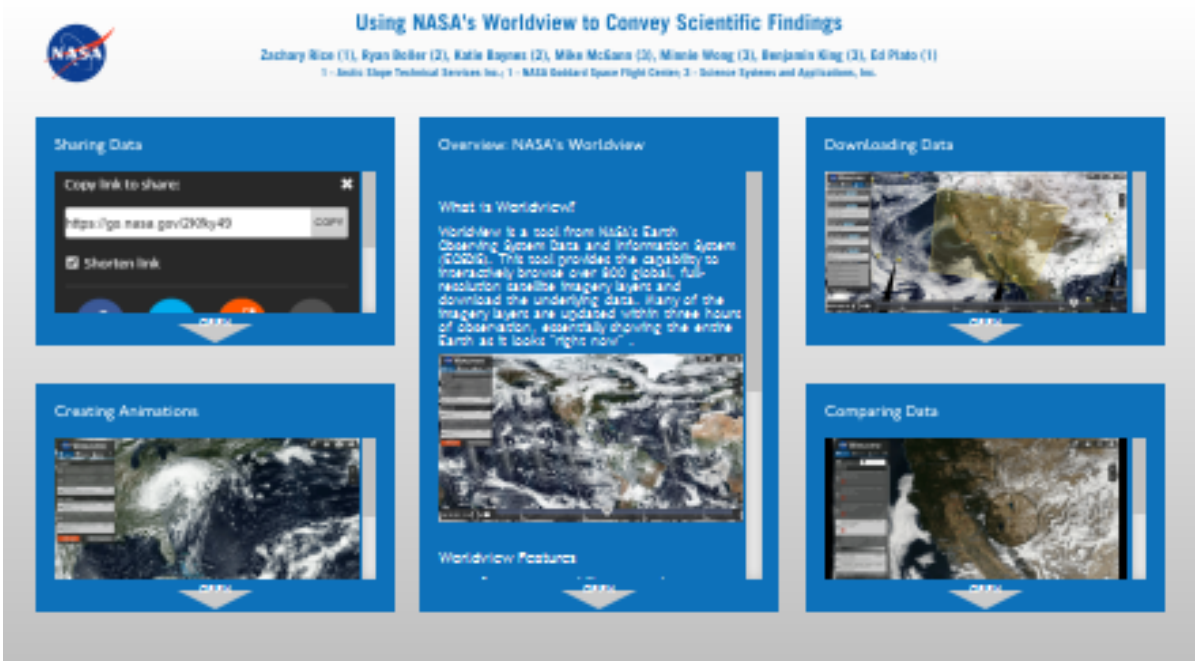
Using NASA's Worldview to Convey Scientific Findings



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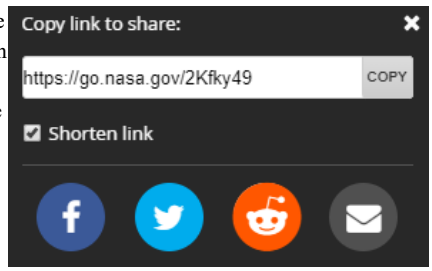
PRESENTED AT:

SHARING DATA

The share tool within the Worldview application gives users the ability to easily share satellite imagery. A user who wants to convey data from these satellite visulations can recreate the extent of the data in Worldview. Then, the data can be shared to others easily via a link, email or popular social media platforms. This tool provides a simple method for conveying visually compelling data across a wide array of platforms that can easily be reshared. Shared links will always return to the same state of the application.



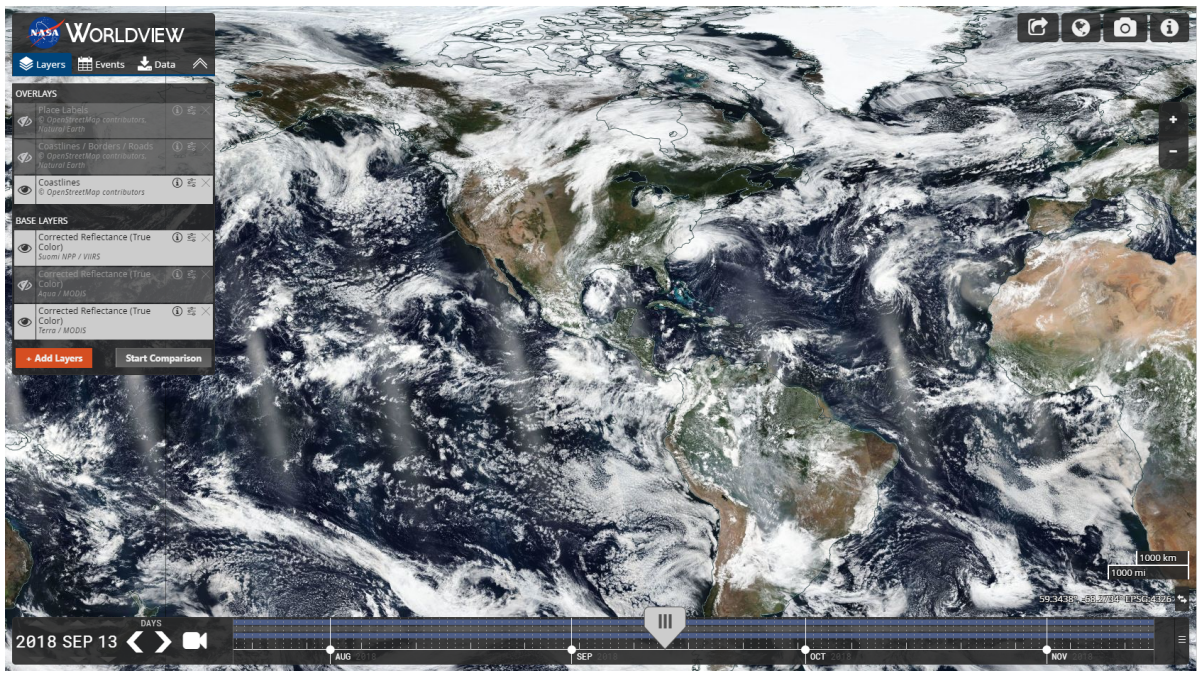
CREATING ANIMATIONS

Shown is an example of using the animation tool & GIF export tool. In the example, the tool is being used to convey the path of Hurricane Florence as it strengthed in the Atlantic and bombarded the east coast from the period of September 9, 2018 to September 17, 2018. In the example, an animation of 2.5 frames per seconds (on a scale of 1 to 10) is chosen and a resolution of 5km is set.

OVERVIEW: NASA'S WORLDVIEW

What is Worldview?

Worldview is a tool from NASA's Earth Observing System Data and Information System (EOSDIS). This tool provides the capability to interactively browse over 800 global, full-resolution satellite imagery layers and download the underlying data. Many of the imagery layers are updated within three hours of observation, essentially showing the entire Earth as it looks "right now"[1].



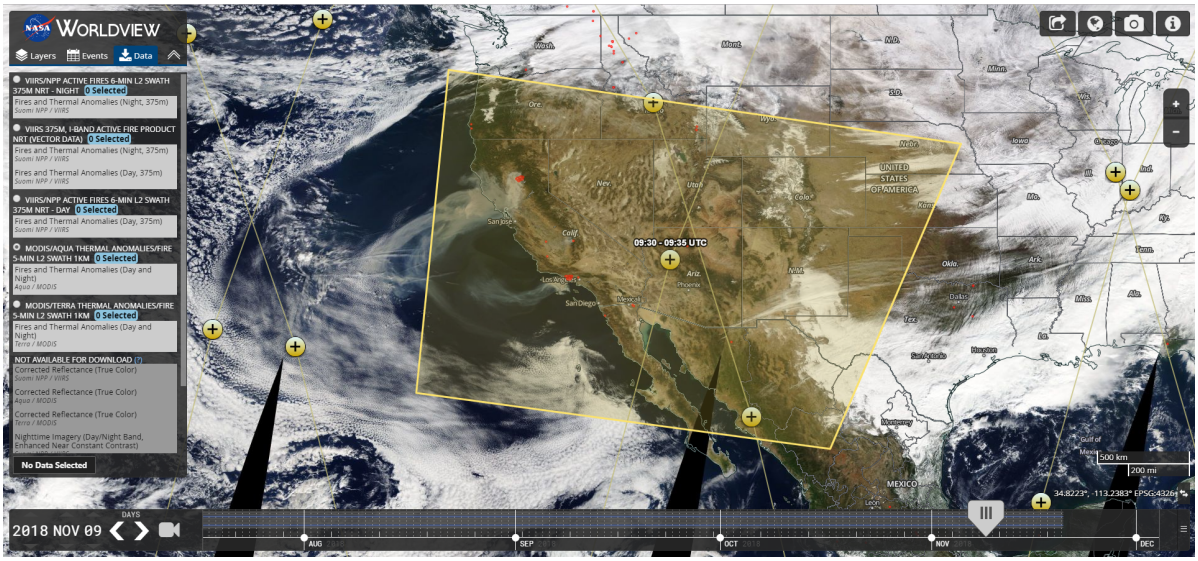
Worldview Features

- Open-source; ability to stand-up your own version of Worldview
- Over 800 layers built-in to explore & share
- Comparison tool with 3 modes of comparison
- Image snapshot, animation & animated GIF creation tools
- Ability to easily share the state of the app

Who is Using Worldview?

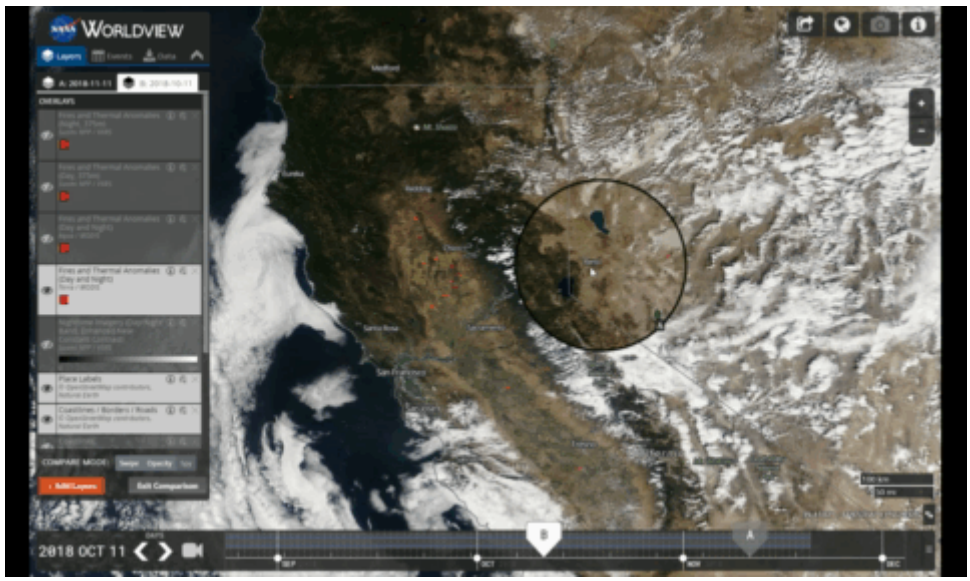
- Univeristy of Wisconsin Space Science and Engineering Center (http://mayon.ssec.wisc.edu/site-example-map/web/)
- National Center for Atmospheric Research (NCAR) - Atmospheric Chemistry Observations & Modeling Laboratory
- Soil Moisture Active Passive (SMAP) mission - Calibration and Validation team
- The Council for Scientific and Industrial Research (CSIR) (http://dashboard.afis.co.za/nasa_world_view) lead by the Meraka Institute and supported by partners such as the South African National Space Agency (SANSA), University of Maryland and University of Wisconsin Madison
- Extreme Weather Expertises, France

DOWNLOADING DATA



Shown above is an example of using the data download tool to download the raw "MODIS/AQUA Thermal Anomalies/Fire 5-min L2 Swath 1km" data. There are multiple sources and formats for each data set which the user can choose from to download the data. This tool is aimed at scientists or academia users whom need data directly from the source to convey their scientific findings.

COMPARING DATA



Shown above is an example of the comparison tool; a feature which can compare two separate groups of layers and separate dates. The example above showcases all three comparison modes; spy mode, opacity mode, and swipe mode. In this example, the region of California where the recent Camp Fires have occured is being observed. Both "A" and "B" states have fire layers enabled. State "A" is showing the region as seen on November 11, 2018; State "B" is showing the region as it was seen on October 11, 2018.

ABSTRACT

NASA Worldview is an interactive interface for browsing full-resolution, global satellite imagery. The application can show single or multiple layers of satellite imagery with over 700 layers available. Each layer has options such as opacity and color palettes which can be adjusted to differentiate layers or underlying data values. The timeline feature allows end-users to study historical events: changes over time can be visualized using the animation tool and exported to animated GIFs. Users can even compare two separate days using the A|B comparison feature. Every time the state of the application changes, it is saved in the URL making it easy to share findings with others.

The application is accessible online for anyone to use at any time and the source code is available on GitHub.com. The Worldview source code was designed to be customizable allowing end users to turn on/off features and brand the application for their specific use case. Worldview has code contributors and end-users from all over the world who use the official tool and create personal instances to test and convey their own data.

From a team of scientists studying weather over the Philippines, to a group in France studying high environmental risks, Worldview's features and portability allows end-users all over the World to gain valuable earth science insights in a multitude of ways. This presentation will emphasis how end-users are using Worldview to convey their findings.

REFERENCES

(1)NASA Earthdata (Oct 18, 2018). *Worldview.* Retrieved from https://earthdata.nasa.gov/worldview (https://earthdata.nasa.gov/worldview)