TROPICAL CYCLONE SUPPORT

NASA missions and science push the limits of knowledge and innovation in the study of Earth and atmospheric science. The NASA Earth Applied Sciences Disasters Program aims to share this knowledge with communities responding throughout the tropical cyclone lifecycle as it develops, intensifies, makes landfall, and impacts populations.

The Program has developed a catalog of imagery and data products used in previous seasons by the user community. Although not an exhaustive list, this information serves as a starting point for using available NASA science and products.

The goals of this repository are to:

- Create easily accessible information to support disaster management and weather forecasting
- Enable pre-event planning and post-event recovery efforts
- Advance scientific understanding of extreme storms and their impacts

ROUTINE NEAR REAL TIME NASA PRODUCTS AVAILABLE FOR TROPICAL CYCLONE MONITORING

Many science communities currently use NASA data. Others involved in disaster management can benefit from the increased situational awareness provided by NASA resources. Products used in previous seasons are listed below.

The full product catalog with in-depth descriptions of capabilities can be found here.

| PRODUCT TYPE	PRODUCT NAME	PURPOSE	RESOLUTION AND LATENCY	LINKS TO DATA
Near Real-Time Precipitation	Global Precipitation Measurement (GPM) Mission IMERG	Offers rainfall estimates, particularly in regions without widespread radar coverage	0.1 degrees (~10 km) spatial resolution, latency of 4 hours	30 min 3-hour 1-day 7-day
Soil Moisture & Soil Moisture Anomaly - Global	SMAP-Based Global Soil Moisture & Soil Moisture Anomaly	Indicates surface soil moisture and if conditions are relatively drier or wetter	~ 36 km, updated daily	Soil Moisture Soil Moisture Anomaly
Soil Moisture - CONUS & Caribbean	NASA SPoRT Near Real-Time Land Information System	Offers layered soil moisture conditions for assessing flood potential	~ 3 km spatial resolution, updated daily	CONUS LIS
Ocean Sea Surface Temperature (SST)	NASA SPoRT and NOAA NowCOAST composite SST	Informs the ocean environment around the cyclone	~ 2 km resolution, updated twice daily	SST
Flood Water Extent - globally	MODIS Flood Detection products	Provides flood and surface water inundation maps, but can be affected by cloud cover	~ 250 m resolution, updated daily	1-Day 2-Day 3-Day
Optical Imagery	MODIS (Terra & Aqua) and VIIRS Corrected Reflectance:True and Natural Color	Provides an overview of ground and allows for easy assessment of conditions, cloud permitting	True Color: 500 m, Natural Color: 750 m, updated within 3 hours of satellite acquisition	Terra True Color Aqua True Color VIIRS True Color Terra Nat. Color Aqua Nat. Color VIIRS Nat. Color

EVENT-SPECIFIC PRODUCTS AVAILABLE UPON REQUEST FOR TROPICAL CYCLONE MONITORING

NASA innovation develops event-based products to answer specific questions from the user community.

- A hallmark of the Program, these products strive to provide additional information to user workflows.
- Products may utilize techniques more experimental in nature.
- Partnerships with stakeholders enable both the advancement of science and the expansion of user knowledge.
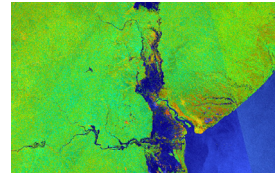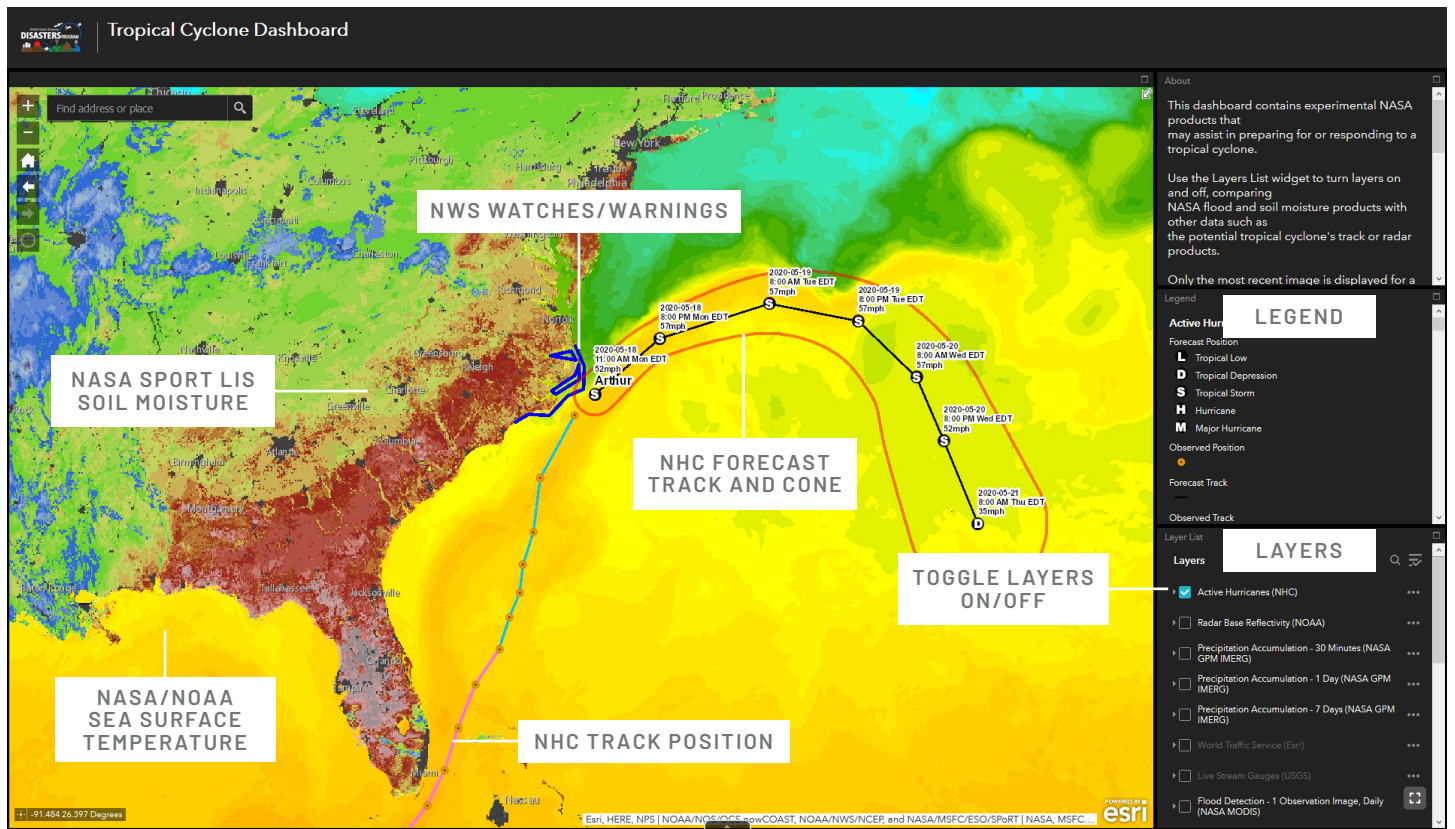

SENTINEL 1 FALSE COLOR RGB

SENTINEL 2 TRUE COLOR RGB

LANDSAT 9 FALSE COLOR RGB

JPL ARIA FLOOD PROXY MAP

Tropical Cyclone Dashboard

- NWS WATCHES/WARNINGS
- NASA SPORT LIS SOIL MOISTURE
- NHC FORECAST TRACK AND CONE
- TOGGLE LAYERS ON/OFF
- NASA/NOAA SEA SURFACE TEMPERATURE
- NHC TRACK POSITION
- LEGEND
- LAYERS

The Disasters Program GIS Mapping Portal serves as the hub of relevant Near Real-Time (NRT) and event-specific products developed by NASA scientists and collaborators. The Tropical Cyclone Dashboard combines NASA NRT products with NRT public data from operational groups such as NOAA's National Hurricane Center.

Tropical Cyclone Event Specific Product Examples Story Map

Notable Past Activation Story Maps:

Hurricanes Eta and Iota, Dorian, Florence, and Cyclone Idai

Scan QR code to learn more about Disasters work on hurricanes and cyclones.