

National Aeronautics and Space Administration

EARTH**DATA**

Expand your View of Earth with NASA Worldview

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Agenda

- Overview of NASA Earth Science Missions and the Earth Science Data and Information System (ESDIS)
- What is NASA Worldview, Worldview Snapshots, and GIBS?
- Why use Worldview and GIBS?
- What Worldview and GIBS provide
- Key Features of Worldview
- Live Demos with Examples
- Features in Beta Testing
- Imagery Use Guidelines
- Helpful Links



Overview of NASA Earth Science Missions



NASA Earth Science Missions



Image credit: "Earth Fleet". NASA Headquarters. NASA Earth Science Division Missions, last updated January 16, 2021, accessed on April 4, 2025 at https://svs.gsfc.nasa.gov/30065

NASA Earth Science Data and Information System (ESDIS)

NASA's Earth science data comes from various sources – satellites, aircraft, field measurements, and more. ESDIS is responsible for processing, archiving and disseminating NASA's vast collection of data - both near real-time datasets and standard data products that are openly available and accessible online, totalling to almost 130 petabytes!



What is Worldview and Worldview Snapshots?



Worldview

Open source web mapping application for users to interactively browse NASA's 1000+ global satellite data visualizations within hours of it being acquired, as well as imagery from the past few decades. Provides linkages to download data products via Earthdata Search.

worldview.earthdata.nasa.gov







Worldview Snapshots

Low bandwidth, 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 Snapshots Map Projection Base Laver 6 Overview NOAA-21, VIIRS, True Color, Corrected Reflectance Geographic Worldview Snapshots is a lightweight tool for creating image snapshots from a selection of popular NASA satellite aver Date (UTC) Overlay Layers imagery layers. You can preview and download imagery in different band combinations and add overlays on the 04/03/2025 Fires Coastlines Coastines, Borders & Roads imagery of active fire detections, coastlines, borders and How To Use 1. Create a Snapshot by choosing a map projection, dat layers, country/region preset or bounding box, and image file options. Bookmark the browser URL if you would like to use these options again later. . Select the preview button to preview and share a subse before downloading 3. Click the download button to generate a snapsho Check out the Frequently Asked Questions (FAQ) on the Earthdata Forum for more information and citation guidelines. Other Tools NASA Worldview Country/Region Presets Country State / Province / Region 😧 Select Country Padding Bounding Bo Bottom Left Latitude 19.547424 -126. Resolution File Fo JPEG 10km Snapshot Attributes image Dimensions: 517px x 377p Estimated File Size: Very Small lase Laver: NOAA, 21 VIIRS True Color Corrected Reflectance verlay Laver(s): VIIRS NOAA21 Thermal Anomalies 375m Da Bottom Left Image Dimensions: 517px x 377p atitude Map Projection: Geographic Auto Scale: Yes 19.547424 126.757976 File Format: JPEC Estimated Size: 0.05 ME share Image: nshot?REQUEST=GetSna Shorten Link ns://www.earthdata.nasa.gov/api/v1/sn

Download Image

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What is GIBS?

Global Imagery Browse Services (GIBS)

Standardized web services (APIs) that provide fast and open access to 1000+ global, full-resolution visualizations of NASA Earth Science observations. Many products (~200) are available within 3-5 hours after being observed.

 Access via Web Map Tile Service (WMTS), Tiled Web Map Service (TWMS), Web Map Service (WMS), Geospatial Data Abstraction Library (GDAL)

Worldview and Worldview Snapshots are powered by GIBS!



earthdata.nasa.gov/gibs



Why use Worldview and GIBS?

- View and explore the Earth as it is "right now" see hurricanes forming, wildfires burning, icebergs drifting, and city lights illuminating.
 View changes on the Earth's surface over time using daily, global imagery going back two decades watch cities expand, farmlands grow, and forests change.
- Fast and responsive maps that are highly interactive through space and time.
- Pick from 1000+ data visualizations that can all be viewed within the same interface.





Worldview and GIBS provide...



Geographic/Lat-Long (EPSG: 4326)

Arctic Polar Stereographic (EPSG: 3413)

Antarctic Polar Stereographic (EPSG: 3031)

- Imagery in 4 map projections: Geographic, Arctic Polar Stereographic, Antarctic Polar Stereographic, Web Mercator (via GIBS API only)
- Imagery/Data types: Raster and vector
- Spatial resolution: Ranging from 30 meter to 375 meter to 1 degree per pixel
- Temporal resolution: 6 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



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

Opaque "Base Layers"

- Rarely provide a color bar mapping data values to RGB.
- Interpreted "as is".

Chlorophyll a, PACE / OCI

- Transparent-capable "Overlays"
- Regularly display a color bar mapping data values to RGB.
- Palettes can be changed, thresholded, etc.



Vector Data



Fires and Thermal Anomalies, NOAA-20 / VIIRS

"Static" Features

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



Key Features of Worldview

Key Features of Worldview

Interactive map to browse and view data visualizations from the past and present.

- Tour Stories: Learn how to use Worldview, how to visualize certain data visualizations, and explore interesting past natural events.
- Layer Picker: Pick layers of interest from over 1000 data visualizations
- Animation: Ability to create animations and export to animated GIFs
- **Comparison**: Allows users to compare data visualizations side by side
- Share and Embed: Allows users to embed Worldview onto their own webpage
- Events: Provides a curated listing of events provided through the Earth Observatory Natural Event Tracker (EONET)
- **Data Download**: Download original, source data via Earthdata Search



Live Demos

Flooding in the Midwest and Southeast U.S. in early April 2025
Iceberg A23A Grounded Near South Georgia Island in March 2025
Smog over Pakistan in November 2024





Features in Beta Testing

Charting Tool

The Charting Tool provides the option to create a line chart for a date range showing change over time, and statistics for a single date (median, mean, minimum, maximum, and standard deviation) for an area of interest. Aimed for initial basic exploratory purposes as it's based on imagery values, not full precision data.

- Still a work in progress!
- Works with layers that have a color palette such Aerosol Index, Precipitation Rate, etc.
- Currently only available for daily layers Please provide your feedback to <u>earthdata-support@nasa.gov</u>







Imagery Use Guidelines

NASA promotes full and open sharing of data and we encourage publication of imagery from Worldview; when doing so for image captions, please cite it as "NASA Worldview" and also consider including a direct shortened link to the imagery in Worldview to allow others to explore the imagery.

For acknowledgment in scientific journals, please use: "We acknowledge the use of imagery from the NASA Worldview application (https://worldview.earthdata.nasa.gov), part of the NASA Earth Science Data and Information System (ESDIS)."



Helpful Links

- Worldview: <u>https://worldview.earthdata.nasa.gov</u>
- Worldview on GitHub: <u>https://github.com/nasa-gibs/worldview</u>
- Worldview Snapshots: <u>https://wvs.earthdata.nasa.gov</u>
- GIBS: <u>https://earthdata.nasa.gov/gibs</u>
- GIBS API documentation: <u>https://nasa-gibs.github.io/gibs-api-docs/</u>
- Frequently Asked Questions: <u>https://go.nasa.gov/4j7Hlyz</u>
- Worldview Image of the Week:

https://www.earthdata.nasa.gov/news/worldview-image-archive

- Embed Worldview: Send us an email at earthdata-support@nasa.gov with a short description of your website, and we will put it through an approval process before we can whitelist the domain.
- Embed article and instructions: <u>https://go.nasa.gov/3PN2gra</u>
- Sample embed usage: <u>https://bit.ly/4jwHoDZ</u>







Visit Us!

Visit: worldview.earthdata.nasa.gov Contribute: github.com/nasa-gibs/worldview Bring imagery into your own web application or GIS client: earthdata.nasa.gov/gibs CONTACT min.m.wong@nasa.gov earthdata-support@nasa.gov



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