jpl.nasa.gov/CYGNSS

David Moroni

David.F.Moroni@jpl.nasa.gov

PO.DAAC Data Stewardship Team (DST) Lead

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

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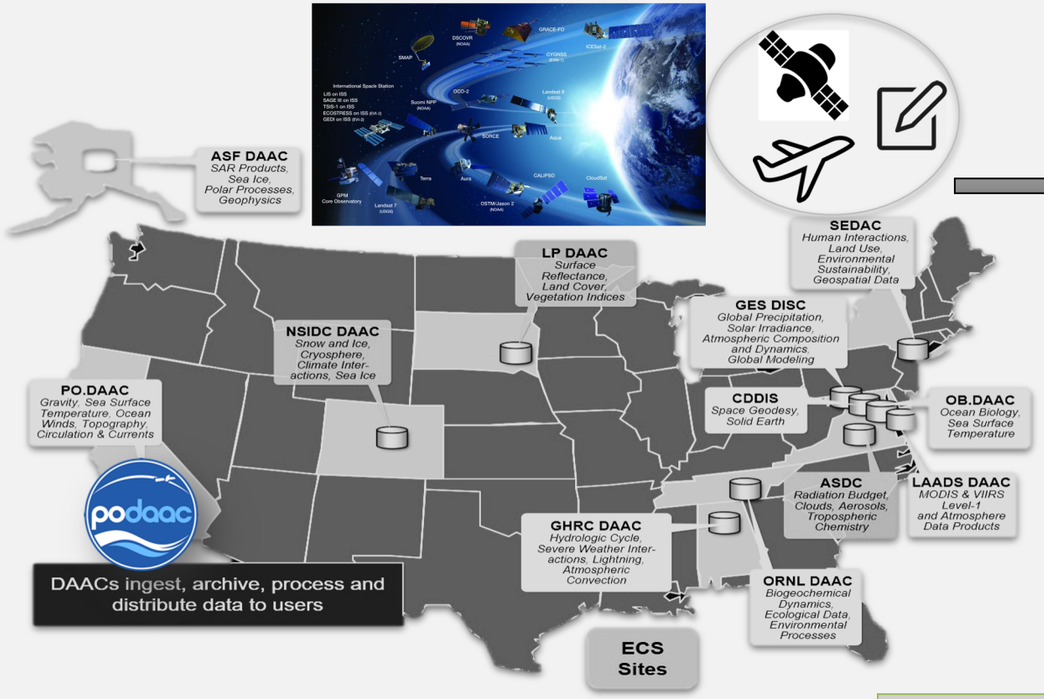
Physical Oceanography Distributed Active Archive Center (PO.DAAC)

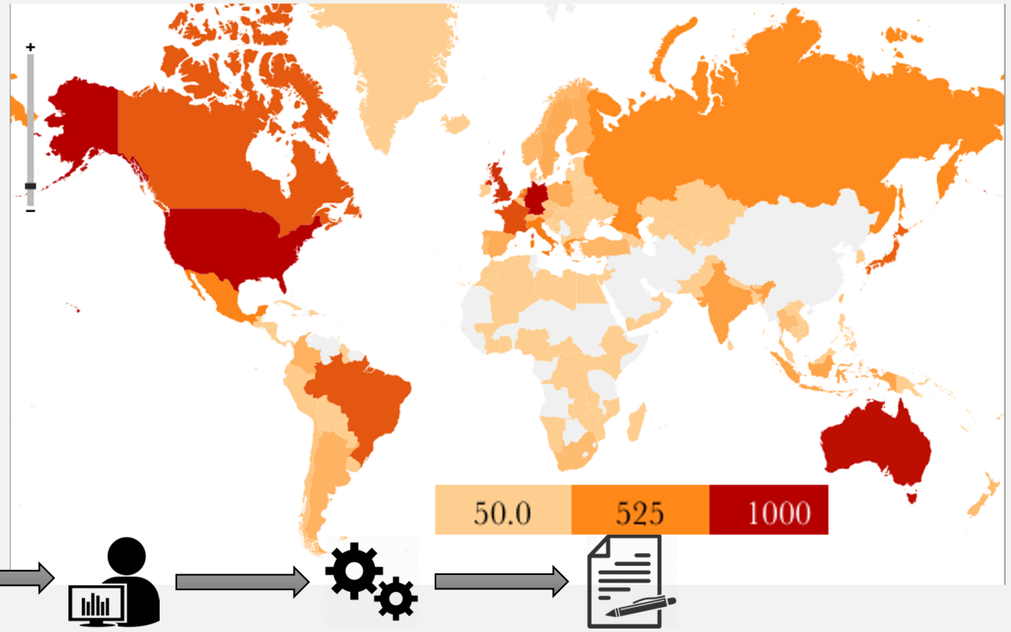
https://podaac.jpl.nasa.gov/



EOSDIS
NASA'S EARTH OBSERVING SYSTEM DATA & INFORMATION SYSTEM

Process → Archive → Distribute

PO.DAAC Global Data/Services Usage Heatmap



Missions & Projects

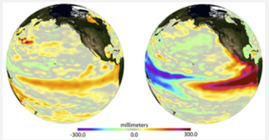
Seasat, TOPEX/Poseidon, Jason-1, NSCAT, SeaWinds on ADEOS-II, CYGNSS, GRACE-FO (2018), QuikSCAT, GRACE, GHRSST, MEaSUREs, Aquarius, SPURS, ISS-RapidScat, AirSWOT, OMG, Jason-CS/Sentinel-6 (2020), SWOT (2021)

Parameters (632 Datasets)

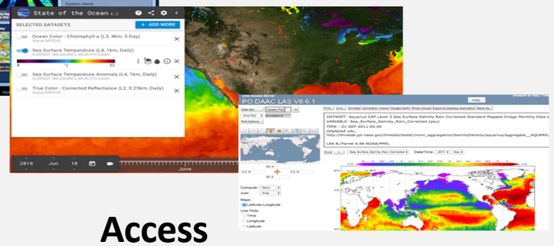
Geodetics/Gravity (87)
Hydrology (11)
Ocean Circulation & Currents (8)
Ocean Surface Salinity (156)
Ocean Surface Topography (6)
Ocean Winds (104)
Sea Surface Temperature (226)
Sea Ice (39)

Tools

Discover



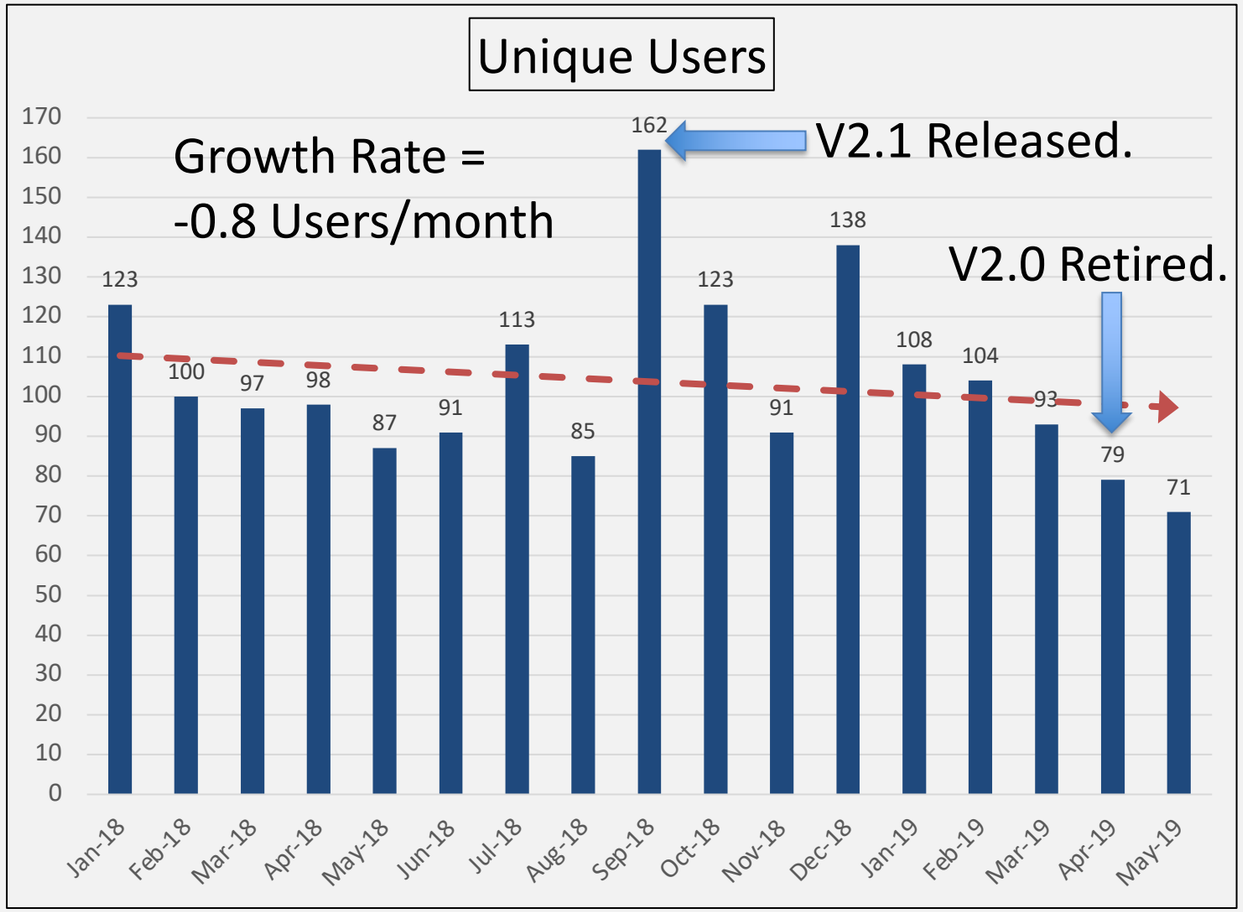
Visualize

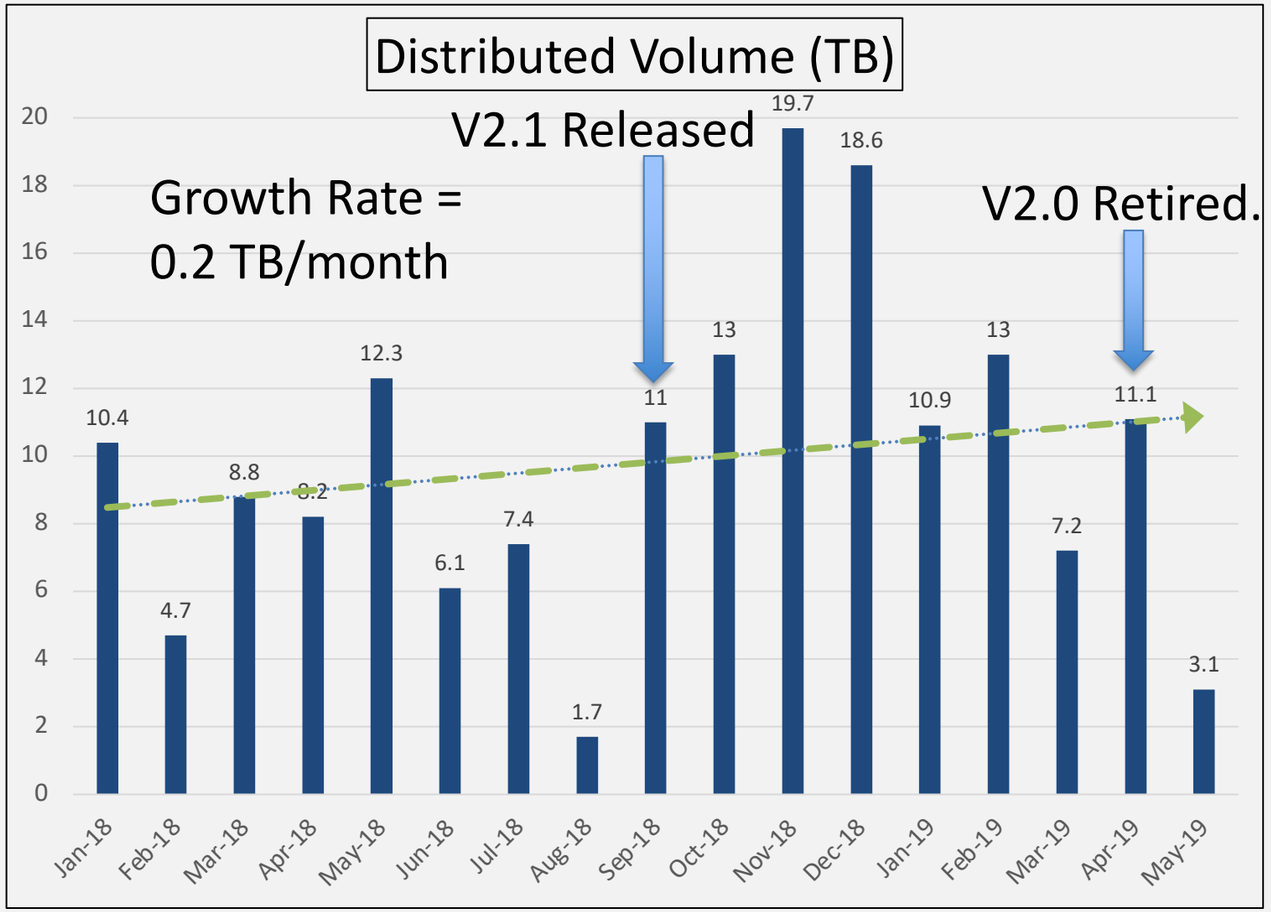


Access

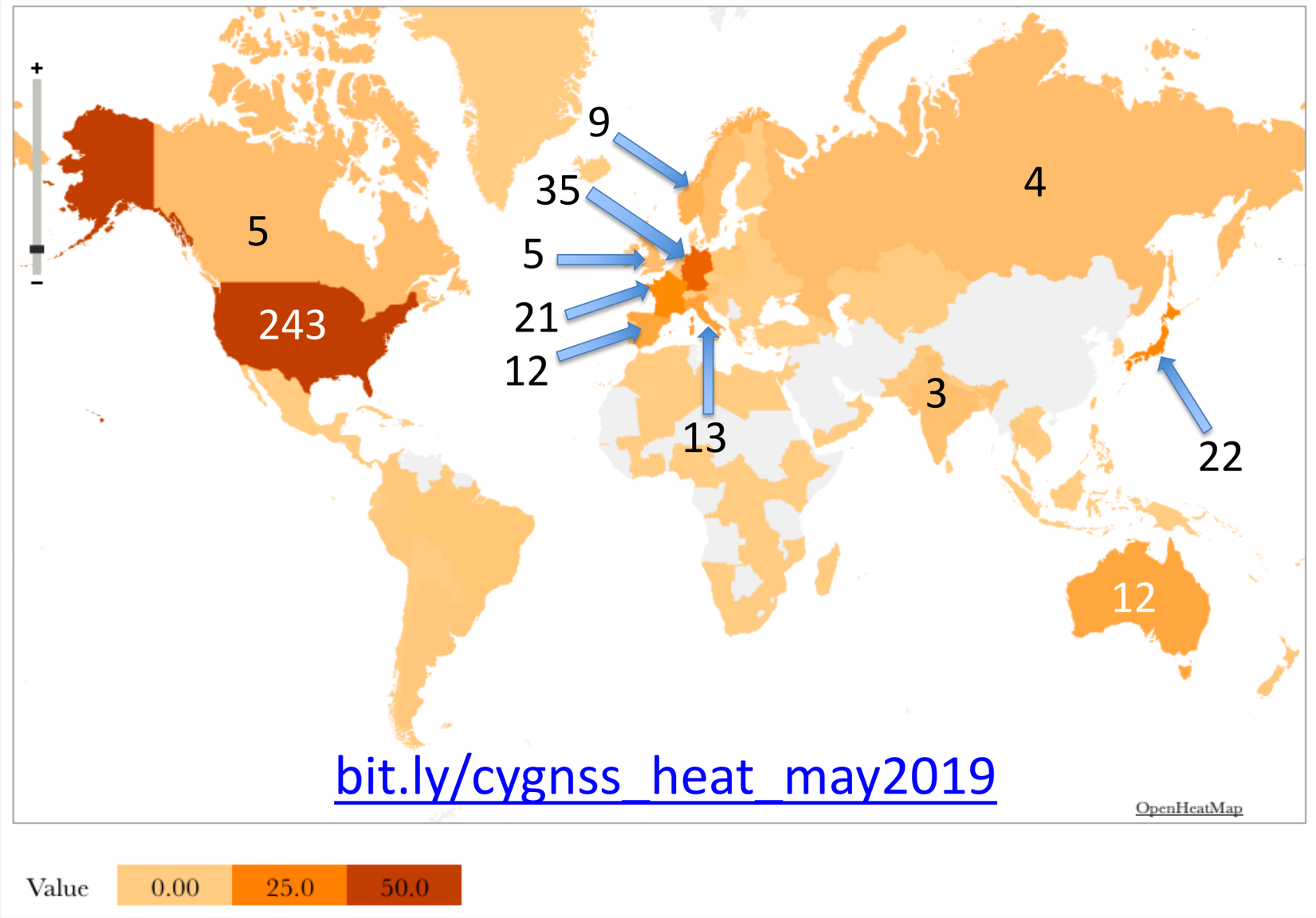
CYGNSS V2.0/2.1 Usage Metrics: Jan 2018 to May 2019

- 700 GB (5.6k files) of new data ingested/archived in 2019; includes L0.
- 1,043 Total Unique Users; 164 TB (1.01M files) downloaded.
- V2.0/2.1 Volume Demand (exc. L0) = Downloaded (164 TB) / Available (5.7 TB) = 28.8





CYGNSS V2.0/2.1 User Heat Map: Jan 2018 to May 2019



- 381 users are from unknown/unresolvable IP addresses.
- 112 are from .net, 127 from .com; these are unassigned to a specific country.
- Countries in white are unmonitored.
- Countries in lightest green have 0 users.

FTP Replacement: PO.DAAC Drive interface with WebDAV client: https://podaac-tools.jpl.nasa.gov/drive FTP Service Removed on 3 June 2019

Open-source Project for a **N**etwork **D**ata **A**ccess **P**rotocol (**OPeNDAP**):
http://opendap.jpl.nasa.gov

Thematic **R**eal-time **E**nvironmental **D**istributed **D**ata **S**ervice (**THREDDS**):
https://thredds.jpl.nasa.gov

Web Services (search/subset/extract):
https://podaac.jpl.nasa.gov/ws

PO.DAAC-PY (Python Library Toolkit):
https://github.com/nasa/podaacpy

Data Recipes: http://bit.ly/datarecipes

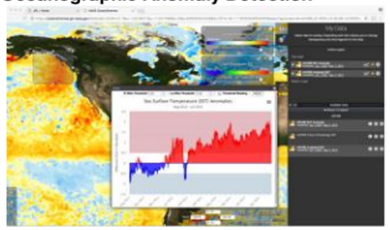
State of the Oceans (SOTO) Version 5.0 (Summer '19)

- CYGNSS Data Layers.
- Visualization and Analytics powered by NEXUS.
- **https://podaac-tools.jpl.nasa.gov/soto/**

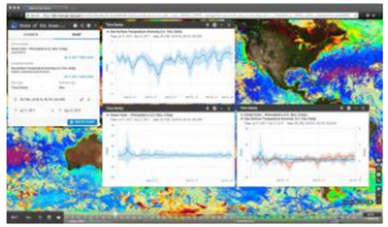
HiTIDE L2 Subsetter – Many New Layers Coming this Summer!

- RapidScat V2.0, QuikSCAT V4.0, ASCAT CDR, CYGNSS V2.1.

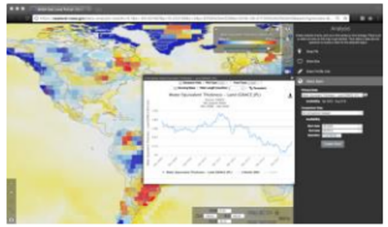
Oceanographic Anomaly Detection



PO.DAAC State Of The Ocean



Hydrological Basin Analysis



Version 2.1 CYGNSS Data Available Since Sept. 2018

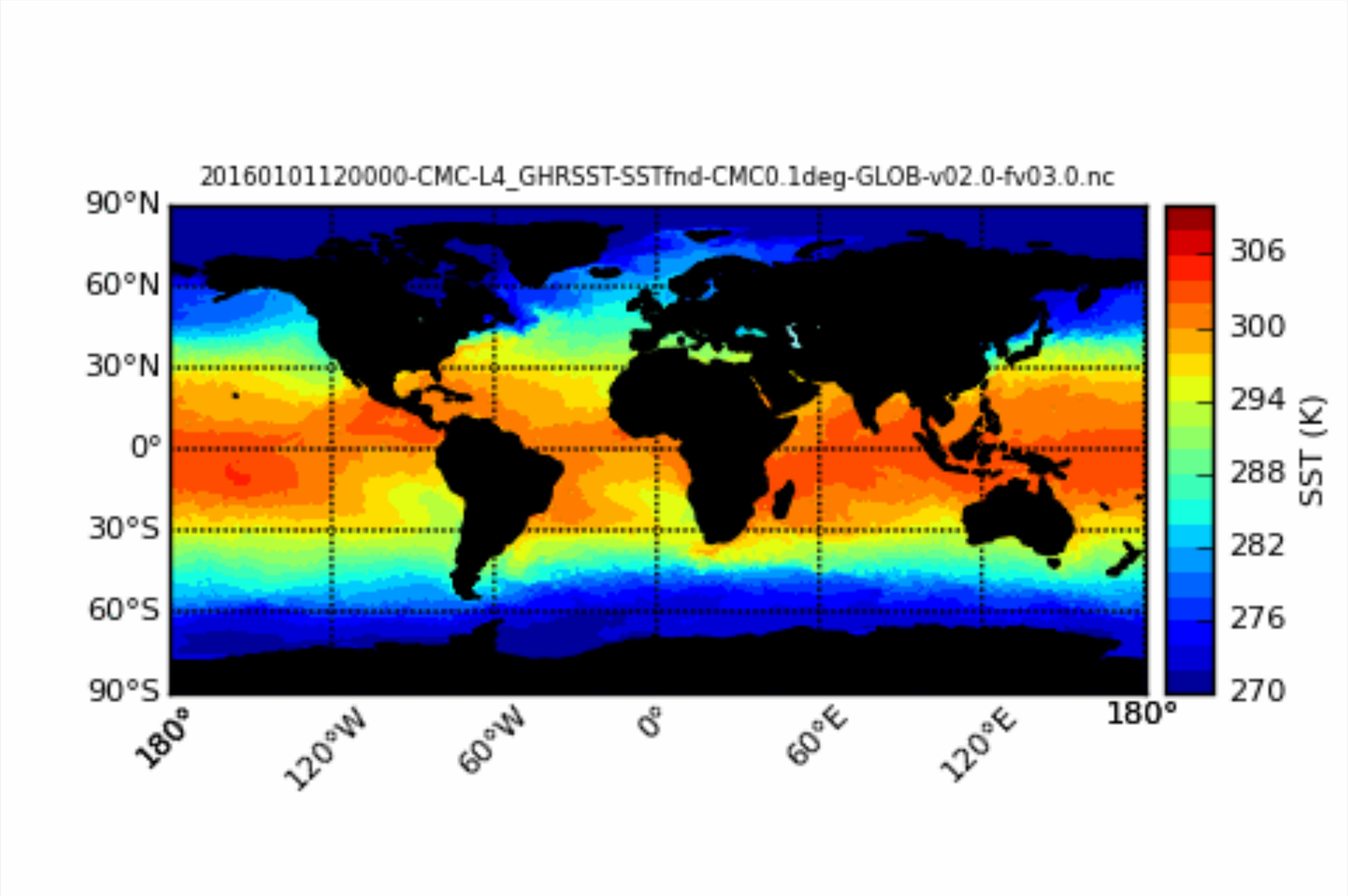
- L0 is restricted access. Ask Tim Butler for access credentials.
- Version 2.0 forward production deactivated in Sept. 2018, replaced by Version 2.1; historical data record to be retired soon.
- L1, L2, and L3 Datasets fully discoverable on the Web Portal:
  - https://podaac.jpl.nasa.gov/datasetlist?ids=Platform&values=CYGNSS
- **OPeNDAP**: https://opendap.jpl.nasa.gov/opendap/allData/cygnss/
- **Drive**: https://podaac-tools.jpl.nasa.gov/drive/files/allData/cygnss/
- Updated ATBDs and Data Dictionaries available in ”docs” directories.
- Monthly updated spacecraft attitude tables available here:

  https://podaac-tools.jpl.nasa.gov/drive/files/allData/cygnss/L1/docs/att_tables

PO.DAAC Data Recipes

podaac.jpl.nasa.gov/recipes

- 64 Total; Recipe varieties:
  - Data Access Services (29)
  - Visualization (13)
  - Installation Tutorials (3)
  - Numerical Analysis (8)
  - Data Format/Other (11)
- PODAAC-PY Updated in Nov ‘18
  - Version 2.2.0.
- Authors/Developers:
  - Yibo Jiang (primary)
  - Ed Armstrong
  - Vardis Tsontos
  - Jessica Hausman
  - David Moroni
  - Lewis McGibnney (podaacpy)
  - Mike Gangl (Drive)



2017-4.1
More Recipes/tutorials

Video Tutorials and Data Animations

podaac.jpl.nasa.gov/tutorials (22)

podaac.jpl.nasa.gov/animations (42)

https://www.youtube.com/user/NASAJPLPODAAC

- PO.DAAC Webinar: Goodbye FTP, New Ways to Access Data
- Tutorial: PO.DAAC 101 – Web Portal Navigation
- Tutorial: PO.DAAC 101 - How to Use OPeNDAP to Access Data
- PO.DAAC Webinar: NASA PO.DAAC State Of The Ocean
- CYGNSS Version 2.1 Level 3 Daily Wind Speed Animation

PODAAC FORUMS	TOPICS	POSTS	LAST POST
General Questions	29	64	by podaac Tue Oct 30, 2018 9:57 am
Data Access	78	180	by podaac Thu Jun 06, 2019 2:35 pm
Data Recipes	123	138	by yiboj Mon Jun 03, 2019 12:27 pm
Tutorials	19	12	by podaac Fri Oct 26, 2018 12:35 pm
Animations	8	8	by podaac Wed Jan 30, 2019 4:43 pm
Ocean Stories Discussions	12	18	by podaac Thu Apr 11, 2019 10:28 am
PO.DAAC Meetings and Workshops	26	30	by podaac Fri Jan 11, 2019 1:39 pm

FREQUENTLY ASKED QUESTIONS	TOPICS	POSTS	LAST POST
General Information FAQ	28	32	by podaac Thu Oct 04, 2018 3:34 pm
Earthdata Login FAQ	4	4	by podaac Thu May 30, 2019 10:50 am

ANNOUNCEMENTS	TOPICS	POSTS	LAST POST
PODAAC General Announcements	64	64	by podaac Mon Jun 03, 2019 9:12 am
System Monitor Announcements	3	3	by podaac Thu May 31, 2018 9:59 am

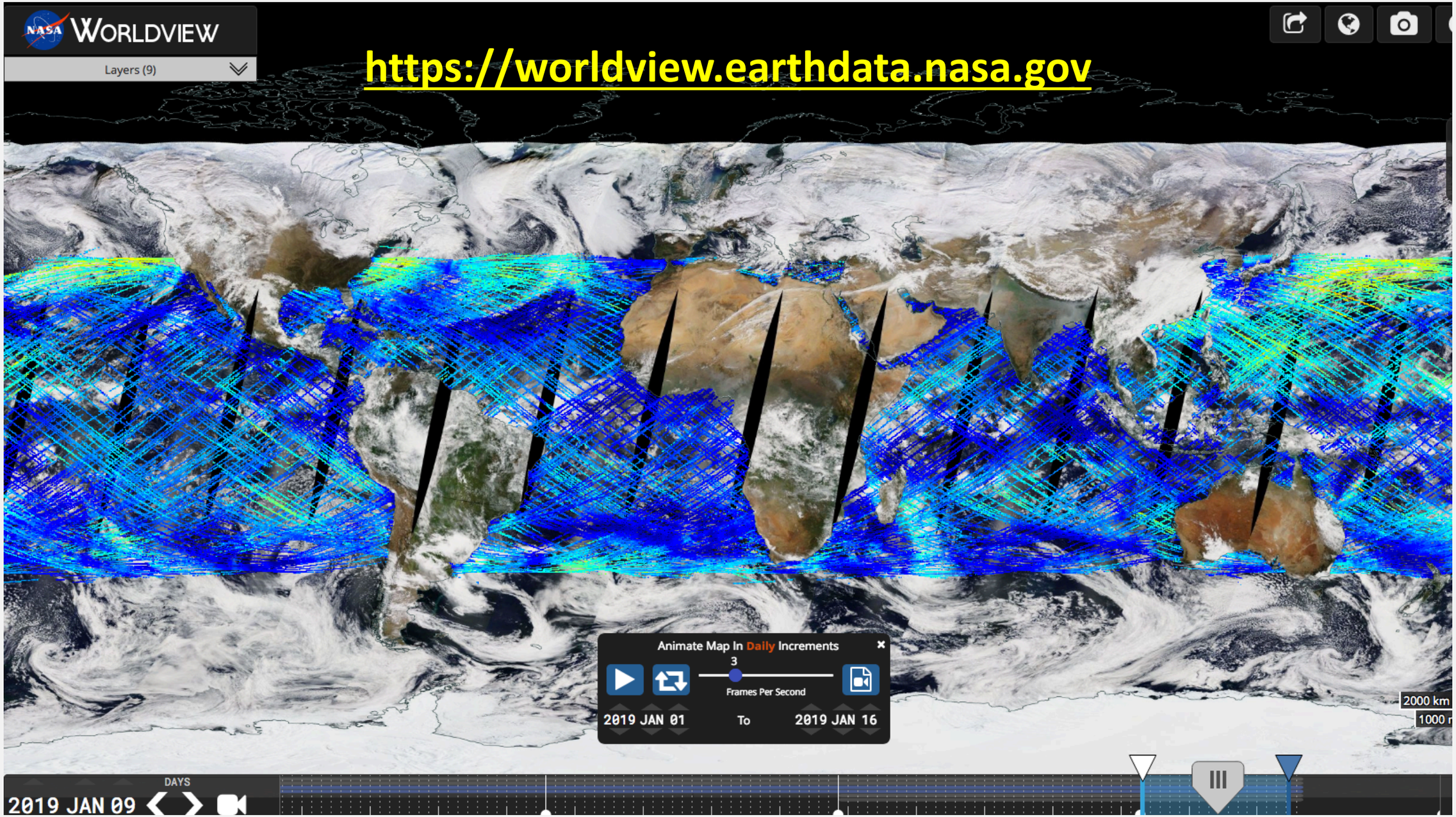
SCIENCE COMMUNITY COLLABORATIVE FORUMS	TOPICS	POSTS	LAST POST
Gravity	3	3	by dmoroni Tue Mar 08, 2016 2:35 pm
Ocean Circulation	1	2	by podaac Mon Apr 04, 2016 9:04 am
Ocean Temperature	18	40	by wenhaoli Tue Nov 28, 2017 3:36 pm
Ocean Topography	7	9	by podaac Thu Apr 28, 2016 10:14 am
Ocean Wind	22	33	by dmoroni Wed Feb 06, 2019 5:29 pm
Salinity	27	35	by podaac Thu Dec 07, 2017 12:03 pm

User Services

- ***https://podaac.jpl.nasa.gov/forum/***
- *Announcements (new datasets, outages, system upgrades)*
  - *Facebook: https://www.facebook.com/podaac*
  - *Twitter: https://twitter.com/podaac*
- *Tutorials (Data Access/Discovery, Visualization and Subsetting)*
- *Data Recipes (how to use **Drive**, **OPeNDAP**, **THREDDS**, **Web Services**, **PODAACPY**, etc…)*
- *Frequently Asked Questions (FAQs)*
- *User Questions*
- *Ocean Stories*
- *Dataset Citation Using DOIs:*

https://podaac.jpl.nasa.gov/CitingPODAAC

CYGNSS V2.1 on NASA Worldview



Summary

PO.DAAC Drive interface with WebDAV client: https://podaac-uat.jpl.nasa.gov/drive/

- ***Like Us on Facebook!*** ***https://www.facebook.com/podaac***
- ***Follow Us on Twitter!*** ***@podaac***
- ***FTP service will be fully decommissioned by 4 June 2019.***
- ***Version 2.1 Data Access on Portal:*** ***https://podaac.jpl.nasa.gov/datasetlist?ids=Platform&values=CYGNSS***
- ***Data Recipes:*** ***https://podaac.jpl.nasa.gov/recipes***
- ***Tools/Services Tutorials:*** ***podaac.jpl.nasa.gov/tutorials***
- ***DOIs are now available for all "Open" Datasets! Please cite accordingly when publishing. https://podaac.jpl.nasa.gov/CitingPODAAC***
- **PO.DAAC Python Library (podaacpy):** ***https://github.com/nasa/podaacpy***
- **Primary Web Portal Home Page:** ***http://podaac.jpl.nasa.gov***
- **User Forum:** ***https://podaac.jpl.nasa.gov/forum/***
- **CYGNSS on Worldview:** ***https://worldview.earthdata.nasa.gov***
- How to get **URS Account**: ***https://urs.earthdata.nasa.gov/users/new***
- Join our **Mailing list**: ***podaac@podaac.jpl.nasa.gov***

Recent Papers/Publications

- OceanObs 2019 White papers Accepted:
  - "Addressing the Challenge of Ocean Data Interoperability: Framework Evolution for Improved Data Discovery and Access" submitted by Vardis.
  - "When Data Play FAIR, Everyone Wins" Submitted by Jessica.
  - "An Integrated Ocean Science Data Analytics Platform" Submitted by Thomas; co-authors Lewis, Ed and Vardis.
- Ramapriyan, H K, Peng G, ***Moroni D***, Shie C-L, Ensuring and **Improving Information Quality for Earth Science Data and Products**. *D-Lib Magazine*, 23 (7/8), July/August **2017**, DOI: https://doi.org/10.1045/july2017-ramapriyan
- Jiang, Y., Li, Y., Yang, C., Liu, K., ***Armstrong, E.M***., Huang, T., **Moroni, D.F., Finch, C.J**. **A comprehensive methodology for discovering semantic relationships among geospatial vocabularies using oceanographic data discovery as an example**. International Journal of Geographical Information Science. **2017**, 31:11, 2310-2328, DOI: 10.1080/13658816.2017.1357819
- Jiang, Y., Li, Y., Yang, C., Hu, F., ***Armstrong, E.M***., Huang, T., **Moroni, D.**, McGibbney, L.J., **Finch, C.J**. **Towards intelligent geospatial data discovery: a machine learning framework for search ranking, International Journal of Digital Earth**. **2017**. DOI: 10.1080/17538947.2017.1371255
- Jiang, Y., Li, Y., Yang, C., Hu, F., ***Armstrong, E.M***., Huang, T., ***Moroni, D***., McGibbney, L.J., Greguska, F., ***Finch, C.J***. **A Smart Web-Based Geospatial Data Discovery System with Oceanographic Data as an Example**. *ISPRS Int. J. Geo-Inf.* **2018**, *7*, 62. DOI: 10.3390/ijgi7020062
- Smith, S.R., Bourassa, M.A., Elya, J., Huang, T., Gill, K.M., Greguska, F.R., Quach, N., **Tsontos, V.,** Holt, B., Worley, S., Ji Z. **The Distributed Oceanographic Match-Up Service.** Chapter in AGU book "**Big Earth Data Analytics in Earth, Atmospheric and Ocean Sciences**". *2018.* (submitted; under review).