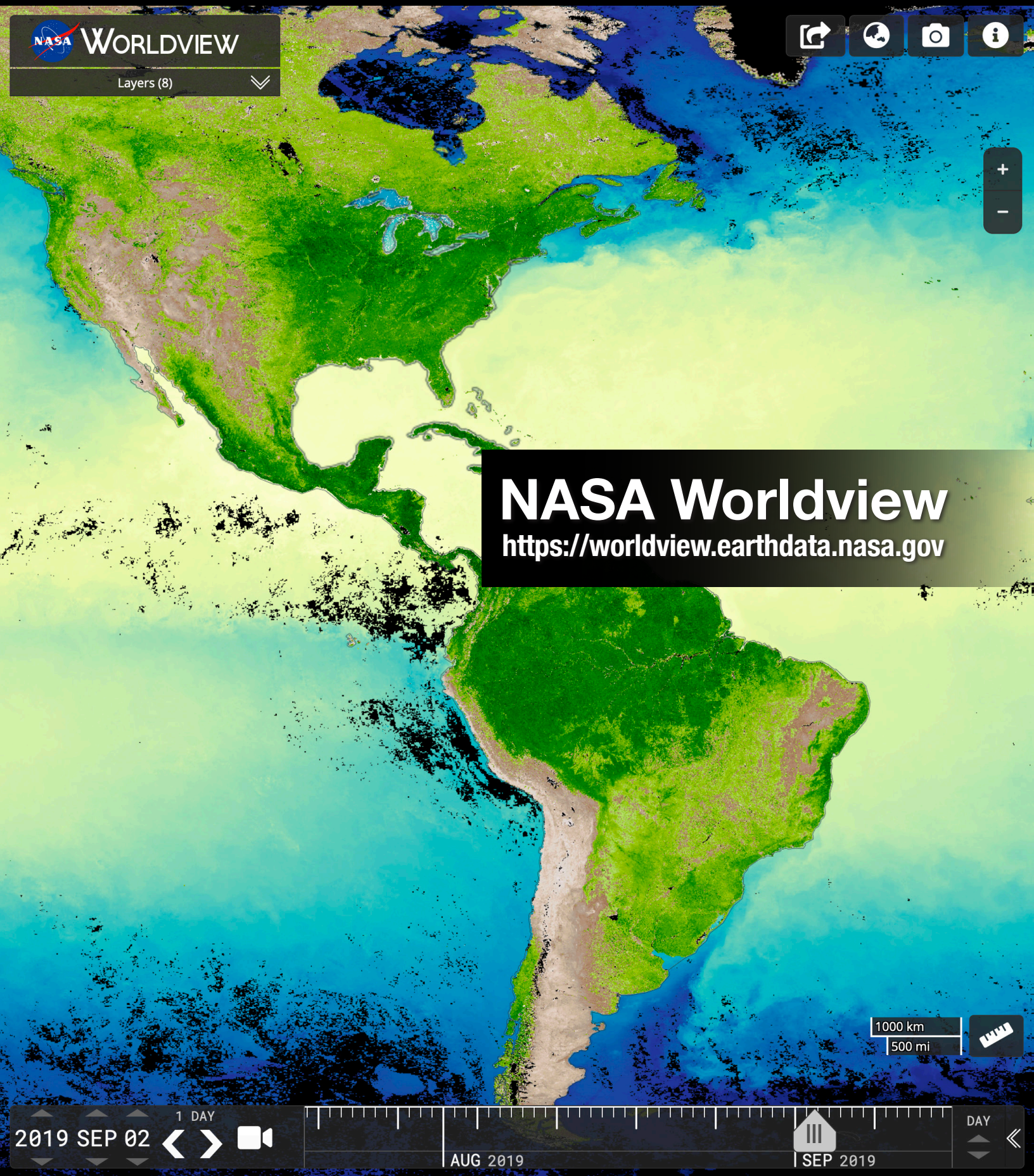
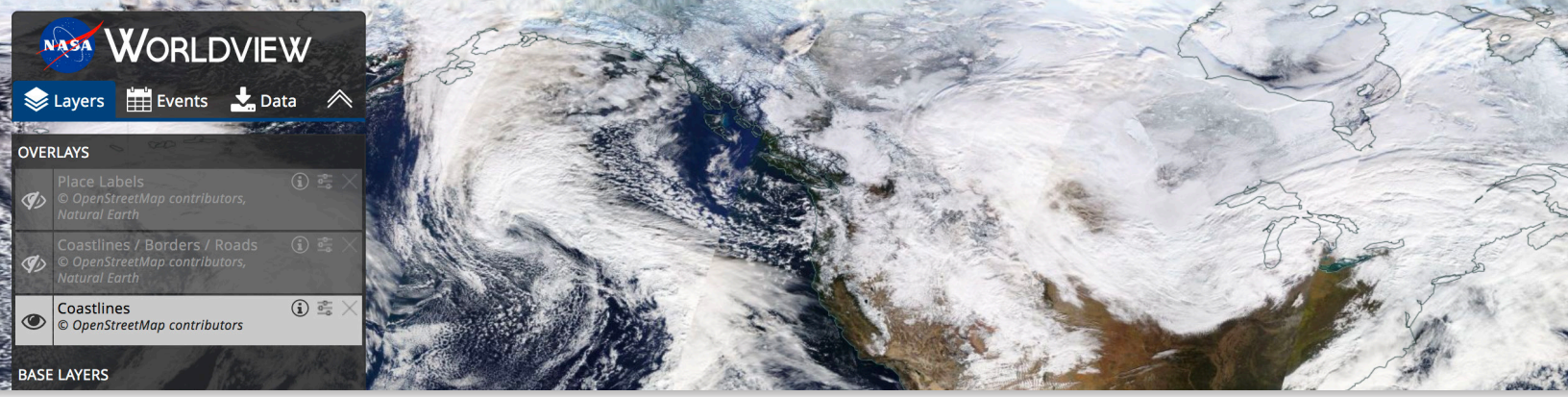
National Aeronautics and
Space Administration



NASA Worldview

https://worldview.earthdata.nasa.gov



Overview

NASA's Earth Observing System Data and Information System (EOSDIS) Worldview mapping application provides the capability to interactively browse over 900 global, full-resolution satellite imagery layers and then download the underlying data. Many of the available imagery layers are updated within three hours of observation, essentially showing the entire Earth as it looks "right now." This supports time-critical application areas such as wildfire management, air quality measurements, and flood monitoring. Imagery in Worldview is provided by NASA's Global Imagery Browse Services (GIBS).

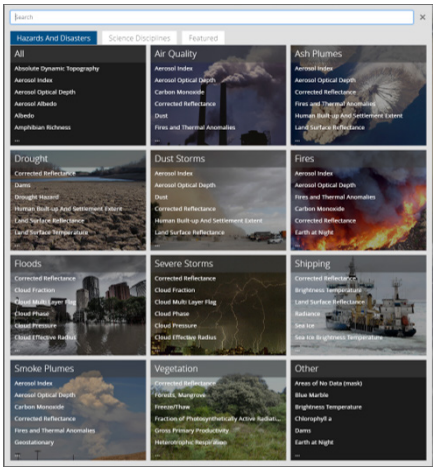
Worldview now includes nine geostationary imagery layers from GOES-East, GOES-West and Himawari-8 available at ten minute increments for the last 30 days. These layers include Red Visible, which can be used for analyzing daytime clouds, fog, insolation, and winds; Clean Infrared, which provides cloud top temperature and information about precipitation; and Air Mass RGB, which enables the visualization of the differentiation between air mass types (e.g., dry air, moist air, etc.). These full disk hemispheric views allow for almost real-time viewing of changes occurring around most of the world.

Key Features

- Daily, global imagery is generally available within three to four hours of satellite observation. Imagery from the year 2000 to present is available. A rolling month of geostationary imagery is available every ten minutes.
- Discover and add relevant layers by science discipline, by natural hazard, by featured layers, or by typing a keyword.
- Polar stereographic views for the Arctic and Antarctic regions provide a "full globe" perspective.
- Story-based tours highlight notable events, provide interesting information about the imagery, and show tutorials on how to use Worldview.
- View current natural hazards and events using the Events tab which reveals a list of natural events, including wildfires, tropical storms, and volcanic eruptions.
- Take a snapshot of imagery/event for a single point in time. Multiple image output formats available include: JPEG, PNG, GeoTIFF, and KML
- Animate data imagery over time—Create animated GIFs to view events as they develop.
- Compare imagery from two different dates, or two sets of imagery from the same date or even two sets of imagery from different dates with the Comparison feature.
- Share your maps using the share and link shortener functionality.
- Browsing on smartphone and tablet devices is generally supported for mobile access to the imagery.

How to Use Worldview

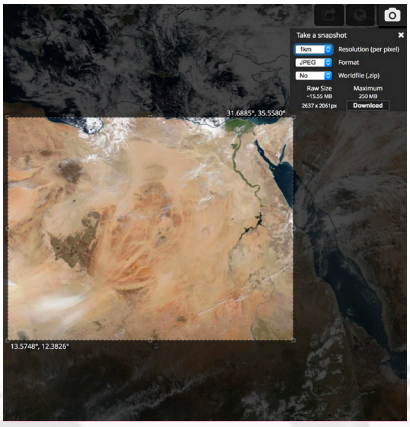
Before you get started, first pan and zoom to your region of interest on the map.



Add Imagery Layers

- Click on **"Add Layers"**
- Next you can either 1) Type keyword into Search bar; 2) Click on **"Hazards and Disasters"**; 3) Click on **"Science Disciplines"**; or 4) **"Featured"** tab.
- Find your layer(s), select by checking the box.
- Change the date by selecting or typing in the date in the date box in the lower left corner, or click on the desired date in the timeline.

***Tip:** For information about imagery layers click on the "i" icon in the layer list. To turn on/off layers click on the eye icon in the layer list.*

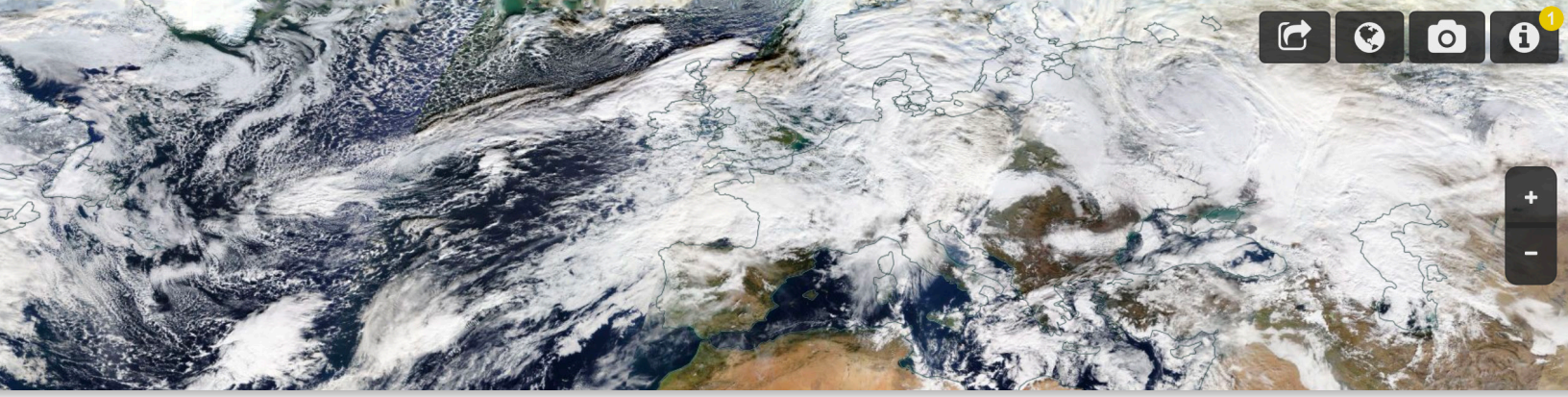


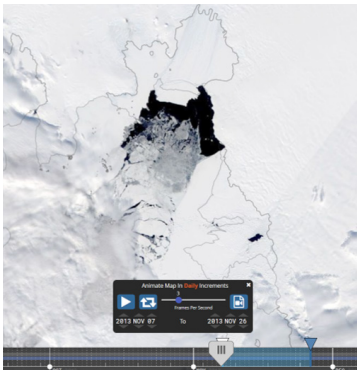
Take a Snapshot

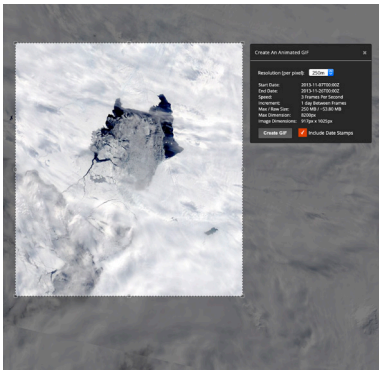
- Click on Camera icon in the upper right hand corner
- Select your area by dragging/ adjusting sides of the box
- Select resolution and file format
- Click the download button and your snapshot will open in a new window!

***Tip:** Select a coarser/lower resolution if your image is over the maximum size.*

***Tip:** You can also download a snapshot as GeoTIFF, JPG with Worldfile, PNG with Worldfile, and KMZ and bring it straight into you own GIS client!*

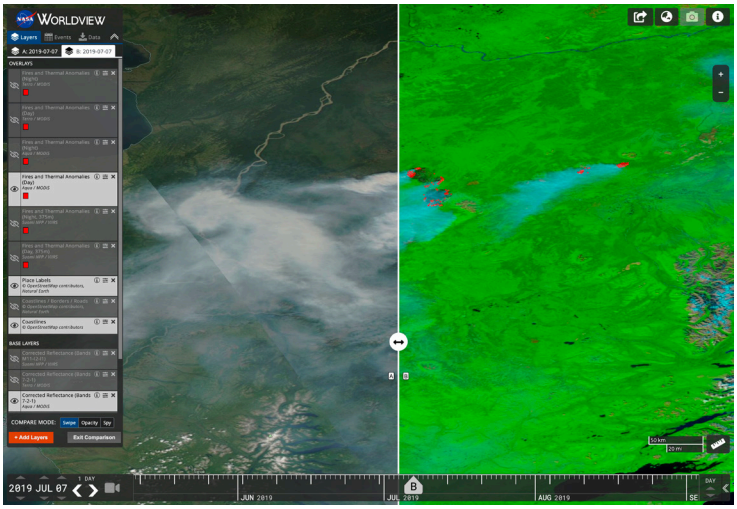






Create an Animated GIF

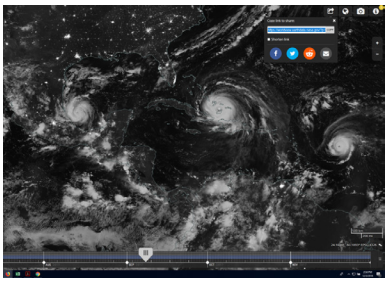
- Click on **"Add Layers"** to filter by discipline, key word, or natural hazard.
- Select your layer(s) of interest.
- Pan/zoom to your geographic region of interest.
- Click on the video camera icon on the lower left corner
- Select your desired date range using the up/down arrows in the animation menu bar, or drag the start and end date indicators on the timeline.
- You may also change the speed at which your animation plays by adjusting the frames per second; you can also ensure that the animation loops/ automatically replays by clicking on the **"Loop video"** icon.
- You can play the animation directly in the browser or click the Create Animated GIF video camera icon in the animation widget to download the GIF to your computer. Select your area by dragging/adjusting sides of the box.
- Select your desired resolution and whether you would like the date stamps included in the animated GIF.
- Click on the orange download arrow or **"Create GIF"** button to create the GIF.
- Click on **"Download"** to save your animated GIF to your computer.



Compare Imagery

- Click on **"Start Comparison"** and the screen and the layer list splits into two sides, the A and B sides.
- Add layers and change the date for the A side in the layer list by clicking on the active/highlighted A tab. Do the same for the B side.
- Click on the Swipe icon in the center of the screen and drag the icon back and forth sideways to see the differences between the A and B side.
- You can also change the compare mode to **"Opacity"** where you fade between the imagery in the A and B tabs and **"Spy"** where the active/ highlighted tab shows the main map and a spyglass shows the imagery listed in the inactive tab.
- Click on **"Exit Comparison"** to return to the regular view.

***Tip:** Compare imagery from two different dates, or compare two sets of imagery layers from the same date or even two sets of imagery layers from different dates!*



Share your Maps

- Click on the **"Share this map"** icon in the upper right corner.
- Copy the link in the **"Copy link to share"** box and/or click on the **"Shorten Link"** checkbox to get a shorter link to share.

***Tip:** You can share the map with certain features activated too! If you're in comparison mode, you can share the direct link to that comparison. If you have the animation set up to specific dates and layers, you can share a direct link to that animation within Worldview. If you've selected a specific event, you can share the link with others and the link will take them directly to that event.*

Useful Layers for Highlighting Specific Hazard and Disaster Events

Severe Storms

- Corrected Reflectance, True Color (Terra MODIS, Aqua MODIS or Suomi-NPP VIIRS)
- Nighttime Imagery (Day/Night Band, Enhanced Near Constant Contrast)
- IMERG Rain Rate (Early)
- IMERG Snow Rate (Early)
- Geostationary imagery — Red Visible, Clean Infrared, and Air Mass RGB layers from GOES-East, GOES-West and Himawari-8.

***Tip:** Add corresponding Orbit Track & Overpass times layers to find the approximate time the imagery was retrieved. If you are viewing Corrected Reflectance from MODIS/Terra, add the Terra day time orbit tracks.*

Floods, Burn Scars

- MODIS Terra or MODIS Aqua Corrected Reflectance (Bands 7-2-1)
- Suomi-NPP VIIRS Corrected Reflectance (Bands M11-I2-I1)

Wildfires

- Terra or Aqua MODIS Corrected Reflectance (Bands 7-2-1)
- Suomi-NPP VIIRS Corrected Reflectance (Bands M11-I2-I1)
- Suomi NPP / VIIRS Fires and Thermal Anomalies (Day, 375m)
- Suomi NPP / VIIRS Fires and Thermal Anomalies (Night, 375m)
- Terra and Aqua / MODIS Fires and Thermal Anomalies (Day and Night)
- Terra / MODIS Fires and Thermal Anomalies (Day and Night)
- Aqua / MODIS Fires and Thermal Anomalies (Day and Night)

***Tip:** The Fires and Thermal Anomalies layers show actively burning fires as red points. Sometimes you can see the actively burning fire front in the false color imagery (Bands 7-2-1 MODIS/Aqua and MODIS/Terra and Bands M11-i2-I1 VIIRS/Suomi-NPP) as bright red spots at the leading edge of the fire.*

Nighttime Lights Imagery

- Nighttime Imagery (Day/Night Band, Enhanced Near Constant Contrast)
- Black Marble (Annual, 2012 & 2016)
- Black Marble - Nighttime Lights only (Annual, 2012 & 2016)

***Tip:** Use Nighttime Imagery (Day/Night Band, Enhanced Near Constant Contrast) to highlight current events as this layer is retrieved daily.*

Caveats

- When applying Base Layers, only the top, visible layer with the 👁 is viewable on your map.
- The animated GIF can only be comprised of 40 frames i.e. 40 days.
- The lack of sunlight during winter causes the polar "hole" in the Arctic and Antarctic regions in the daily, global imagery.
- Some imagery, like the daily, global MODIS Reflectance, has regular black swath gaps. The imagery swaths from this instrument are not wide enough to encompass these areas; the newer VIIRS instrument on board joint NASA/NOAA Suomi-NPP satellite does not have swath gaps.
- Remember to use the corresponding base layer imagery to the overlays e.g. use the Terra MODIS Corrected Reflectance imagery base layer with the Terra MODIS Fires and Thermal Anomalies layer overlay.
- Geostationary data layers currently do not cover Europe, Africa, and the North and South Poles.

See Geostationary Imagery in Action!

- Click on **"Add Layers"** and type in **"Geostationary"** in the search box or select **"Geostationary"** under the **"Featured"** tab.
- Select one of the available layers such as **"Red Visible (0.64um, Band 2, 10 minute) GOES East/ABI"**.
- Note the change in the timeline! You can now see the Year, Month, Day AND the time in Hours and Minutes Z (Zulu Time which is equivalent to UTC - Coordinated Universal Time) on the left side of the timeline.

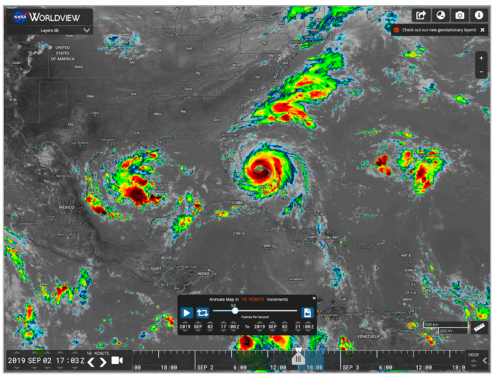
***Tip:** The geostationary imagery from GOES-East, GOES-West and Himawari-8 is available in 10 minute increments starting at 00:00.*

- To the right of the **"Z"** are the < > increment arrows. Click on **"1 Day"** above these to change the increment. Click on Custom and in the Custom Interval Selector box, change the increment to **"10"** and **"Minute"**.
- Click on "Day" on the right side of the timeline to change the timescale to **"Minute"** or **"Hour"**.
- Enter 2019 SEP 02 17:00 Z in the timeline.
- Zoom into the Bahamas/Florida. Here you can see Hurricane Dorian the day after it made landfall on the Bahamas.
- Add another layer such as **"Clean Infrared (10.3 um, Band 13, 10 minute)"**

***Tip:** The Red Visible layer is only available during the daytime; the Clean Infrared and Air Mass layers are available all day!*

- Set up an animation to watch the storm's progression. Click on the Video Camera icon in the timeline.
- Set the second date and time fields to 2019 SEP 02 21:00 Z; set the first date and time fields to 2019 SEP 02 17:00 Z.
- Click on the **"Play"** button and watch the storm move!
- Click on the **"Create Animated GIF"** icon on the right to download an animated GIF of the animation.

***Tip:** Check out the Hurricane Dorian Tour Story featuring geostationary imagery from GOES-East:* **https://go.nasa.gov/32J7VH8**



Tutorials

Worldview Video: *NASA's Worldview: Two decades of Earth Data at your Fingertips* - **https://youtu.be/X16cfGPL2wA**

Worldview Tutorial: *How to View and Share your Planet with Worldview* - **https://youtu.be/LI3aVTNhCKU**

Access

Launch Worldview: **worldview.earthdata.nasa.gov**

For low bandwidth access, use Worldview Snapshots: **https://wvs.earthdata.nasa.gov**

Access Frequently Asked Questions: **https://earthdata.nasa.gov/faq/worldview-gibs-faq**

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

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