

NASA GIBS and Worldview: Bringing 20 years of Terra data into view

IN13A-07

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Background

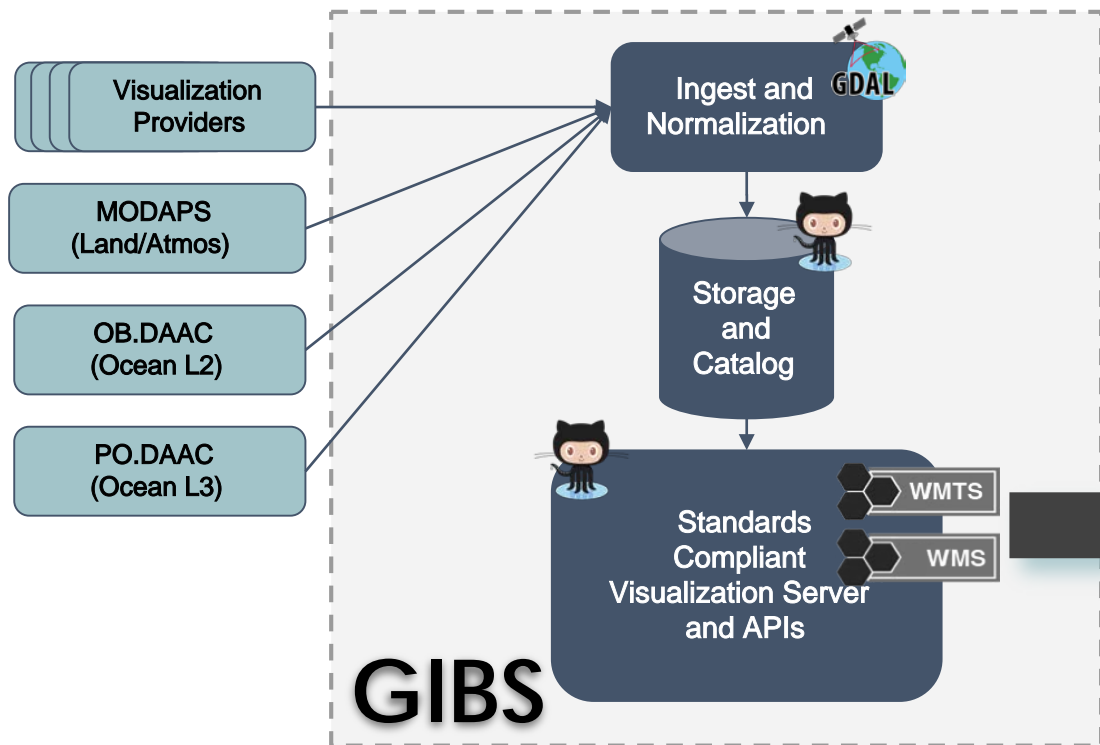


Worldview and the Global Imagery Browse Services (GIBS) provide a **visual-first** approach to finding and using Earth observations.

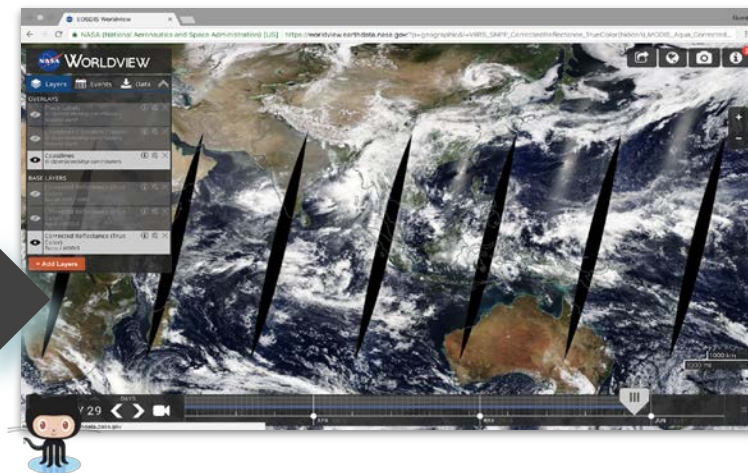
GIBS is a system providing fast and open access via standards-based web services to over 900 layers representing hundreds of NASA science parameters.

Worldview is a web app allowing users to interactively browse visualizations served by the GIBS system. Users may easily view and share visualizations on their desktop, tablet, or smartphone devices.

Visualization Pipeline



Worldview



Visualization Selection / On-Boarding Process

Request

Disposition internal or external request:ESDIS / SIPS / DAAC / Science Team / UWG / Users

Define

Define ICD and Data → RGB Mapping
GIBS / SIPS / DAAC / Science Team

Develop

Develop Generation Code
SIPS / DAAC

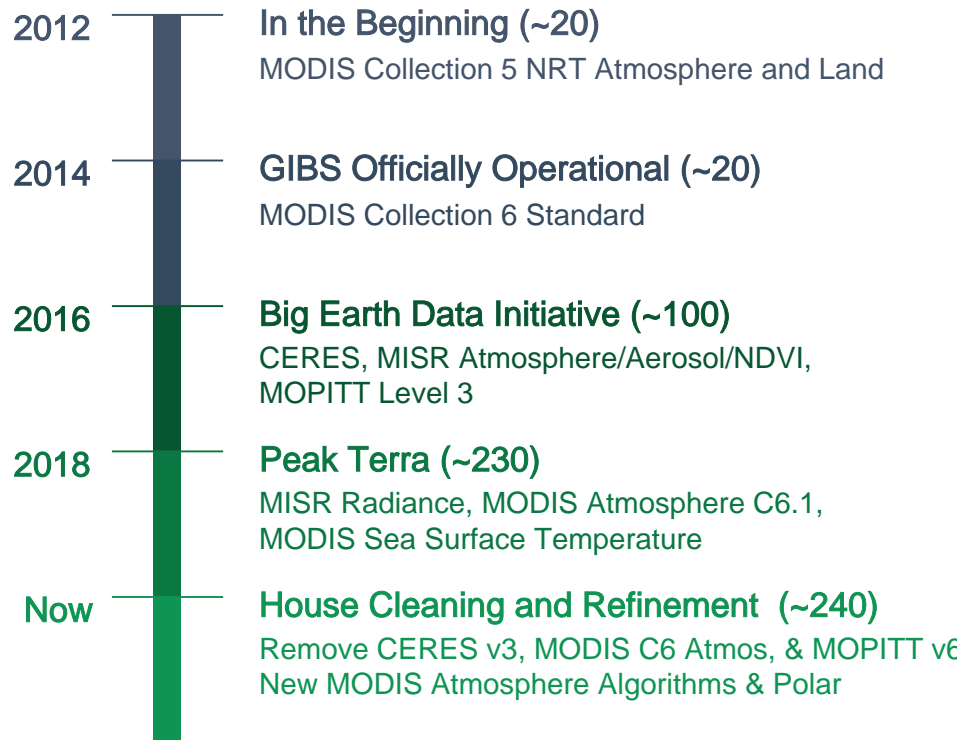
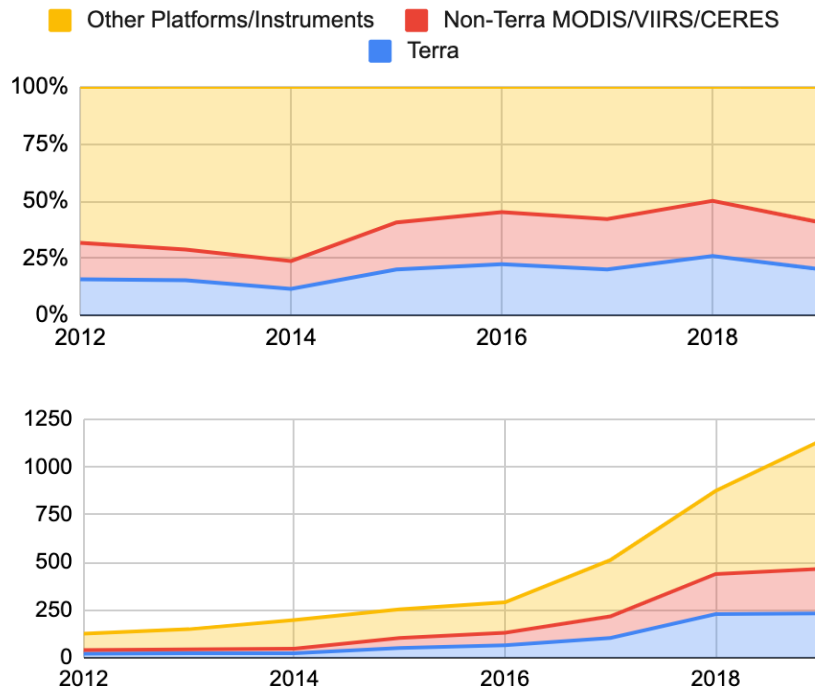
Test

Internal Testing
GIBS / SIPS / DAAC

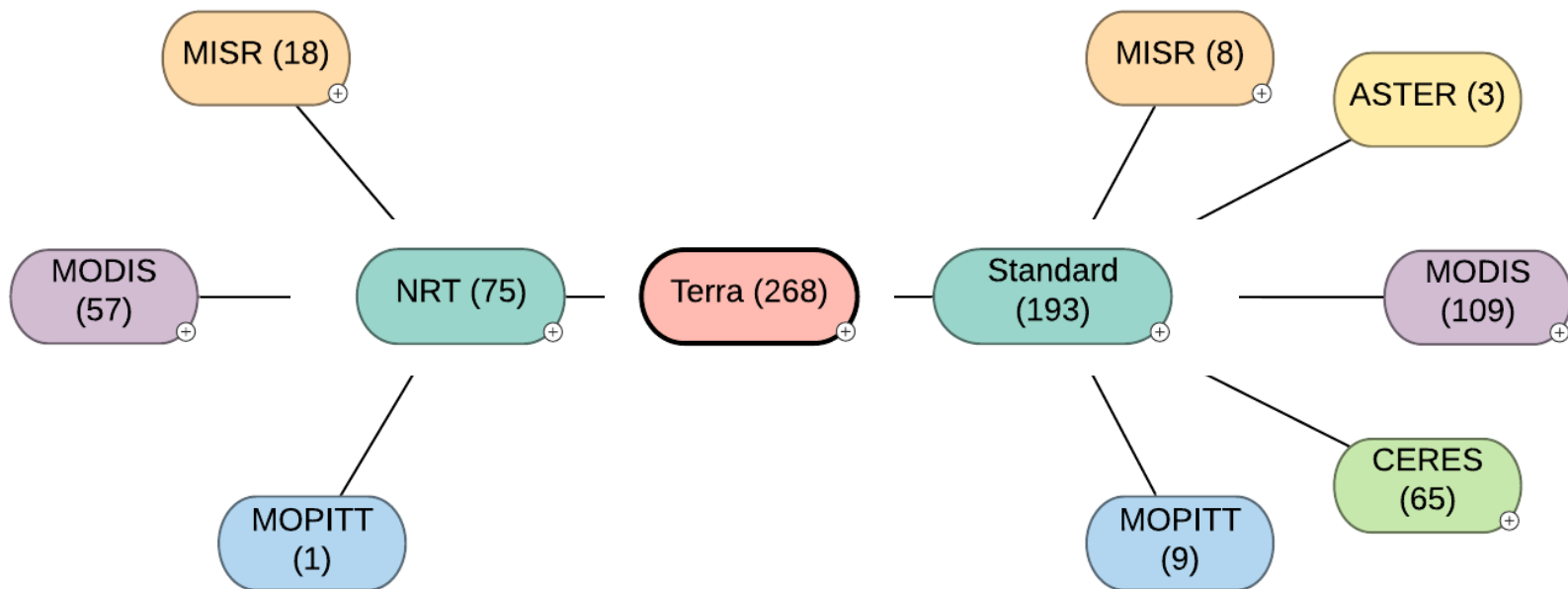
Review

Review for quality
SIPS / DAAC / Science Team

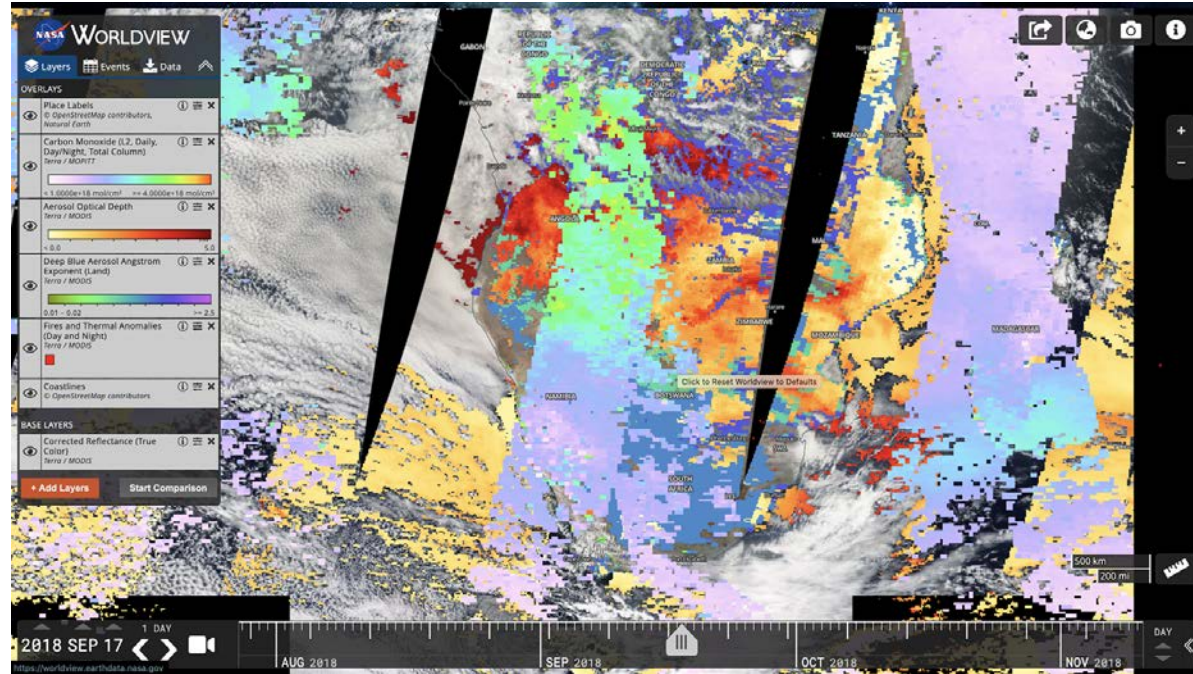
GIBS Visualization Products (Approximate)



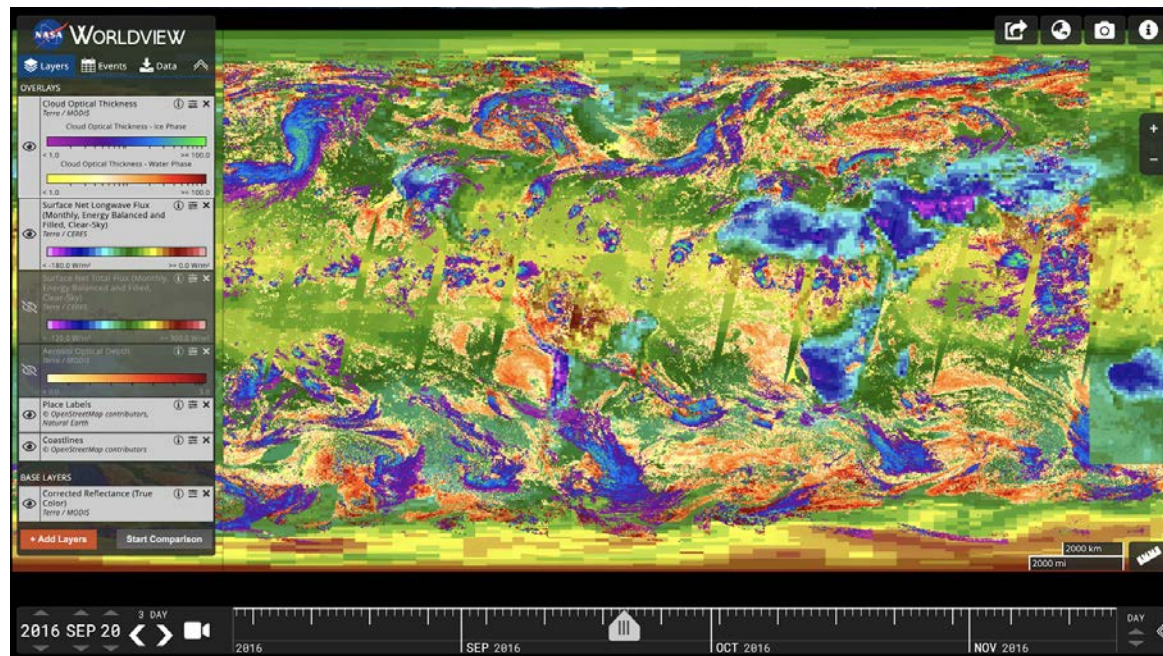
GIBS Terra Visualizations



Coincident Terra Retrievals

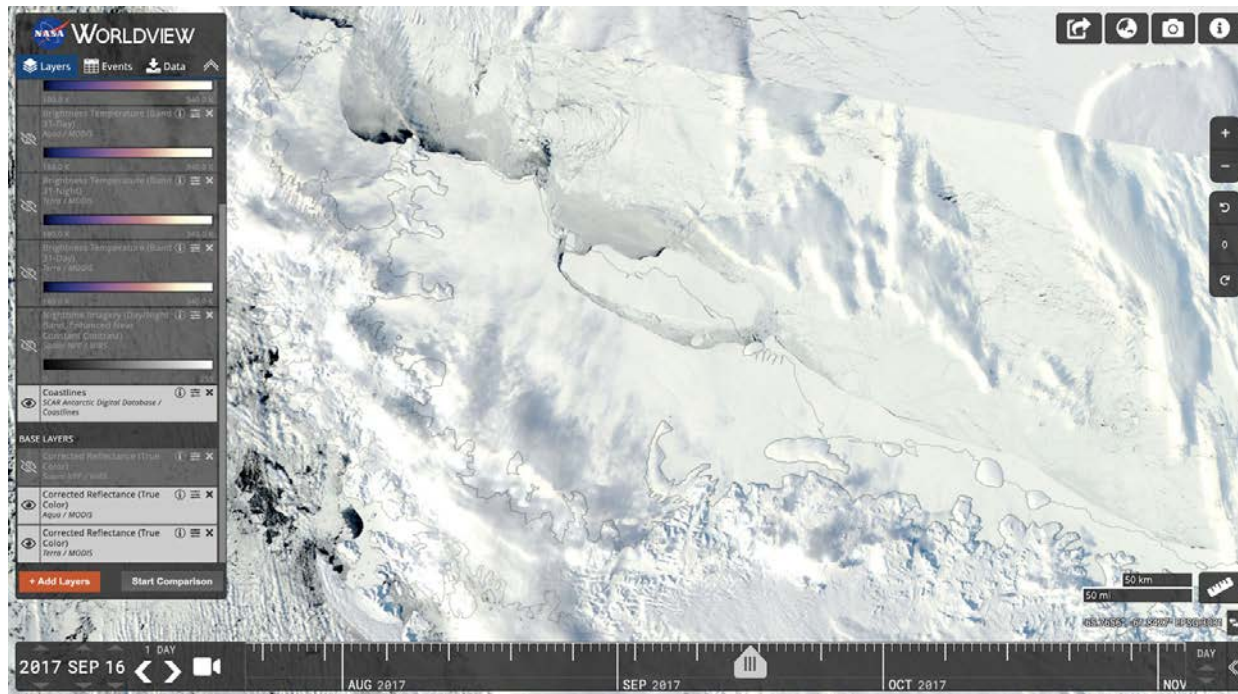


Coincident Terra Retrievals



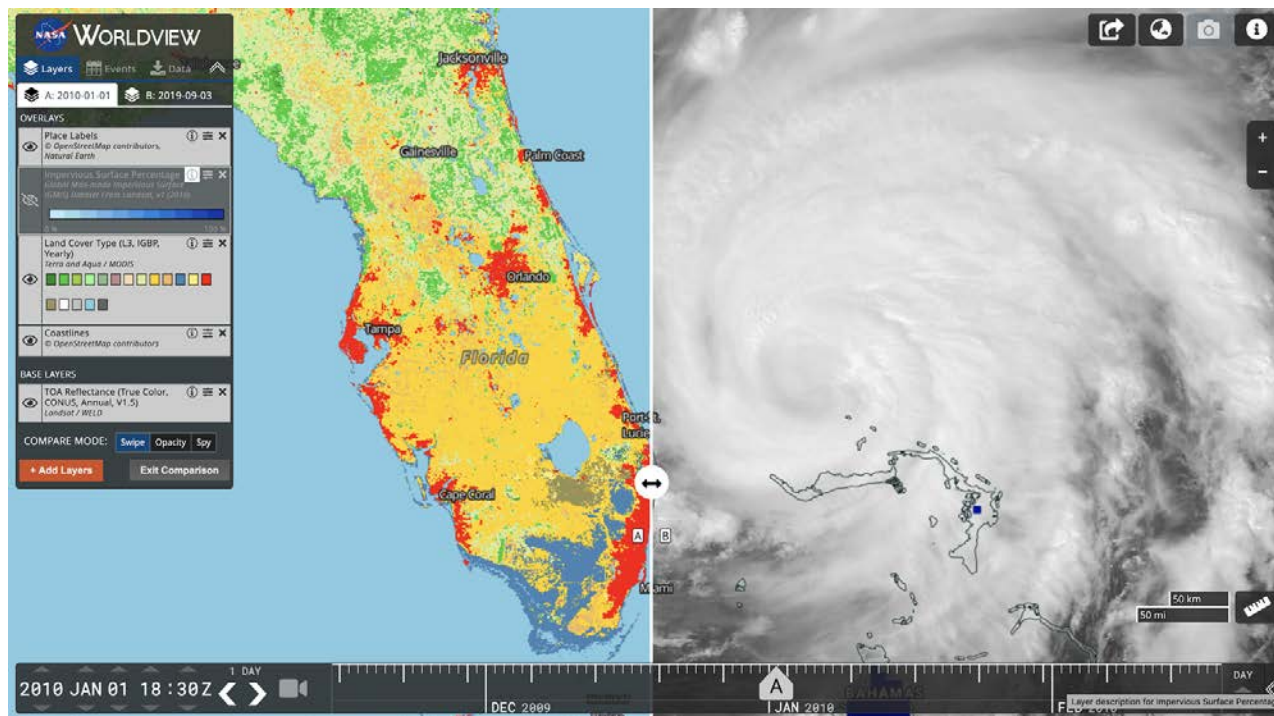
MODIS Corrected Reflectance, Cloud Optical Thickness
CERES Surface Net Longwave Flux (Global)

Coincident Terra / Aqua / SNPP / NOAA20 Retrievals



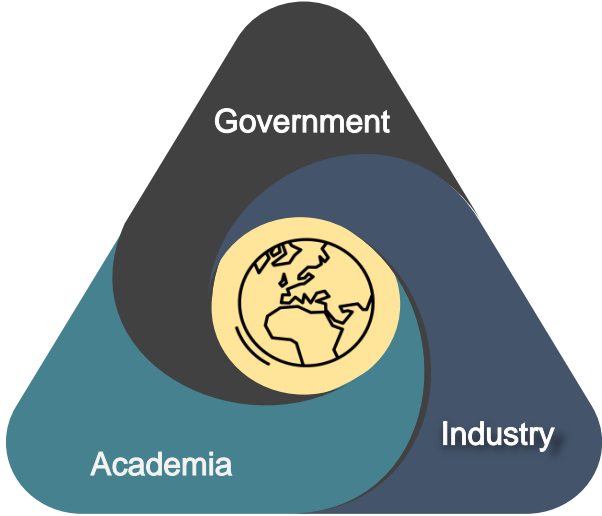
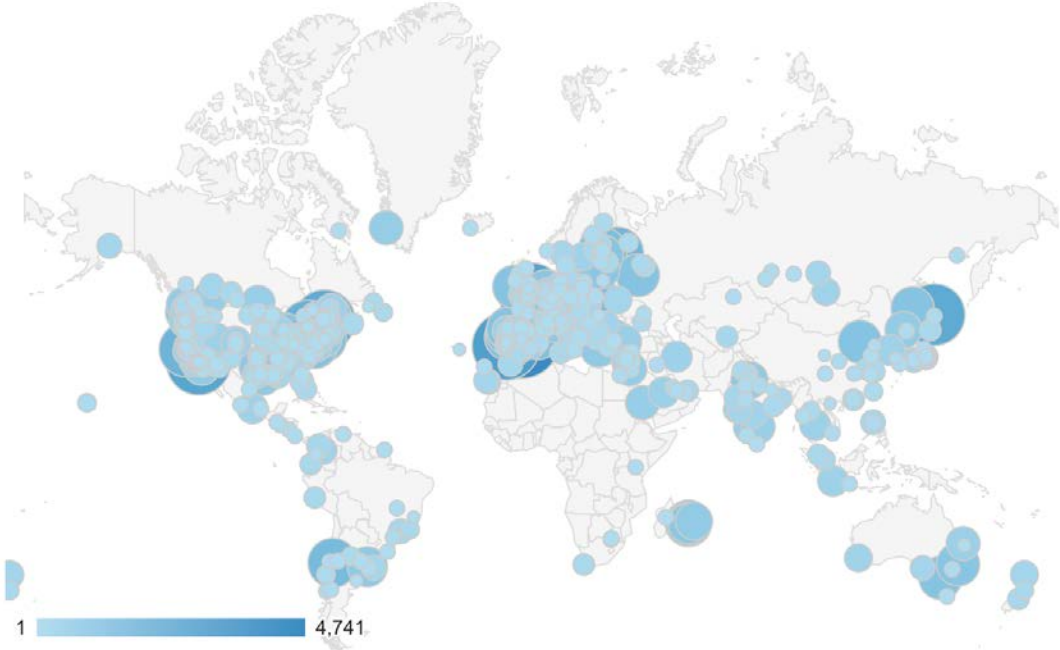
MODIS Terra & Aqua, VIIRS/SNPP Corrected Reflectance

Coincident Terra / Other Platform Retrievals



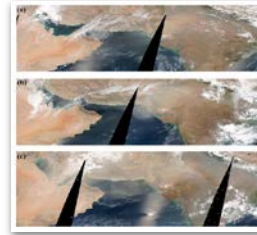
MODIS Corrected Reflectance, GOES East Red Visible, SMAP Soil Moisture WELD, MODIS Land Cover Type, SEDAC Impervious Surface, SEDAC Reservoir, Gridded Population, GHRSSST SST

Worldview / GIBS see a wide range of users from all over the globe, serving a variety of consumers.

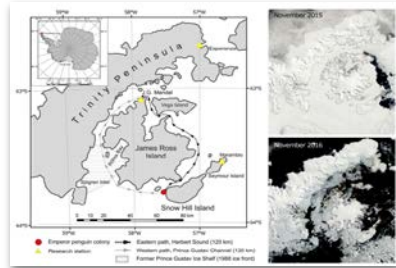


Scientific Journal / Applied-Sciences Usage

Impact of Deadly Dust Storms (May 2018) on Air Quality, Meteorological, and Atmospheric Parameters Over the Northern Parts of India



Observation of the Emperor penguins *Aptenodytes forsteri* in the Prince Gustav Channel related with unusual sea-ice decline in north-western Weddell Sea



“...our centre is using the site to monitor river ice breakup in the Far North of Ontario where there are several remote fly-in only First Nations communities that are highly susceptible to nearly annual ice induced flooding that has substantial financial and social cost. Your site is a very useful tool for this purpose.”

- Hydrometric Specialist
Surface Water Monitoring
Centre
Ontario Ministry of
Natural Resources and
Forestry

Media Usage

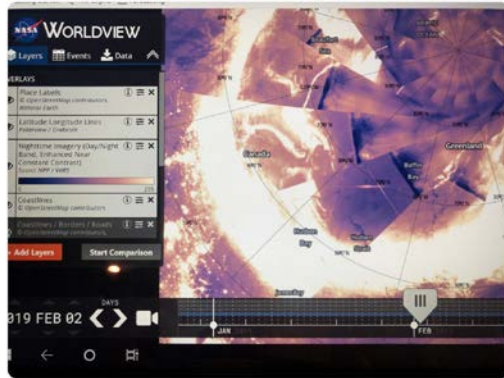


Sara Housseal
@SNHWx

Follow

Shout out to Dan Miller from @NWSduluth for showing me @NASA Worldview and how to use it to see the aurora! How did I not already know about this amazing product?!

#SWW2019



10:42 AM - 3 Apr 2019

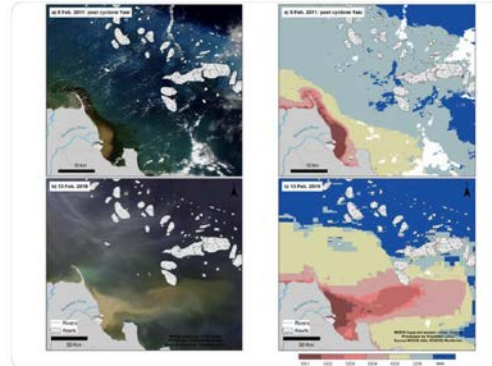
1 Retweet 7 Likes



TropWATER
@TropWATER

Follow

True colour satellite images from @NASA #MODIS highlighting the extent of the Burdekin River plume #GreatBarrierReef compared to the last big flood event of 2011 (L), and wet season water type maps (R) produced by @PetusCaroline for @gbrmarinepark MMP (Source: EOSDIS Worldview).



3:00 PM - 18 Feb 2019

19 Retweets 22 Likes

James Cook Uni



QUARTZ

FUEL TO FIRE

Satellite images show the worst of Delhi's winter is here

By Kuwar Singh · November 9, 2018



FROM TINDERBOX TO POWDER KEG —

What is going on with California's horrific fires?

The last two years should be understood within the context of climate change.

SCOTT K. JOHNSON - 11/13/2018, 5:05 PM



Satellite imagery reveals the stunning scope of historic flooding inundating the Midwest

By Tom Yulsman | March 19, 2019 5:10 pm

THE WALL STREET JOURNAL

Fires in Venezuela's El Guri Complex Could Have Sparked Blackout

Future Visualization Products

● Terra

- MISR Winds (Vector)
- Level 2 Sea Surface Temperature, Updated Chlorophyll, Photosynthetically Available Radiation, etc...
- Historical Thermal Anomalies (Vector)

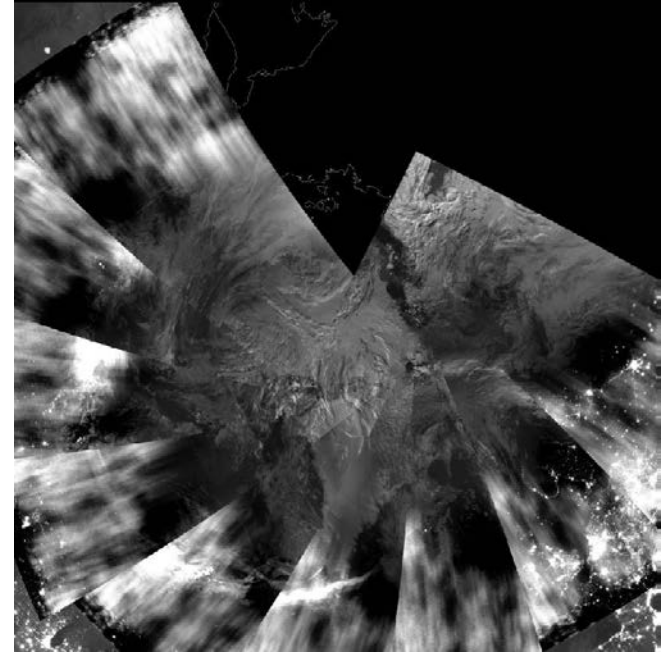
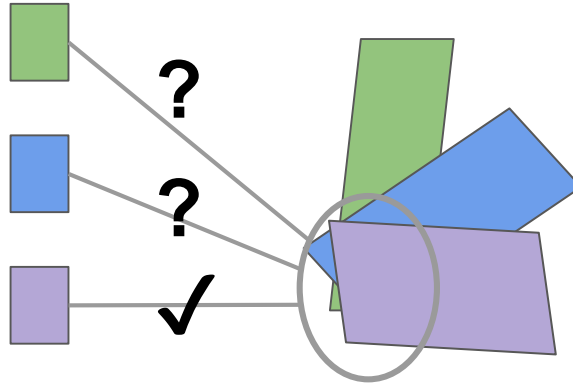
● Non-Terra “Companions”

- MODIS/Aqua SST, Chlorophyll, PAR, etc...
- MODIS/Aqua, VIIRS/SNPP Historical Thermal Anomalies
- VIIRS/SNPP Land/Atmosphere Level 2, Land Level 3+
- VIIRS/NO AA20 Level 1, Land/Atmosphere Level 2, Land Level 3+
- CERES/SNPP

Future Visualization Capabilities

Granule Visualizations (“No Pixel Left Behind”)

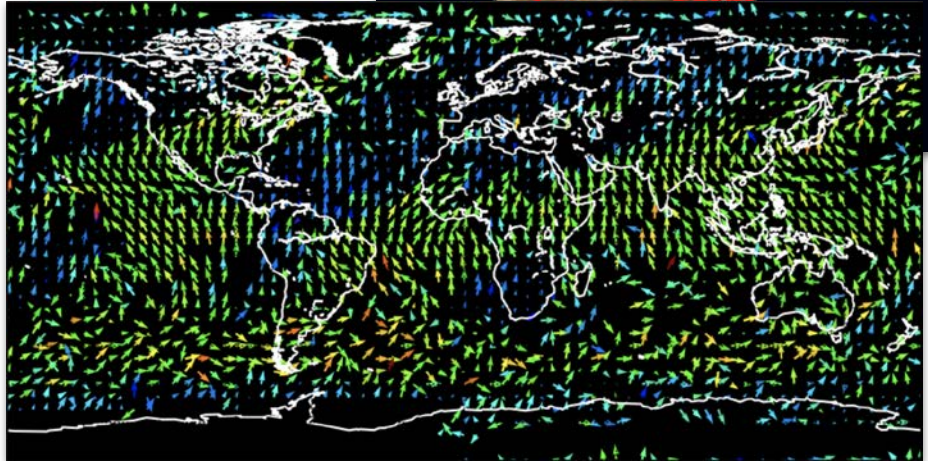
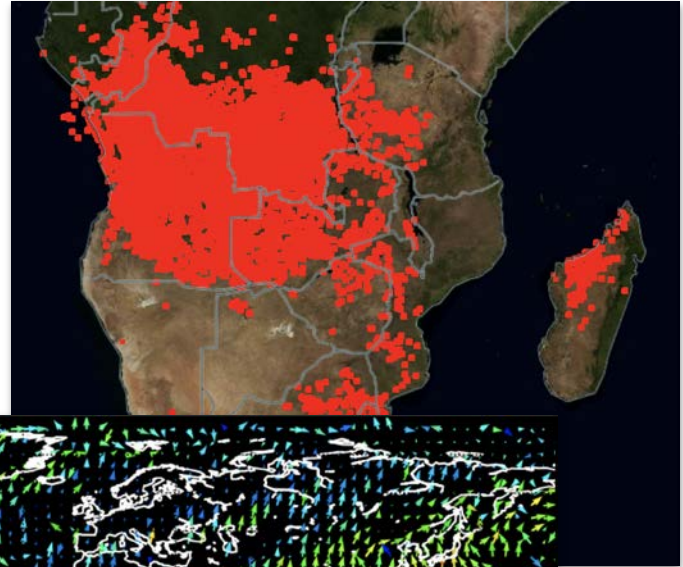
- Overview
 - Unwrapping swaths to view all of the data
- Status
 - Prototype presented at LANCE Fall UWG meeting



Future Visualization Capabilities

Enhanced Vector Support

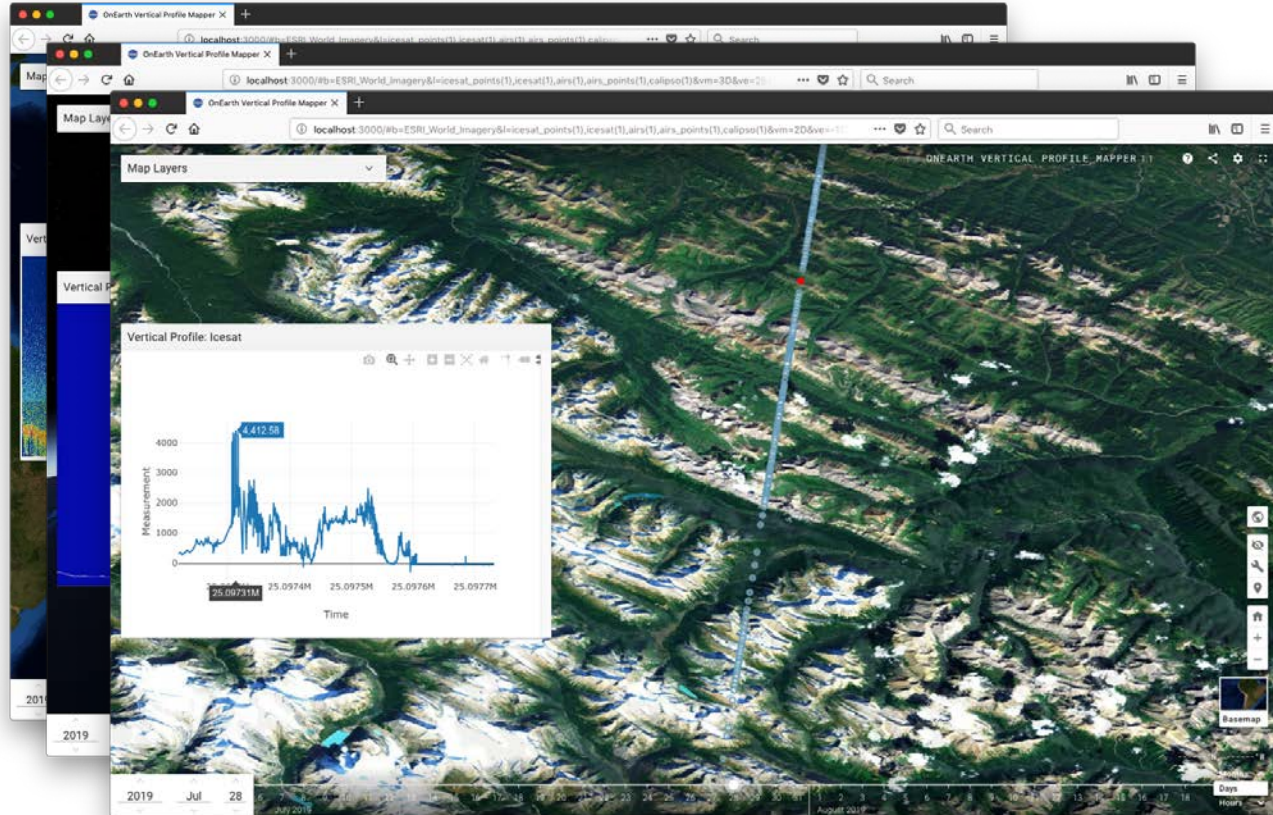
- Overview
 - Support dense (non-filterable) products (e.g. FIRMS)
 - Support magnitude & direction products (e.g. MISR Winds)
- Status
 - Prototyping with data providers



Future Visualization Capabilities

Vertical Profiles

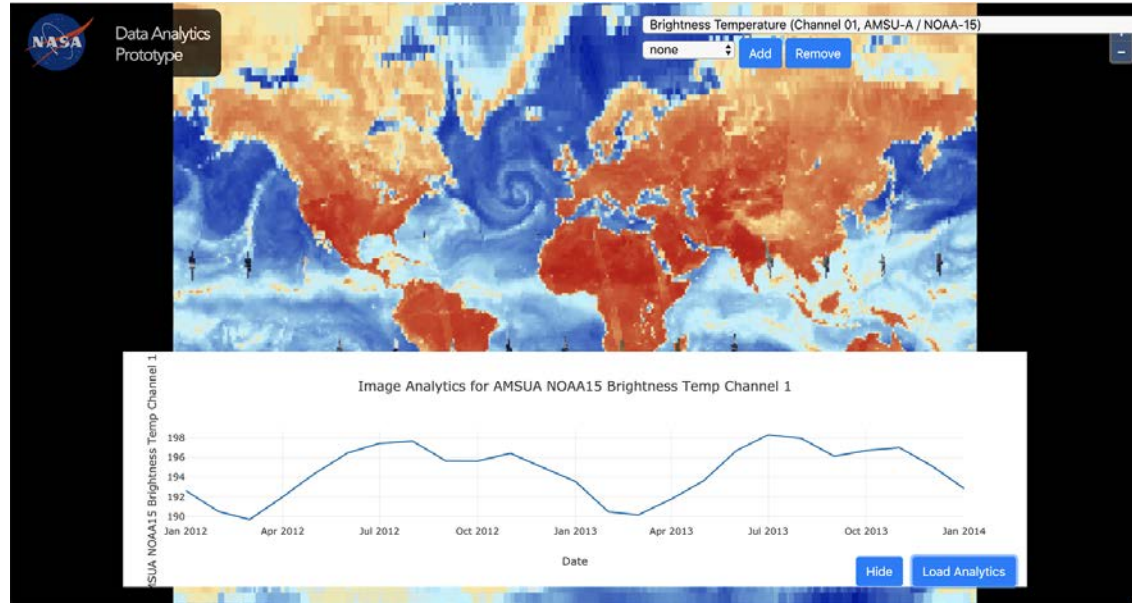
- Overview
 - “Curtain” image plots
 - Vector data plots
- Status
 - Initial prototypes built
 - Preparing feedback slide deck



Future Visualization Capabilities

Imagery Sampling (Analytics)

- Overview
 - Visualization-based sampling
 - Client- or Server-side approaches
- Status
 - Internal prototypes developed
 - Pending prioritization for next steps



Contact us ... support@earthdata.nasa.gov

Learn more about GIBS ... <https://earthdata.nasa.gov/gibs>

Learn more about Worldview ... <https://earthdata.nasa.gov/worldview>

Participate ... <https://github.com/nasa-gibs/>

Backup