

National Aeronautics and  
Space Administration

# NASA earth



**NASA Disasters Response Coordination  
System (DRCS)**

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Manager





# Why is NASA here?

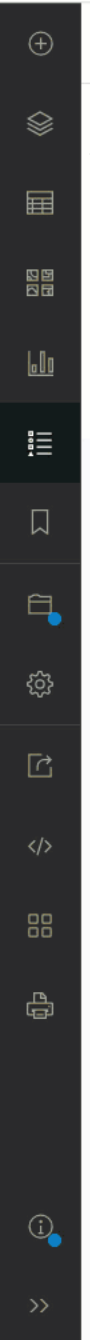








Augusta, Georgia. Pre-and-Post Hurricane Helene August, 2024 (Left) compared to September, 2024 (Right)



Burn Scar - Corrected Reflectance (VIIRS / Suomi-NPP)

Burn Scar - Corrected Reflectance (VIIRS / Suomi-NPP)

- Red: Band\_1
- Green: Band\_2
- Blue: Band\_3



Timeline interface showing a date range from 1/5/2025 to 1/6/2025. The current date is 1/12/2025. Includes play/pause, back, forward, and zoom controls.

Scale Range: Maximum Scale <None>, Minimum Scale <None>

Visibility Range: Transparency 0.0%, Layer Blend Normal, Feature Blend Normal

Effects: Swipe, Flicker 500.0 ms

Compare: Symbology, Masking, Display Filters, Import, Aggregation

Drawing: Field No fields, Unit, Type

Extrusion: Face Culling, Lighting

Contents

Search

Drawing Order

- SWOT Data
  - SWOT River Reach
  - SWOT Point Cloud 2024-05-17
    - classification (classification)
      - Land
      - Land near water
      - Water near land
      - Open water
      - Dark water
      - LowCoh Water near land
      - Open LowCoh Water
  - World Imagery





ANIMATION



# What can NASA do?





# DISASTERS PROGRAM CORE ELEMENTS



## Disasters Science to Action Portfolio

- Portfolio of multi-hazard profiles and approaches to risk analytics and risk reduction
- Critical infrastructure and economic impact modeling for disaster mitigation and improved recovery
- Climate and extreme event modeling for enhanced understanding of future risk and impacts to communities



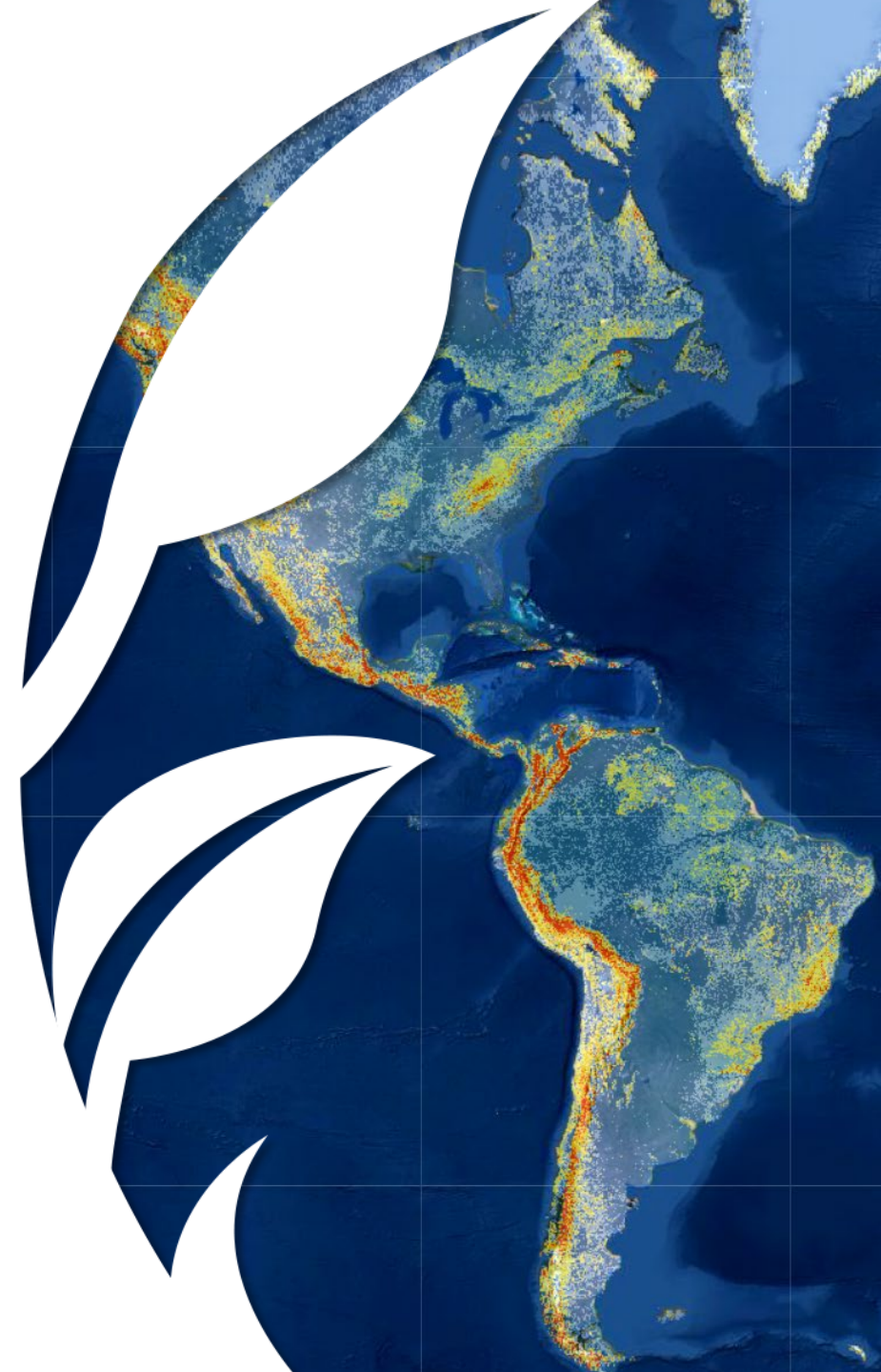
## Disasters Response Coordination System

- Partner-focused global and domestic response assistance.
- Near real-time information on hazards and exposure empowers decisionmakers.



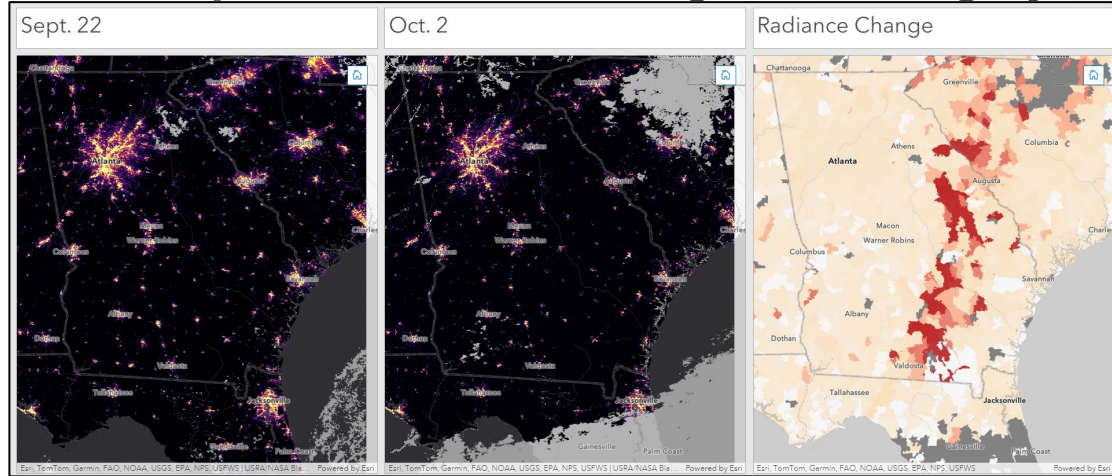
## Disasters Partnership and Learning Platform

- Free and open data products on global and domestic disasters
- GIS-enabled capabilities for integration into partner platforms

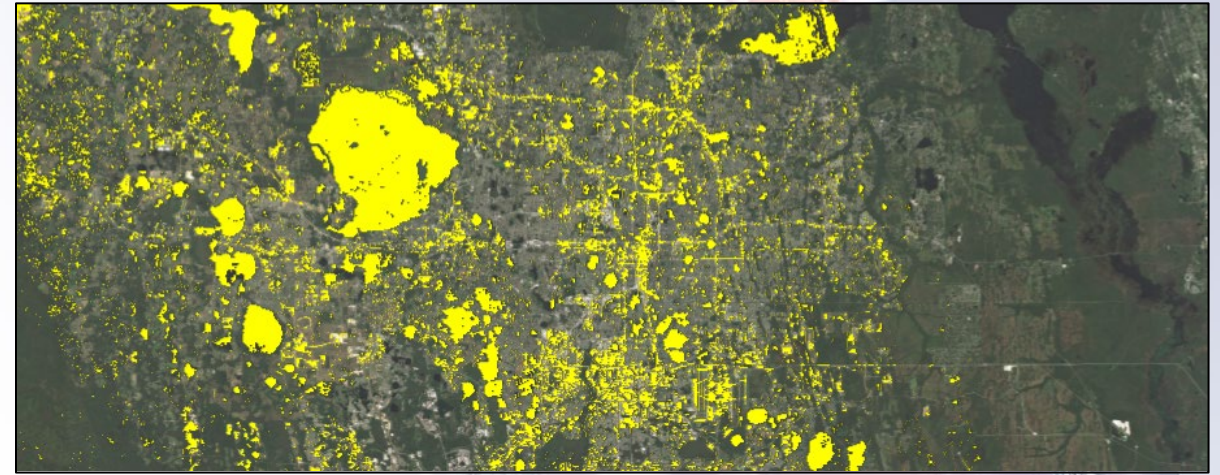


# NASA DRCS provides Earth observations data, analysis, and expertise to support incident response

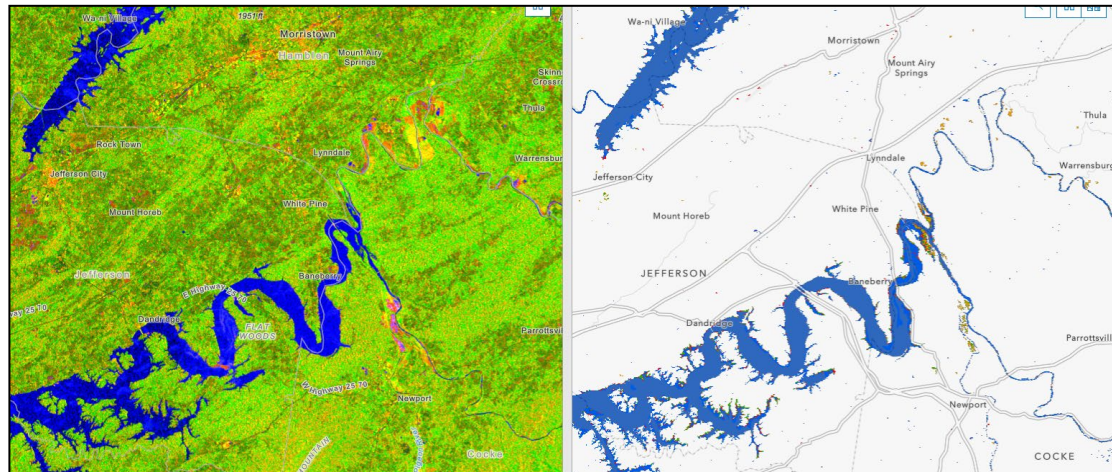
## Assess power status from nighttime imagery



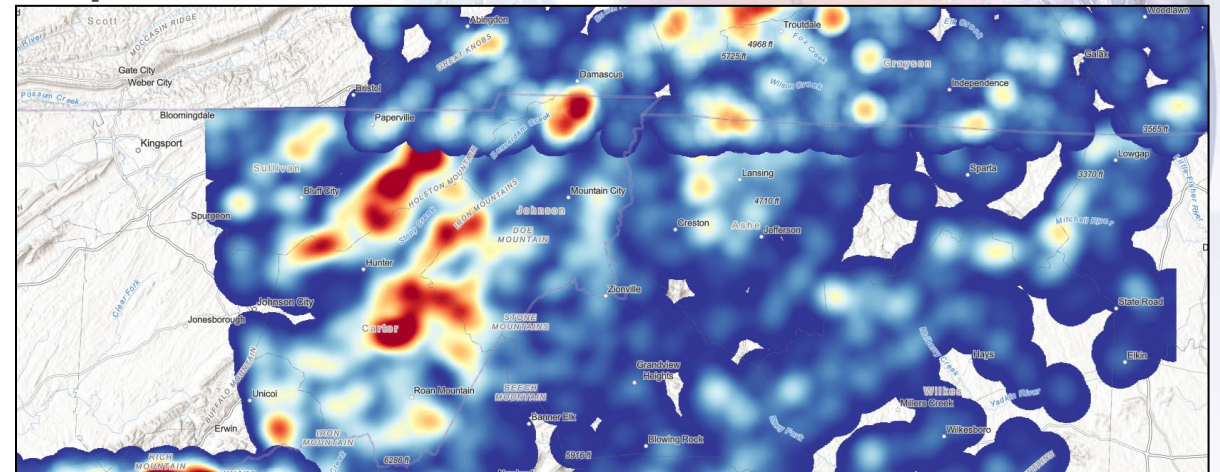
## Vegetation change to identify damage



## Detect floods



## Map landslides





## DISASTERS RESPONSE COORDINATION SYSTEM

- Request-driven.
- Leverages a One-NASA approach to support disaster response organizations locally and globally.
- Systematically connects best available science to address disaster response challenges.



Find us online at [disasters.nasa.gov](https://disasters.nasa.gov)

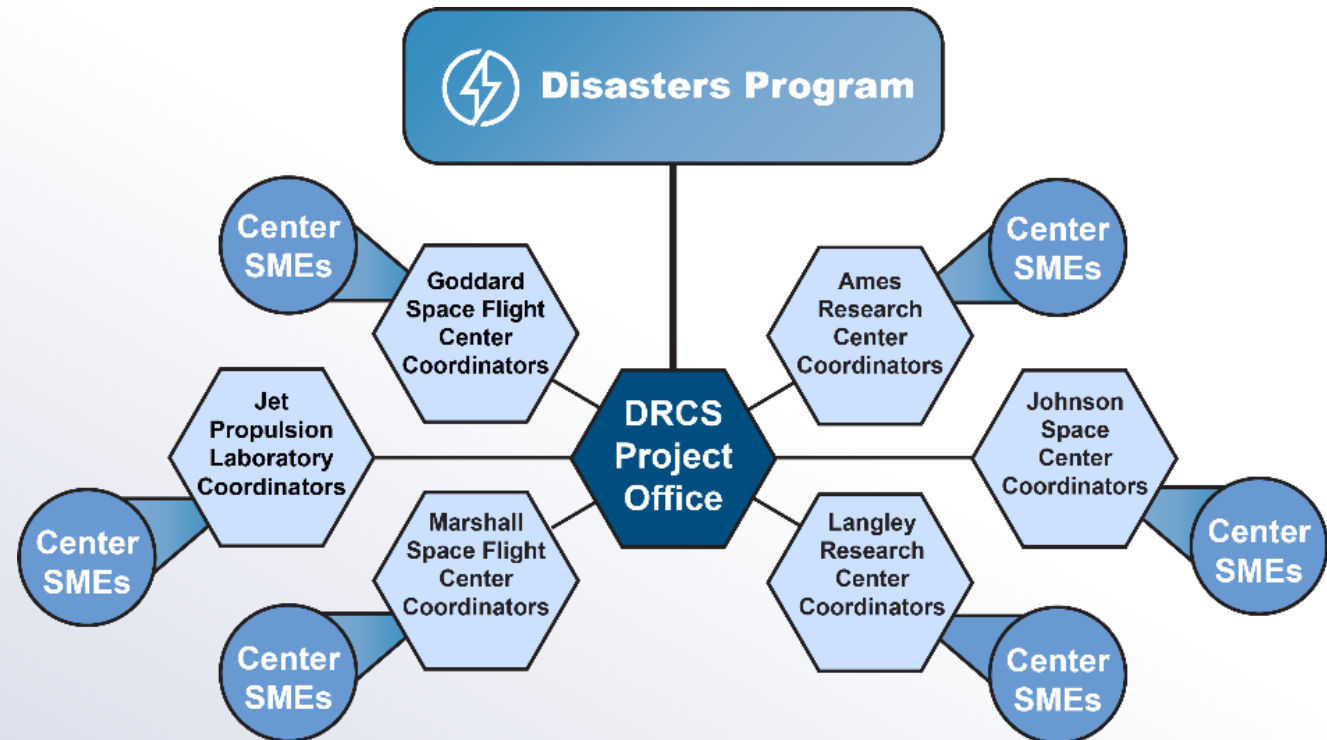
# Disasters Response Coordination System

## Mission

Enable response community to reduce disaster impacts to lives and livelihoods through timely, actionable, and accurate information.

## Purpose

- Advance disaster data and information for supporting disaster response needs
- Build skilled and effective response communities through improved coordination, engagement, and learning
- Reduce impact to lives and livelihoods by empowering communities to more effectively respond to disasters



# Myths about Remote Sensing in Disasters

## Myths

Satellites are always up there, so imagery should be available within 24 hours.

Satellite data looks like Google Earth, where you can see trees, powerlines, and mailboxes.

Satellites can capture images of the whole impacted area.



## Realities

Satellites follow a stable orbital track; it can be days before they pass over the affected area.

Google Earth combines satellite and aerial imagery; many data types are not processed as true color imagery.

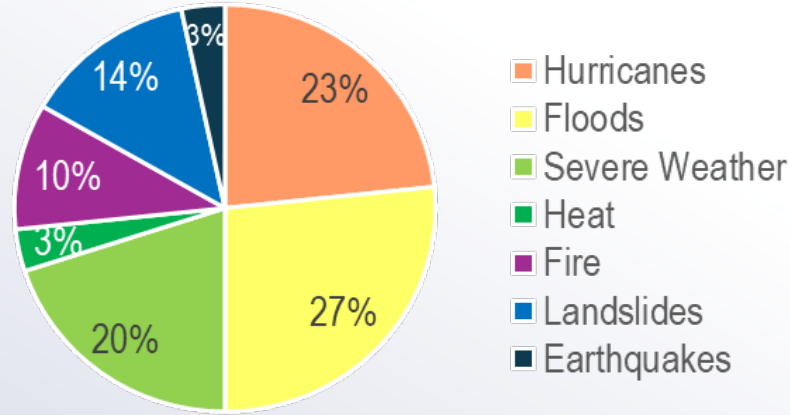
Area coverage is limited by field of view, resolution, clouds, and data transmission rate.



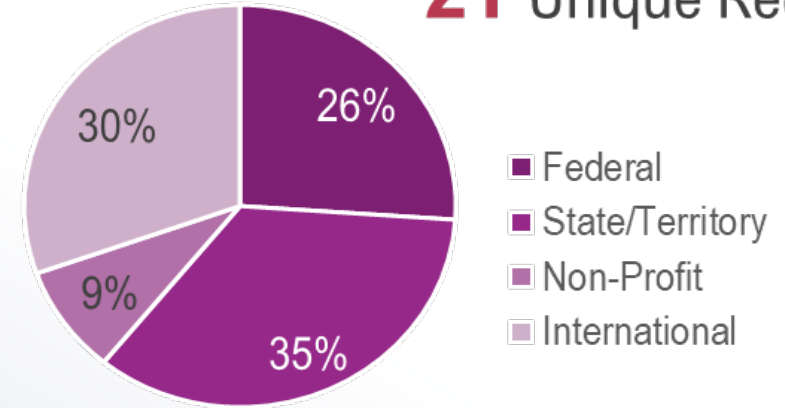
# 2024 DISASTER RESPONSE ACTIVATIONS

**24**  
Activations

## 7 Hazard Types



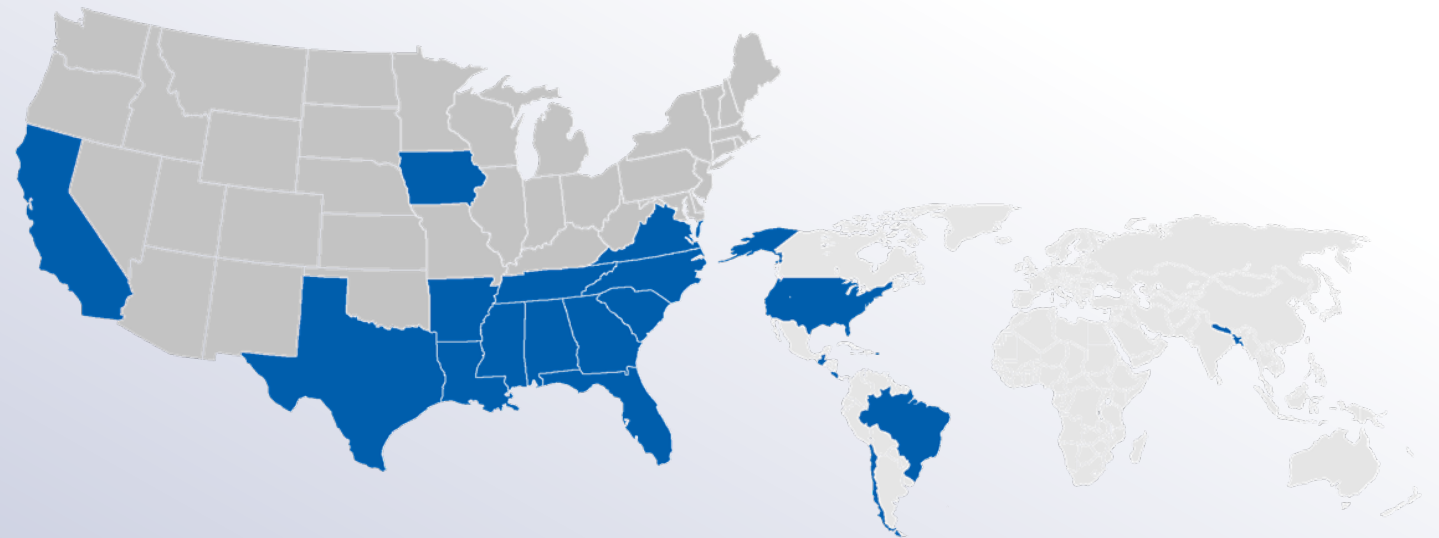
## 21 Unique Requestors



## Geographic Reach

**14** U.S. States & 1 U.S. Territory

**7** Countries

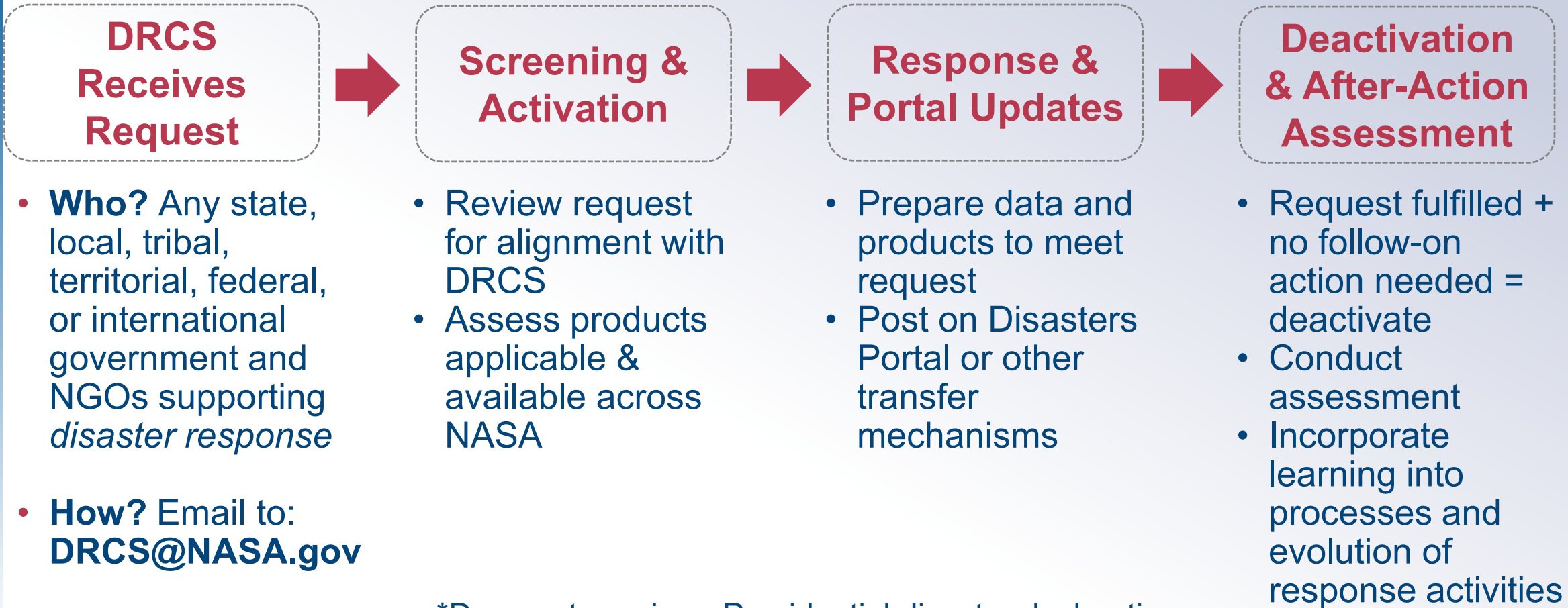




# How do I get NASA involved?



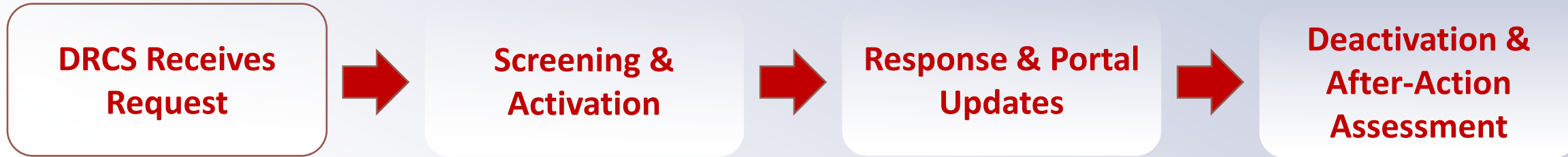
# DRCS ACTIVATION PROCESS



\*Does not require a Presidential disaster declaration



# Activation Process



## Who can request an activation?

Any entity supporting disaster response, including:

- 1) Units of international governments;
- 2) Units of Federal, state, Tribal, territorial, or local government;
- 3) National or international-level private/non-profit organizations.

## How do I request an activation?

Email [drcs@nasa.gov](mailto:drcs@nasa.gov) with the following:

- 1) Area(s) of interest
- 2) Response question(s)
- 3) Products or expertise requested
- 4) Timeframe the product is needed for decision making

# Examples of DRCS Requestors and End Users

## Federal Agencies



FEMA



## State Agencies



## Local Agencies



## Voluntary Agencies



World  
Central  
Kitchen

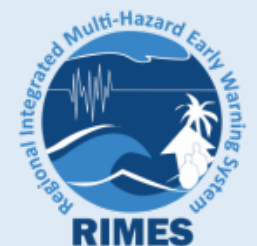


American  
Red Cross

## International



UNIVERSIDAD DE  
COSTA RICA



Most direct users are Geospatial Specialists or data analysts who can incorporate our data into apps, dashboards, and internal analyses to inform response decisions within their organizations.



# Activation Process

**DRCS Receives Request**



**Screening & Activation**



**Response & Portal Updates**



**Deactivation & After-Action Assessment**

## How do we decide to activate?

**We consider both the nature of the request and availability of CRCs and SMEs**

- Organization eligibility
- NASA's value-add proposition
- Availability of staff and capabilities
- DRCS personnel availability
- Impact on current DRCS activities
- Alignment with NASA and DRCS strategic direction



# Activation Process

**DRCS Receives Request**



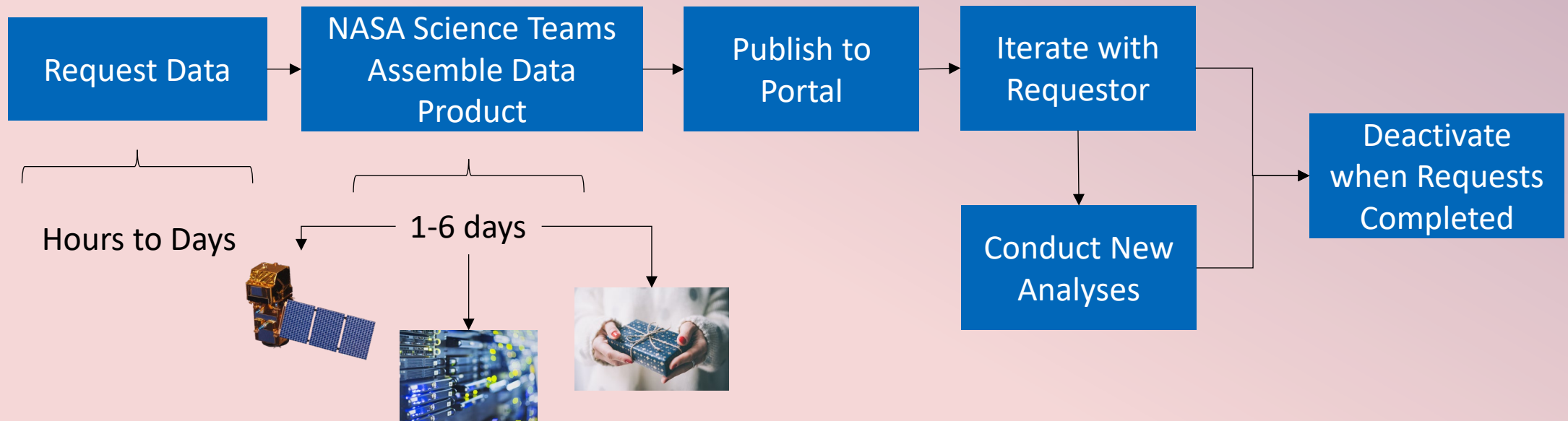
**Screening & Activation**



**Response & Portal Updates**



**Deactivation & After-Action Assessment**

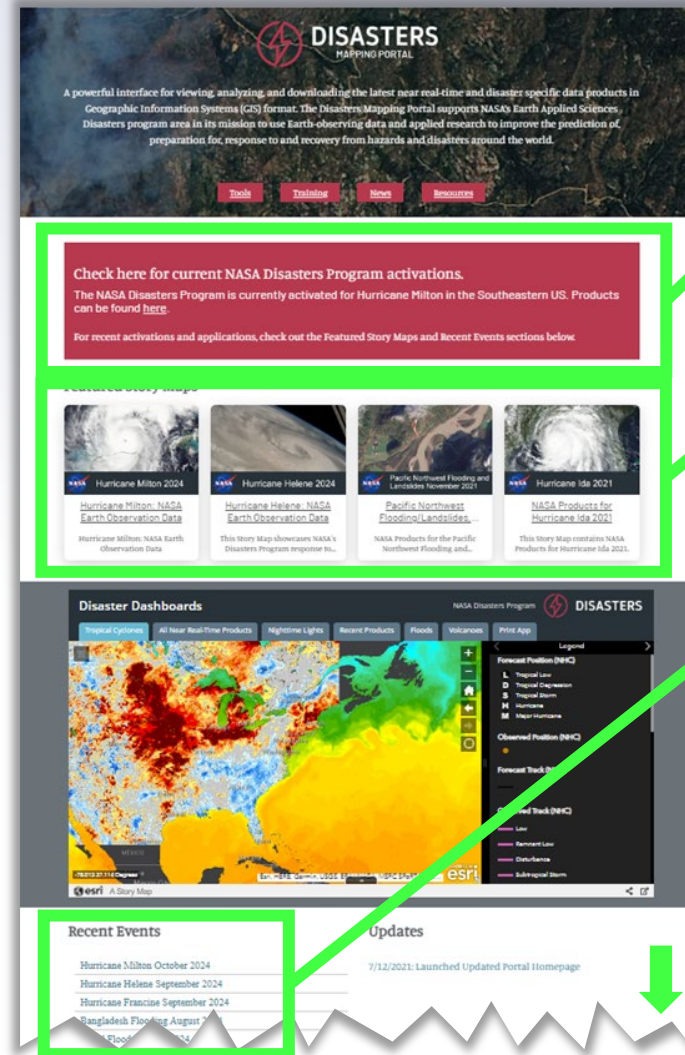


# All data is publicly available through the NASA Disasters Mapping Portal



[maps.disasters.nasa.gov](https://maps.disasters.nasa.gov)

- Open access through ArcGIS Online
- Primary interface for sharing maps, data and analysis
- Standardized GIS format allows easy integration into decision-support tools
- Testbed for new NASA data products
- Portal-to-portal connections with partners streamline delivery

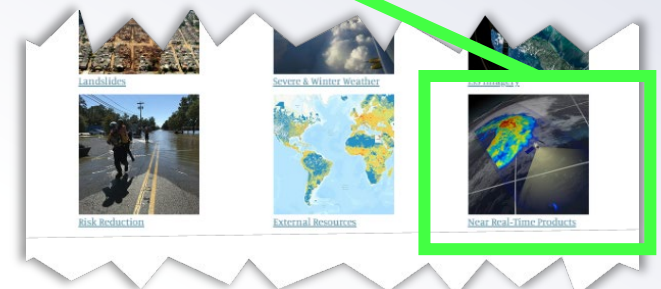


Links to data for current/active incidents are at the top of the page

Storymaps provide context and interactive views

Incident-specific product galleries make it easy to find data

Near real-time products update automatically



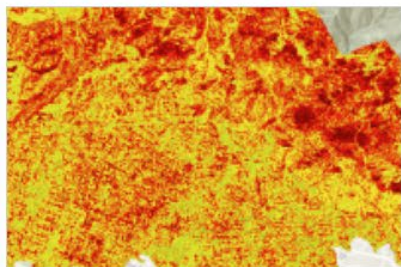


# DISASTERS

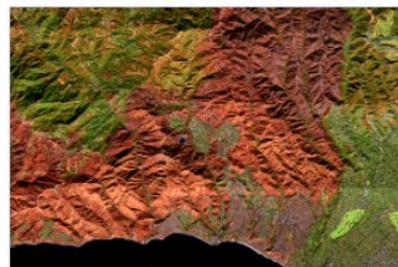
## NASA Products for Southern California Wildfires January 2025



ARIA/OPERA Surface Disturbance from Sentinel-1 (DIST-S1) prototype Web Map



AVIRIS-3 Differenced Normalized Burn Ratio Product for the Southern California Wildfires January 2025



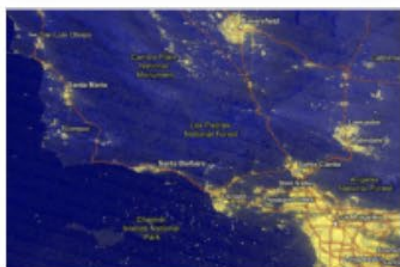
AVIRIS-3 False-Color Quick Looks for the Southern California Wildfires January 2025



AVIRIS-3-derived Char/Ash fractional abundance for the Southern California Wildfires January 2025



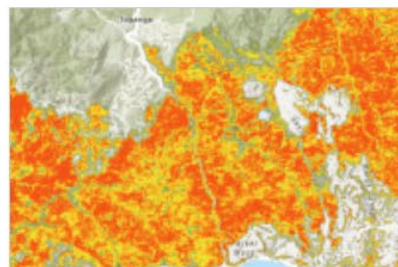
Binary burned area product (Sentinel-2 & VIIRS)



Black Marble Nighttime Lights Blue/Yellow Composite (VIIRS / SNPP & NOAA-20) for California Wildfires January 2025



Burn Scar Imagery (MODIS/VIIRS) for California Wildfires January 2025



Burn severity of Vegetation vs. Urban surfaces Derived from combined Sentinel-1 and Sentinel-2 analysis for the Southern California Wildfires January 2025



Copernicus Sentinel-2 Imagery for the Southern California Wildfires in January 2025



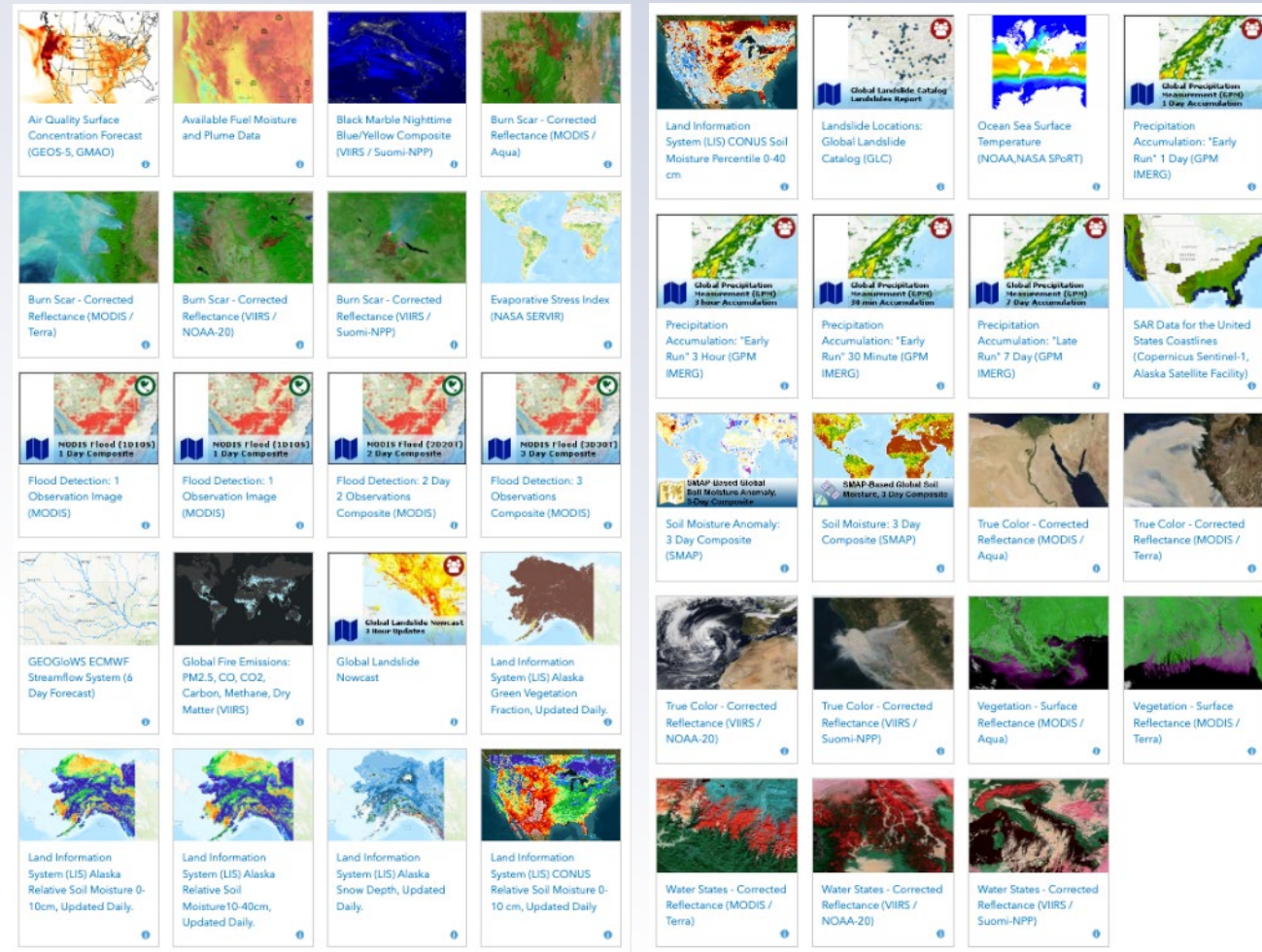
FEDS Active Fire Points and Perimeters for the Southern California Wildfires January 2025

# NEAR REAL-TIME PRODUCTS

- Global coverage (unless otherwise noted)
- Coarser resolution
- Automatically updated every few hours to daily or weekly

## Examples:

- Black Marble Nighttime Blue/Yellow Composite
- Global Landslide Nowcast
- Flood Detection – 1, 2, 3 Observations (MODIS)
- Precipitation Accumulation – 30 min, 3-hour, 1-day (GPM IMERG)
- Evaporative Stress Index – weekly
- True Color Imagery – Daily (MODIS at 250m, VIIRS at 375m)
- Natural Color Imagery – Daily (MODIS at 250m, VIIRS at 375m)
- TEMPO Vertical Column NO<sub>2</sub>



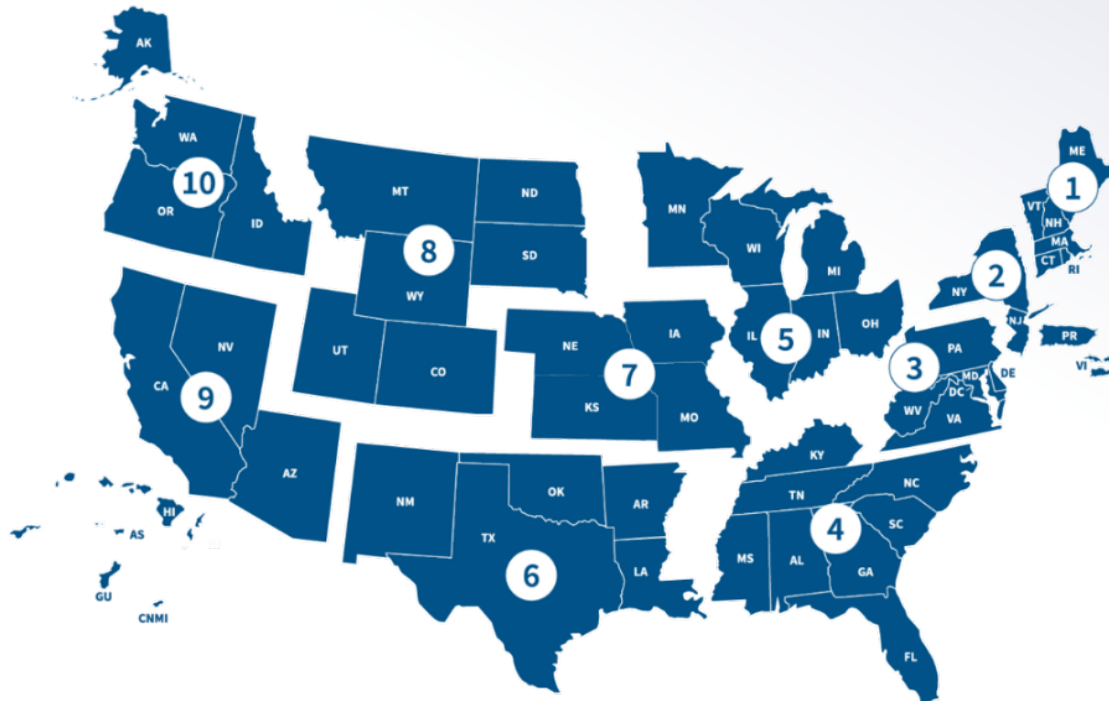
<https://maps.disasters.nasa.gov/arcgis/apps/sites/#/home/pages/near-real-time>



# Next Steps



- Continue building NASA community of practice to bridge research and disaster response applications
- Conduct “blue sky” outreach domestically and internationally to build awareness and capabilities for disaster response organizations to effectively use the DRCS for situational awareness and decision support



Region	Lead NASA Center
1	Goddard Space Flight Center
2	Goddard Space Flight Center
3	Langley Research Center
4	Marshall Space Flight Center
5	Langley Research Center
6	Johnson Space Center
7	Marshall Space Flight Center
8	Ames Research Center
9	Jet Propulsion Laboratory
10	Ames Research Center

# CONNECT WITH US

Find us online at  
[disasters.nasa.gov](https://disasters.nasa.gov)



For disaster response support,  
reach out during blue-sky  
periods to establish needs to:  
[drcs@nasa.gov](mailto:drcs@nasa.gov)

Watch the NASA TV Launch  
Event:  
<https://bit.ly/DRCSLaunchVideo>



Sign up for our **Disasters  
Community Newsletter** for  
the latest news and updates





**NASA**  
**earth**

[science.nasa.gov/earth](https://science.nasa.gov/earth)

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