

11th UN-GGIM Session - Side Event



CARIGEO

Caribbean Geospatial
Development Initiative

GEO-EMPOWERING THE CARIBBEAN



Monday August 16, 2021 @ 9:30 - 11:00 am (EDT)

Application of Geospatial Tools in Caribbean Disaster Management

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Jamaica Co-chair support & Task Group A & C Lead, UN-GGIM WG Disasters &
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Outline

- Highly Vulnerable & Disaster Impacted Caribbean Region
- Disaster Risk Levels in Caribbean
- CCRIF - SPC
- Sendai Framework & Strategic Framework on Disasters
- Caribbean Geoportal:
 - Functionality
 - Disaster-related data available: ESRI, NASA, NOAA & other
 - Utilization

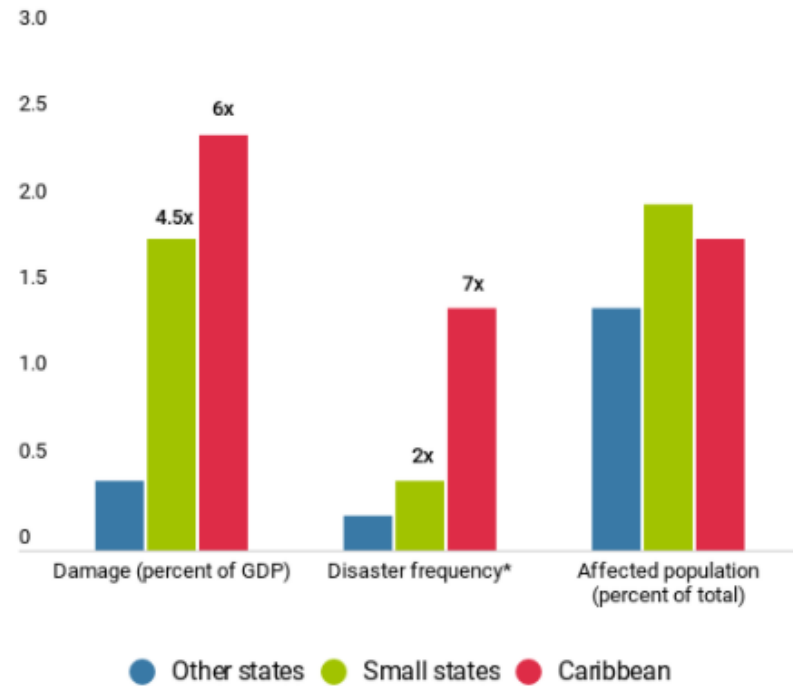
Highly Vulnerable & Disaster Impacted Caribbean Region



Highly vulnerable

Caribbean countries experience frequent natural disasters with high human and economic costs.

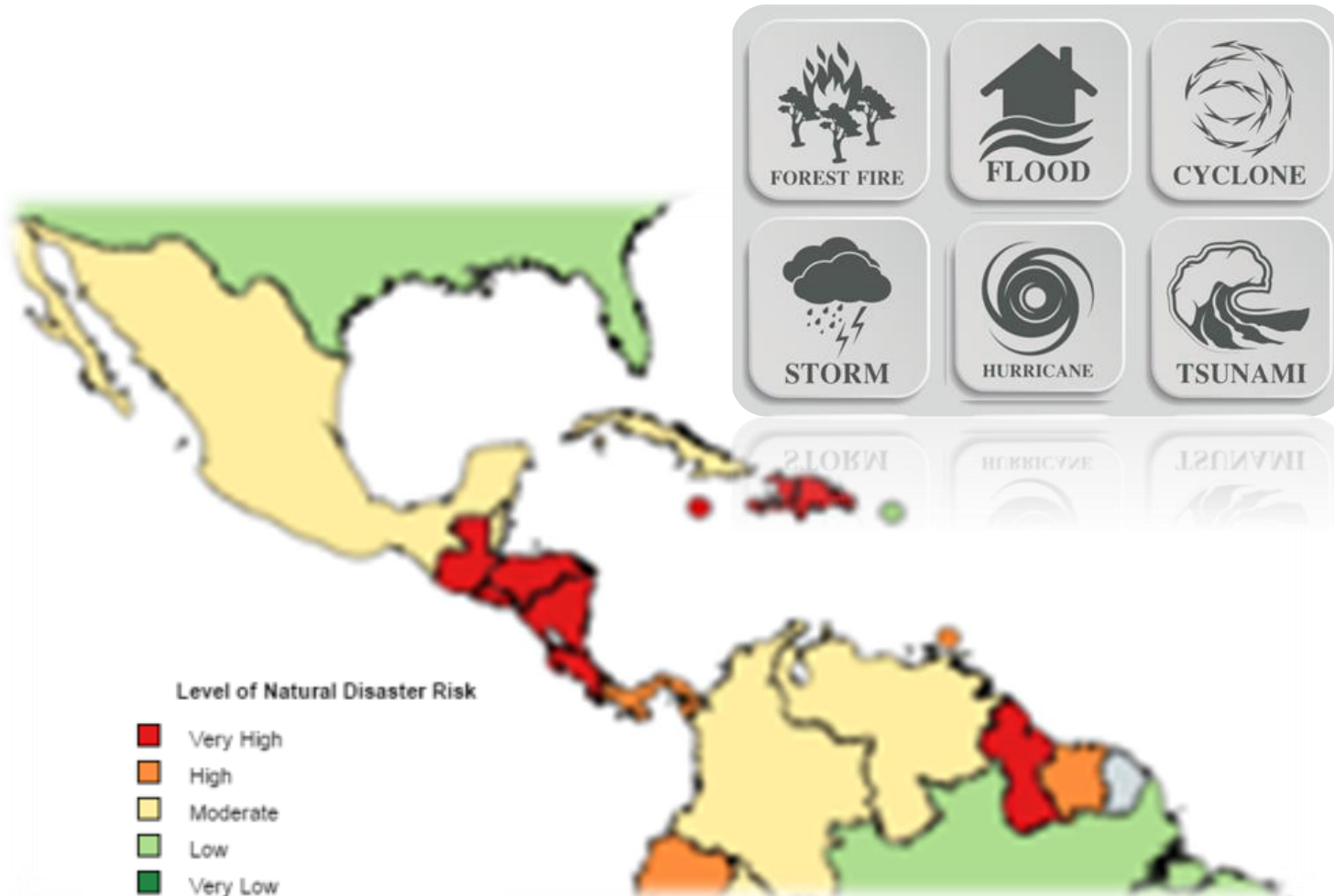
(frequency and effects of natural disasters, 1990-2014)



Source: IMF staff calculations.

Caribbean is primarily made up of Less Developed Countries (LDCs) and Small Island Developing States (SIDS) that are highly vulnerable to the impacts of disasters.

Disaster Risk Levels in Caribbean



Natural Disaster Risks:

- Hurricanes
- Tropical Storms
- Tropical Depressions
- Troughs
- Earthquakes
- Volcanoes
- Landslides & Floods
- Forest Fires & Wildfires
- Droughts etc.

Other Disasters:

- Epidemic & Pandemics eg. COVID-19
- Chik V, Zik V etc



Pacific Disaster Center

TROPICAL CYCLONE
Tropical Depression - Grace
Reported: 2 days ago
Updated: 2 hours ago

EARTHQUAKE
Earthquake - 7.2 - 13 km SSE of Petit Trou de Nippes, Haiti
Reported: a day ago
Updated: 38 minutes ago

HAZARD NAME: Tropical Storm - Fred
FORECAST (UTC): 2021 AUG 12, 03:00Z
FORECAST (USER PREF): 2021 Aug 12, 03:00
SAFFIR SIMPSON CATEGORY:
CURRENT ADVISORY NUMBER: 25
WIND SPEED: 35 mph / 56 kph
WIND GUSTS: 46 mph / 74 kph

Recent or Current Hazards:

- Tropical Storm Fred
- Tropical Depression Grace
- Trough
- 7.0 Magnitude Earthquake (August 14, 2021)



CCRIF - SPC

- Caribbean Catastrophe Risk Insurance Facility (CCRIF) Segregated Portfolio Company (SPC) limits the financial impact of natural hazard events to Caribbean and Central American governments by quickly providing **short-term liquidity** when a policy is triggered.
- CCRIF offers parametric insurance policies for **tropical cyclones, earthquakes, excess rainfall and the fisheries sector.**



**Earthquake
Policies**



**Tropical Cyclone
Policies**



**Excess Rainfall
Policies**



**Fisheries Policy -
COAST**

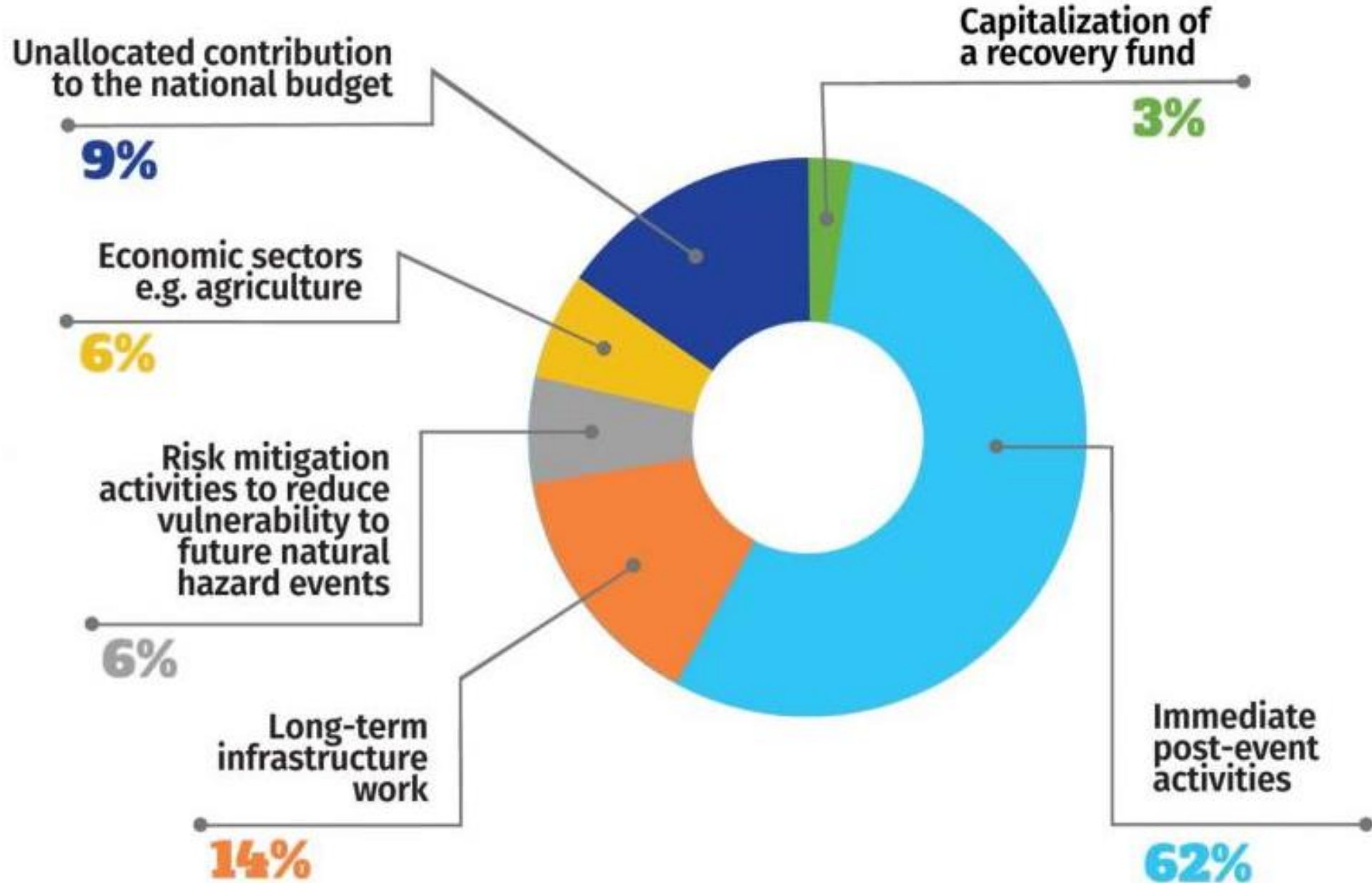


**Electric Utilities
Policy**

Uses of Payouts by Category for All Countries to Date

Caribbean
Catastrophe
Risk
Insurance
Facility
(CCRIF)

Segregated
Portfolio
Company
(SPC)



THE SENDAI FRAMEWORK OUTLINES SEVEN GLOBAL TARGETS TO BE ACHIEVED BY 2030:

SUBSTANTIAL REDUCTIONS

A. Reduce global disaster mortality



B. Reduce the number of affected people globally



C. Reduce direct economic loss in relation to GDP



D. Reduce disaster damage to critical infrastructure and disruption of basic services



E. Increase the number of countries with national and local disaster risk reduction strategies



F. Substantially enhance international cooperation to developing countries



G. Increase the availability of and access to multi-hazard early warning systems



SUBSTANTIAL INCREASES

The Sendai Framework for Disaster Risk Reduction articulates a very specific goal: **to considerably diminish disaster risk and losses of lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries**

Aligned

Provides Member States with concrete actions to protect development gains from the risk of disaster.

Strategic Framework on Geospatial Information and Services for Disasters

Working Group on Geospatial Information and Services for Disasters (WG-GISD)
The United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)

August 2017

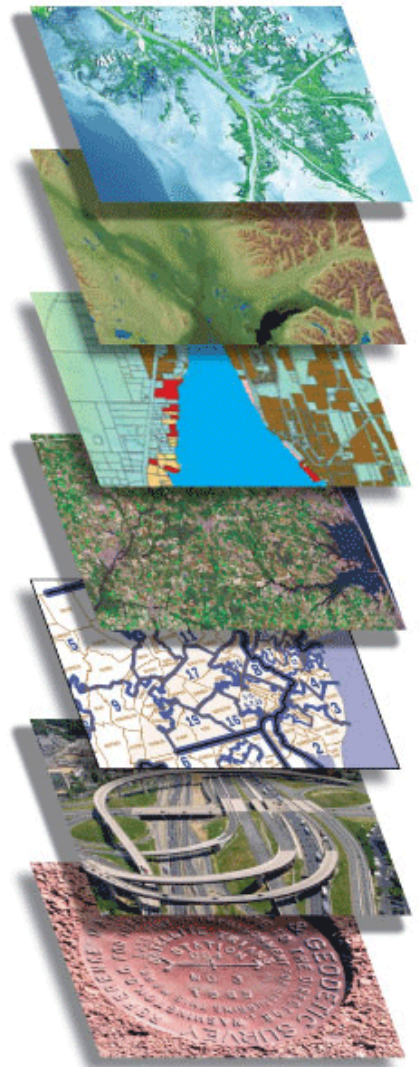


UN-GGIM

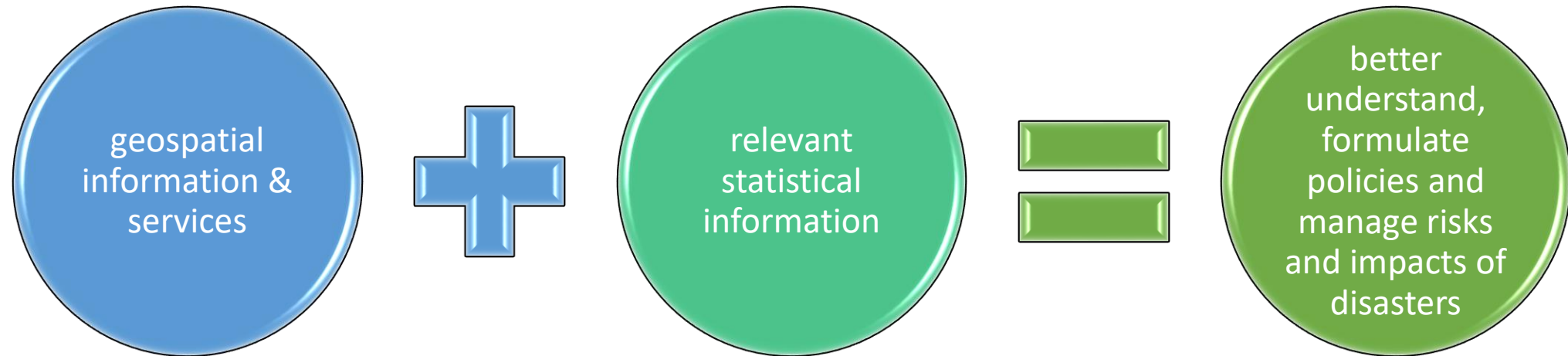
United Nations Committee of Experts on Global Geospatial Information Management

ggim.un.org

*The Strategic Framework aims to guide Member States and other stakeholders in **making available and accessible all quality geospatial information and services in operations within and across all sectors, before, during and after disaster events.***



Use of:



Member States





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Five Priorities for Action



Governance
and Policies



Awareness Raising
and Capacity Building



Data
Management



Common Infrastructure
and Services



Resource
Mobilization

Advance the use
of Geographic
information to
support **Disaster
Risk Reduction**
in the Member
States.





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Caribbean GeoPortal

“

We are deeply committed to supporting innovation in the Caribbean, helping users discover, explore, and understand the vast information available to them through the power of maps

”

Jack Dangermond
President and Founder, Esri





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The Caribbean GeoPortal

Inspiring communities through geography



COVID-19: From the Ground Up

<https://www.caribbeangeoportal.com/>



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The Caribbean GeoPortal

Inspiring communities through geography

- An **open mapping community** for the Caribbean
 - **Data** by Esri, Partners, Governments, other authoritative producers and the Community e.g., NOAA, NASA
 - **Analytical tools** for spatial data
 - Hands on **software training**
 - **Publish your own data** online
 - **Field data collection tools**
 - **Configurable web applications**



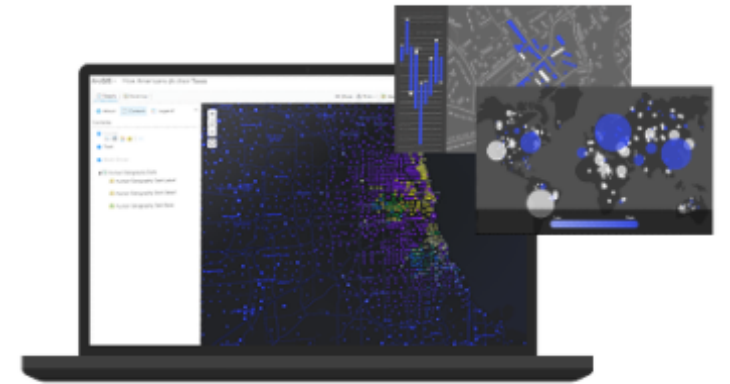
Geospatial Tools

The Caribbean GeoPortal gives users access to the leading geospatial tools to easily map, analyze, and share geospatial information. Combine your data with open data, apply powerful tools, and create engaging outputs. These tools are free to use for all Caribbean GeoPortal users.

Create a web map

Quickly create maps by dropping in your spreadsheet or combining it with other location data included in the Caribbean GeoPortal. Apply smart mapping styles to make your data visually stunning.

The Caribbean GeoPortal is designed to give single users free access to the best geospatial tools. Tools are continually updated with the latest technology.



[Create a Web Map](#)



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Apply spatial analytics:

- Aggregate, join, summarize, enrich
- Find, Search, Geocode
- Analyze patterns, calculate density
- Manage data - dissolve, extract, merge and overlay



Apply spatial analytics

Intuitive analysis tools help reveal relationships and outliers, and learn more about your data. Check patterns to make predictions and determine forecasts. Use location to bring data together or enrich it with new insight.

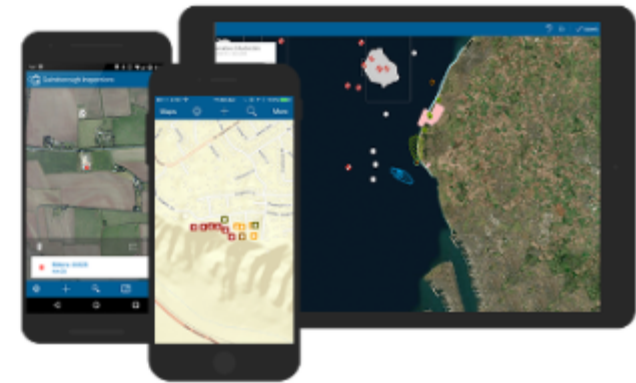
The Caribbean GeoPortal allows users to bring data together and make more informed decisions based on powerful analytics. Answer your first spatial question now.

[View all the tools](#)

Take your work into the field

Easily collect data in the field using pre-built apps accessible on all devices. Collect location data or questionnaires via a range of tools. The apps work online and offline to ensure productivity anywhere. Collected data feeds straight back into the geospatial tools ready to map, analyze, and share.

The Caribbean GeoPortal gives users the power to work end to end. Prebuilt applications, offline navigation, and easy to configure tools allow for simple and structure data collection. Start your field work now.



Supporting Disaster Response in the Caribbean



Tropical Cyclones - Watches, Warnings, and Track/Intensity Forecasts

Map Image Layer by
NOAA.GeoPlatform

Map displaying the latest NWS/National Hurricane Center (NHC) and Central Pacific Hurricane Center (CPHC) tropical storm and hurricane information...

[View item details](#)



The latest NWS/National Hurricane Center (NHC) and Central Pacific Hurricane Center (CPHC) tropical storm and hurricane information



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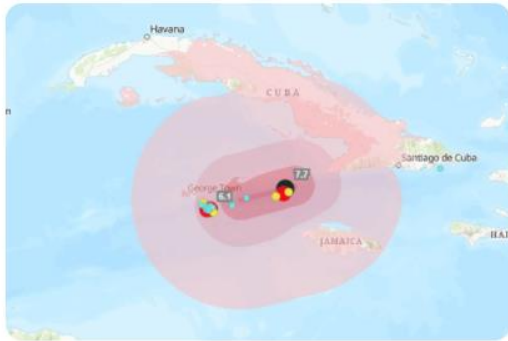
[About Us](#)



Earth Observation

NASA's fleet of Earth satellites can provide a wealth of information before, during and after a disaster.





Recent Earthquakes

- Authoritative
- Esri Live Feeds
- Caribbean GeoPortal

Summary

This service presents recent earthquake information from the USGS Prompt Assessment of Global Earthquakes for Response (PAGER) program.

In addition to displaying earthquakes by magnitude, this service also provide earthquake impact details. Impact is measured by population as well as models for economic and fatality loss. For more details, see: PAGER Alerts.

Details

- Map Feature Service
- August 15, 2021 Date Updated

- August 15, 2021 Info Updated
- August 15, 2021 Data Updated
- December 13, 2019 Published Date



Haiti Earthquake - 7.0 Magnitude Saturday August 14, 2021

Impacted:


- Haiti, Puerto Rico, Dominican Republic, Jamaica
- Over 1200 persons dead in Haiti
- More than 1,800 people were injured and over 7,000 displaced
- Significant damage to homes, roads, and infrastructure



<https://www.caribbeangeoport.com/search?q=noaa>

GeoPortal





Hurricane and Cyclone App

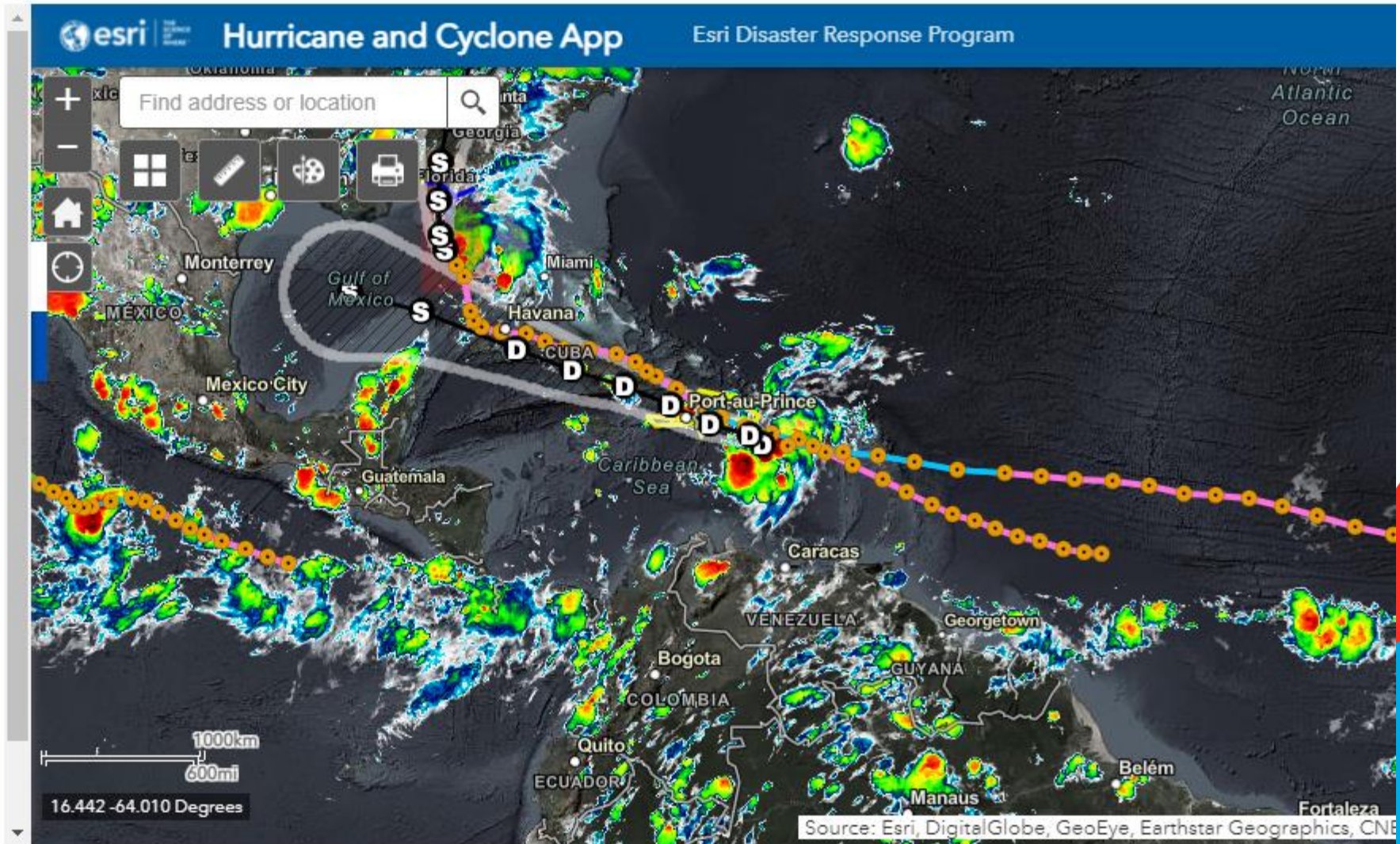
 **DRP Admin**
Caribbean GeoPortal

Summary

This map contains live feed sources for hurricane path and forecast path of tropical activity from the National Hurricane Center and Joint Typhoon Warning Center.

[View Full Details](#)

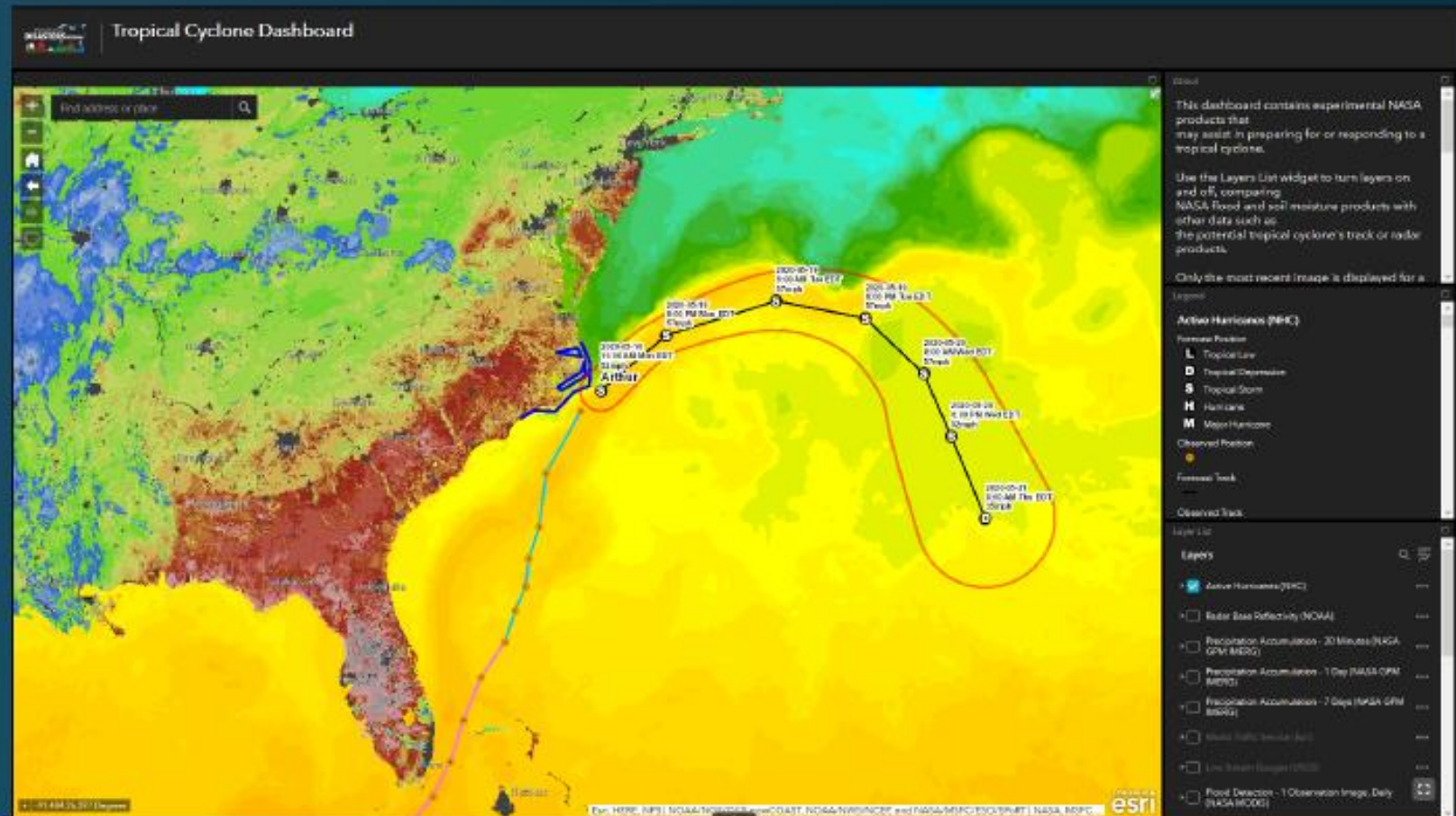
-  **Application**
Web Mapping Application
-  **August 2, 2021**
Date Updated
-  **February 6, 2018**
Published Date
-  **Public**
Anyone can see this content



NASA Disaster Program Data

Tropical Cyclone Dashboard

- Demonstrate ways to combine NASA data with other sources
- Layers include:
 - Soil Moisture (NASA)
 - MODIS Flood Products (NASA)
 - Hurricane Forecast Track (NOAA)
 - Radar (NOAA)
 - Sea Surface Temp. (NOAA/NASA SPORT)
 - GOES Imagery (NOAA)





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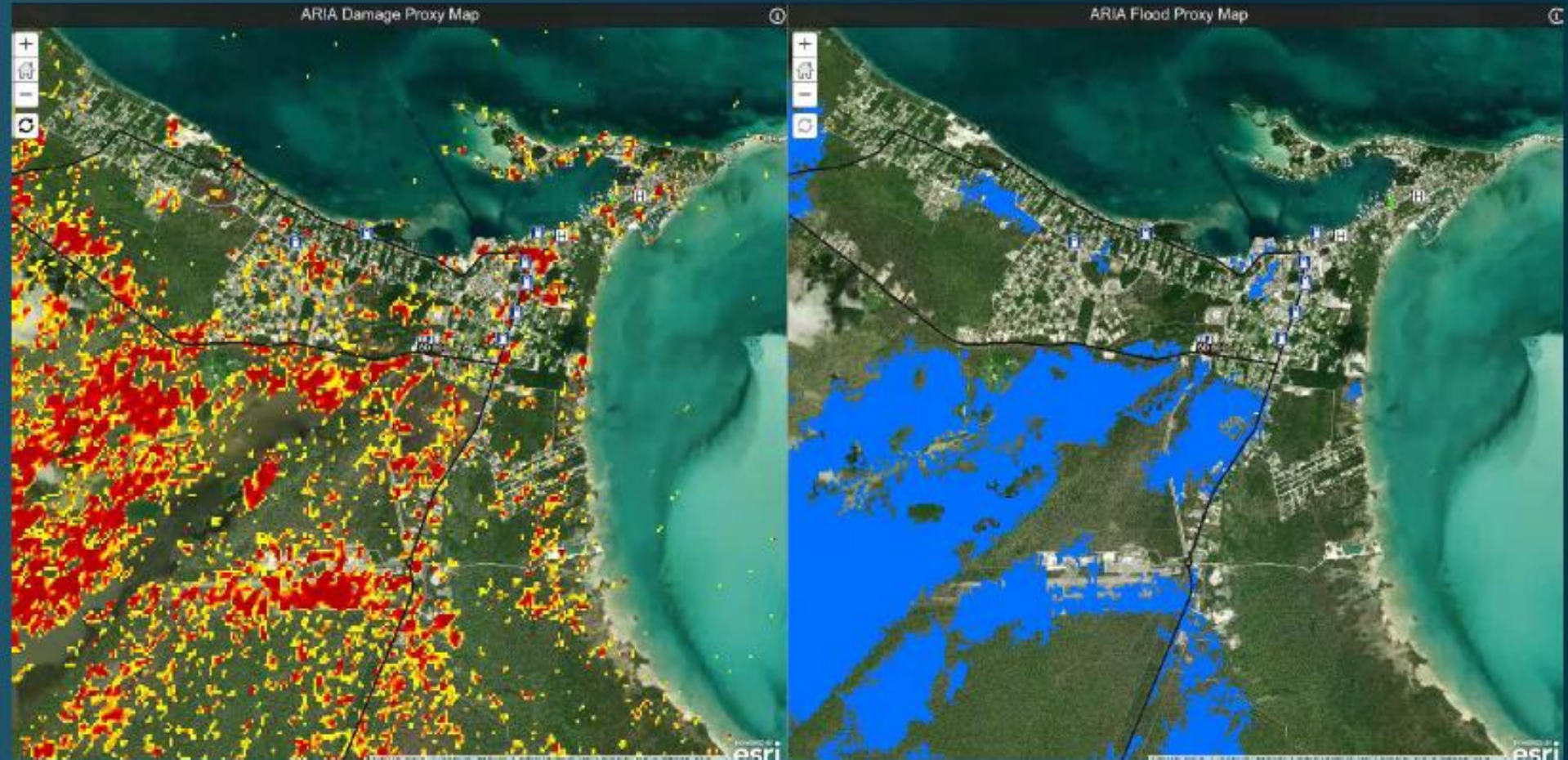
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Source: NASA Disaster Program

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





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Source: NASA Disaster Program

Near Real-Time Products

- Global unless noted otherwise
- Coarser resolution
- Automatically updated every few hours to daily or weekly
- Many products for the Caribbean
 - Black Marble Nighttime Blue/Yellow Composite
 - FIRMS Active Fire Points (MODIS, VIIRS)
 - Global Landslide Nowcast
 - Flood Detection – 2, 3 Observations (MODIS)
 - Precipitation Accumulation – 30 min, 3 hour, 1 day (GPM IMERG)
 - Soil Moisture and Soil Moisture Anomaly – 3-Day Composite (SMAP)
 - Evaporative Stress Index – weekly
 - Global Fire Emissions – Daily (VIIRS)
 - True Color Imagery – Daily (MODIS at 250m, VIIRS at 375m)
 - Natural Color Imagery – Daily (MODIS at 250m, VIIRS at 375m)





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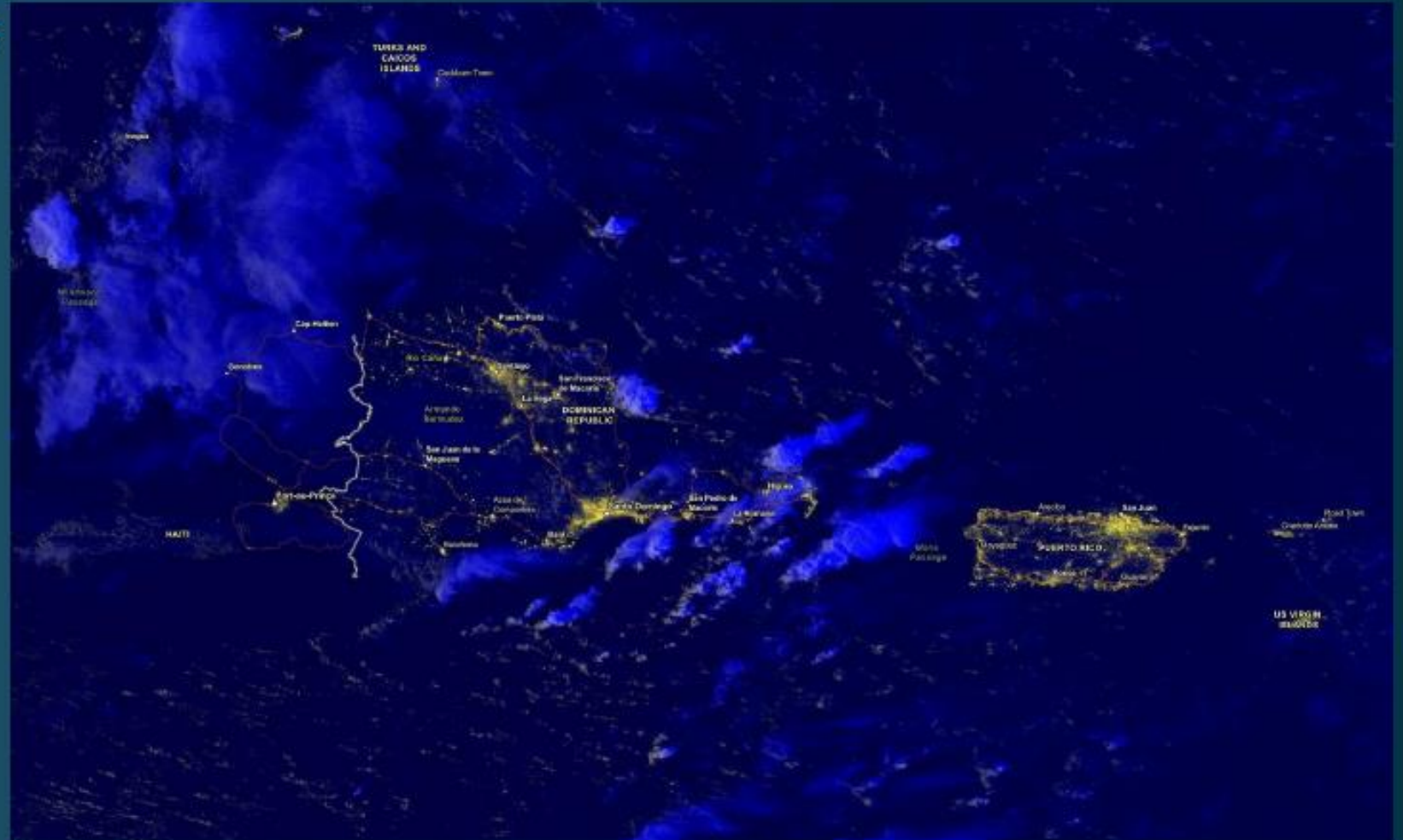
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Source: NASA Disaster Program

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





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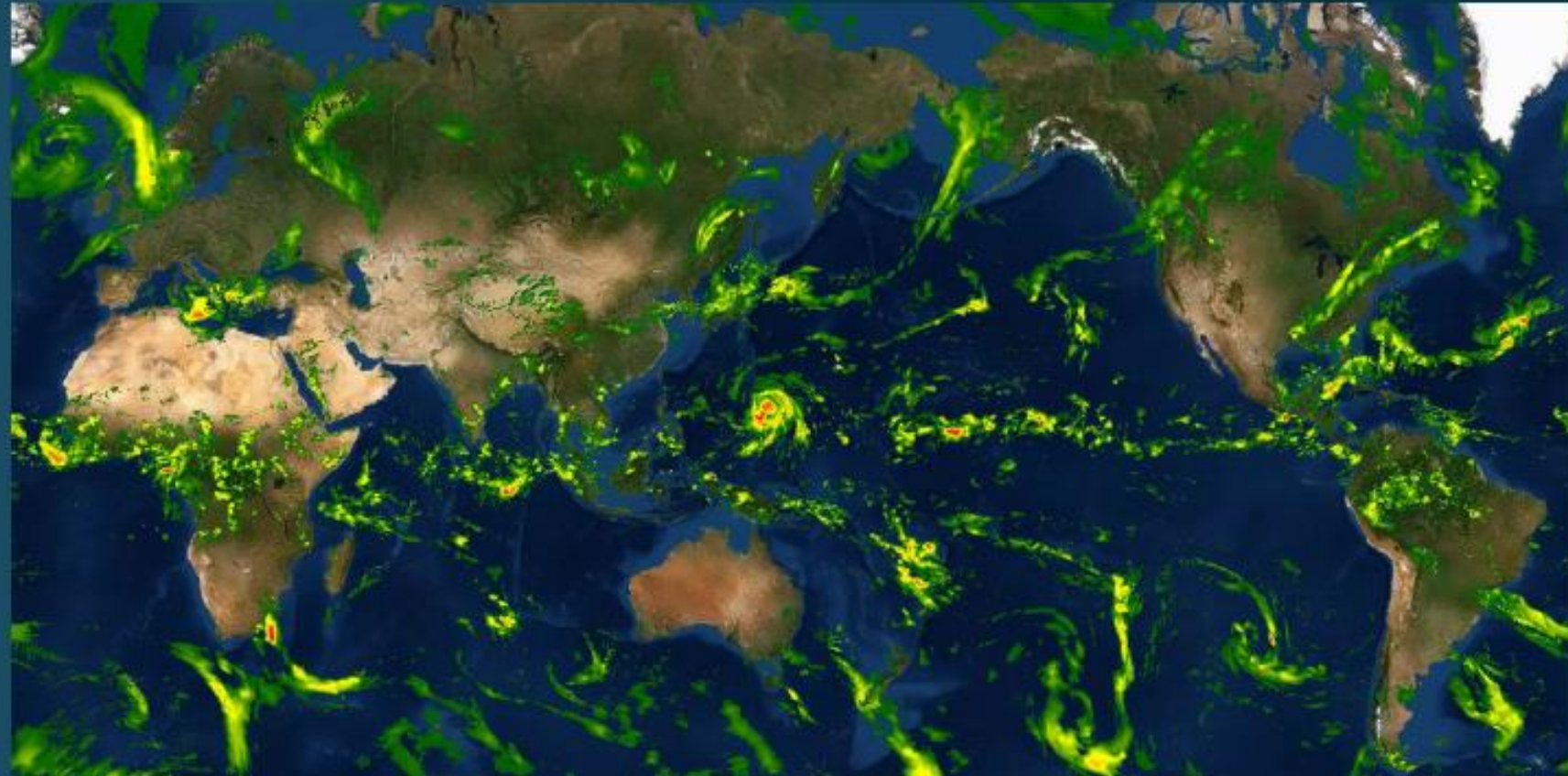
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Source: NASA Disaster Program

Global Precipitation Measurement Products

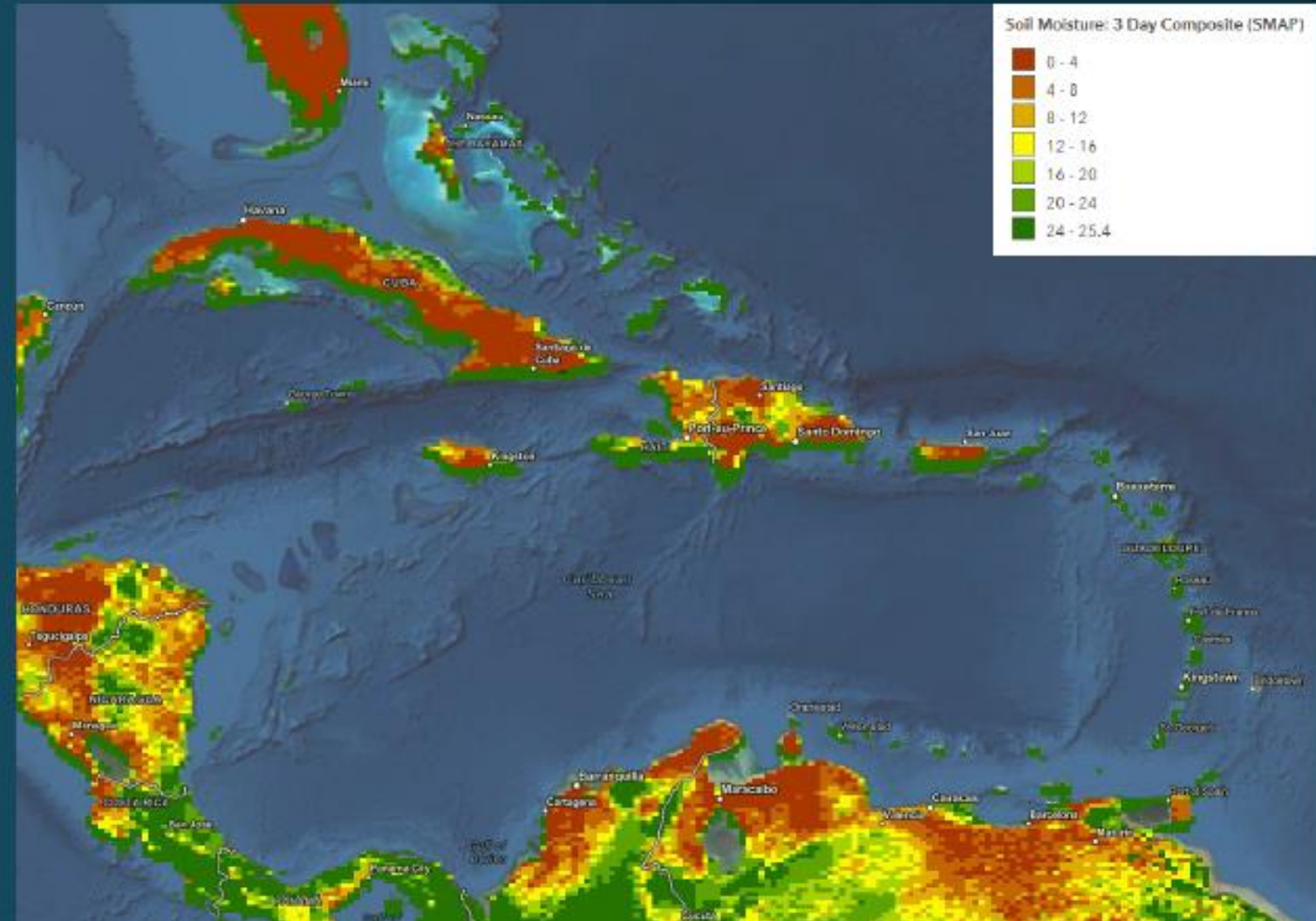
- 30-min, 3-hour, 1-day, 7-day total accumulations
- Resolution: 0.1 degrees
- Updated every 3 hours



Source: NASA Disaster Program

Soil Moisture

- Soil Moisture Active Passive (SMAP) derived product
- 3-Day Composite
- 25.4mm = saturated
 - Red = dry
 - Green = wet
- Resolution: .25°
 - Best for larger Countries





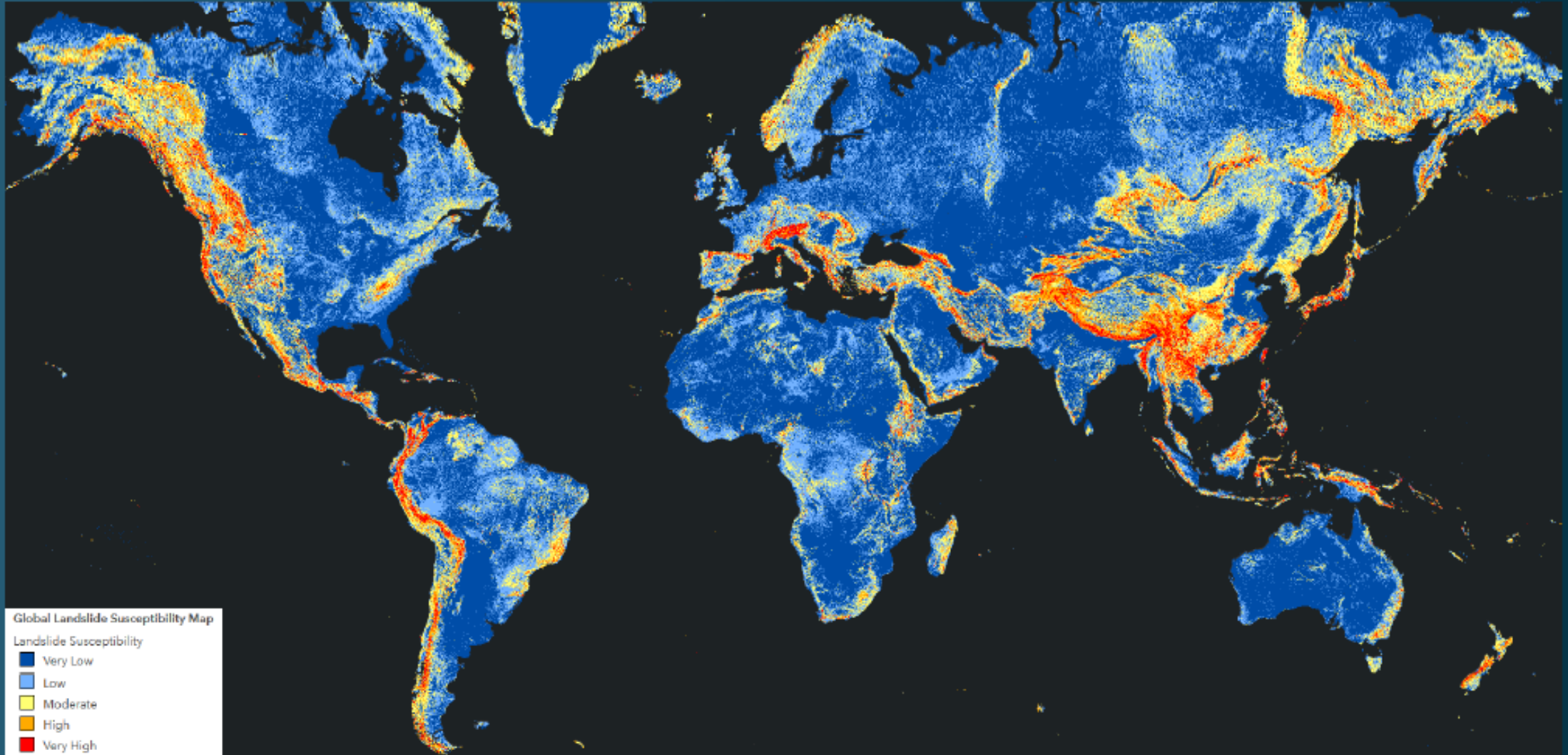
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Source: NASA Disaster Program

Global Landslide Susceptibility



... Caribbean Geoportal Webinar series

April - September 2021

Webinar #1:
How You Can Use the Caribbean Geoportal
(April 21, 2021)

Webinar #2:
Leveraging the Caribbean GeoPortal for Disaster Planning and Management
(June 22, 2021)

Webinar #3:
Metadata, Maintenance & Best Practices On Data Sharing
(for data producers)
(September 21, 2021)



https://www.youtube.com/watch?v=h8-C_wNhpkE



<https://www.youtube.com/watch?v=seekUoKUTIA&t=576s>



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Access
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Explore wide array of
geospatial data and
tools available

Contribute and upload
geospatial data

Apply geospatial tools
to analyze data and
make decisions in
response to disasters





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Thank you!

August 16, 2021



Simone Lloyd, GISP

Jamaica Co-chair support

UN-GGIM Working Group on Geospatial Information and Services for Disasters

&

Senior GIS Manager/Trainer

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