NASA Worldview:
Explore the Earth from Past to Present with Global Satellite Observations

https://worldview.earthdata.nasa.gov

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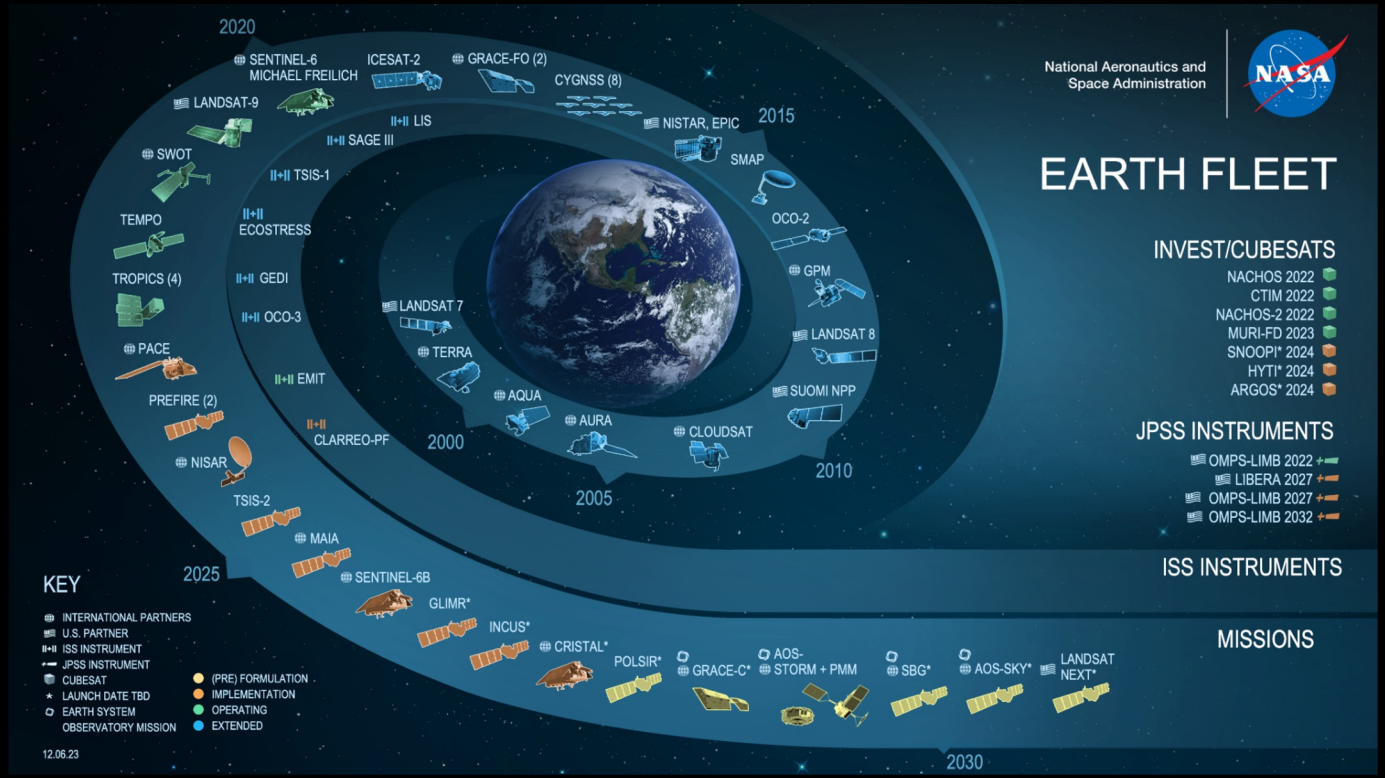
Outline

- NASA Earth Science Missions
- NASA EOSDIS
- What is NASA Worldview and GIBS?
- What do Worldview and GIBS provide?
- Key Features of Worldview

NASA Earth Science Missions



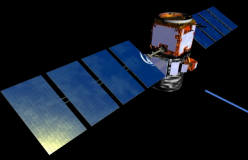
Data collected by NASA are free for all to use - NASA's data policy ensures that all NASA data are available **fully, openly, and without restrictions**.

Image credit: "Earth Fleet". Scientific Visualization Studio: NASA Earth Science Division Missions, last updated 10 December 2023, accessed on 12 January 2024 at https://svs.gsfc.nasa.gov/30065

NASA Earth Observing System Data and Information System (EOSDIS)

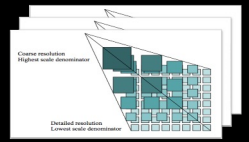
https://earthdata.nasa.gov/eosdis

- Responsible for processing, archiving and disseminating NASA's vast collection of data from Earth observing satellite, airborne, and ground based missions, as well as socio-economic data - over 70 petabytes!
- Worldview and the Global Imagery Browse Services (GIBS) are the imagery visualization components of EOSDIS.



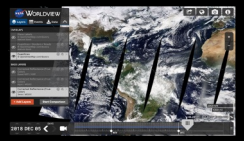
Data

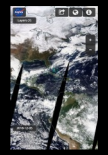
Imagery



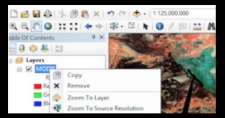
GIBS
Archive/ API

Worldview





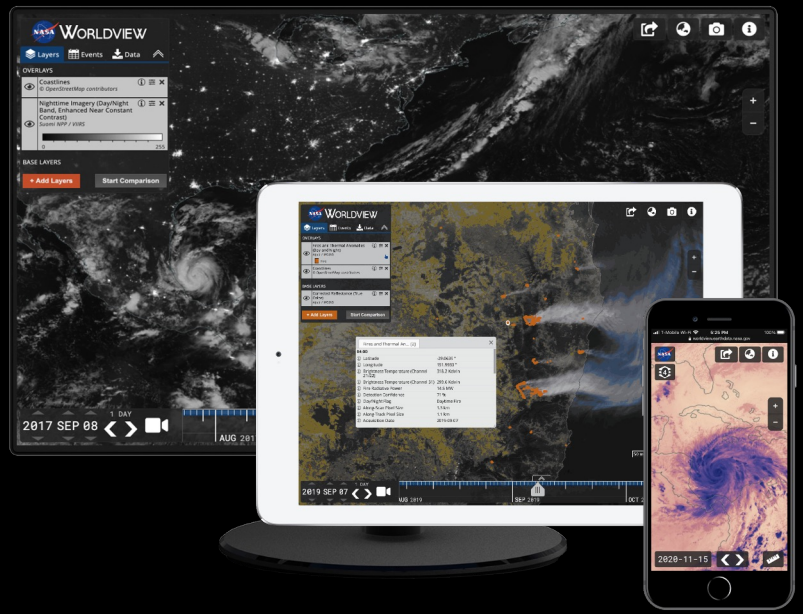
Web & mobile clients



GIS Clients

Scripts/Utilities

What is NASA Worldview and GIBS?

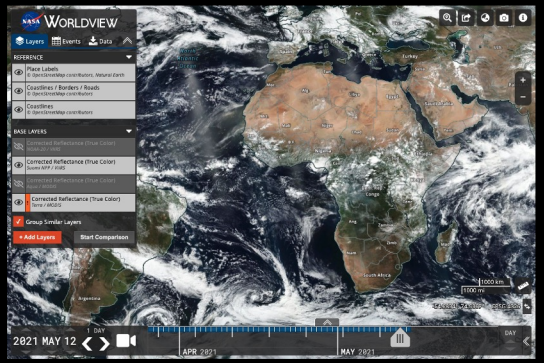


Worldview and the Global Imagery Browse Services (GIBS) provide a **visual-first** approach to finding and using Earth observations.

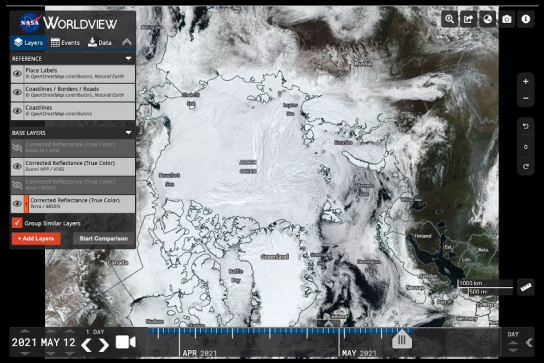
- **Worldview** is an open source **web mapping application** - interactively browse NASA's global satellite imagery within hours of it being acquired as well as imagery from the past few decades. worldview.earthdata.nasa.gov
- **GIBS** is a **set of services -** fast and open access to 1000+ NASA imagery products for Worldview and any other applications via standards-based web services. earthdata.nasa.gov/gibs
- Also available is **Worldview Snapshots -** a **lightweight tool** for creating image snapshots in a variety of file formats from a selection of popular NASA satellite imagery base layers and overlays. wvs.earthdata.nasa.gov

Worldview and GIBS provide...

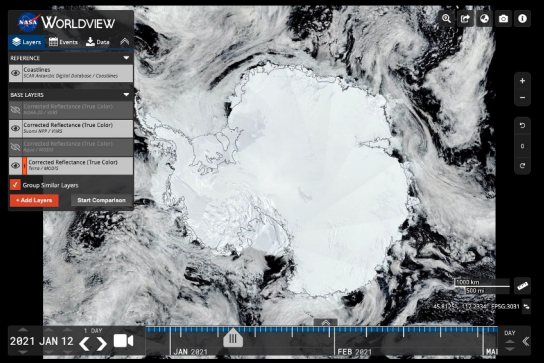
- Imagery in 4 map projections: Geographic, Arctic Polar Stereographic, Antarctic Polar Stereographic, Web Mercator (via GIBS API only)



Geographic/Lat-Long (EPSG: 4326)



Arctic Polar Stereographic (EPSG: 3413)



Antarctic Polar Stereographic (EPSG: 3031)

- Imagery/Data types: Raster and vector
- Spatial resolution: Ranging from 30 meter to 375 meter to 1 degree per pixel
- Temporal resolution: 10 minutes, daily, monthly, yearly (and others in between)
- Latency from observation to availability: 40 mins for geostationary, 3 hours ("near real-time") for many others, longer for everything else.

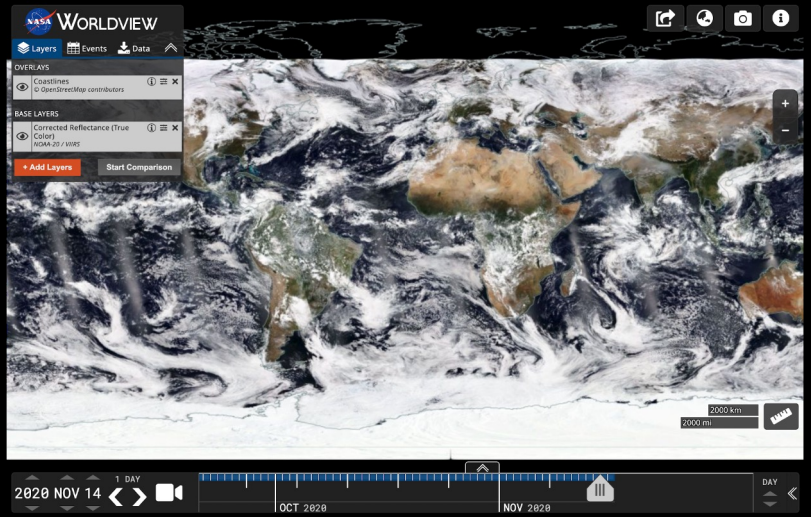
Raster Imagery Types

Opaque “Base Layers”

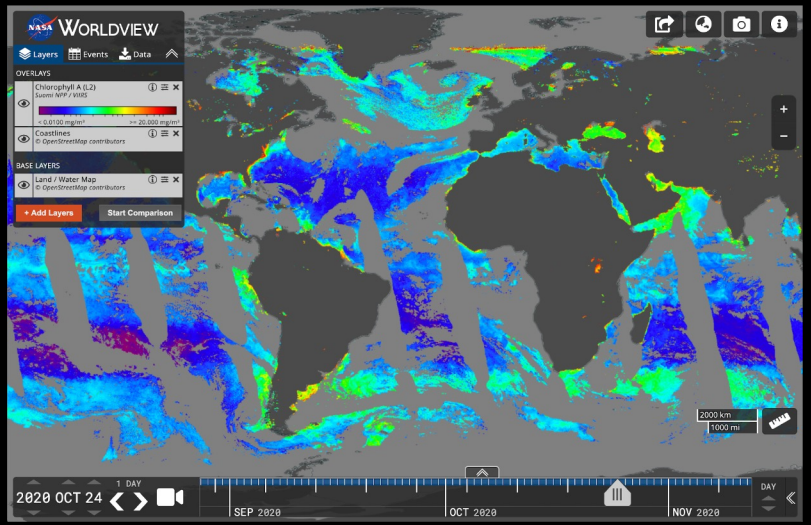
- *Rarely* provide a color bar mapping data values to RGB.
- Interpreted “as is”.

Transparent-capable “Overlays”

- *Regularly* display a color bar mapping data values to RGB.
- Palettes can be changed, thresholded, etc.



Corrected Reflectance (True Color), NOAA-20 / VIIRS



Chlorophyll *a*, Suomi NPP / VIIRS

Vector Data

“Static” Features

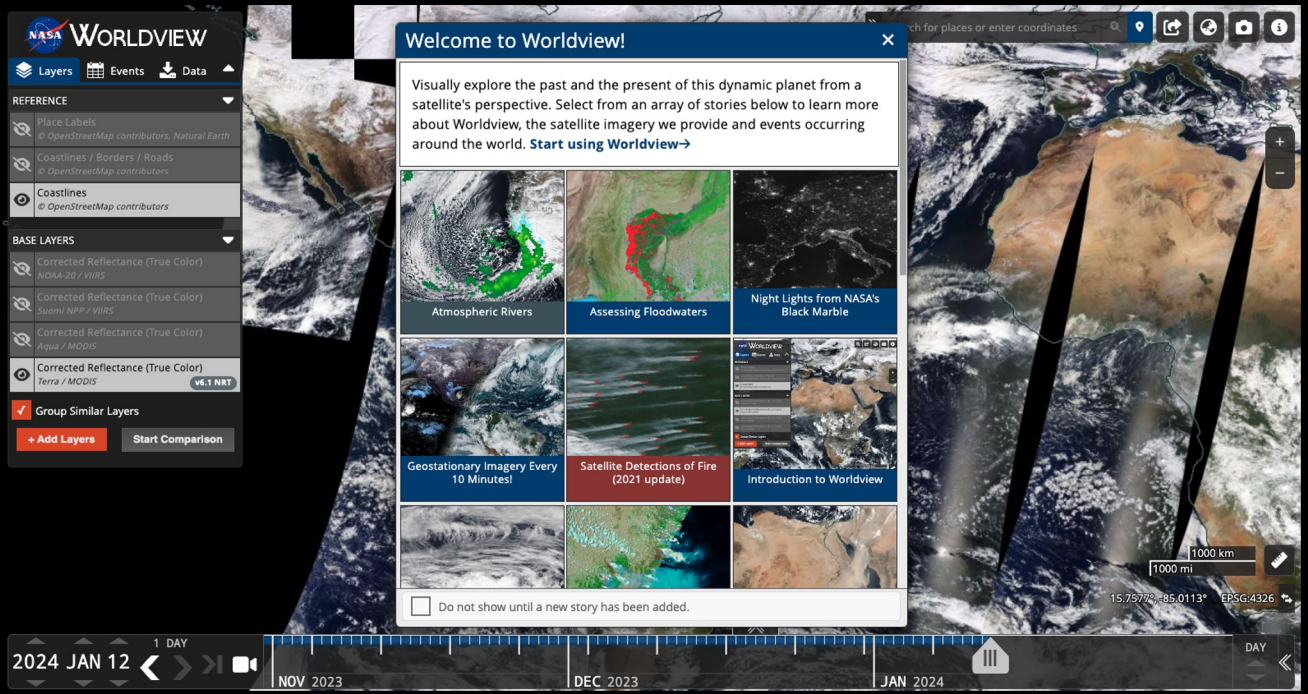
- Points, Lines, and Polygons supported.
- Associated metadata/attribute information for user analysis.

Fires and Thermal Anomalies, NOAA-20 / VIIRS

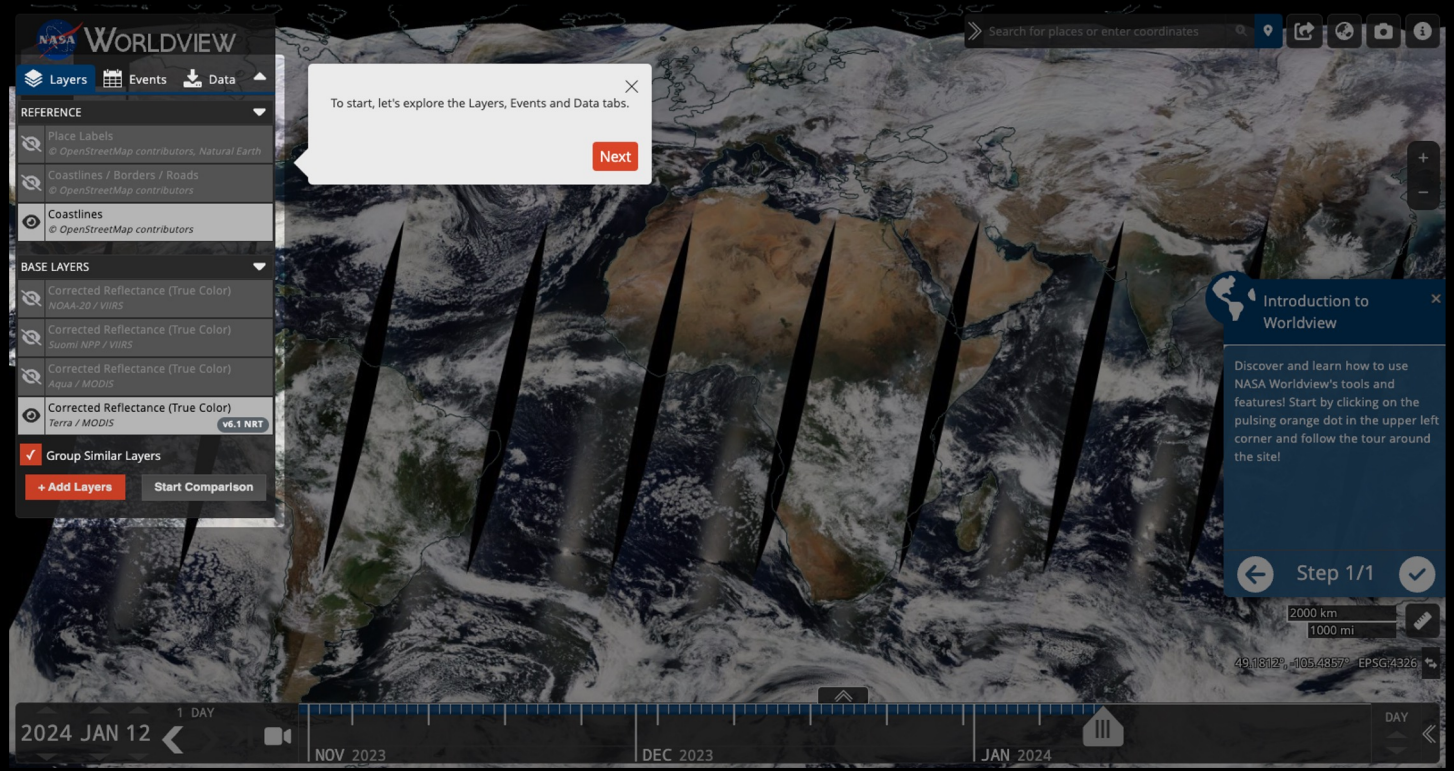
Some Features in Worldview

- Tour Stories: Learn how to use Worldview, how to visualize certain imagery layers, and explore interesting past natural events.
- Animation: Ability to create animations and export to animated GIFs
- Comparison: Allows users to compare imagery side by side
- Embeddable widget: Allows users to embed Worldview onto their own webpage
- Events: Provides a listing of events provided through the Earth Observatory Natural Event Tracker (EONET)
- Data Download: Download related data via Earthdata Search

Tour Stories

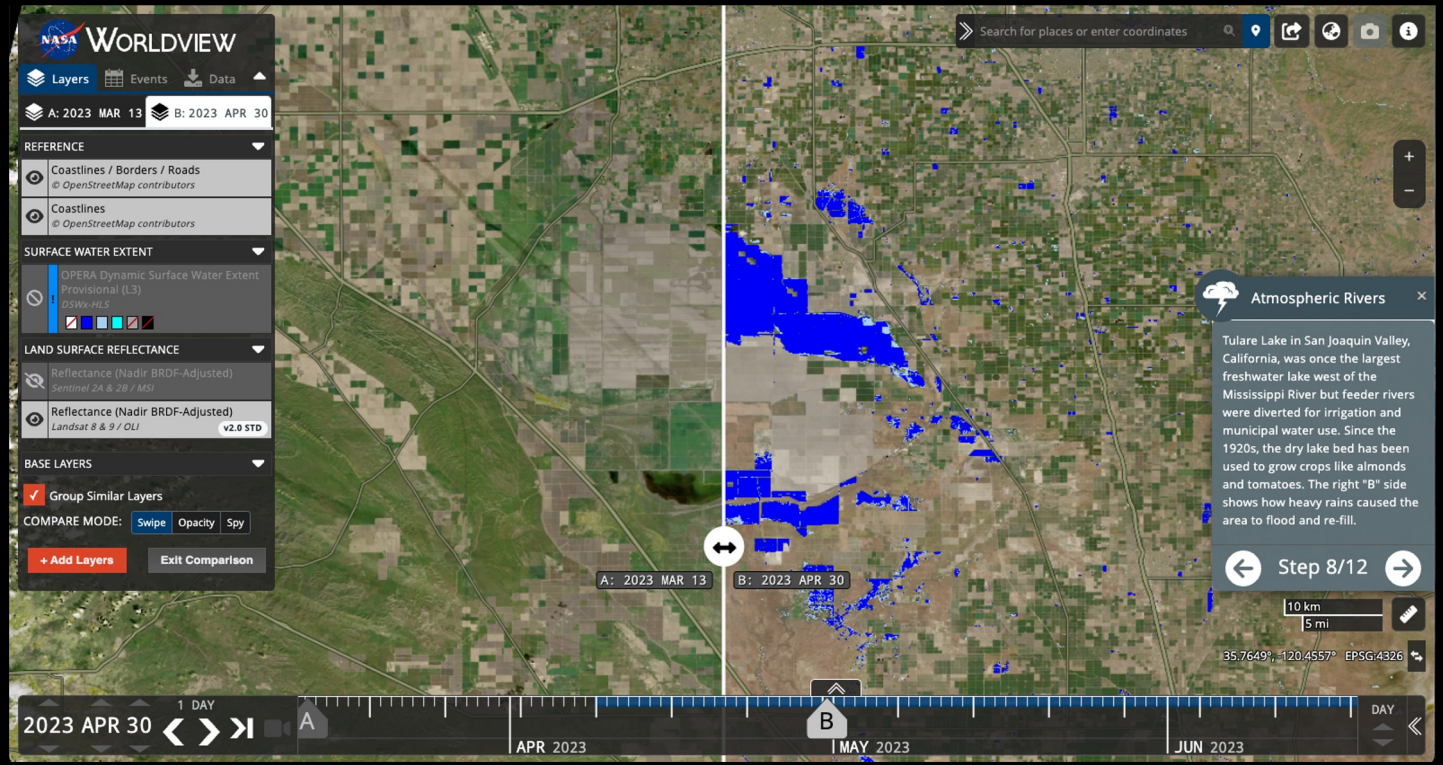


Introduction to Worldview Tour Story



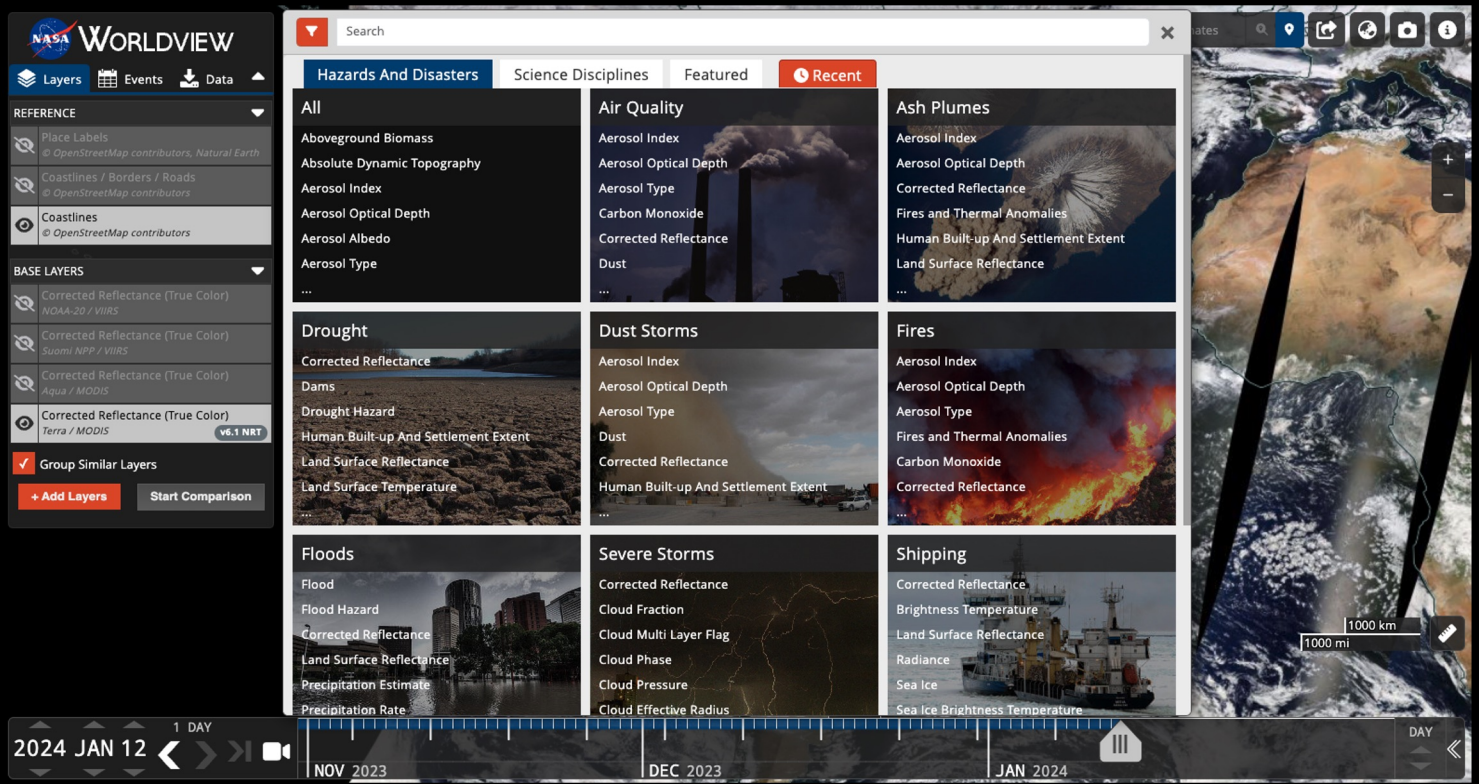
https://go.nasa.gov/3O37b9r

Atmospheric Rivers Tour Story



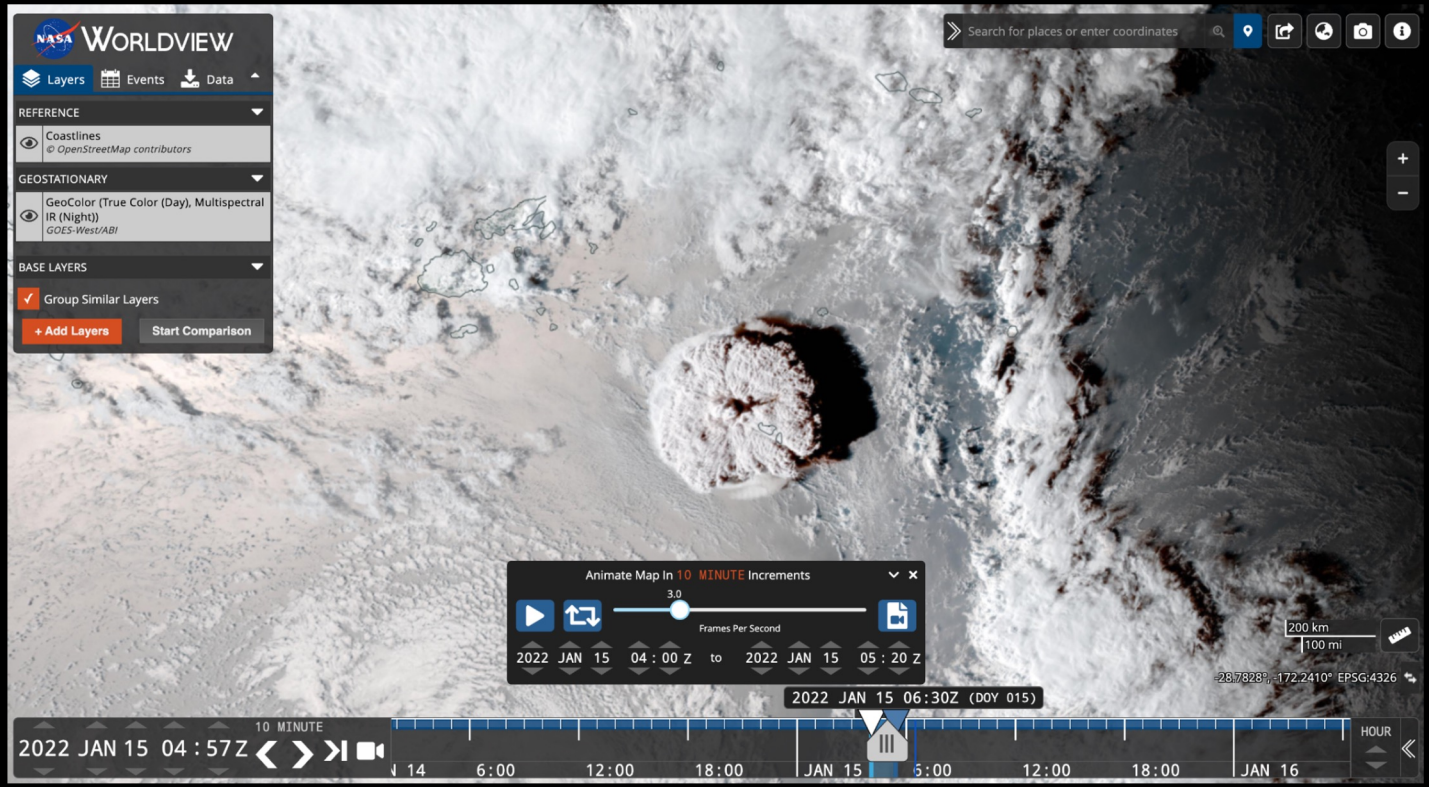
https://go.nasa.gov/48S7iNi

Layer Picker

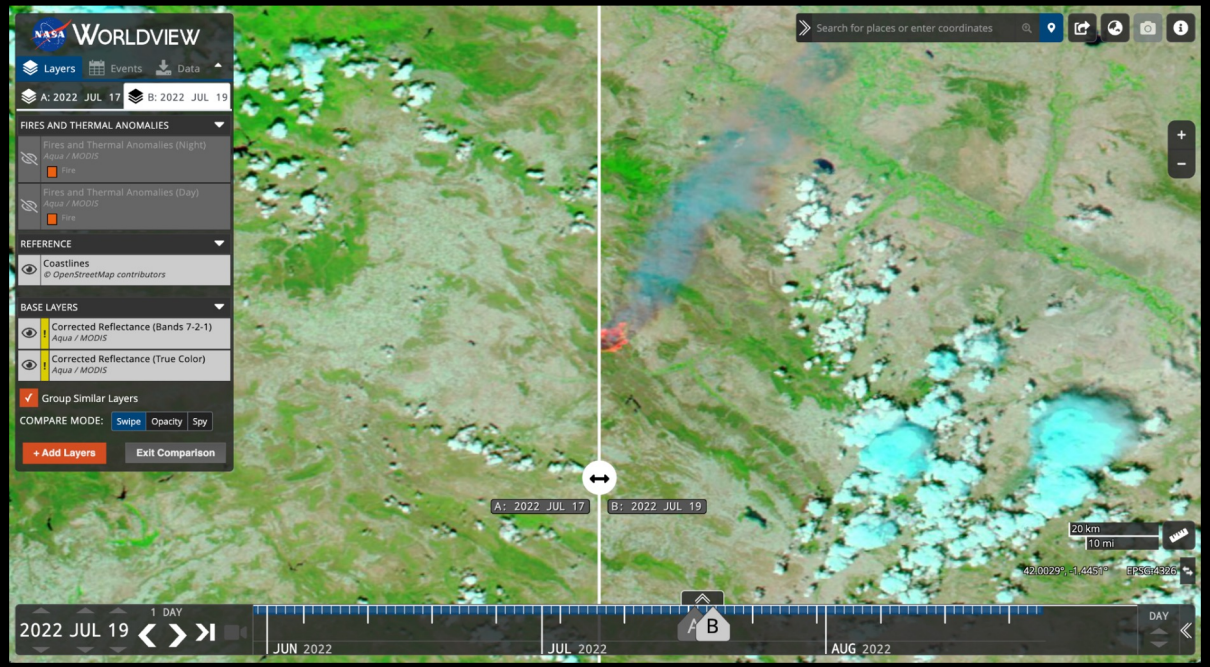


Animation

Eruption of Hunga Tonga - Hunga Ha'apai Volcano: https://go.nasa.gov/3pHf0Ff



Comparison

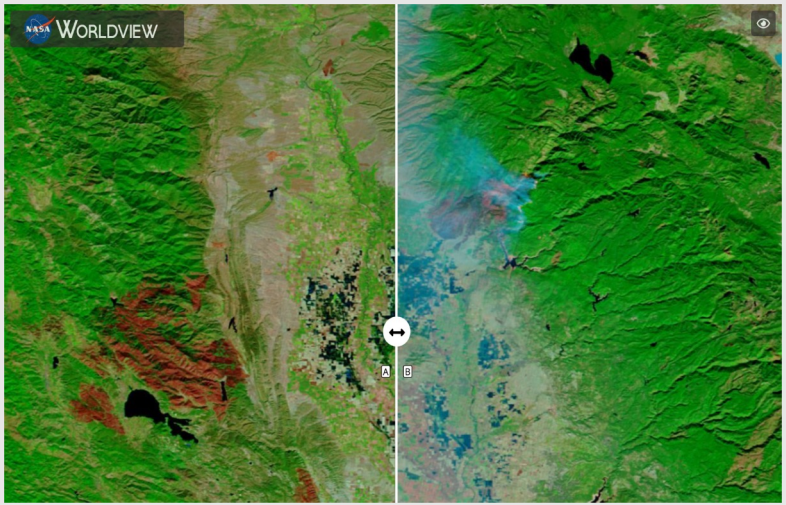


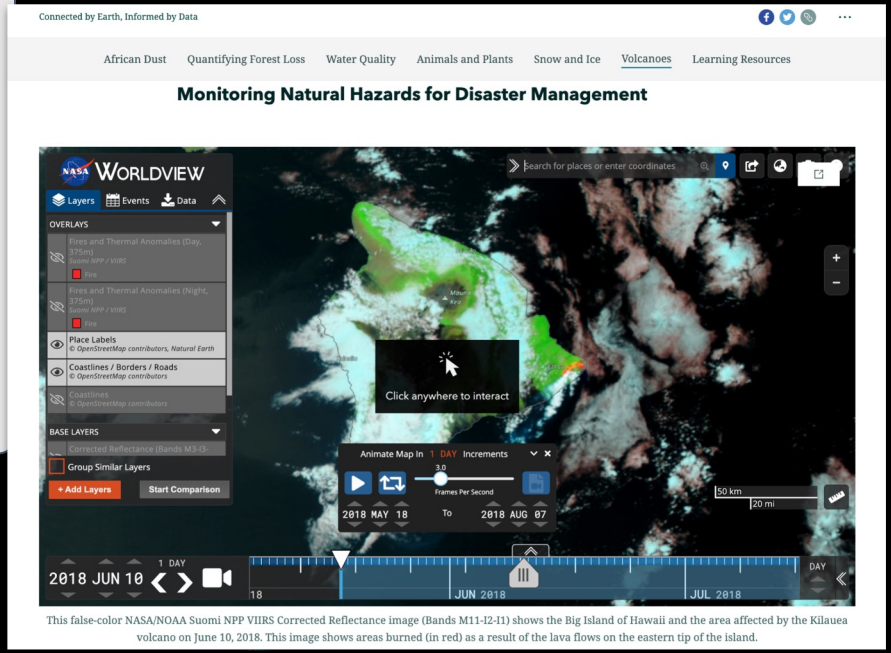
Compare imagery from two different dates, or two sets of imagery from the same date or even two sets of imagery from different dates!

Article: https://go.nasa.gov/3KkFXrG

Embeddable Widget

Your Webpage

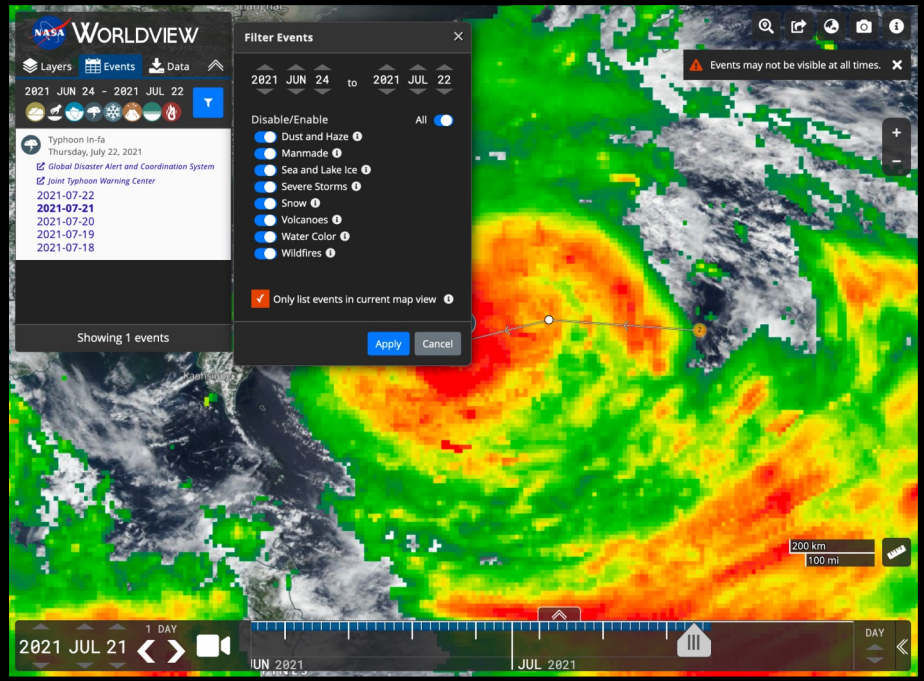




Article and instructions: https://go.nasa.gov/3PN2gra
Sample usage: https://go.nasa.gov/3cj2ZCU
Contact us to request to have your domain added

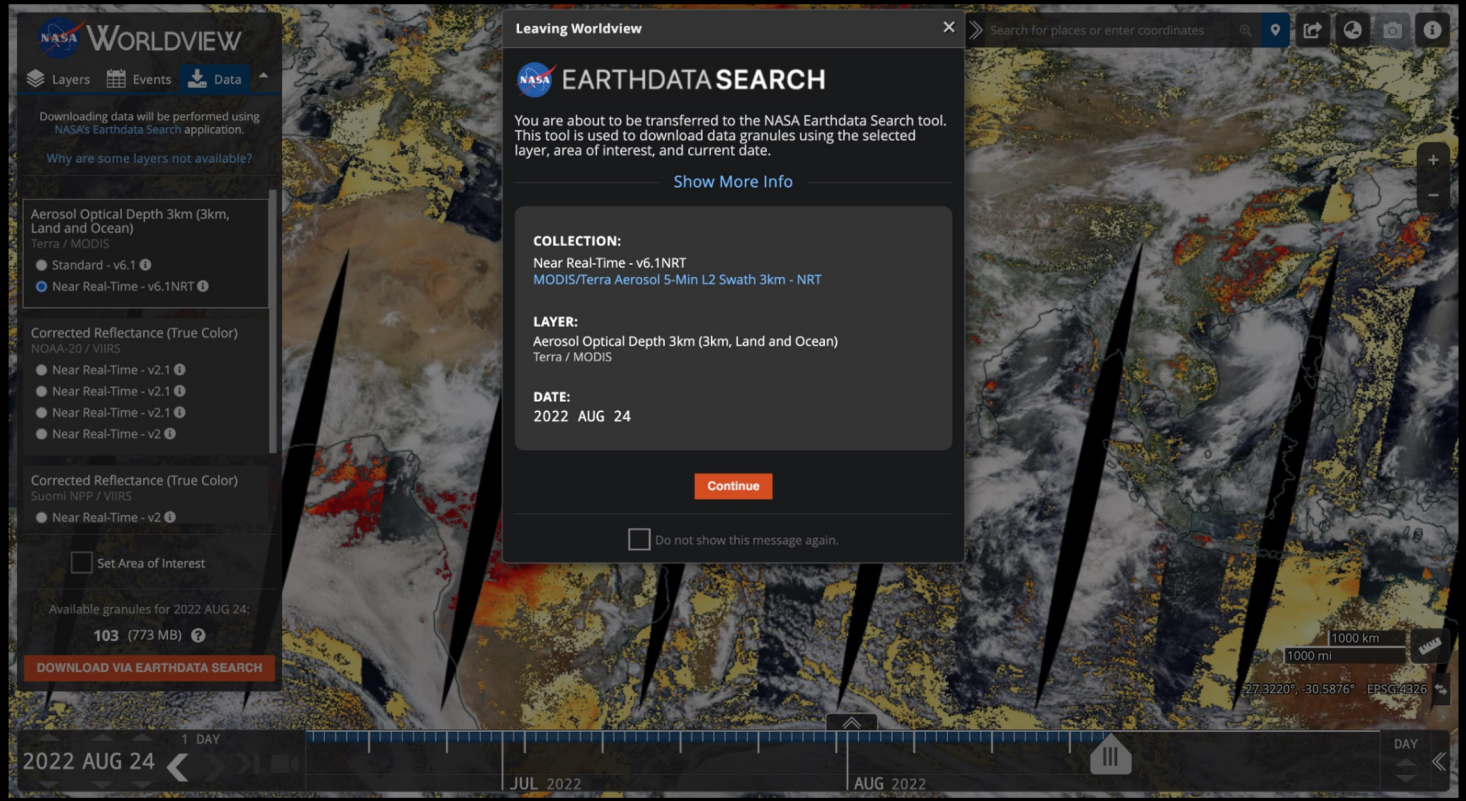
Events

- Click on the "Events" tab in the sidebar and you will be presented with the first 50 events from the past few months.
- Click on the blue filter icon to start narrowing down the events.
- You can filter events by date, event type, and events in the current map view. Events go back to 1 January 2000, though not all event types/categories have events populated back to 1 January 2000.
- Event types include Dust and Haze, Manmade, Sea and Lake Ice, Severe Storms, Snow, Volcanoes, Water Color and Wildfires.
- You can also check the box to "Only list events in current map view" to further filter your search results.



Screenshot of the Events tab and event filter options.
https://go.nasa.gov/3iHrvNn

Data Download via Earthdata Search



Learn more…

- Introduction to Worldview tour - learn about the different elements in the web mapping application: https://go.nasa.gov/3SveXK7
- Tutorial: Getting Started with NASA Worldview (December 2021): https://youtu.be/uMkuiRJr_-E
- Webinar: NASA Worldview - Explore the Earth from Past to Present with Global Satellite Observations (May 2021): https://youtu.be/WqkX-b-jYGI

Thank you!

Check out NASA Worldview:
https://worldview.earthdata.nasa.gov

Contribute to Worldview - Source Code: https://g
gibs/worldview

Bring imagery into your own web application
or GIS client: https://earthdata.nasa.gov/gibs

Contact us for questions or comments:
support@earthdata.nasa.gov