New Capabilities, Products, and Usage of NASA Earth Imagery for Near Real Time Applications

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earthdata.nasa.gov/worldview
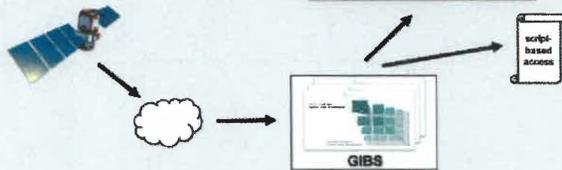earthdata.nasa.gov/gibs

Overview: NASA's Worldview and Global Imagery Browse Services (GIBS) have provided near real time (NRT) imagery to the public since 2011 and continue to add new capabilities and products. As a web map app for GIBS, Worldview (https://worldview.earthdata.nasa.gov) has recently added new features to support NRT applications such as a "before" and "after" comparison capability and support for geostationary imagery. As an open set of standards-based web map services, GIBS (https://earthdata.nasa.gov/gibs) has added several new NRT imagery products and will soon add new capabilities for better integration with Geographic Information System (GIS) clients. One of NASA's original NRT imagery systems and a long-running workhorse, Rapid Response, has been retired and replaced with a modern, mobile-friendly, and low-bandwidth app dubbed Worldview Snapshots (https://wvs.earthdata.nasa.gov). Finally, this presentation will demonstrate recent usage of these tools and services by those in the NRT community.

What is Worldview and GIBS?

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

GIBS

Worldview

worldview.earthdata.nasa.gov

Worldview is a web app to interactively browse NASA's global satellite imagery within hours of it being acquired.

- Interactively explore the Earth as it is "right now" and throughout the past
- Browse over 800 imagery products provided by the Global Imagery Browse Services (GIBS), many of which are available in near real-time via the Land, Atmosphere Near real-time Capability for EOS (LANCE)
- Download imagery and/or the underlying data
- Use the Comparison feature, Animation feature, Events listing, and many more features and tools

Global Imagery Browse Services (GIBS)

gibs.earthdata.nasa.gov

GIBS is a system providing fast and open access to 800+ NASA imagery products for Worldview and any other application via standards-based APIs.

- Access imagery through standards-based web services for access through web clients, GIS clients, and scripts
- Imagery is provided in several map projections:
  - Geographic / Equirectangular
  - Web Mercator
  - Arctic Polar Stereographic
  - Antarctic Polar Stereographic

What Happened to Rapid Response?

The long-running Rapid Response system is being replaced by Worldview Snapshots, a lightweight imagery client optimized for use in low-bandwidth situations and when only a image "snapshot" is needed. See the poster next to this one (IN43D-0934) for details!

New Features for 2018

Comparison mode: compare two imagery products from the same day, compare the same products "before" and "after", or compare whatever combination you like.

Above: using a vertical slider bar to compare the view of a wildfire between "true color" visible imagery (left half of app) vs "false color" infrared imagery (right half of app)

Updated natural events: natural events which last several days (e.g., hurricanes, drifting icebergs) now show "tracks" which illustrate their paths; events occurring near the poles are now displayable in a polar stereographic map projection.
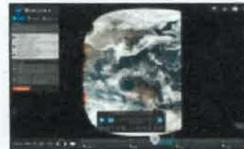

Track illustrates path taken by Hurricane Florence from 2018 Aug 31 – Sept 17

Icebergs shown in the Antarctic polar stereographic map projection

Upcoming Features for 2019

Geostationary imagery support: ability to view, animate, and download geostationary imagery from Geostationary Operational Environmental Satellite (GOES) - 16

Enhanced capabilities for vector products: ability to query vector data and dynamically style it. Image at right demonstrates fire points colored by their confidence values.

OGC Web Map Service (WMS) support: better ability to use GIBS' time-varying layers in GIS clients such as ArcMap and QGIS.

New NRT Products in 2018

New NRT products:

- Lightning Imaging Sensor (LIS) / International Space Station (ISS)
  - Flash Count
  - Flash Radiance
- Ozone Mapping Profiler Suite (OMPS) / Suomi National Polar orbiting Partnership (Suomi NPP)
  - Aerosol Index
  - Aerosol Index (PyroCumuloNimbus)
  - Ozone
  - Sulfur Dioxide (Lower Troposphere)
  - Sulfur Dioxide (Middle Troposphere)
  - Sulfur Dioxide (Upper Troposphere and Stratosphere)
  - Sulfur Dioxide (Planetary Boundary Layer)

NRT product version upgrades:

- Microwave Limb Sounder (MLS) v4
- Global Precipitation Measurement (GPM) v5
- Integrated Multi-satellitE Retrievals for GPM (IMERG) v5
- Ozone Monitoring Instrument (OMI) Sulphur Dioxide v3

Sample NRT Usage in 2018