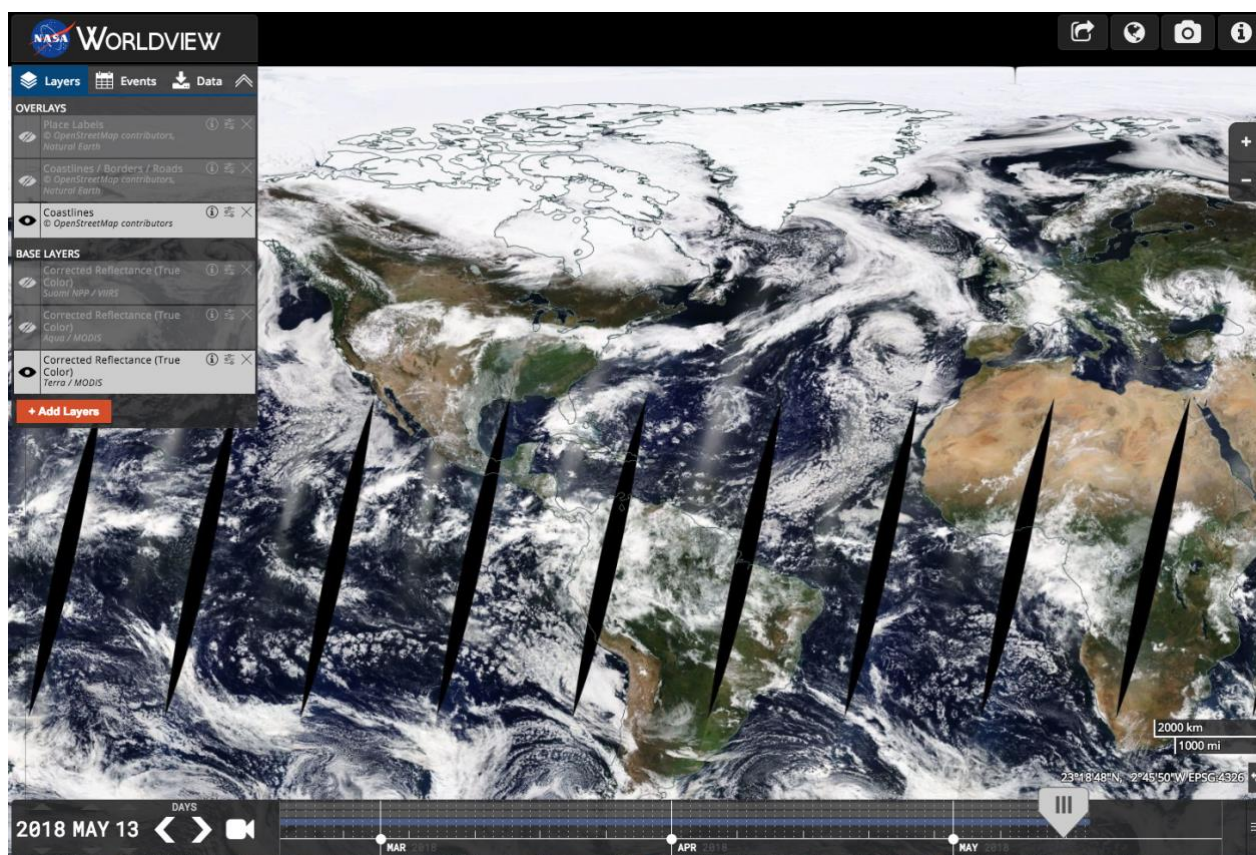


Visualize and download NASA SMAP Data with NASA Worldview

In this step-by-step tutorial, we will demonstrate how to interactively browse, visualize, and download NASA Soil Moisture Active Passive, or SMAP data using the NASA Worldview application. NASA Worldview search provides an interactive map-based search environment where you can browse global satellite imagery, save and share what you find, and download the underlying data. This tutorial also uses soil moisture data and visible satellite imagery to visualize the effects of Hurricane Harvey in 2017.

Step 1: Go to the NASA Worldview website

<https://worldview.earthdata.nasa.gov>



Step 2- Understanding the four main sections of the home page

Far left – data layer window (Section 1)

- Search for data by keyword, data set, or science discipline
- Add data and turn on/off base layers and overlays
- Adjust symbology of overlays and base layers, including opacity and color scheme
- Access more information about the data and links to raw data
- View natural events and related satellite imagery
- Download data

Bottom panel – timescale and animation access (Section 2)

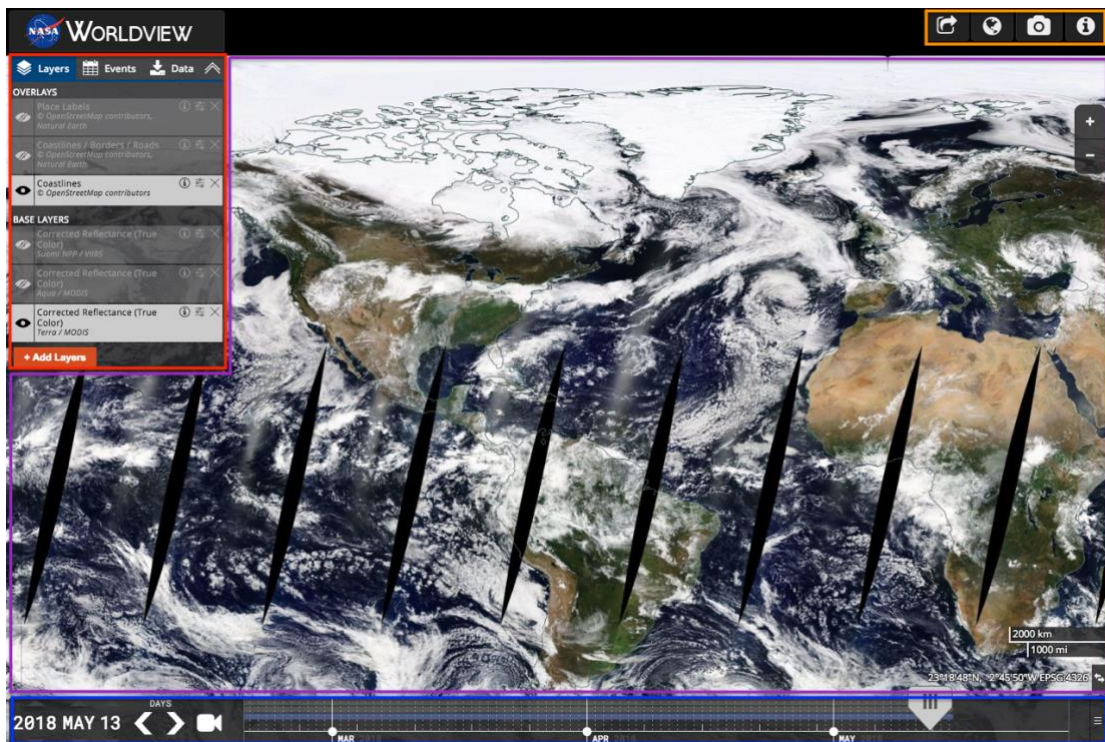
- Adjust dates and view temporal coverage of data
- Create an animation of specific data and specific temporal coverage

Main panel – global map display (Section 3)

- Use your cursor to pan across the map
- Zoom in and out using the plus (+) and minus (-) buttons on the far right

Top panel – save and share map results (Section 4)

- Share your map (URL link, Facebook, Twitter, Reddit, or email)
- Choose your map projection, including North Polar Stereo View, South Polar Stereo View and Geographic
- Take a snapshot of your map



Step 3: Add SMAP data to the data layers

- Click on 'Add Layers' box
- Click on the 'Science Disciplines' tab
- Under the 'Hazards and Disasters' tab, choose 'Vegetation'
- Expand the 'Soil Moisture' section and choose the 'SMAP/Model Value-Added' option
- Check the 'Surface Soil Moisture 9 km (L4, 12z Instantaneous)' box

Tip: There are multiple ways to find soil moisture. For example, soil moisture is also located under the 'Science Discipline' tab then 'Terrestrial Hydrosphere,' among other locations. You can also simply search for "soil moisture" in the main search bar.

Soil Moisture

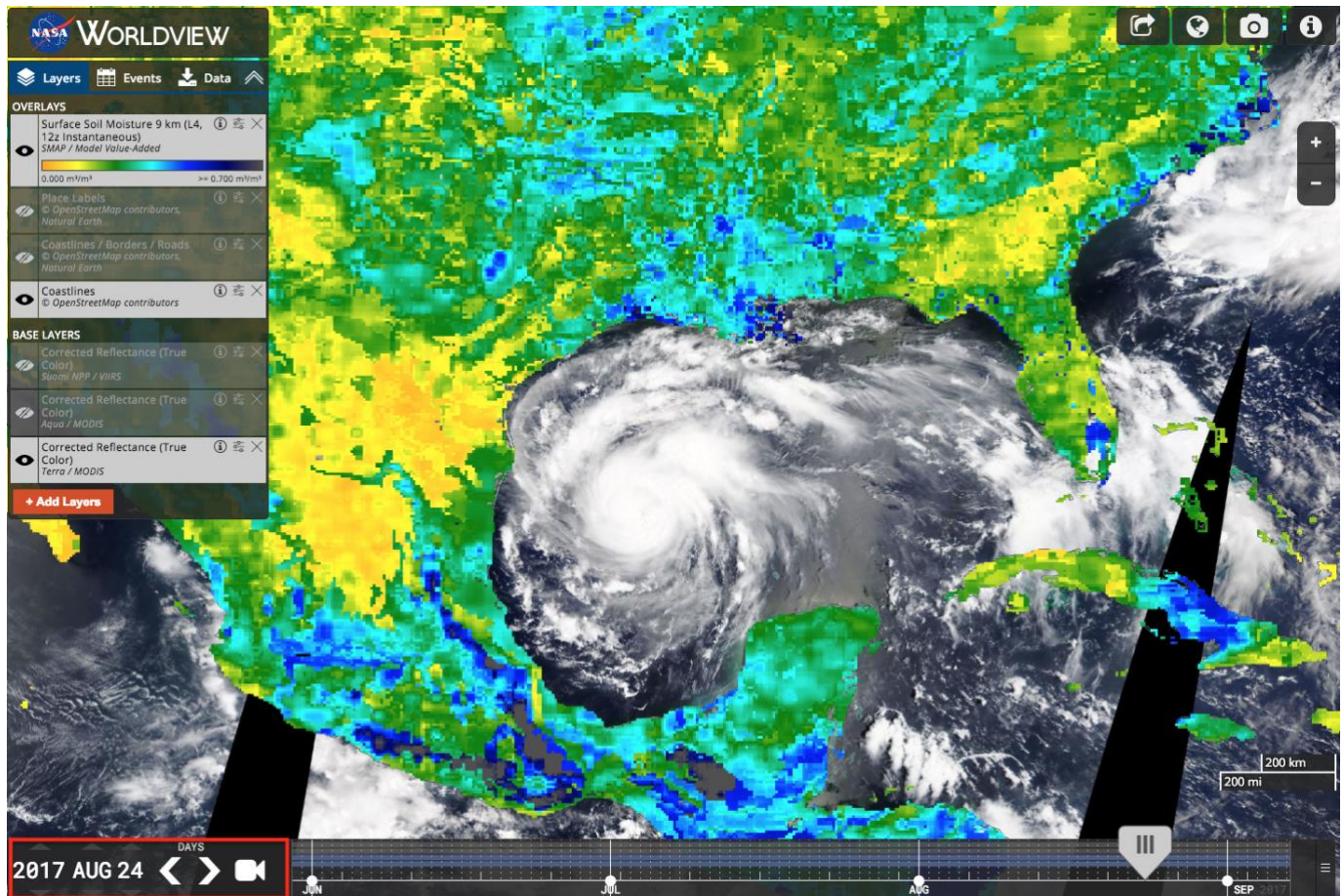
GCOM-W1/AMSR2, SMAP/Radar, SMAP/Radiometer, SMAP/Model Value-Added, SMAP/Radiometer and Sentinel-1/Radar, SAC-D/Aquarius, GLDAS, NLDAS

SMAP / Sentinel-1	<input type="checkbox"/>	Root Zone Soil Moisture 9 km (L4, 12z Instantaneous)
SMAP / Radar	<input type="checkbox"/>	Root Zone Soil Moisture Uncertainty 9 km (L4, 12z Instantaneous)
SMAP / Radiometer	<input type="checkbox"/>	Surface Soil Moisture 9 km (L4, 12z Instantaneous)
GCOM-W1 / AMSR2	<input checked="" type="checkbox"/>	Surface Soil Moisture 9 km (L4, 12z Instantaneous)
SMAP / Model Value-Ad	<input type="checkbox"/>	Surface Soil Moisture Uncertainty 9 km (L4, 12z Instantaneous)
SMAP / Radar/Radiomet		
GLDAS		Root Zone Soil Moisture 9 km (L4, 12z Instantaneous, Model Value-Added)
SAC-D/Aquarius		Temporal coverage: 31 March 2015 - present
NLDAS		The Soil Moisture Active Passive (SMAP) "Root Zone Soil Moisture 9 km (L4, 12z Instantaneous, Model Value-Added)" layer displays model-derived global estimates of root zone soil moisture of the top 100 cm of the soil column in m^3/m^3 posted on a 9 km SASE Grid 2.0. Root zone soil moisture estimates are obtained by merging

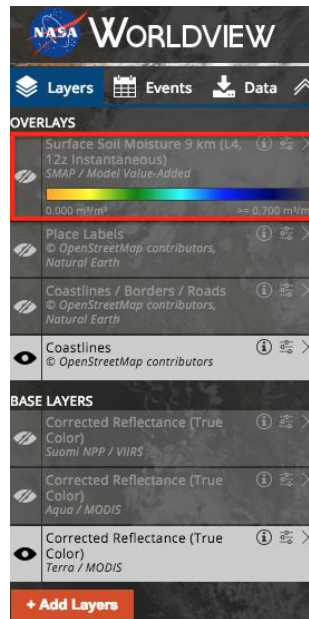
Step 4: Find data of interest (Hurricane Harvey)

- Using your mouse and/or the zoom controls, zoom to the Gulf of Mexico region
- Adjust the date to August 24, 2017

Tip: The temporal coverages of available data are shown in blue on the time scale, in stacked order, as displayed in the data layer box.



- c. In the 'Overlays' section, turn off the SMAP data



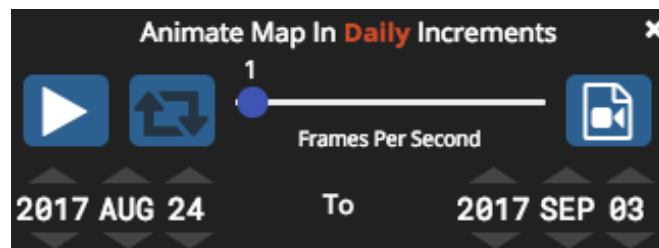
- d. Scroll the dates forward and determine the duration of the hurricane and thus what SMAP data you need (August 24, 2017 to September 3, 2017 should cover the storm)
- e. Turn the SMAP data back on

Step 5: Create an animation and a GIF with the SMAP data

- a. Click the camera icon in the bottom panel



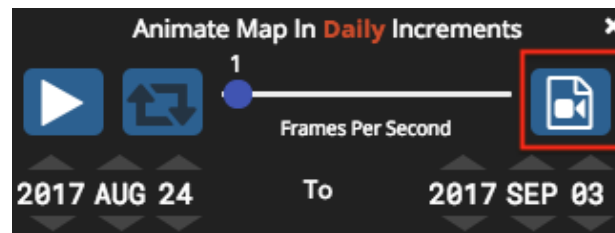
- b. Adjust the date range to 2017 AUG 24 To 2017 SEP 03 and change the 'Frames Per Second' to 1



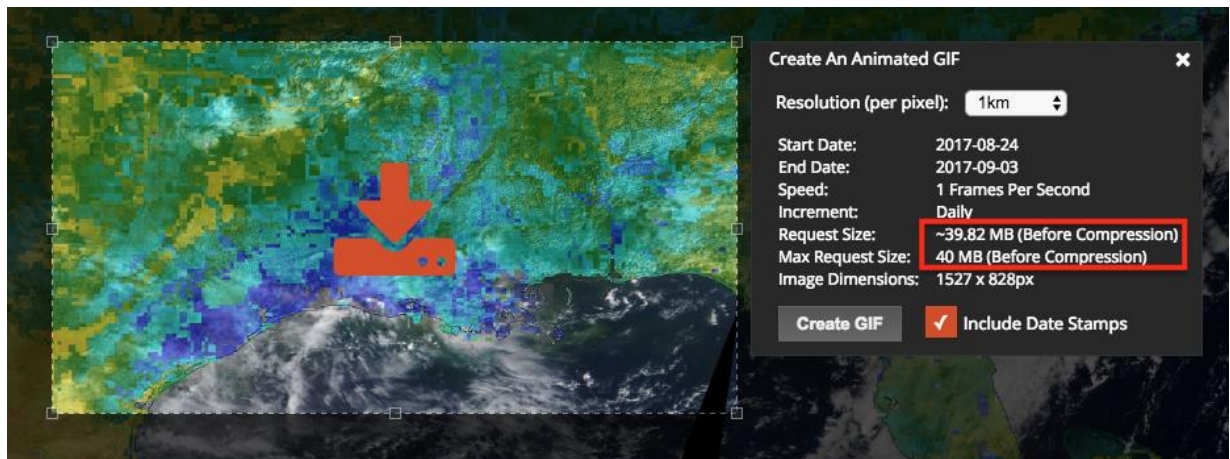
- c. Push 'Play' to watch the animation

Tip: By adjusting the opacity of the SMAP data, you can see the actual hurricane advance inland and the resulting soil moisture.

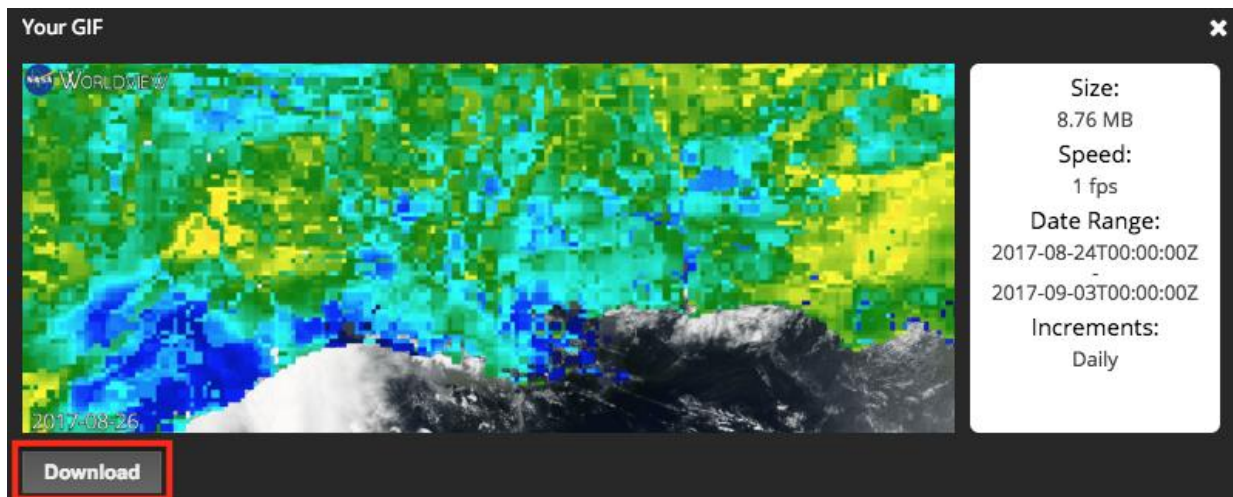
- d. Click on 'Create Animated GIF'



- e. Adjust the image dimensions, not to exceed 40 MB

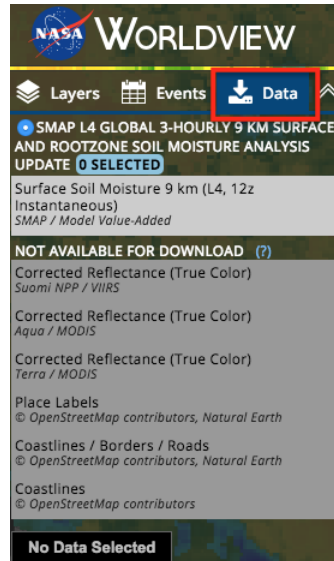


- f. Click 'Create GIF' to watch the animation
g. Click 'Download' to download the GIF



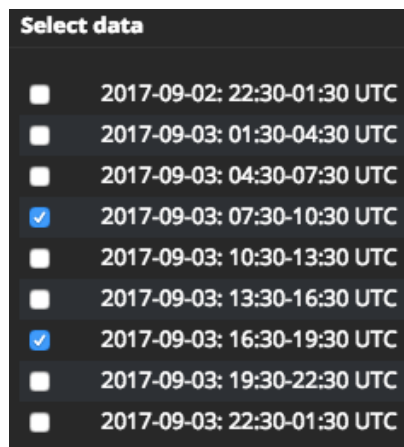
Step 6: Download NASA SMAP data

- a. Click on the 'Data' tab in the Data Layers window



- b. Select the SMAP granules you want to download.

Tip: The granules displayed in the 'Select data' box are only for the date shown on the time scale. To select different dates, choose the preferred date on the time scale. Multiple dates and data sets may be downloaded at once.



- c. Click 'Download Selected Data' when you are ready to download

Need Help or Have Questions?

- If you have any questions about NASA Worldview or any feedback, you can always click on this 'i' button on the top right of the page.
- If you're interested in learning more about NASA Worldview, visit the home page and view the introductory tour.
- Finally, if you have questions about SMAP data, you can email the National Snow and Ice Data Center User Services office at nsidc@nsidc.org.