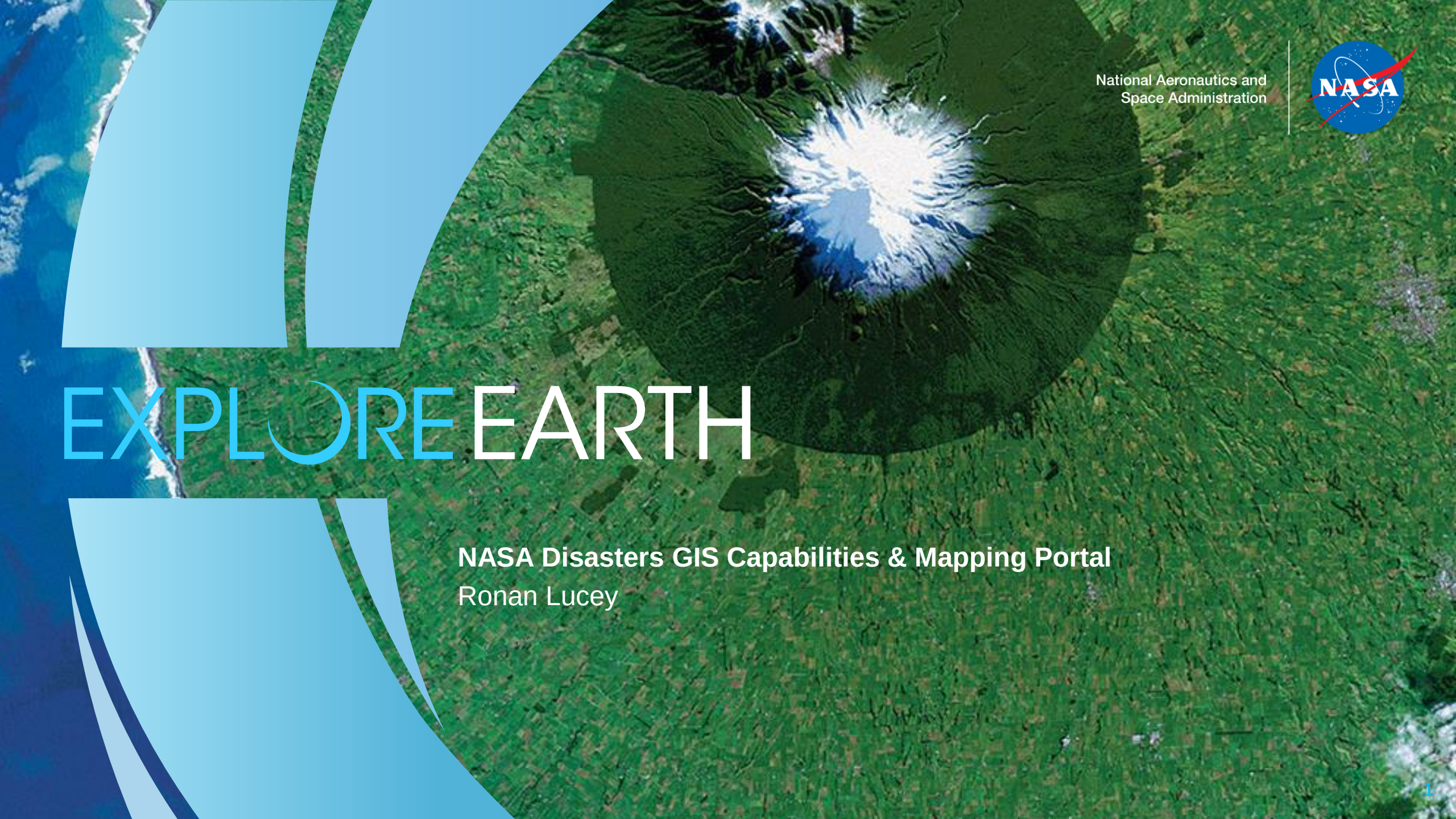
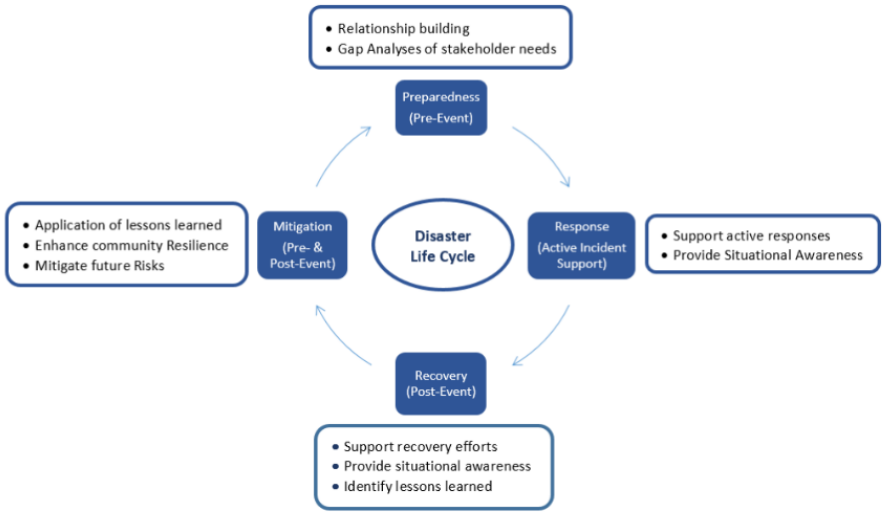


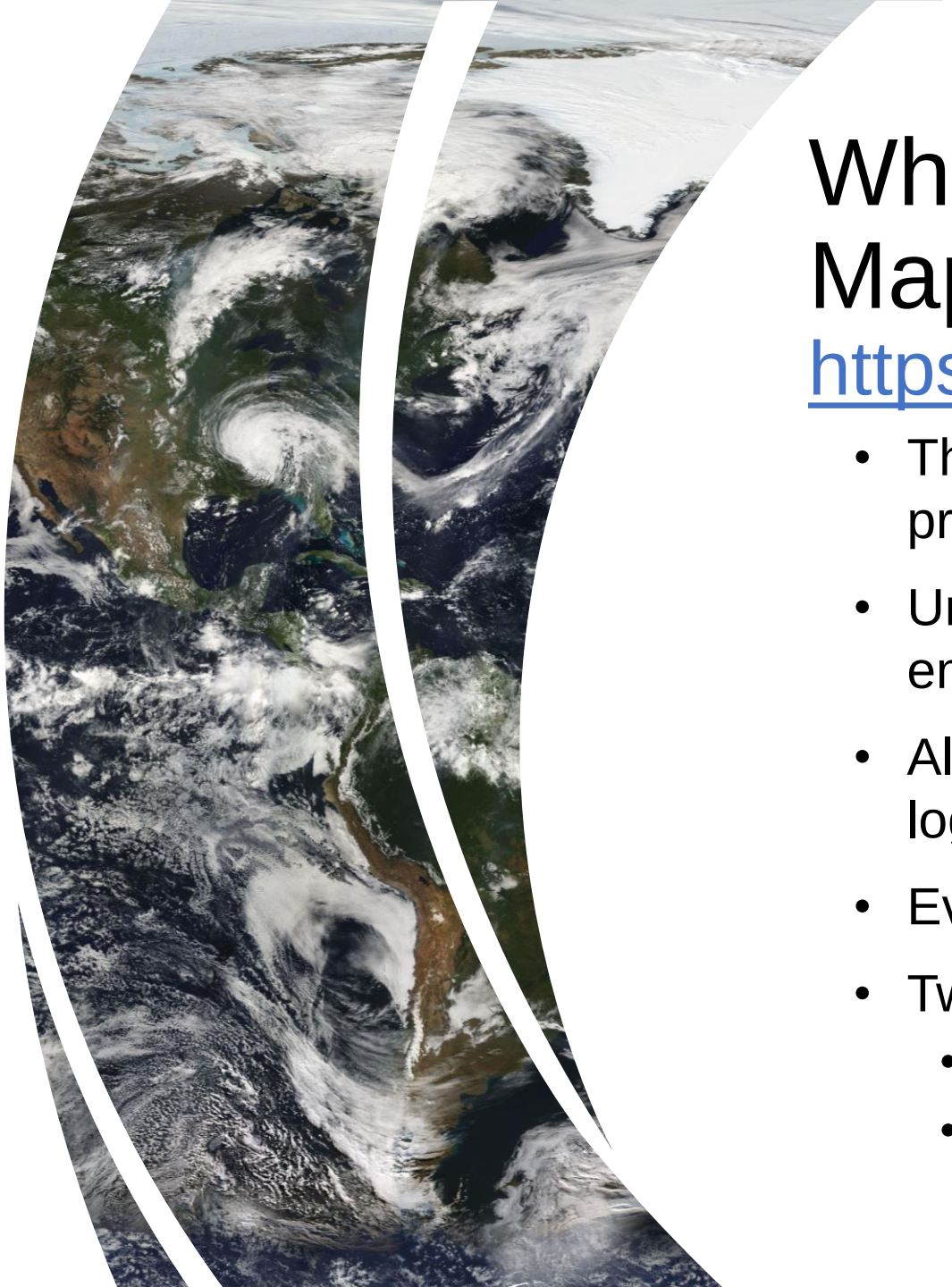
NASA Disasters GIS Capabilities & Mapping Portal

Ronan Lucey

NASA Disasters Program Mission and Goals



- Program Mission: The Disasters Program mission is to use Earth observation to inform disaster risk reduction and resilience across the disaster cycle from local to global scales.
- Program Goals:
  - Harness NASA Capabilities for Disaster Risk Reduction (DRR) and resilience.
  - Engage stakeholders in the use of Earth Observations (EO) throughout the disaster lifecycle.
  - Demonstrate the value and impact of EO to support decision making and actions.
  - Grow as a trusted source for delivering useful results.



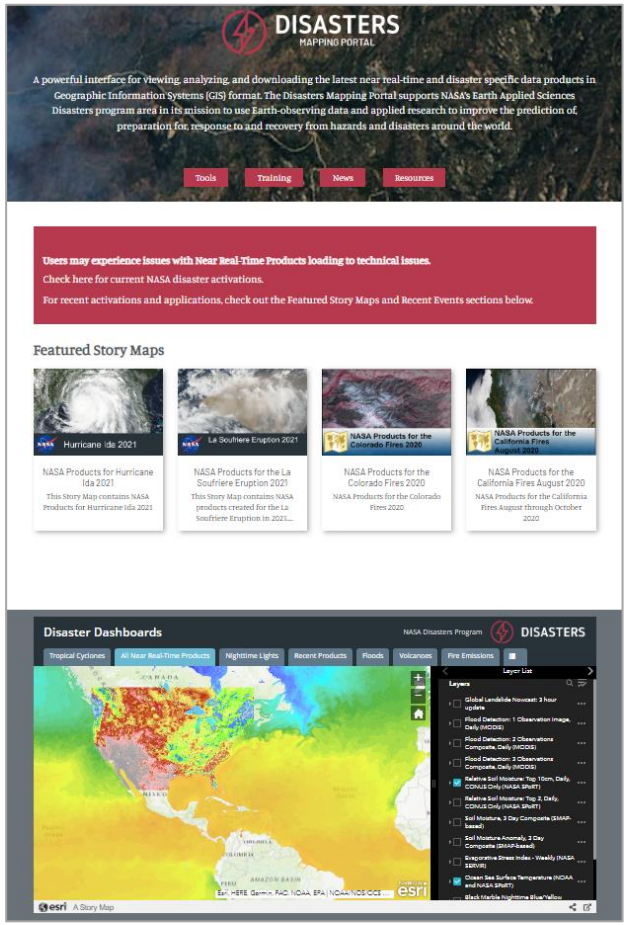
What is the NASA Disasters Mapping Portal?

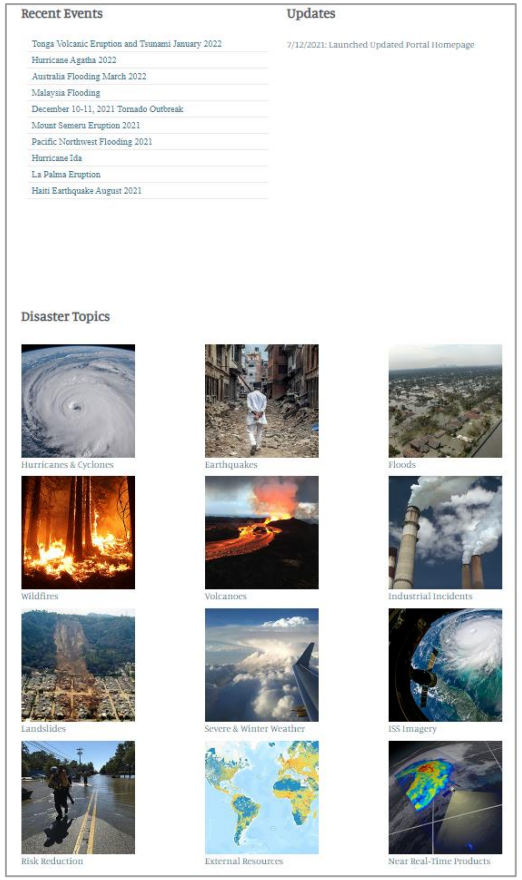
https://disasters-nasa.hub.arcgis.com/

- The hub of geospatially enabled NASA disaster products
- Uniform format allows easy ingestion by emergency managers and the public
- All data is free and openly available without any login requirements
- Every product has REST and WMS endpoints
- Two types of products:
  - Event-based Products
  - Near Real-Time Products

Portal Home

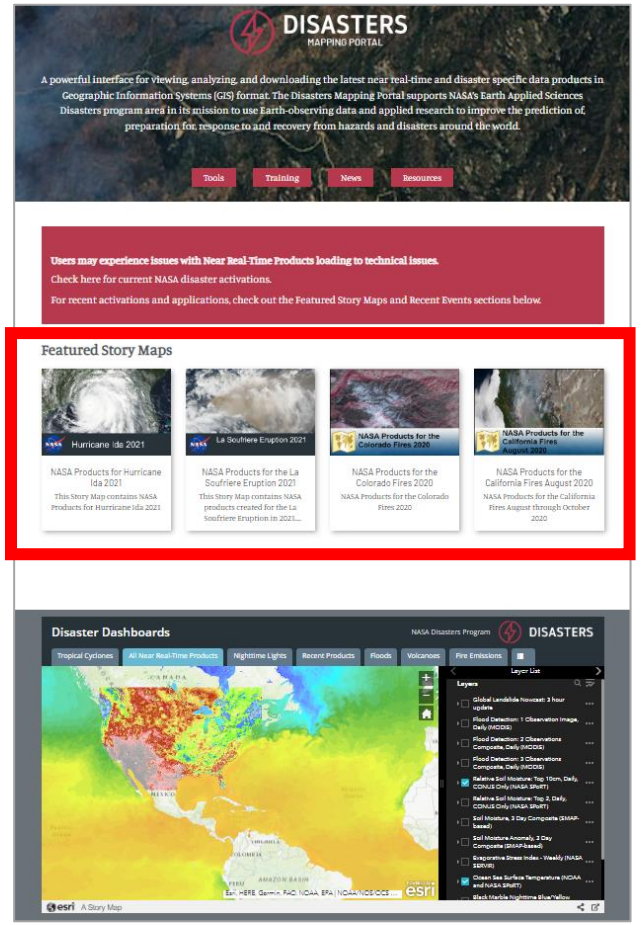
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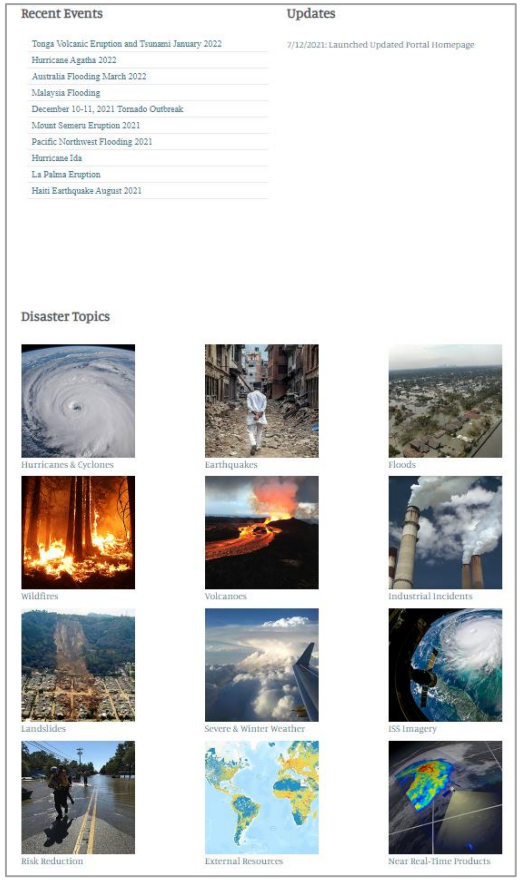




Portal Home

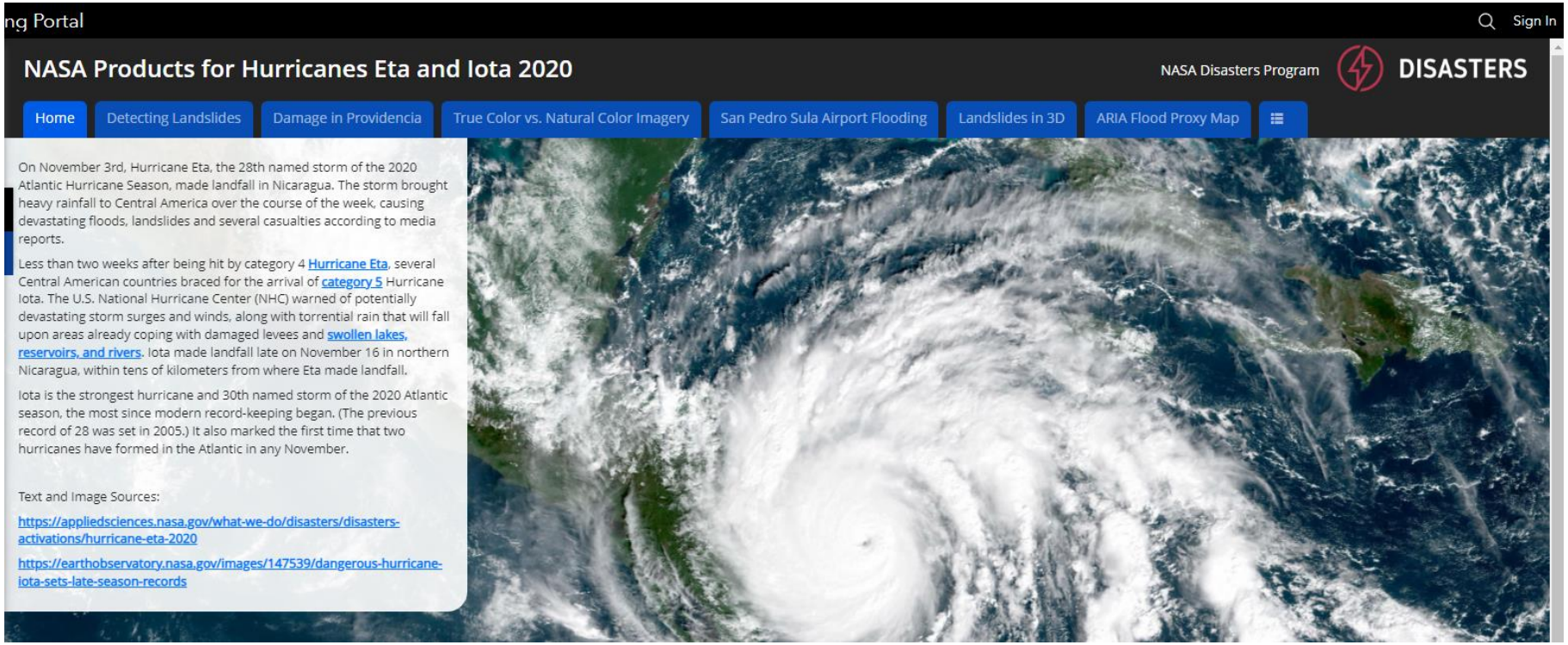
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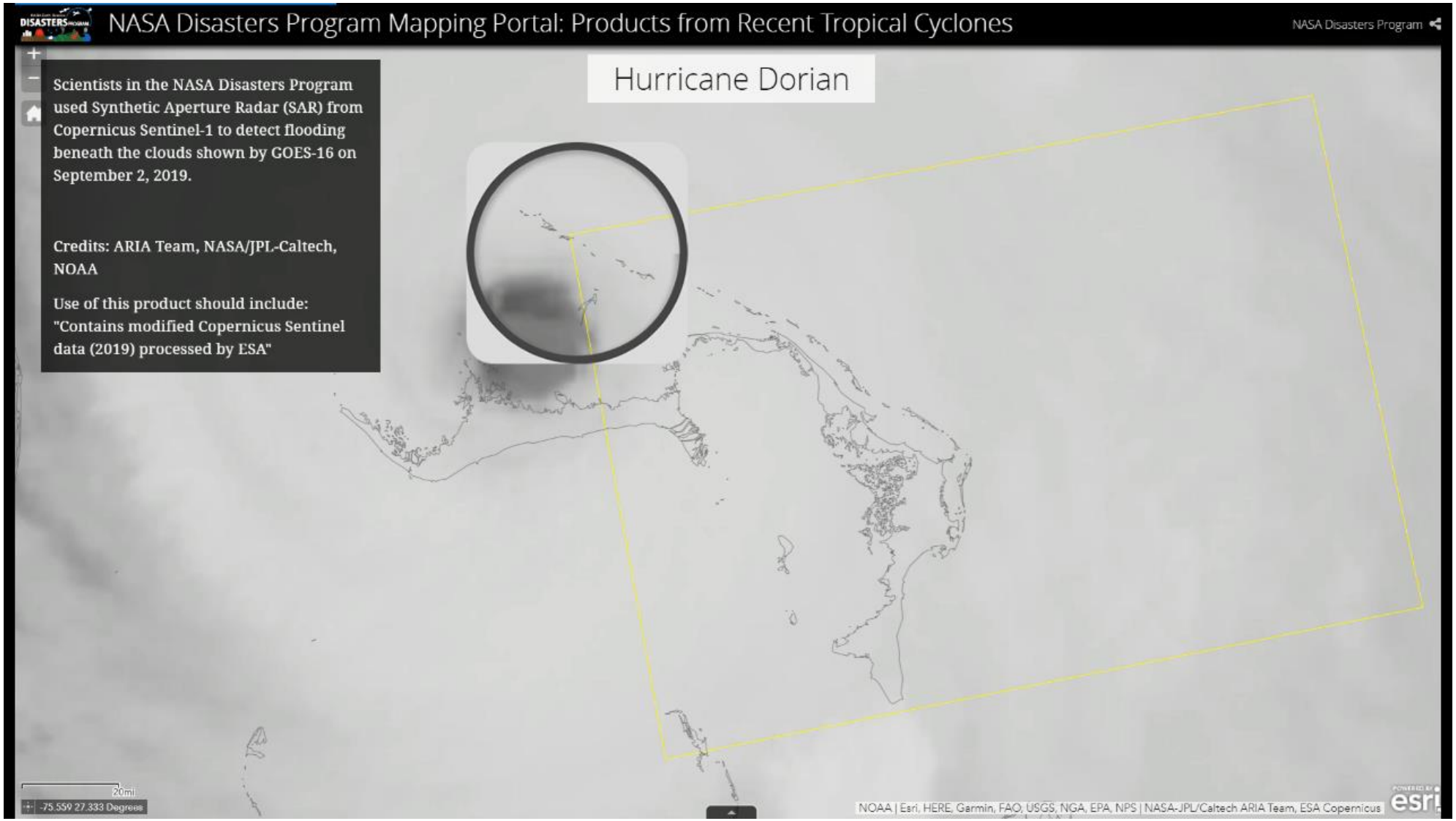
Story Maps

- Tell the disaster's story
- Show what's possible with NASA products
- Highlight notable products and disaster impacts



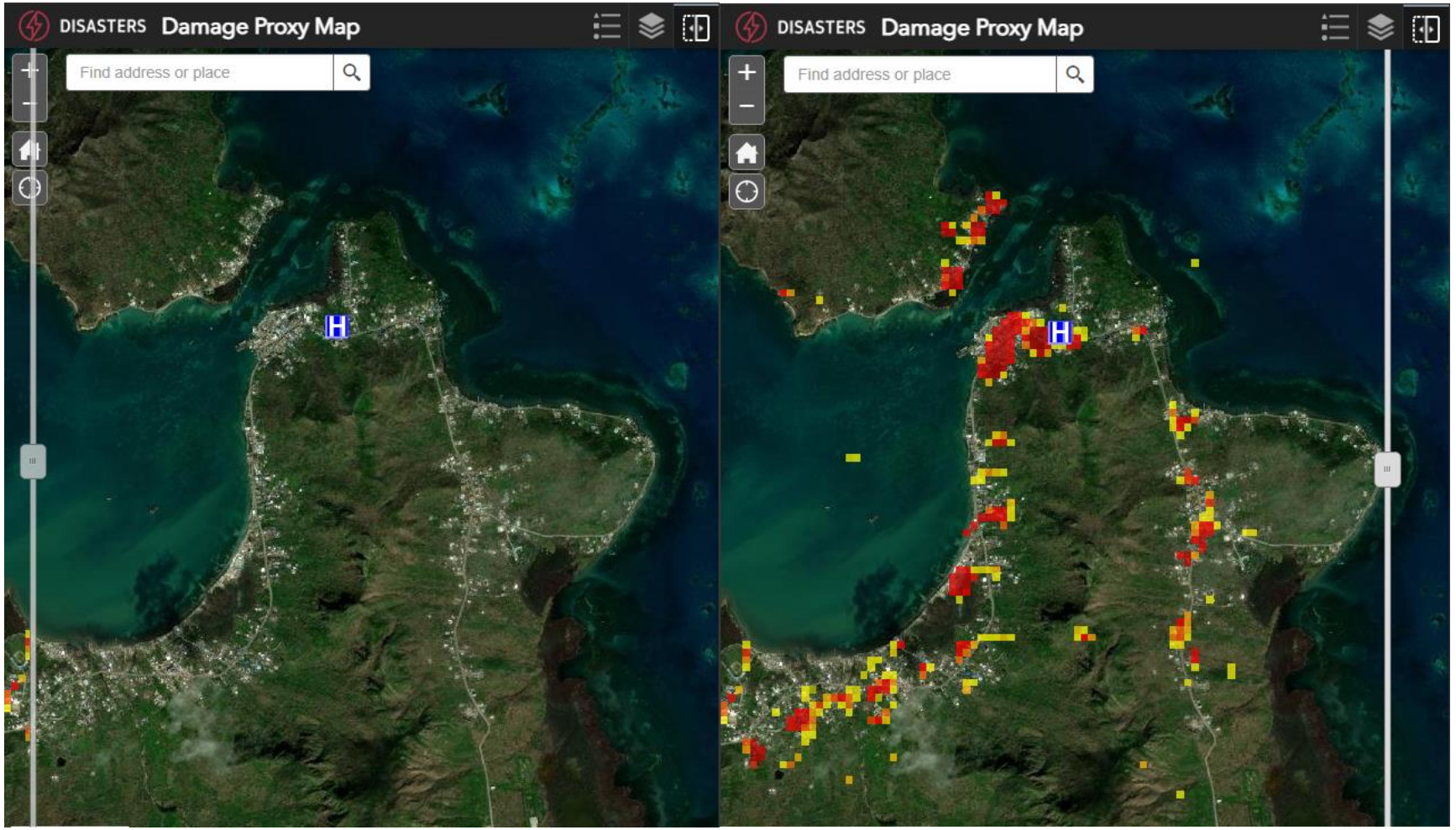
Interactive widgets and web apps

- Help explain products
- Show ways to use data



Show What's Possible

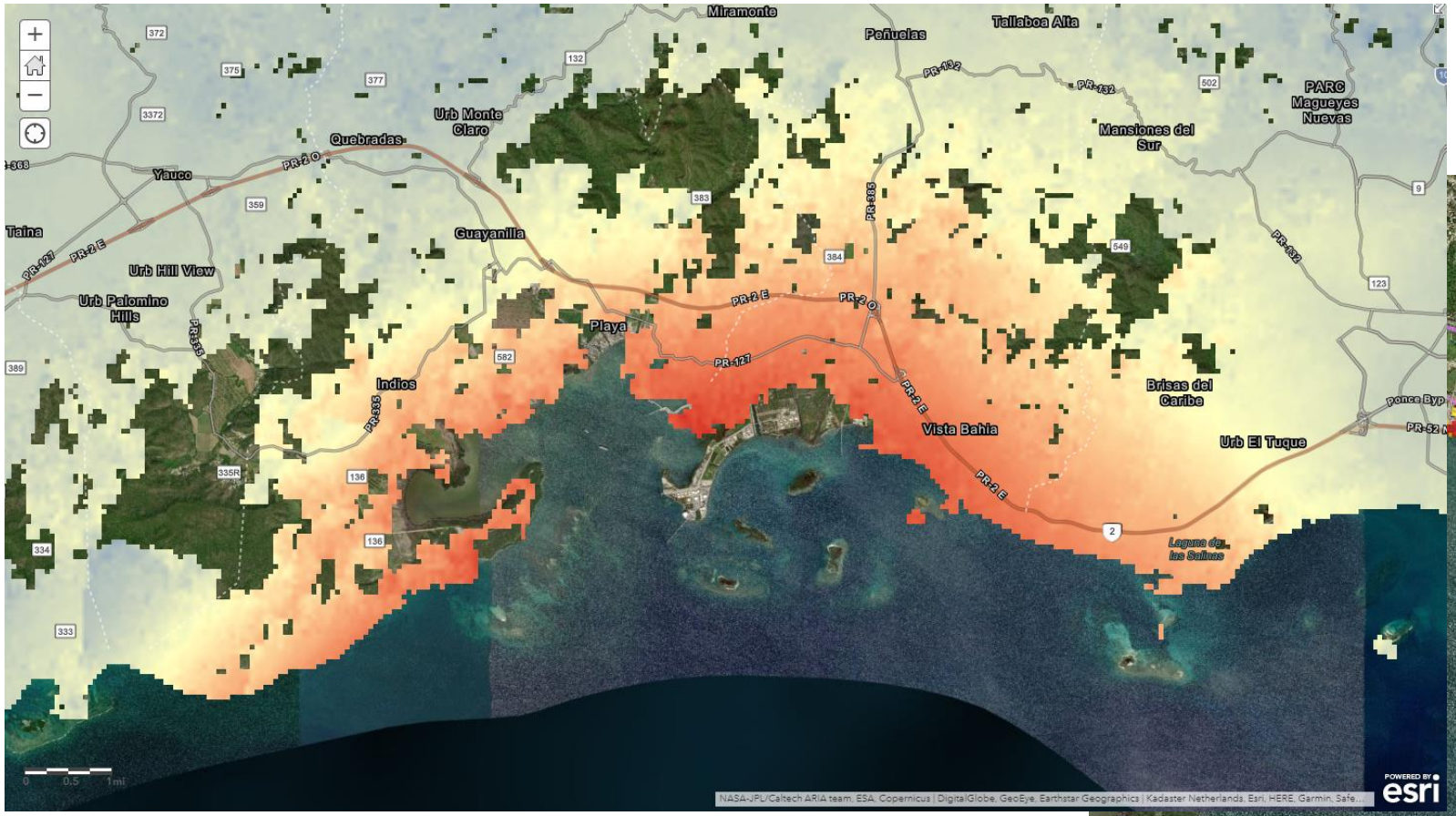
- Damage and Flood Proxy Maps
- Resolution: 30m
- SAR-based change detection
- Combine with infrastructure data to show potentially damaged or flooded assets

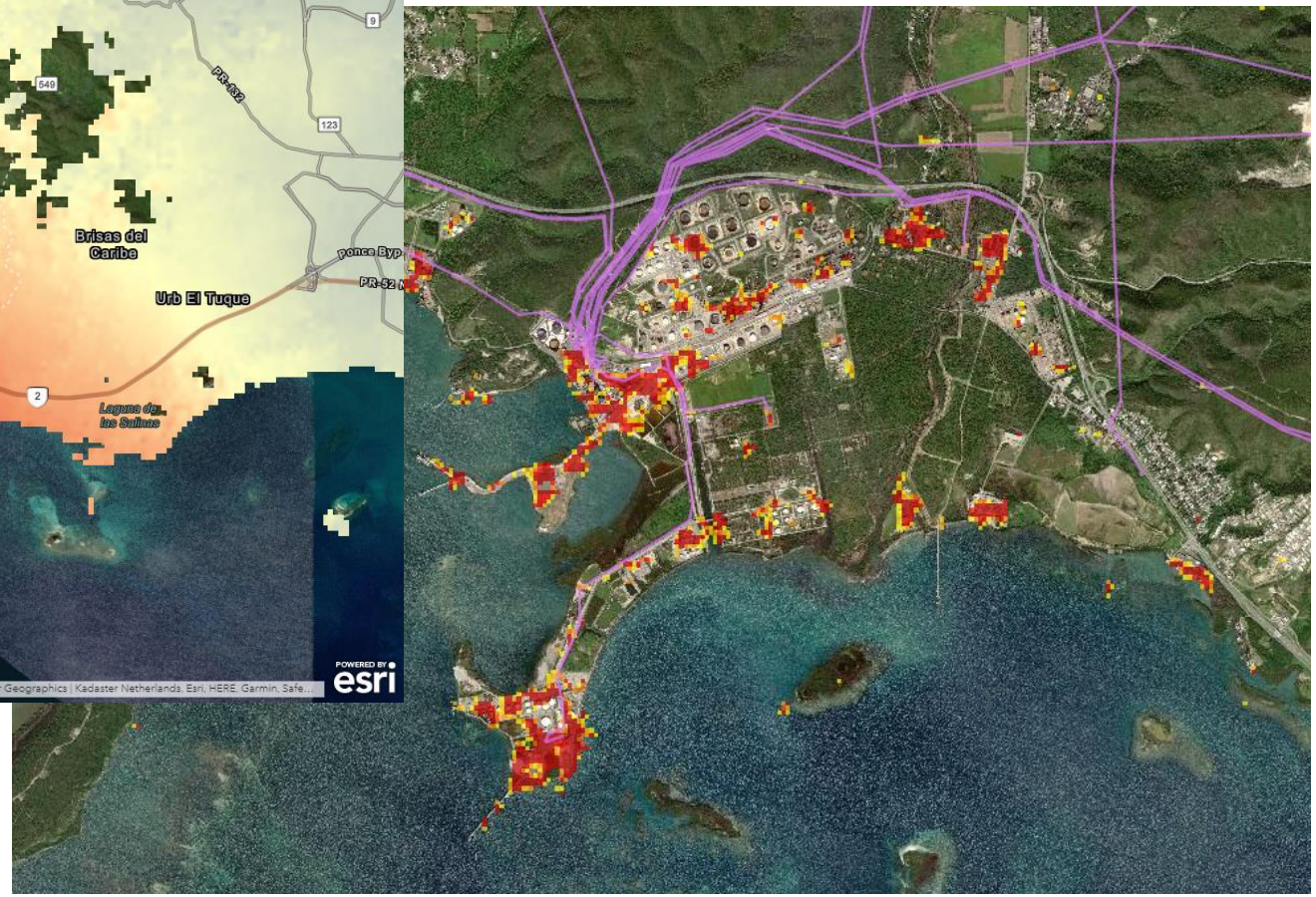


Providencia, Colombia – November 2020

Other Event-Specific Products of Note

Puerto Rico Earthquakes 2020

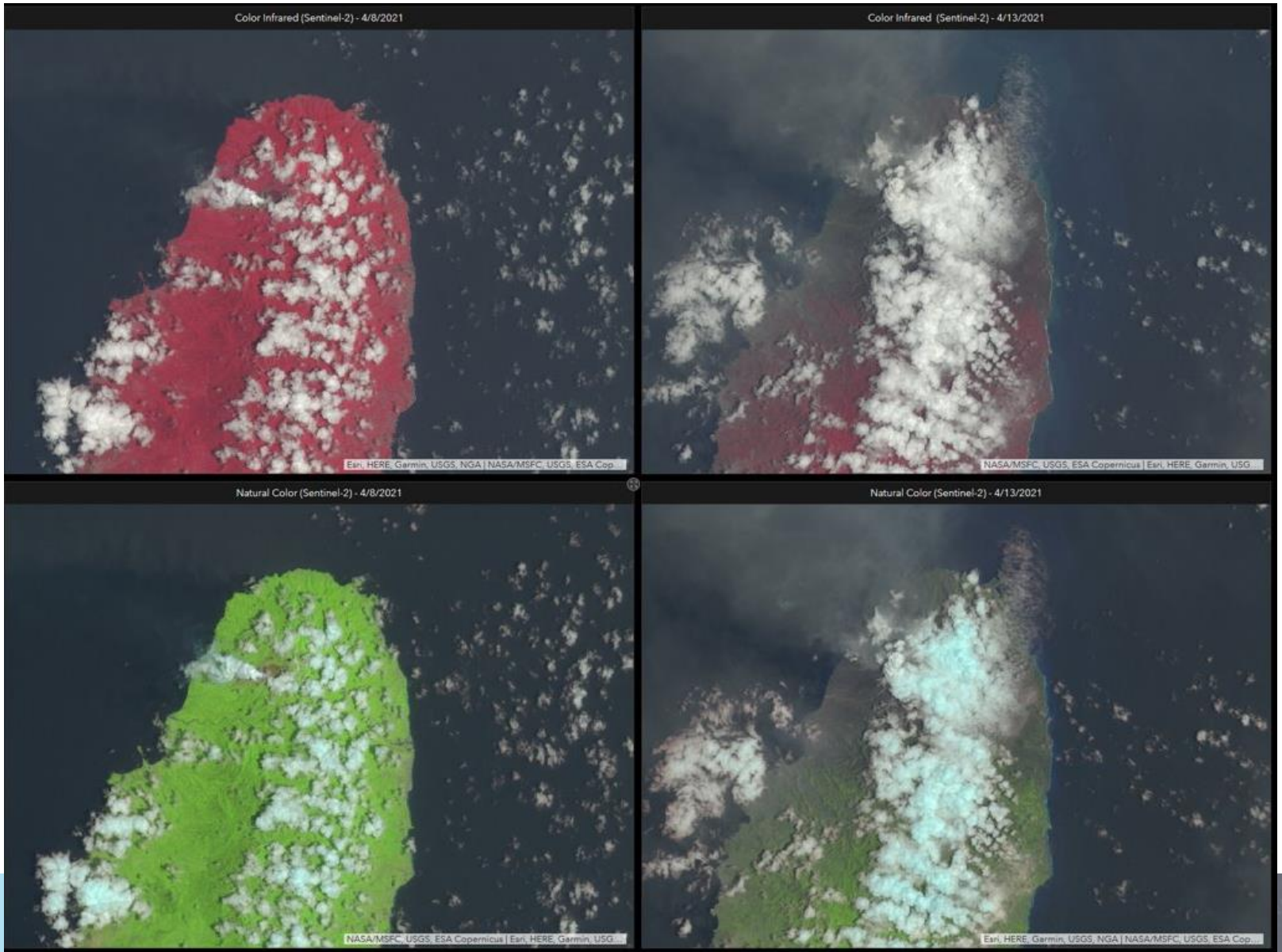




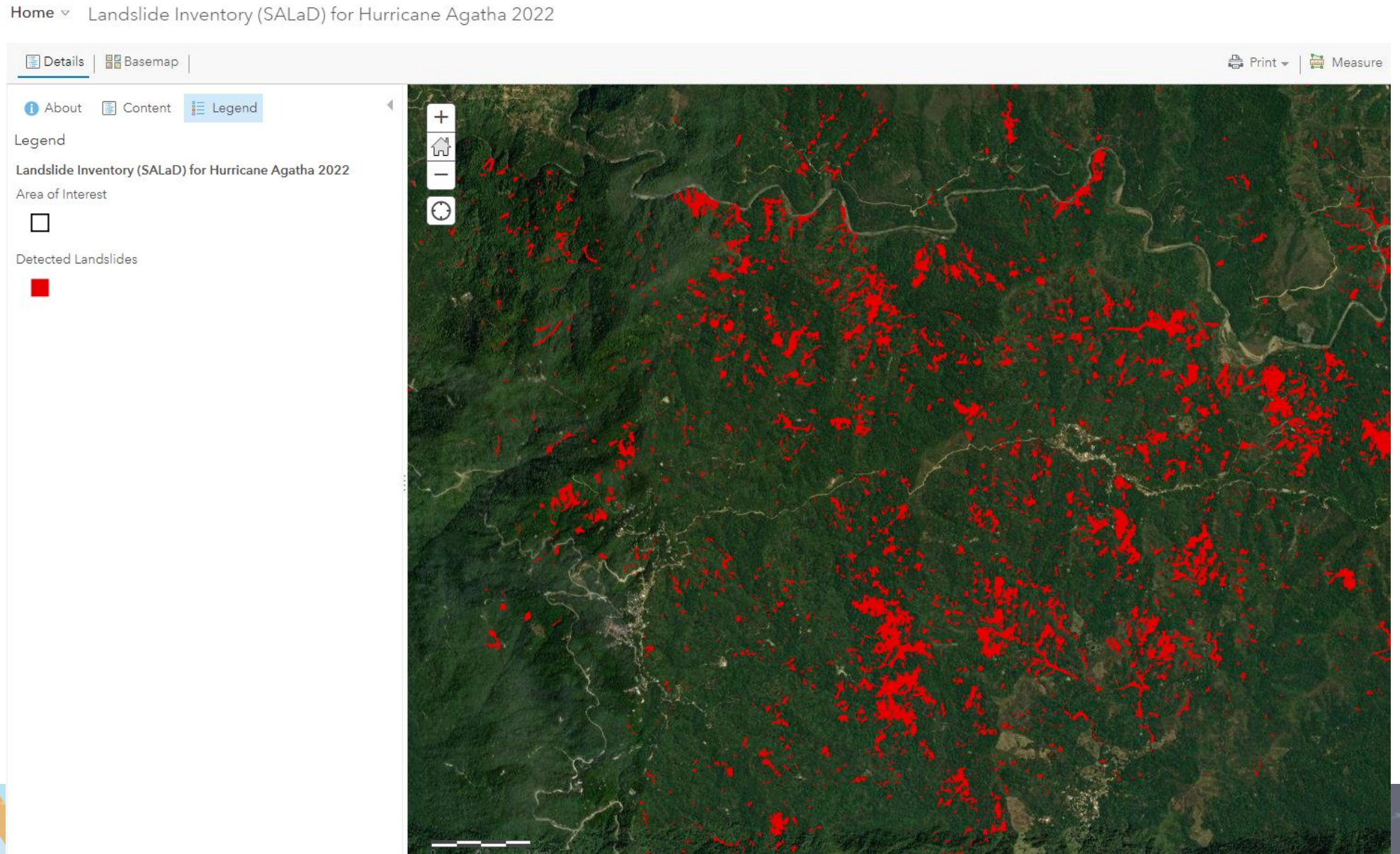
San Pedro Sula Honduras Flooding 2020



La Soufriere Volcanic Eruption St. Vincent 2021

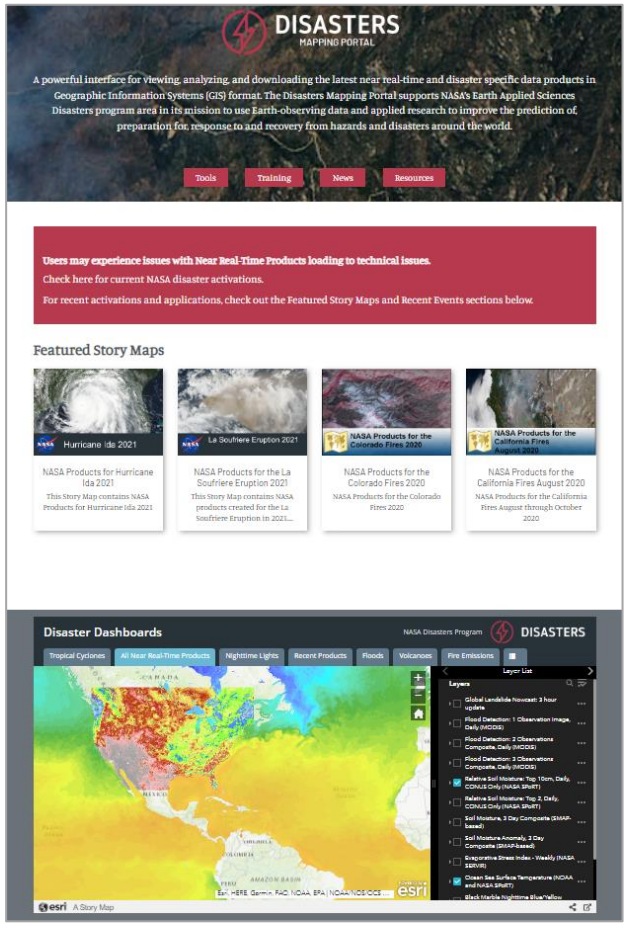


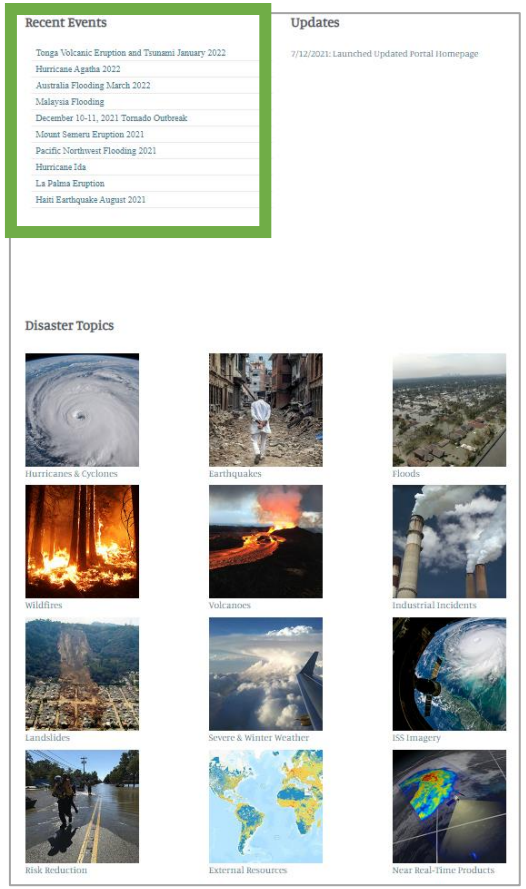
Mexico Landslide Mapping 2022



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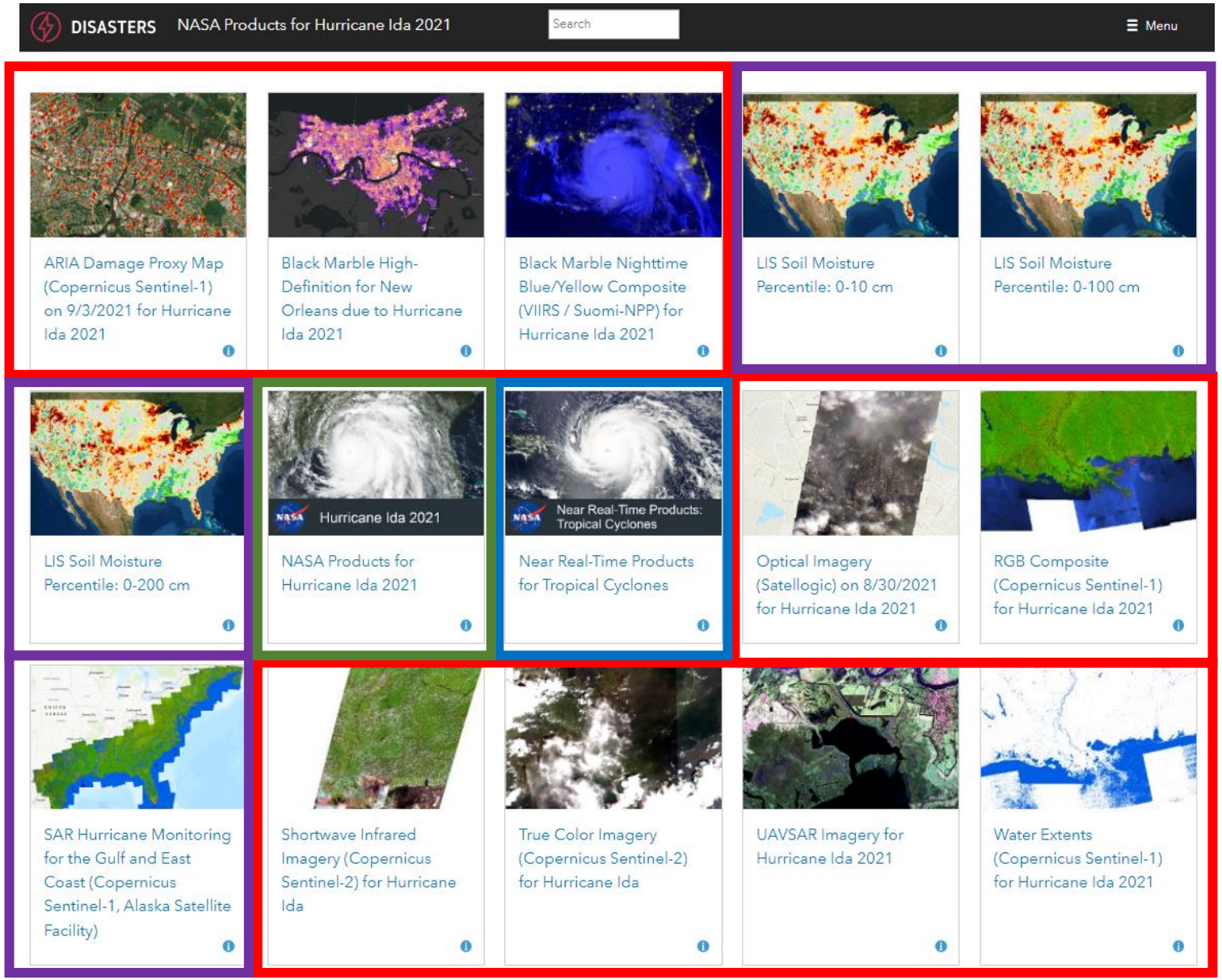




Product Gallery

Hurricane Ida, August 2021

- Event-specific products
- Relevant Near Real-Time Products
- Relevant Dashboards
- Story Map (if created)



Item Details Page

- Date of Image(s)
- Summary
- Suggested Usage
- Satellite/Sensor
- Credits
- Esri REST Endpoint – For all Esri software
- WMS Endpoint – For open source software
- Terms of Use – Open to all users
- Data Download

True Color RGB Imagery Produced Using Copernicus Sentinel-2 for Hurricane Dorian 2019

Overview



True Color RGB Imagery Produced Using Copernicus Sentinel-2 for Hurricane Dorian 2019

Map Image Layer by jkirkend

Created: Sep 1, 2019 Updated: Sep 16, 2019 View Count: 592

Open in Map Viewer

Open in Scene Viewer

Open in ArcGIS Desktop

Metadata

Description

Date of Images:
Post Event
Bahamas 9/5/19
South Carolina 9/6/19
Georgia 9/6/19
Pre-Event
May-August 2019

Date of Next Image:
Unknown

Summary:
The True Color RGB composite provides a product of how the surface would look to the naked eye from space. The RGB is created using the red, green, and blue channels of the respective instrument.

Suggested Use:
The True Color RGB provides a product of how the surface would look to the naked eye from space. The True Color RGB is produced using the 3 visible wavelength bands (red, green, and blue) from the respective sensor. Some minor atmospheric corrections have occurred.

Satellite/Sensor:
MultiSpectral Instrument (MSI) on European Space Agency's (ESA) Copernicus Sentinel-2B satellite; 10m resolution

Credits:
NASA/MSFC, USGS, ESA Copernicus

ESRI REST Endpoint:
See URL section on the right side of page.

WMS Endpoint:
https://maps.disasters.nasa.gov/ags02/services/hurricane_dorian_2019/Sentinel2_truecolor/MapServer/WMSServer

Details

Source: Map Service
Size: 1 KB

Owner

jkirkend

Tags

NASA Disasters Program, Hurricane, Hurricane Dorian, Tropical Cyclone, Sentinel-2, ESA, Copernicus, True Color

Credits (Attribution)

NASA/MSFC, USGS, ESA Copernicus

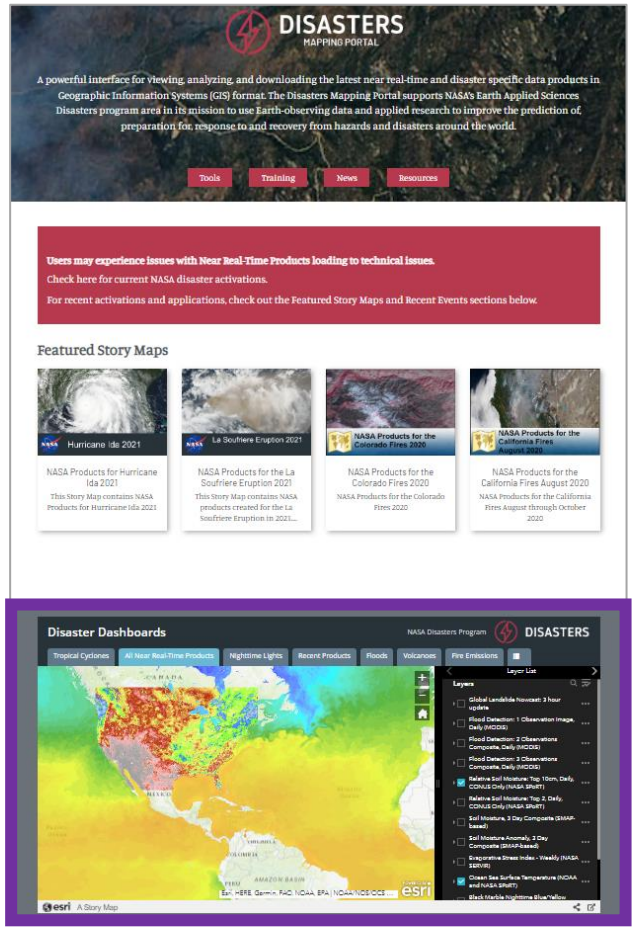
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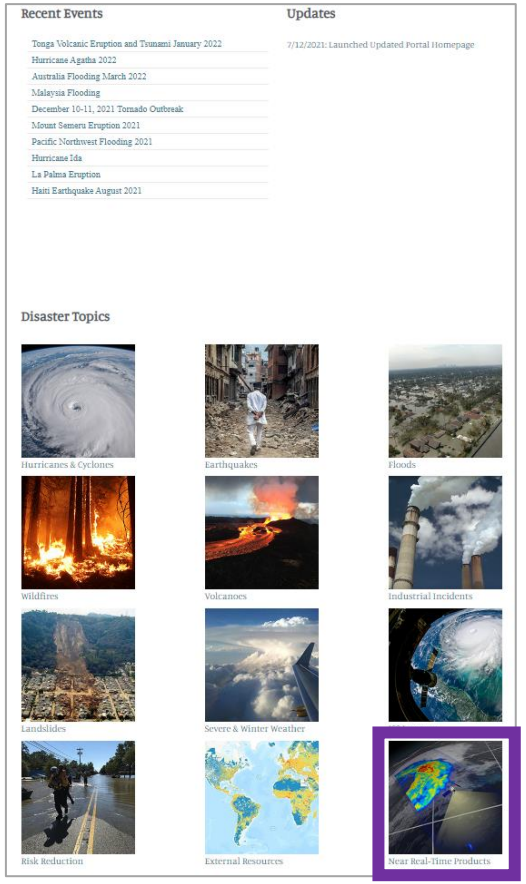
View

https://maps.disasters.nasa.gov/ags02/

Portal Home

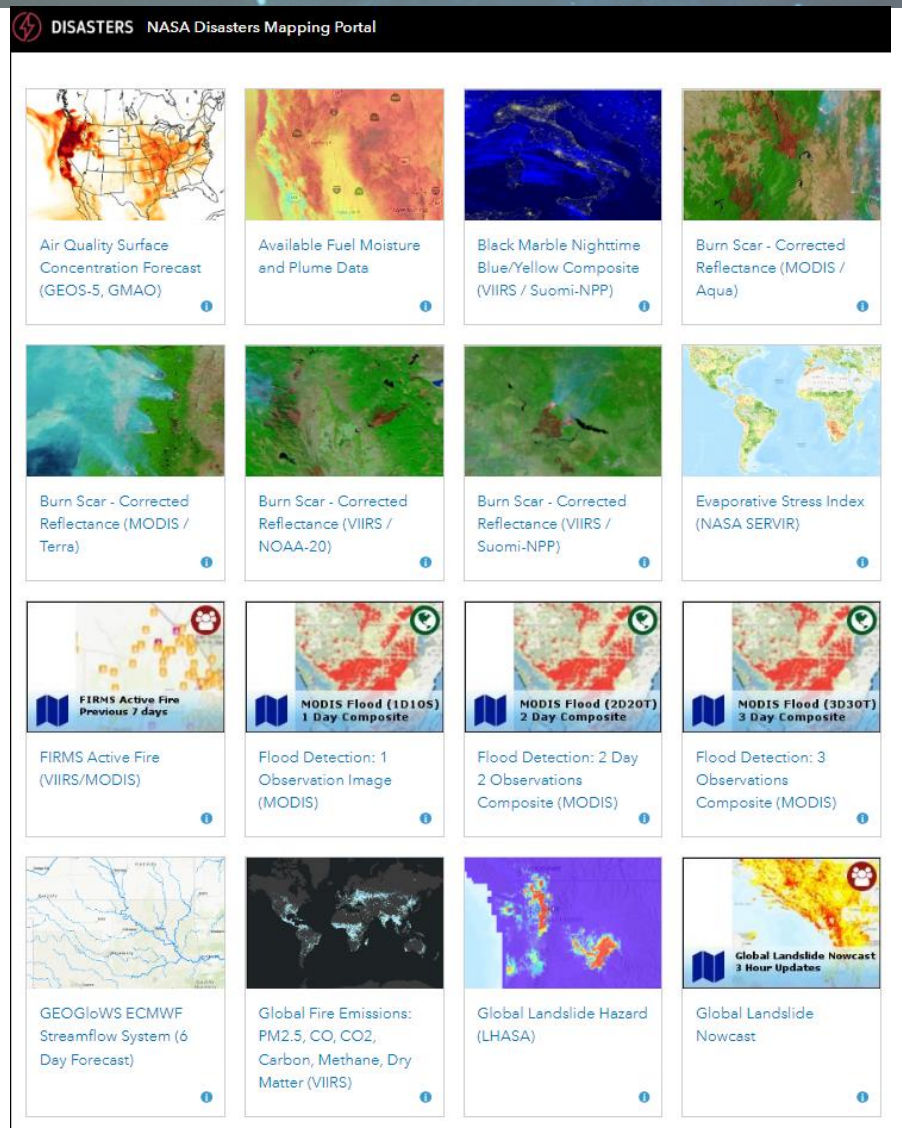
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Near Real-Time Products

- Global unless noted otherwise
- FIRMS Active Fire Points (MODIS, VIIRS)
- Global Landslide Nowcast
- Flood Detection – 1, 2, 3 Observations (MODIS)
- Precipitation Accumulation – 30 min, 3 hour, 1 day (Global Precipitation Measurement)
- Soil Moisture and Soil Moisture Anomaly– 3 day composite (SMAP)
- Evaporative Stress Index – weekly
- Natural and True Color Reflectance (MODIS, VIIRS)

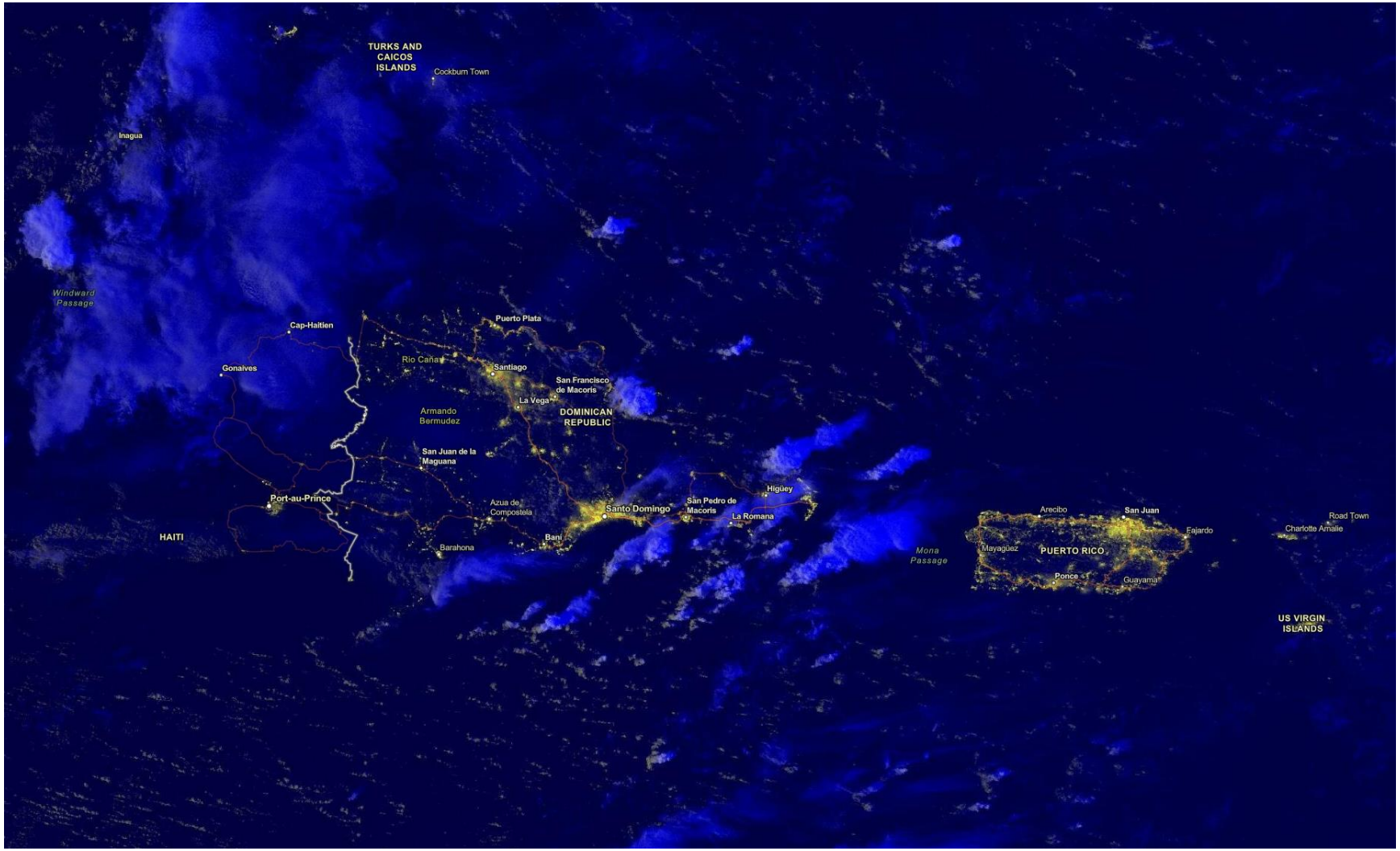


And many more!

https://maps.disasters.nasa.gov/arcgis/apps/sites/#/home/pages/near-real-time

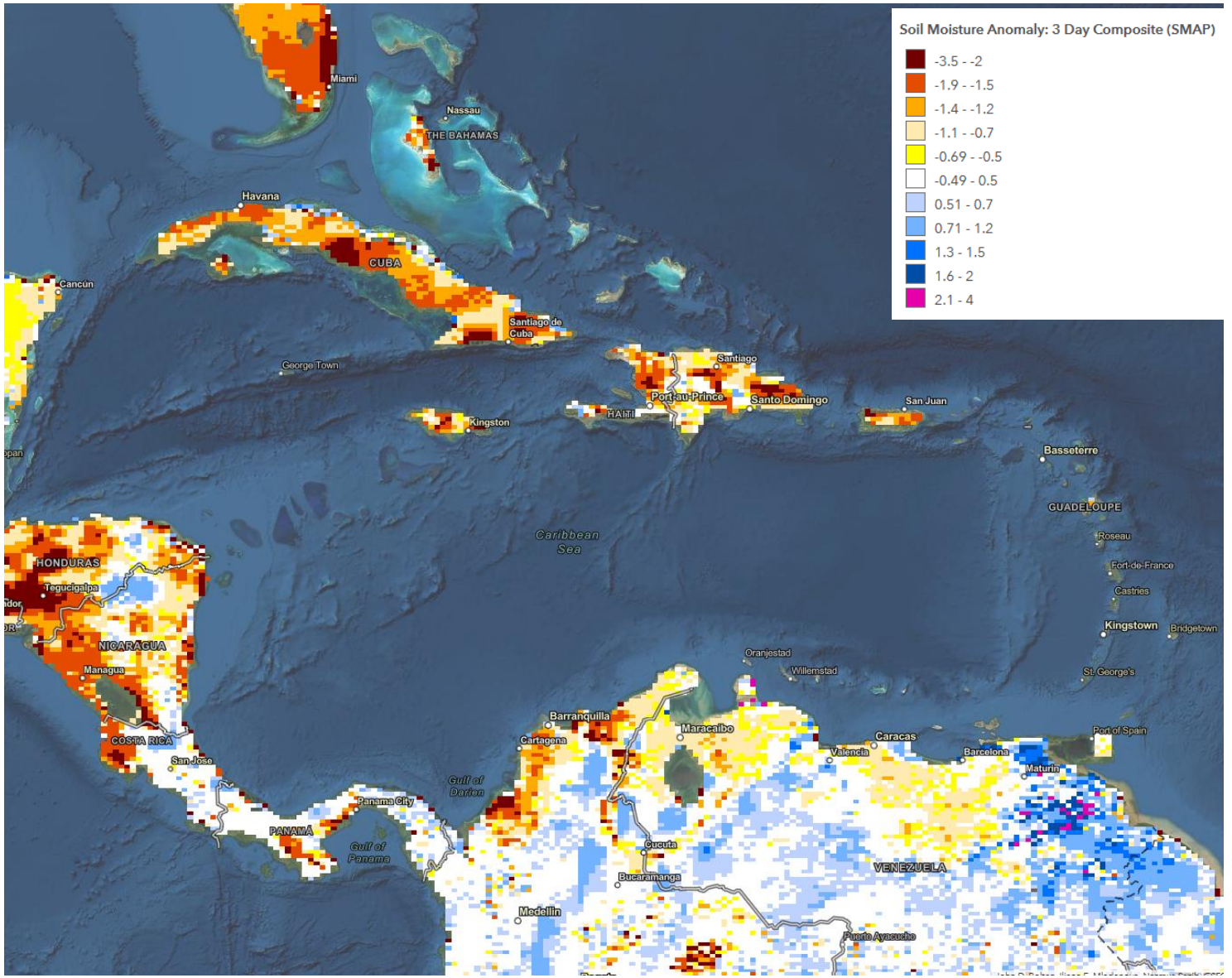
Black Marble Nighttime Blue/Yellow Composite

- Daily product
- Monitor changes in nighttime lights
- Imagery available ~4-6 hours after acquisition
- Resolution: 750m
- Clouds also obscure lights
- Bright moon phases wash out faintest lights and light up cloud tops



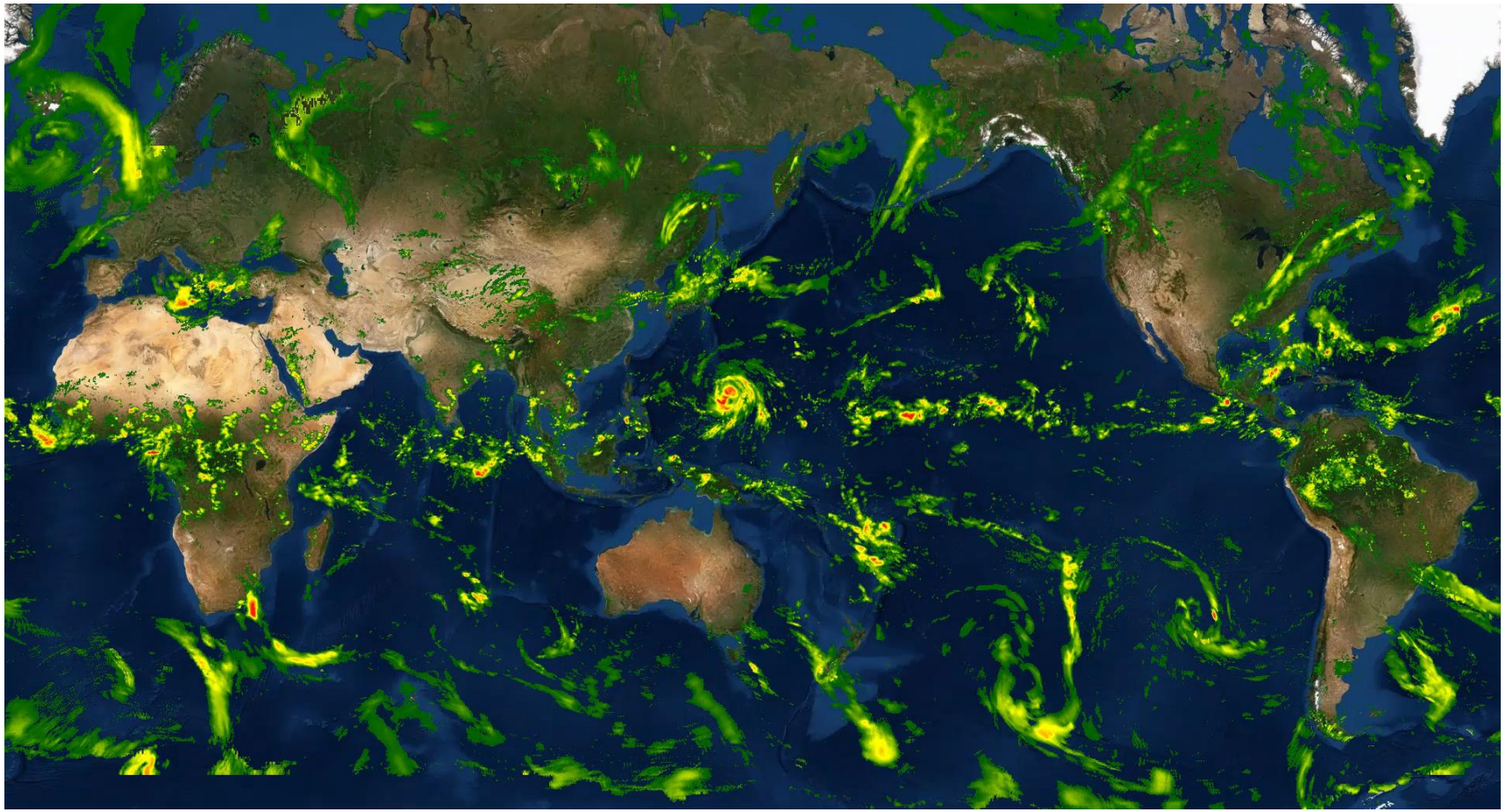
Soil Moisture Anomaly

- Soil Moisture Active Passive (SMAP) derived product
- 3-Day Composite
- -.49 – 0.5 = Normal conditions
- Red to yellow = drier than normal
- Blue to pink = wetter than normal
- Resolution: .25º
  - Smaller islands excluded



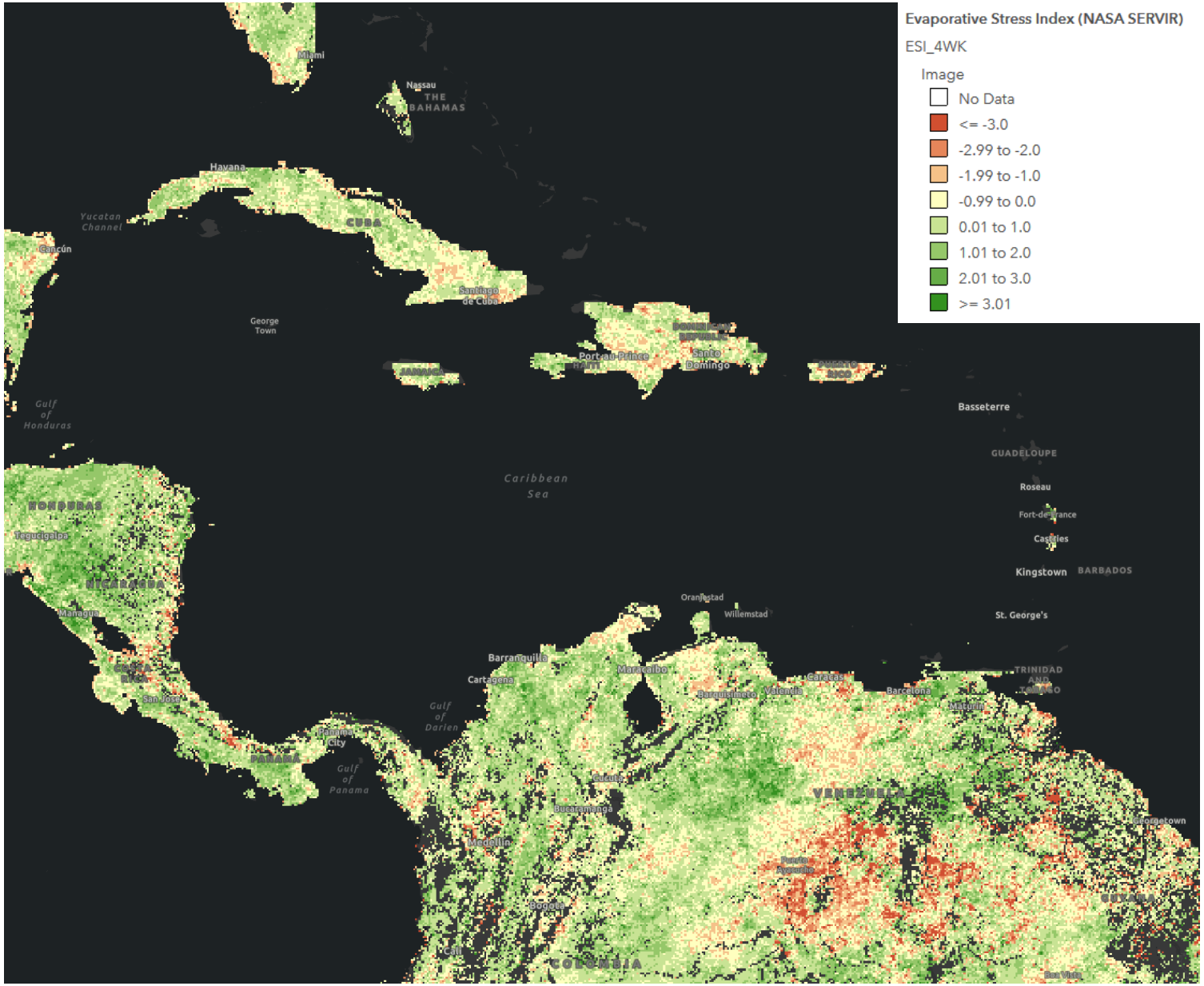
Global Precipitation Measurement Products

- 30-min, 3-hour, 1-day, 7-day total accumulations
- Resolution: 0.1 degrees
- Updated every 3 hours

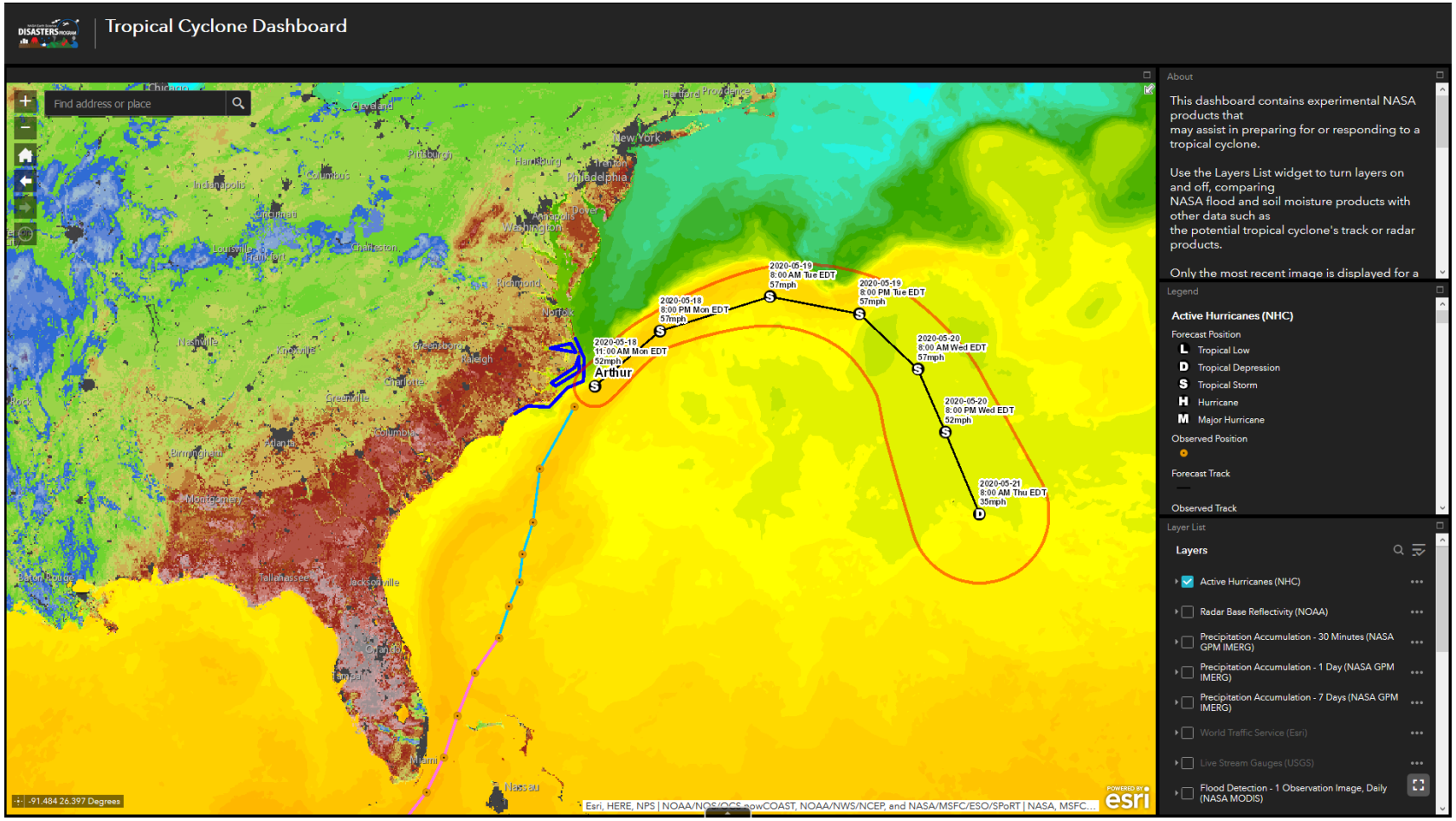


Evaporative Stress Index

- Weekly product
- Yellow to Red = Dry, stressed vegetation
- Latency = ~2 weeks
- Resolution: 5km

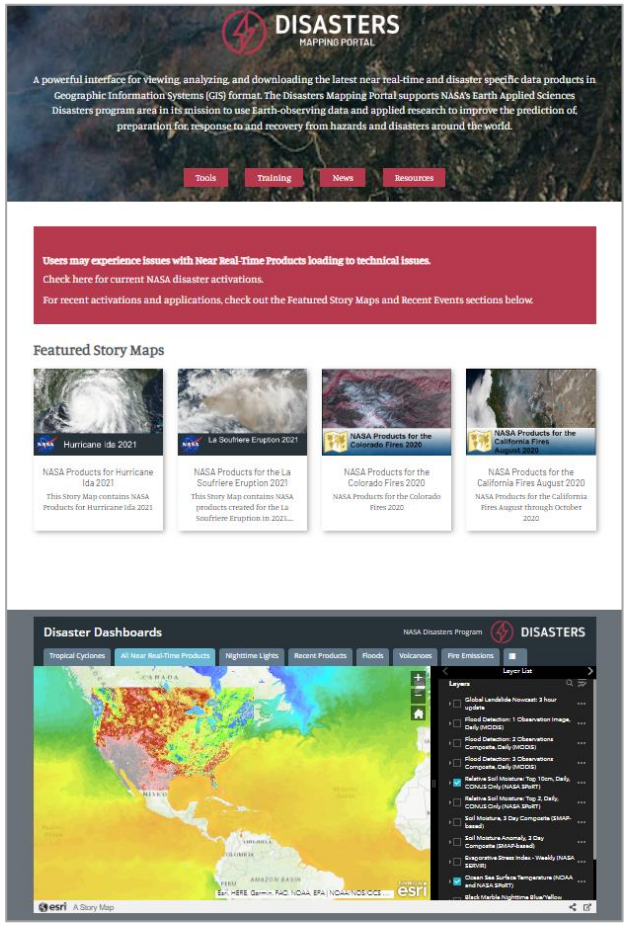


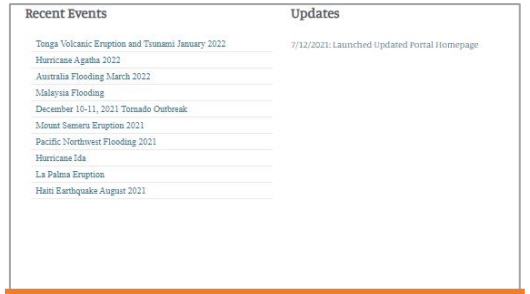
Tropical Cyclone Dashboard



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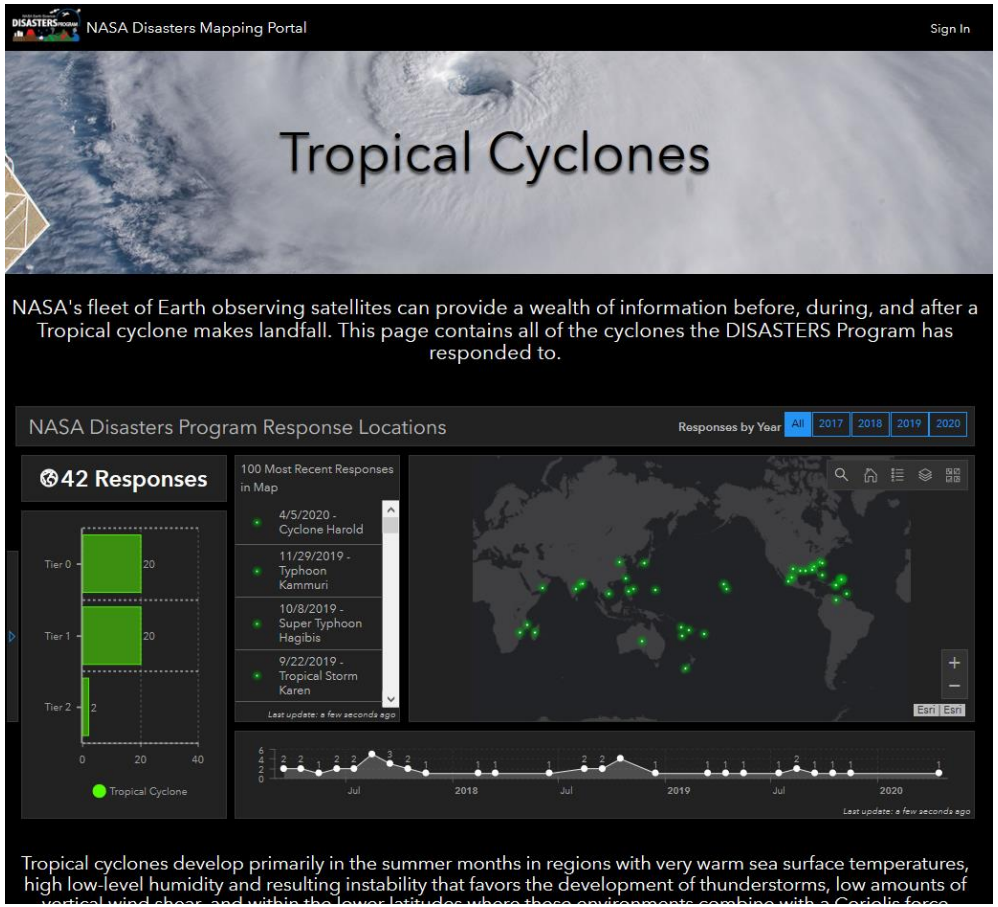


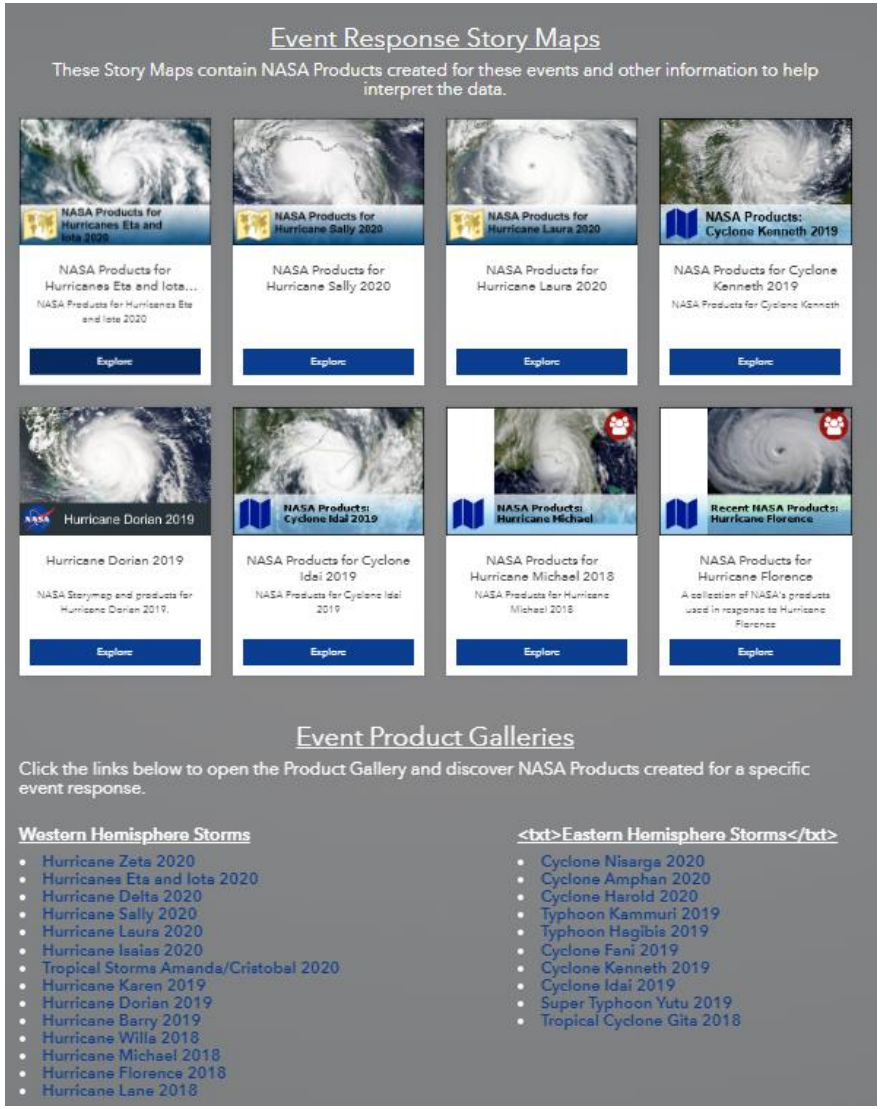




Hurricanes and Cyclones Page

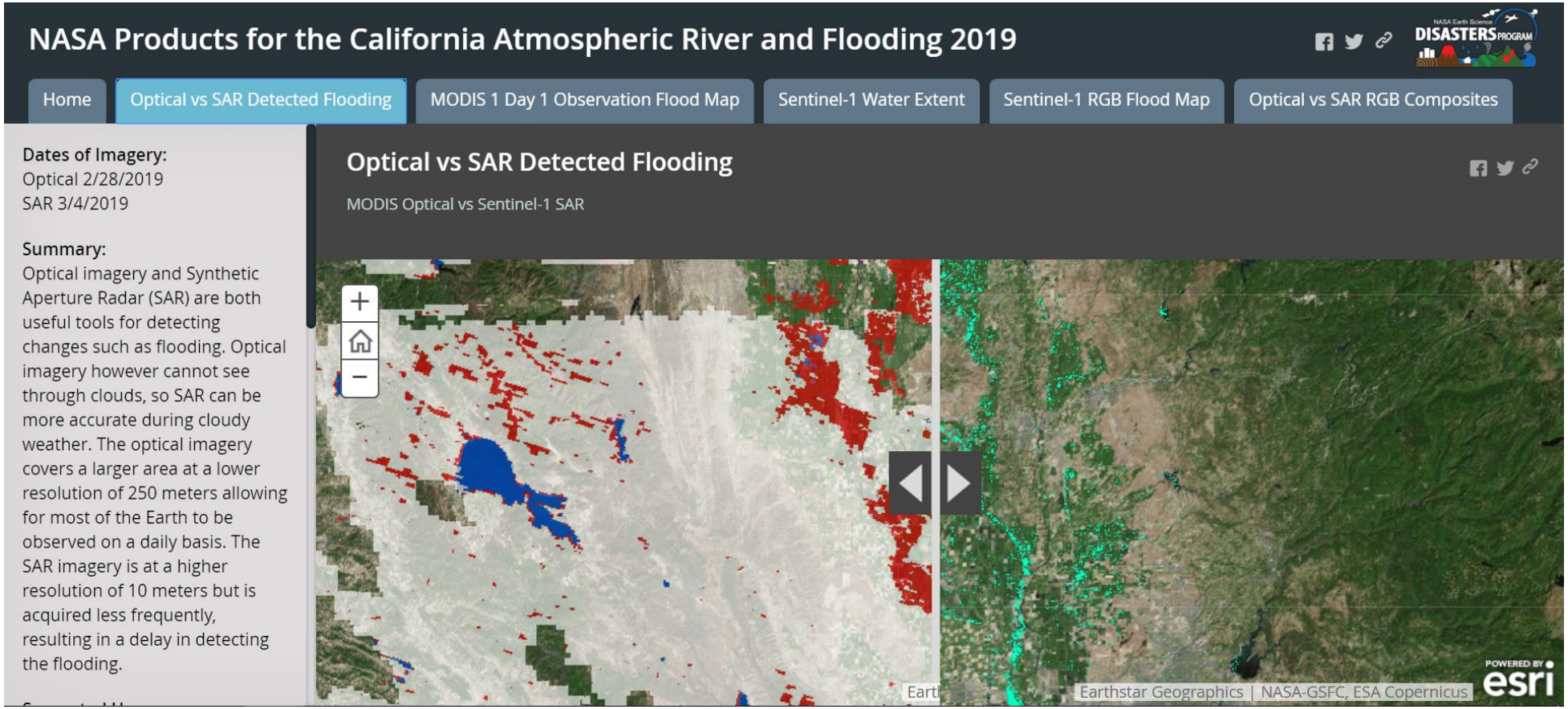
- Response Location Dashboard
- Past event Story Maps and Product Galleries





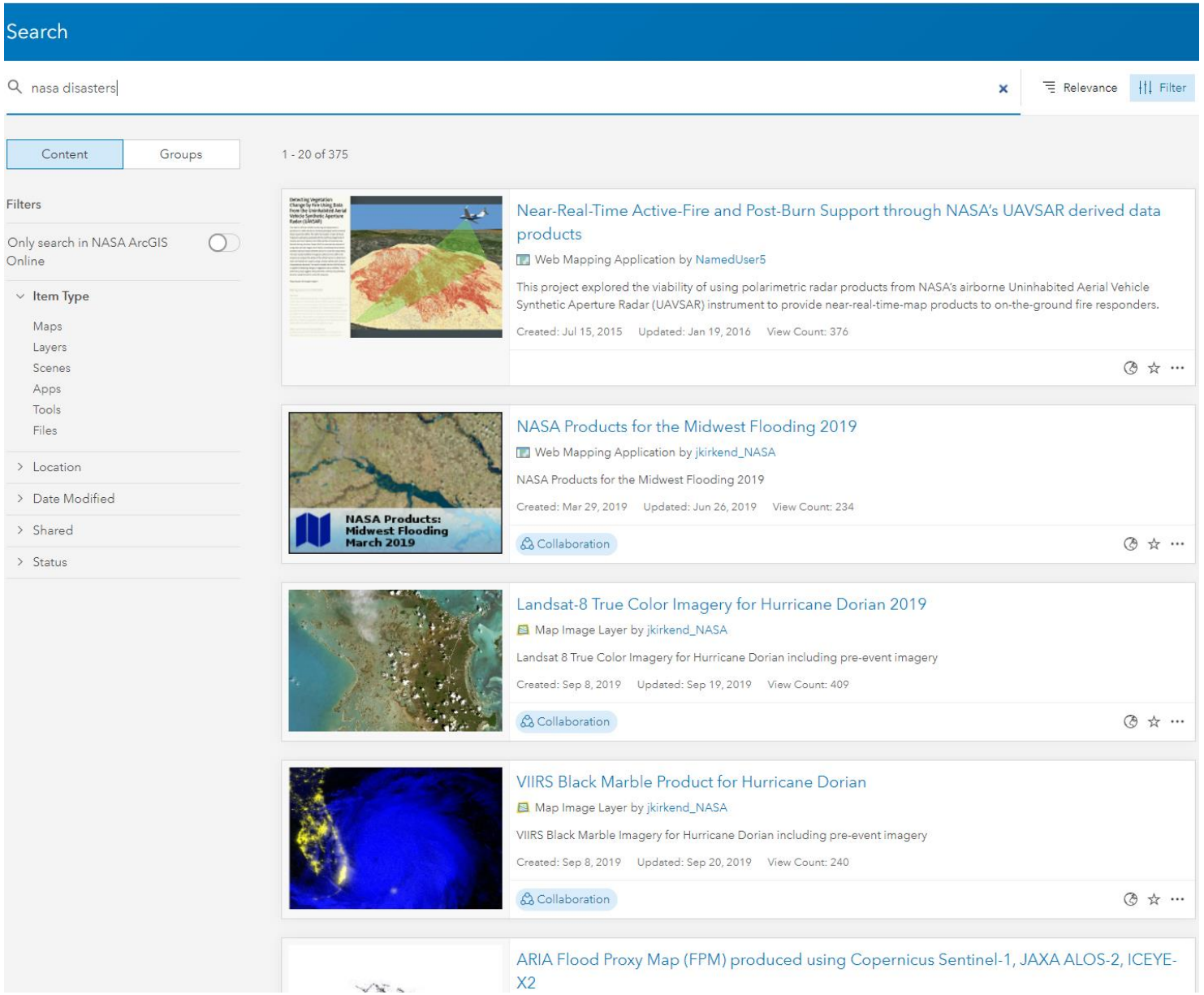
Limitations

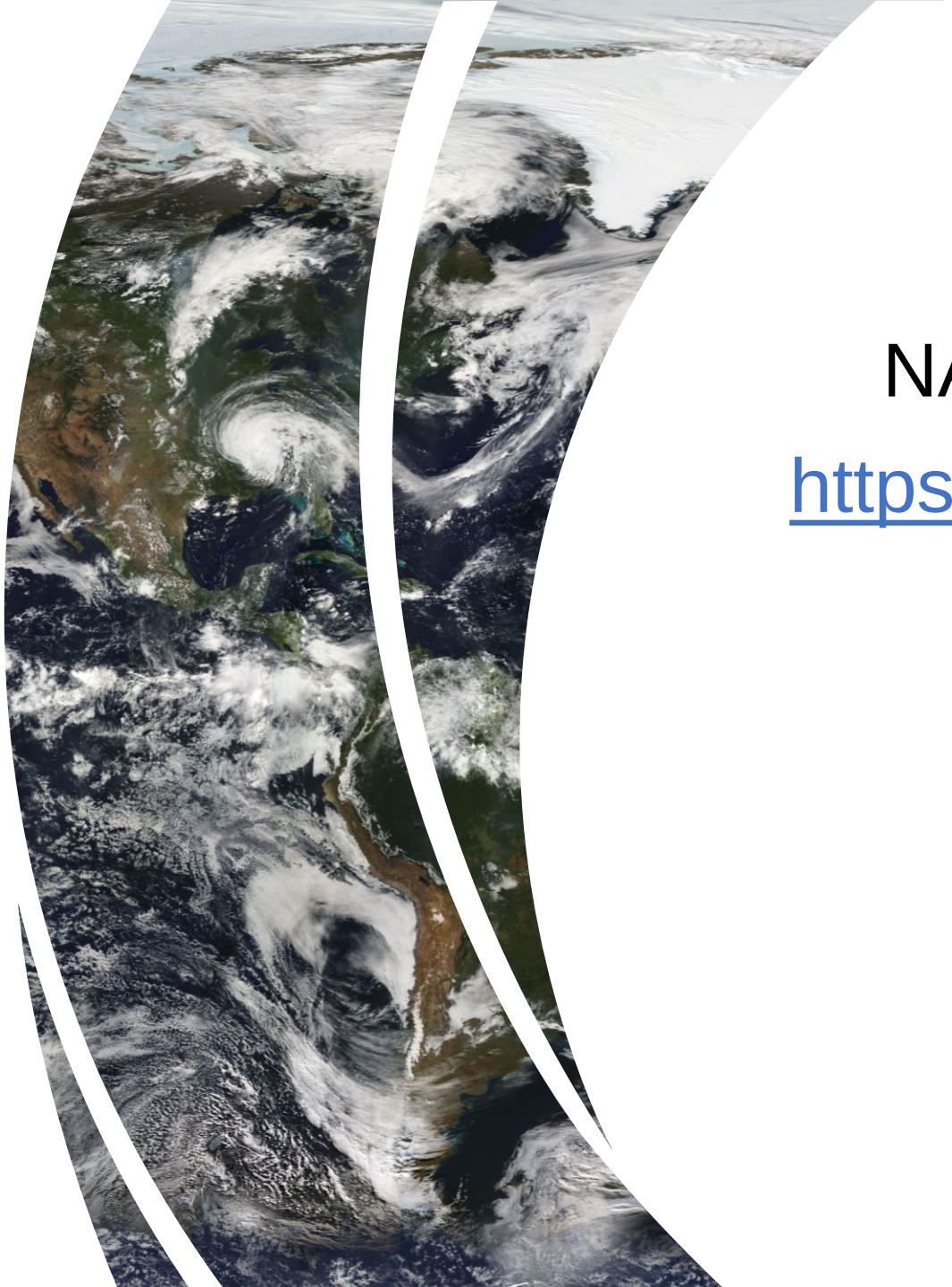
- Timing of satellite passes
- Sensor type – Optical, SAR, IR
- Resolution
- Ground truthing data improves product accuracy



ArcGIS Online and Open Data

- Recent and future products available
- Discoverable through Open Data search engines





NASA Disasters Mapping Portal:

https://disasters-nasa.hub.arcgis.com/

Ronan Lucey

ronan.m.lucey@nasa.gov

Portal Questions:

HQ-Disasters-GIS@mail.nasa.gov

Request Disaster Support:

HQ-Disasters-EM@mail.nasa.gov