# Using the Caribbean GeoPortal for Disaster Management and Response

**Get Answers:** Questions will be answered in dedicated sessions throughout. You can submit them at anytime through the Q&A module.

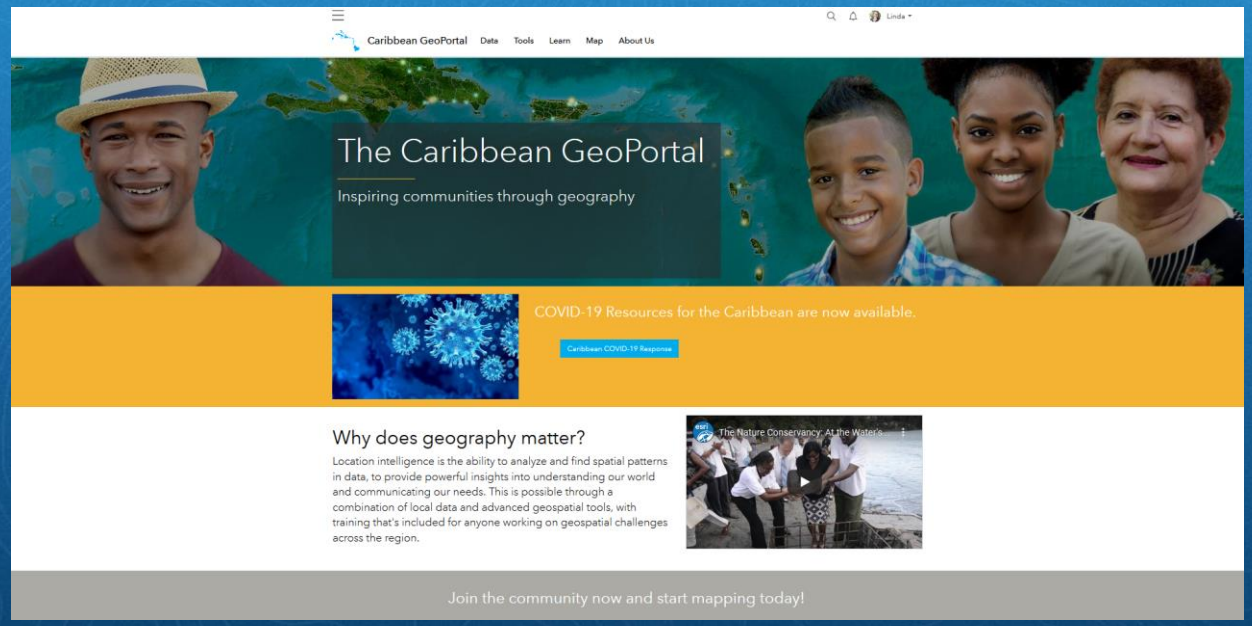
**On-Demand:** The recording will be posted shortly after the webinar.

You'll receive an email with the link to view or download.

**Start time:** The webinar will start at 7:00 am Pacific/10:00 am Eastern

**Contact us:** For anything else, please email us: **kelleymoreno@esri.com**

# Using the Caribbean GeoPortal for Disaster Management and Response




Caribbean GeoPortal

# CARIGEO

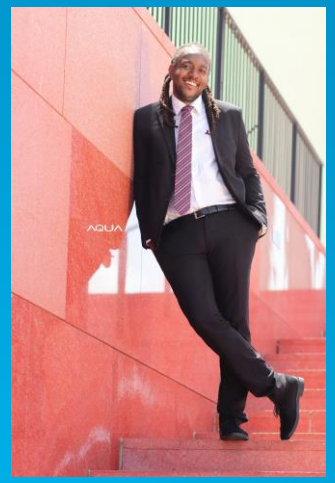
Caribbean Geospatial Development Initiative

GEO-EMPOWERING THE CARIBBEAN

an Initiative implemented by the Americas Regional Committee of United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)

# Today's Presenters

**Ms. Simone Lloyd**
*Sr. Geographic Information Systems Manager & Trainer*
National Spatial Data Management Branch/ Land Information Council of Jamaica, Co-Chair support UNGGIM Disasters Working Group



**Mr. Roshaun Clarke**
*Deputy Chief Executive Officer*
Spatial Innovision Limited

**Ms. Michelle St. Clair**
*Land Surveyor*
Lands and Surveys, Barbados

**Ms. Renee Babb**
*GIS Specialist*
Caribbean Disaster Emergency Management Agency (CDEMA)

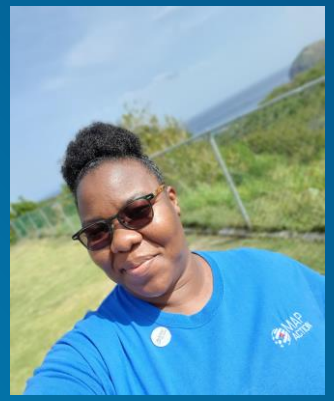
**Mr. Oronde Lambert**
*ICT Manager*
Caribbean Disaster Emergency Management Agency (CDEMA)

# Today's Presenters

**Mr. Jeremy Kirkendall**
*Sr. GIS Admin and Emergency Management Specialist*
NASA

**Mr. Garrett Layne**
*Disasters GIS Specialist*
NASA

**Mr. Robert Emberson**
*Associate Scientist*
NASA - GSFC



**Mrs. Lavern Ryan**
*GIS Manager*
Ministry of Agriculture, Land, housing and the Environment, Montserrat

**Ms. Dornet Hull**
*Town Planner*
Physical Planning Unit, Saint Vincent and the Grenandines

**Mr. Sean McGinnis**
*GeoPortal Program Manager*
Esri

# Agenda

| Introduction | Overview | Data for Disasters | Country Perspectives | Conclusion |
| --- | --- | --- | --- | --- |
| Importance of Geospatial in Disasters | Disaster Management and Response | NASA Data products | Responding to an event, experiences and lessons learned | Resources Questions |

Caribbean GeoPortal

# Importance of Geospatial in Disasters

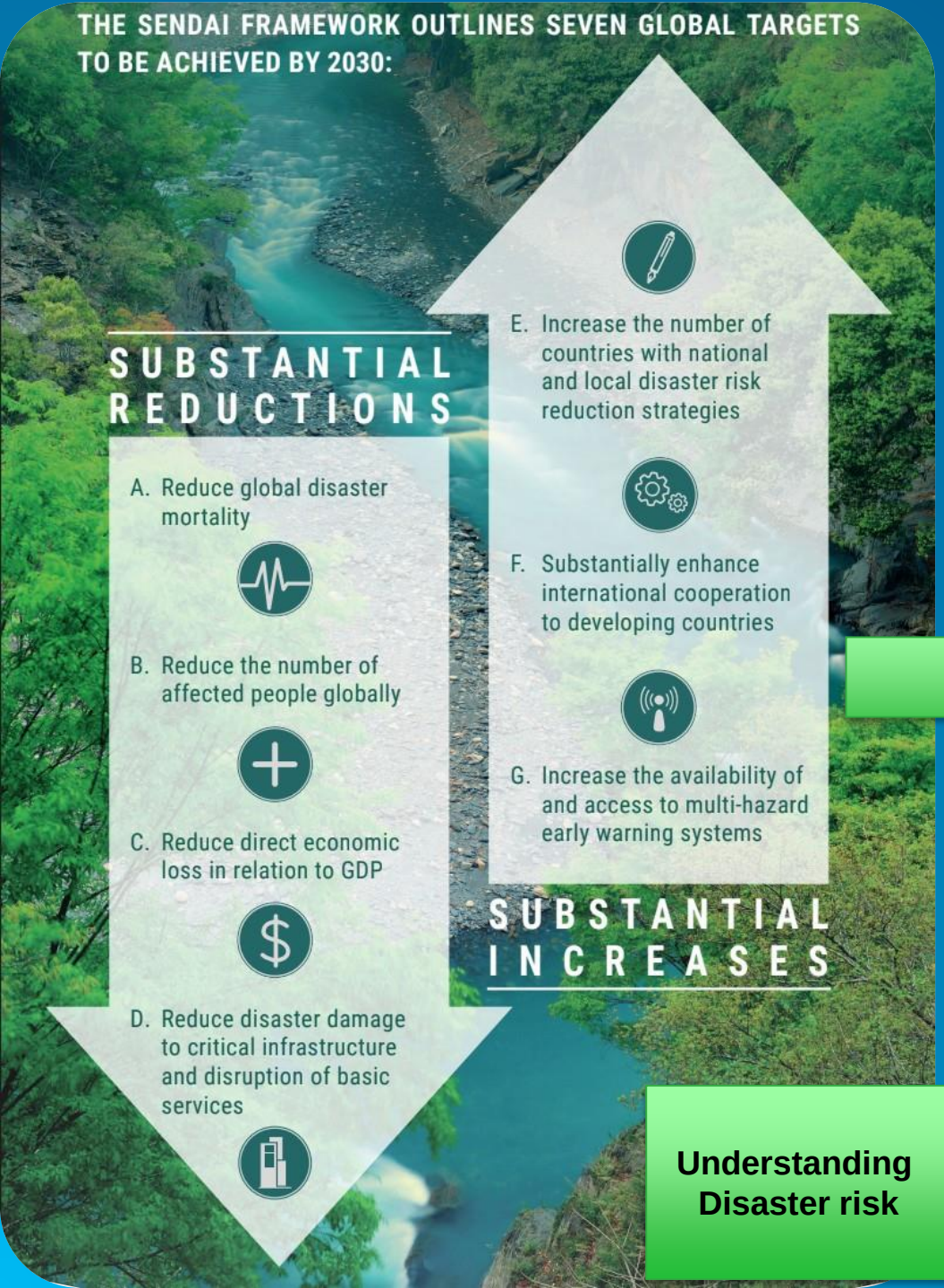
Simone Lloyd


# UN-GGIM WG on Geospatial Information and Services for Disasters (WG-Disasters)

## CARIGEO Caribbean Geoportal Webinar 2:
## "Leveraging the Caribbean Geoportal for Disaster Planning and Management"

June 22, 2021
10:00 – 12:00 pm (EST)

Simone Lloyd, GISP
Senior GIS Manager & Trainer, National Spatial Data Management Branch
Jamaica Co-chair support, UN-GGIM WG Disasters &
Jamaica Focal Point, UN-GGIM CARIGEO Steering Committee




Endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR), and advocates for:

*The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.*

UNISDR

www.preventionweb.net/go/sfdrr
www.unisdr.org
isdr@un.org

## Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030

### Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors.

### Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

### Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

### Targets

Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015

Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015

Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030

Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030

Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020

Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030

Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030

### Priorities for Action

There is a need for focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas.

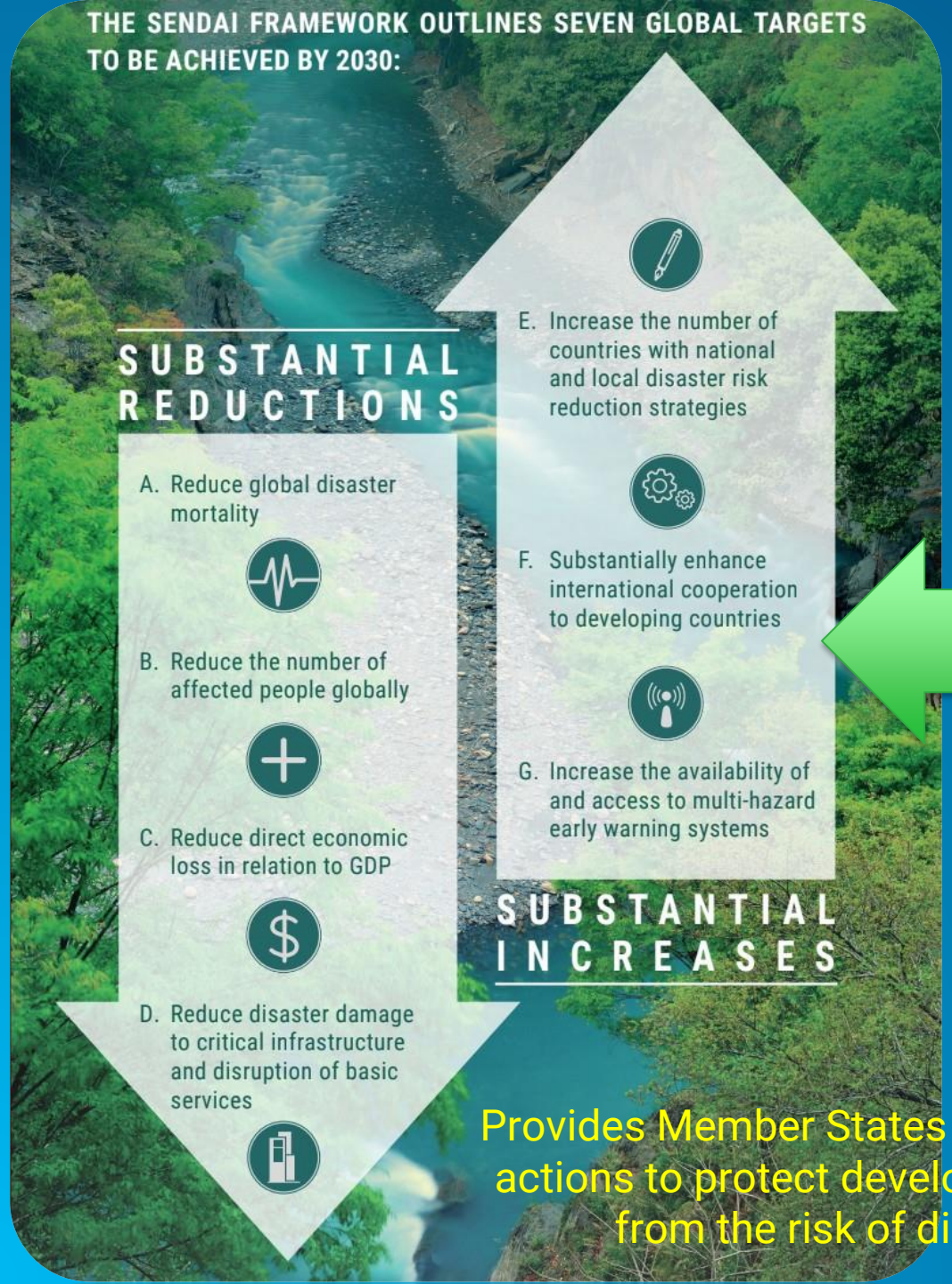
**Priority 1**
Understanding disaster risk

**Priority 2**
Strengthening disaster risk governance to manage disaster risk

**Priority 3**
Investing in disaster risk reduction for resilience

**Priority 4**
Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

**Understanding Disaster risk**



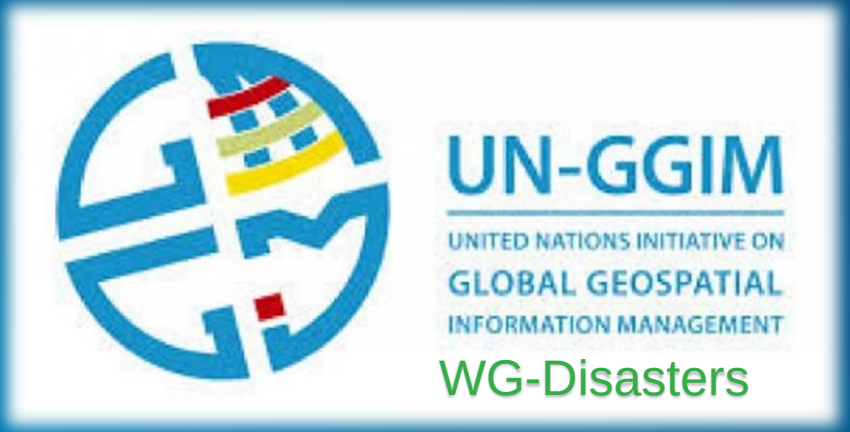

Aligned


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

UN-GGIM
UNITED NATIONS INITIATIVE ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT
WG-Disasters

United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) in August 2015, under decision 5/110 supported the proposal to establish a working group to further develop and implement a strategic framework that would be:

- Focused in a **practical manner**;
- Aligned with the outcome and follow-up to the **Sendai Framework for Disaster Risk Reduction 2015-2030** and its implementation;
- Able to take into consideration the **special needs of developing countries**, especially with respect to **capacity building and knowledge sharing** and;
- Broadly representative of **different regions of the world** and taking into account regional experiences.




## Vision:

- **Accurate, timely and reliable geospatial information and services are available, in a coordinated way, to decision makers and operational leads prior to, during and post disasters.**

Provide a forum for dialogue and coordination among member states, UN system, DRR organizations etc.

Improve the availability, accessibility and timeliness of good quality geospatial information for DRR

Encourage greater coordination and collaboration on geospatial information activities for DRM

# Strategic Framework on Geospatial Information and Services for Disasters


## Strategic Framework on Geospatial Information and Services for Disasters 2016 - 2030

### Scope and Purpose

The strategic framework aims to guide all stakeholders and partners in the management of geospatial information and services in all phases of Disaster Risk Reduction and Management (DRRM)

### Expected Outcome

The human, economic, and environmental risks and impacts of disasters are prevented and reduced through the use of geospatial information and services

### Goal

Quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations within and among all stakeholders and partners and in all phases of DRRM

### Priorities for Action

Member States with the support of regional and international organizations as well as other relevant organizations should focus their action on the following five priorities for action:

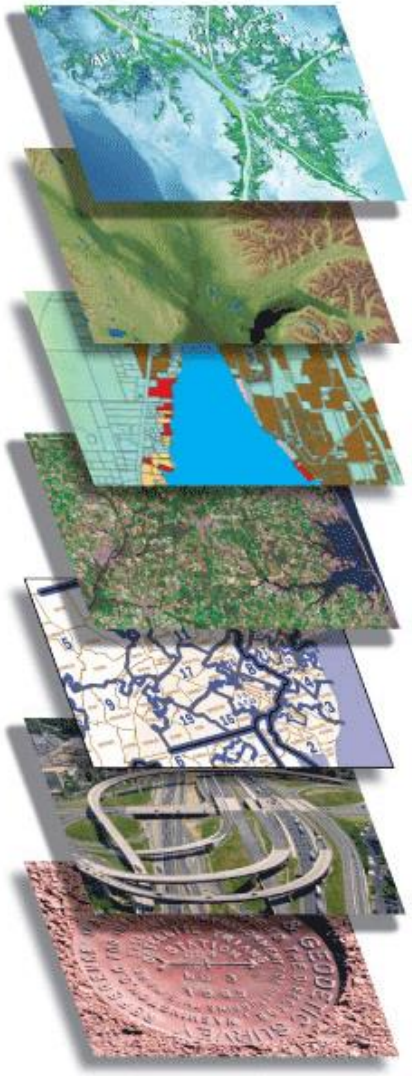
| Priority 1<br>Governance and Policies | Priority 2<br>Awareness Raising and Capacity Building | Priority 3<br>Data Management | Priority 4<br>Common Infrastructure and Services | Priority 5<br>Resource Mobilization |
|---|---|---|---|---|
| Policies, collaborative agreements and legal frameworks aiming at improving the availability and accessibility of quality geospatial information and services among all stakeholders and partners established and implemented in all phases of DRRM | Awareness is raised among concerned entities on the importance of geospatial information and services and all necessary technical and human capacities are built and/or strengthened especially in the pre-disaster phase of DRRM | Geospatial databases and information products are developed based on common standards, protocols and processes as important tools in every decision-making process across all phases of DRRM | Common facilities and services are established for all key stakeholders and partners to have a common operational picture of emergency scenarios especially during and in the post-disaster phases of DRRM | All necessary technical, human and financial resources are available to sustain all the activities of DRRM |

### Guiding Principle

The strategic framework is guided by the 2030 Agenda for Sustainable Development, International Strategy for Disaster Reduction, Sendai Framework for Disaster Risk Reduction 2015-2030, UN General Assembly resolution on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development and other relevant instruments. It is also guided by the principles of open data and requirements of national data infrastructure, and by the UN-GGIM's own Statement of Shared Principles for the Management of Geospatial Information.

http://ggim.un.org/documents/UN-GGIM_Strategic_Framework_Disasters_final.pdf

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



# Use of:

geospatial information & services

+

relevant statistical information

=

better understand, formulate policies and manage risks and impacts of disasters

# Member States

# Disaster Risk Levels in Caribbean

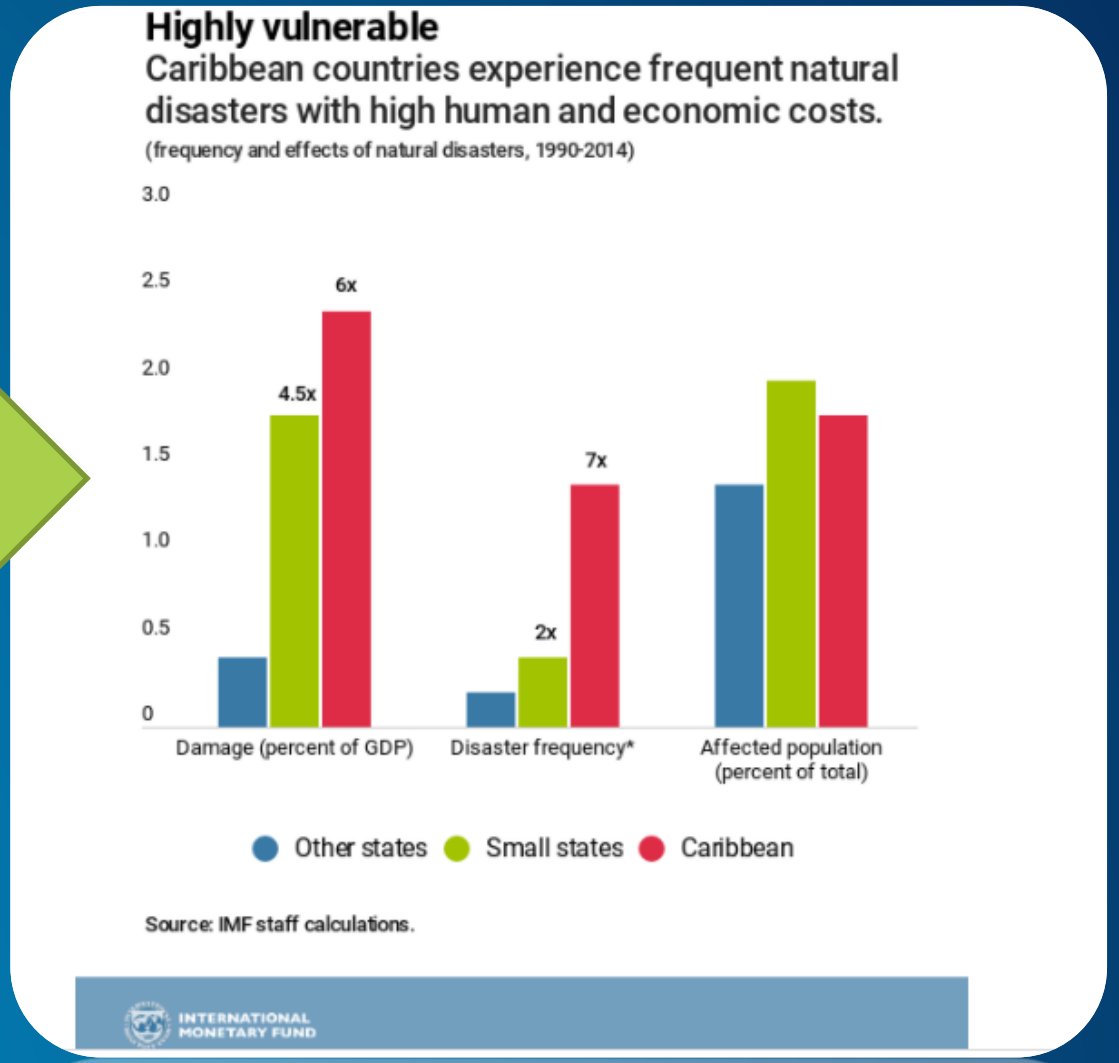

https://www.childfund.org/Content/NewsDetail/2147489272/

**Natural Disaster Risks:**

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

**Other Disasters:**

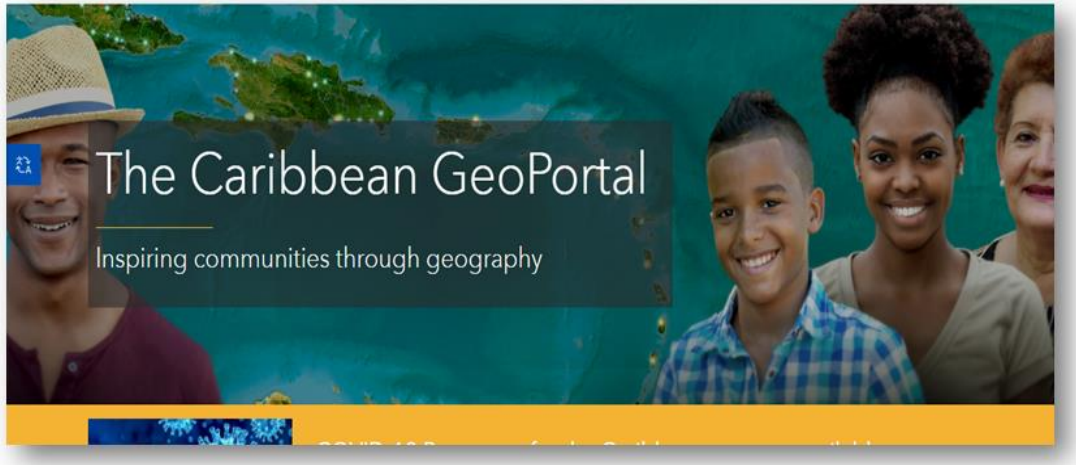
- Epidemic & Pandemics eg. COVID-19
- Chik V, Zik V etc




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.

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN

# Caribbean Geoportal Webinar series
## (April - August 2021)




Webinar #1:
**Learn 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**
(August 26, 2021)


Thank you

UN-GGIM
UNITED NATIONS INITIATIVE ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT


***Simone Lloyd, GISP***

*Jamaica Co-chair support*

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

&

Senior GIS Manager/Trainer

National Spatial Data Management Branch (NSDMB)

Land Information Council of Jamaica (LICJ)

Ministry of Housing, Urban Renewal, Environment & Climate Change (MHURECC),

Jamaica W.I

simone.lloyd@mhurecc.gov.jm

# Disasters in the Caribbean

Michelle St. Clair

# The Caribbean at a glance


**Population**
**44.2M**

**GDP per capita**
**US$33K – US$745**

**Small Island Developing States**

# Vulnerabilities of Caribbean SIDS

Small size

Economic, social & environmental factors

Vulnerability

Remoteness from markets

Narrow resource base

Climate Change
&
Intense Natural Disasters

# Natural Disasters

STORMS

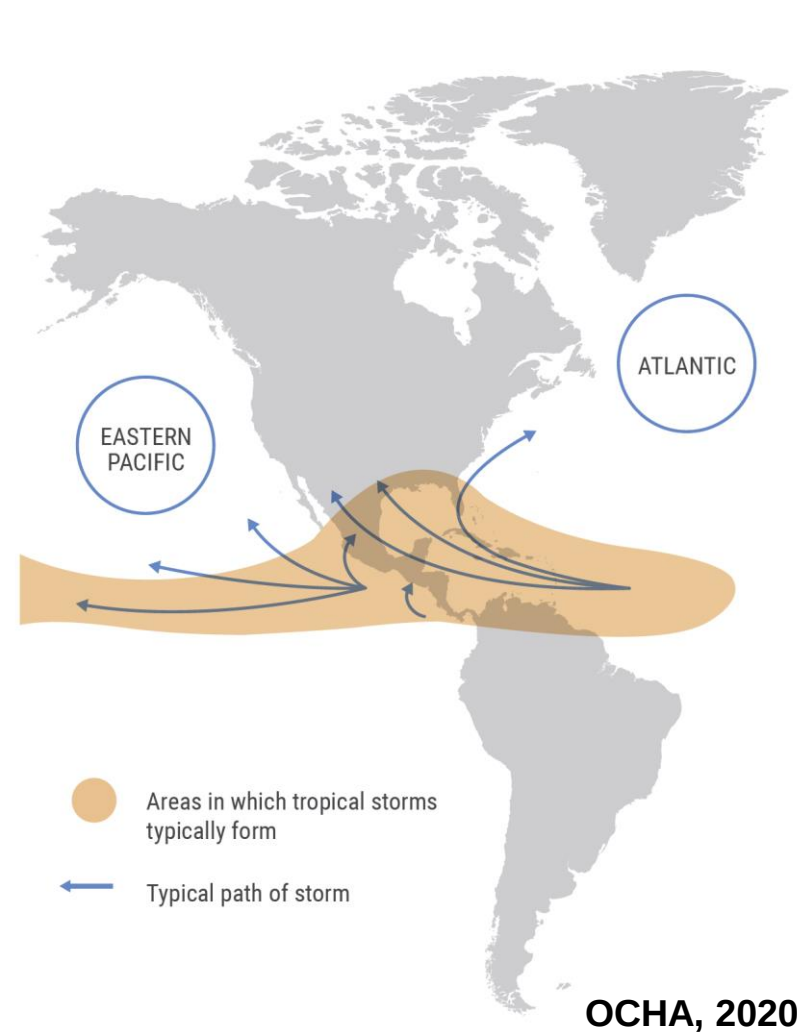
FLOODS

VOLCANIC ACTIVITY

EARTHQUAKES

DROUGHTS

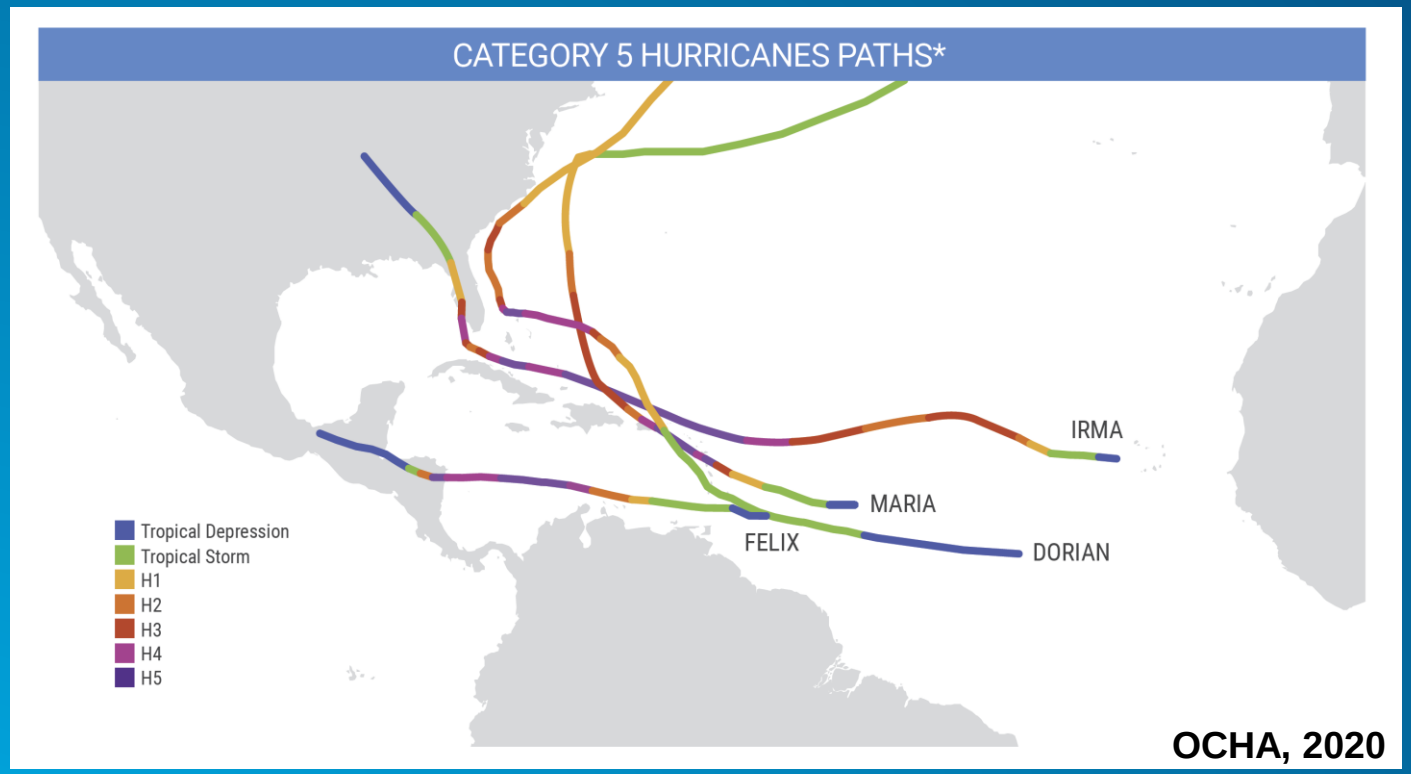
# Tropical Storms & Hurricanes




**OCHA, 2020**

- An average of **17 hurricanes per year.**
- From 2000 to 2019 there were **23 Category 5 hurricanes**.
- The 2017 hurricane season is the **third worst on record** in terms of number of disasters and countries affected as well as the magnitude of damage.
- In 2019, Hurricane Dorian became the **strongest Atlantic hurricane** on record to directly impact a landmass.

# Tropical Storms & Hurricanes




OCHA, 2020

| Hurricane Irma | Hurricane Maria | Hurricane Dorian |
|---|---|---|
| Aug 30 – Sept 12, 2017 | Sep 16 – 30, 2017 | Aug 24 – Sep 10, 2019 |
| Category 5<br>180 mph (290 km/h) | Category 5<br>170 mph (274 km/h) | Category 5<br>220 mph (354 km/h) |
| 47 deaths | 143 deaths | 67 deaths |
| 10M people affected | 927K people affected | 29.5K people affected |

Dominica – Hurricane Maria, 2017

Bahamas – Hurricane Dorian, 2019

Bahamas – Hurricane Dorian, 2019

# Volcanic Activity



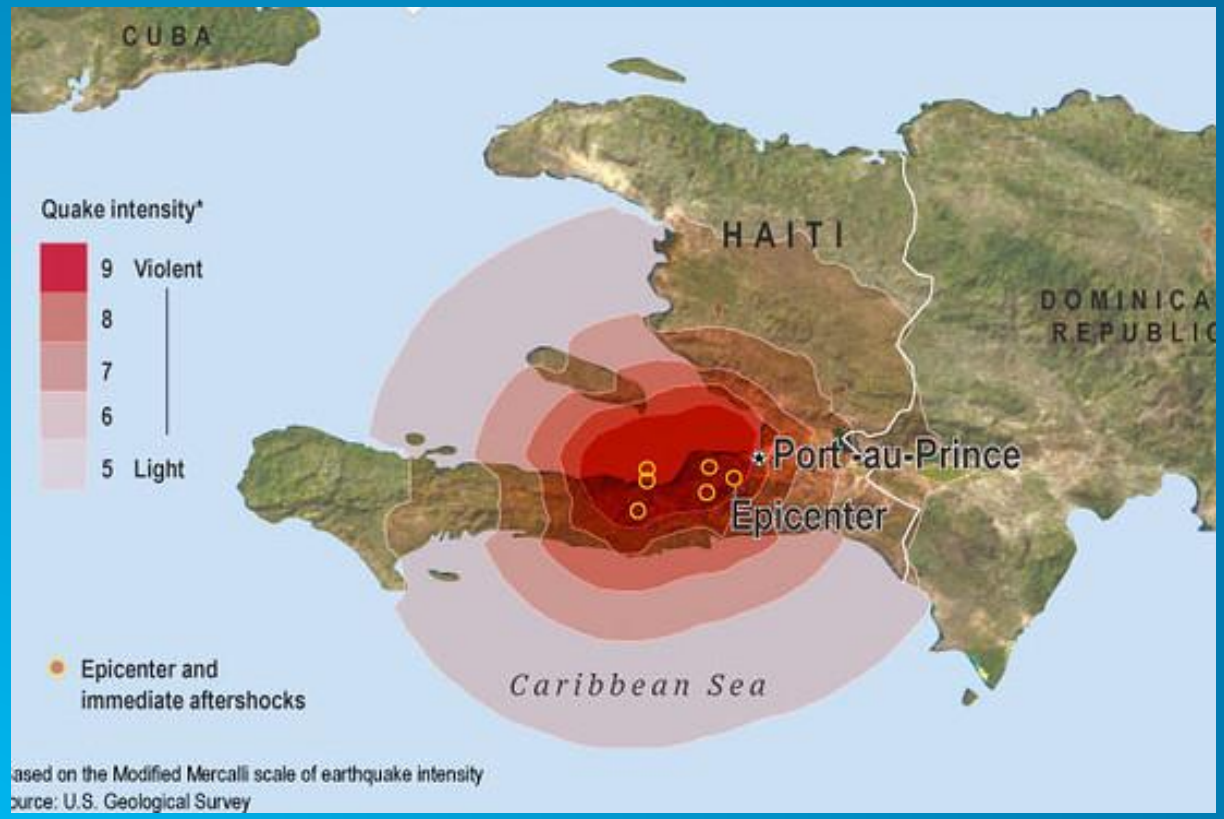

| La Soufriere Eruption<br>ST. VINCENT & THE GRENADINES |
| --- |
| starting April 9, 2021 |
| ~ 20,000 people evacuated |
| damages/losses up to 50% of GDP |

# Earthquakes

**Number of Earthquakes between 2009 and 2019:**

| South America | Central America | Caribbean* |
|---|---|---|
| 35 | 32 | 8 |

**OCHA, 2020**



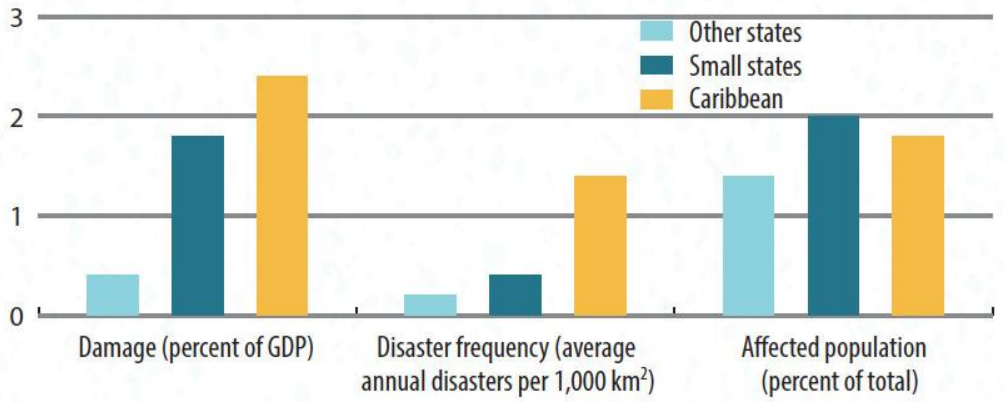

| HAITI |
|---|
| January 12, 2010 |
| Magnitude 7.0 |
| ~ 316,000 deaths |
| ~300,000 injured |
| ~ 1.3M people homeless |
| Estimated losses US$7B – US$14B |

# Impact of Natural Disasters

## Economic

**Highly exposed**

Natural disasters occur more frequently and cost more on average in the Caribbean than elsewhere—even in comparison to other small states.

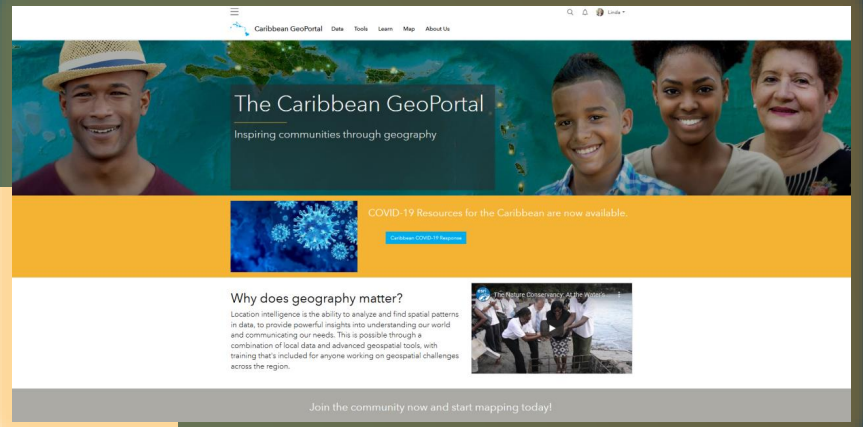


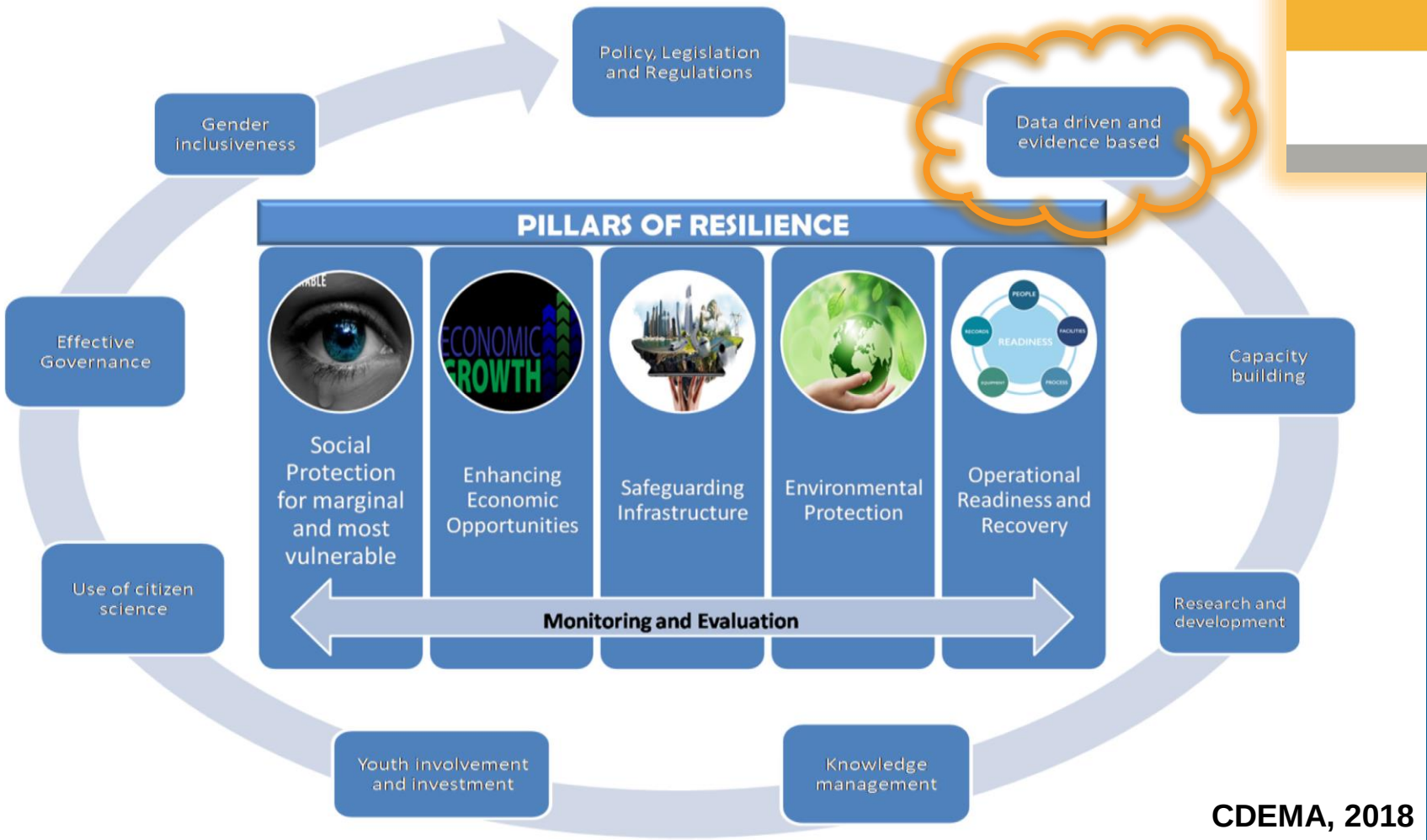

**Sources:** EM-DAT; IMF. 2016. "Small States' Resilience to Natural Disasters and Climate Change—Role for the IMF"; IMF, *World Economic Outlook*; World Bank, *World Development Indicators*; and authors' calculations.

## Social

## Environmental

# Data as a Pathway to Resilience




CDEMA, 2018

# Open Q/A

# Disaster Management and Response

Roshaun Clarke, Renee Babb, Oronde Lambert and Sean McGinnis

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


# Understanding Potential Impact

***Question***: **The frequency and intensity of threats and hazards is ever increasing. How are you using GIS or geospatial information, tools and technology today to better understand the potential impact to citizens and infrastructure?**

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


**Estimate prepare and deploy limited resources**

***Question*: Preparing where to deploy resources is critical today to insure equitable outcomes. How are you using geography and spatial awareness to better understand this key issue?**

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


# Monitor Rapidly Changing Conditions

***Question:*** **Often in a disaster setting, conditions in the field degrade quickly – how do you see GIS being used to support ready response during field operations?**

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


# Assess and Report Damage

***Question***: **During and after a storm, understanding areas of impact are critical to response. How do you begin to understand evolving events for damage assessments towards supporting restoration efforts?**

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


# Provide Real Time Operational Status

***Question***: **For Responders having secure access to real time situational information is key – how are you using GIS to help in this area?**

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN


# Communicate effectively with public and partners

***Question***: **Citizens need access to information before, during, and after an incident to assess risk and determine when to act. But information without context is hard to understand. Is this an area you provide support as well? If so, in what ways?**

# Open Q/A

# Poll Question

Please Tick the Boxes that Apply to You

# NASA Data Products

Jeremy Kirkendall, Garrett Layne, Robert Emberson, Sean McGinnis

National Aeronautics and Space Administration

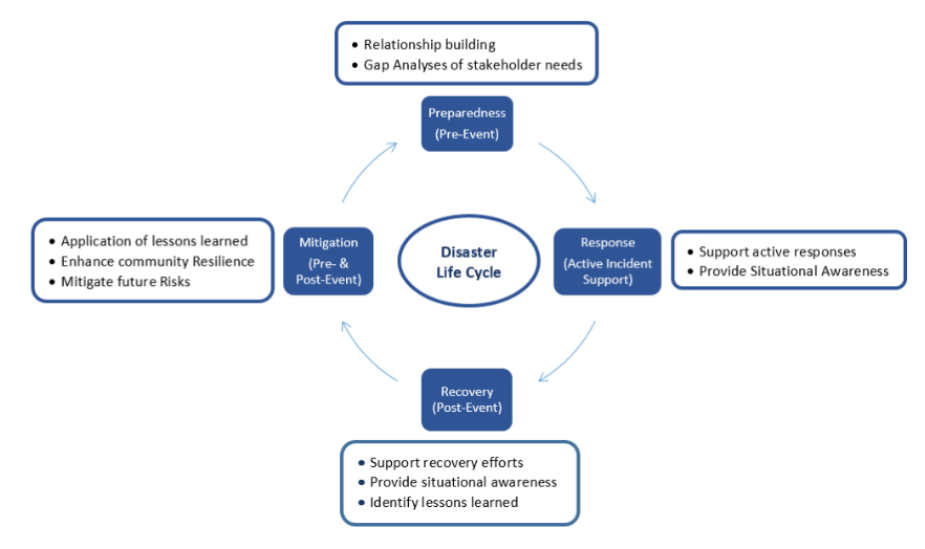
# EXPLORE EARTH

**Jeremy Kirkendall, Garrett Layne, Robert Emberson**
NASA Disasters Program

Caribbean GeoPortal Content

June 22, 2021

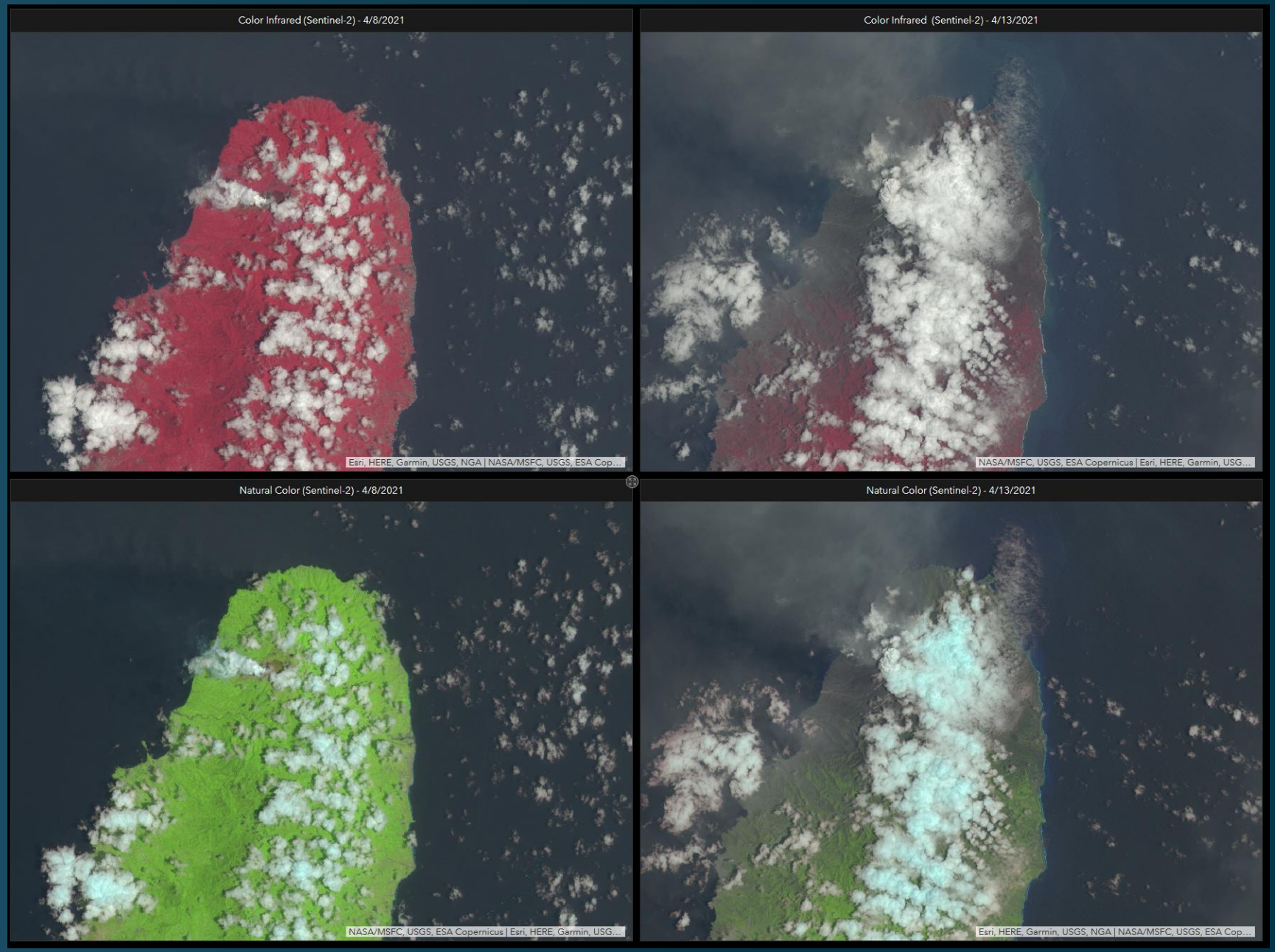
# Disasters Program Mission and Goals




- 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.

# Event Specific Products

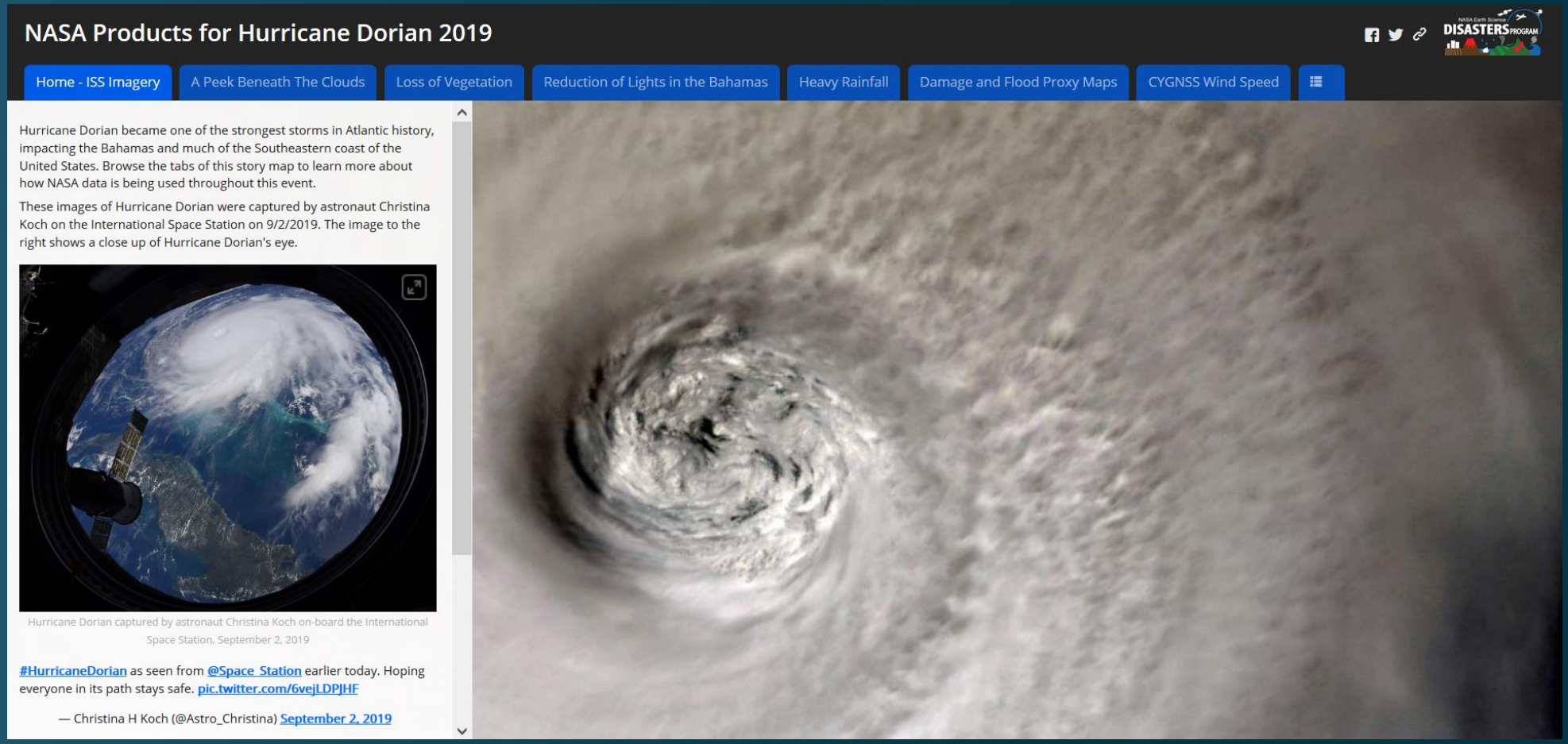
- Created for specific disasters
  - Hurricanes, earthquakes, flooding, volcanic eruption etc.
- Manually created
- Resolution varies, 10m and up
- Latency usually 1-2 days post satellite overpass




*Vegetation covered by volcanic ash on St. Vincent*

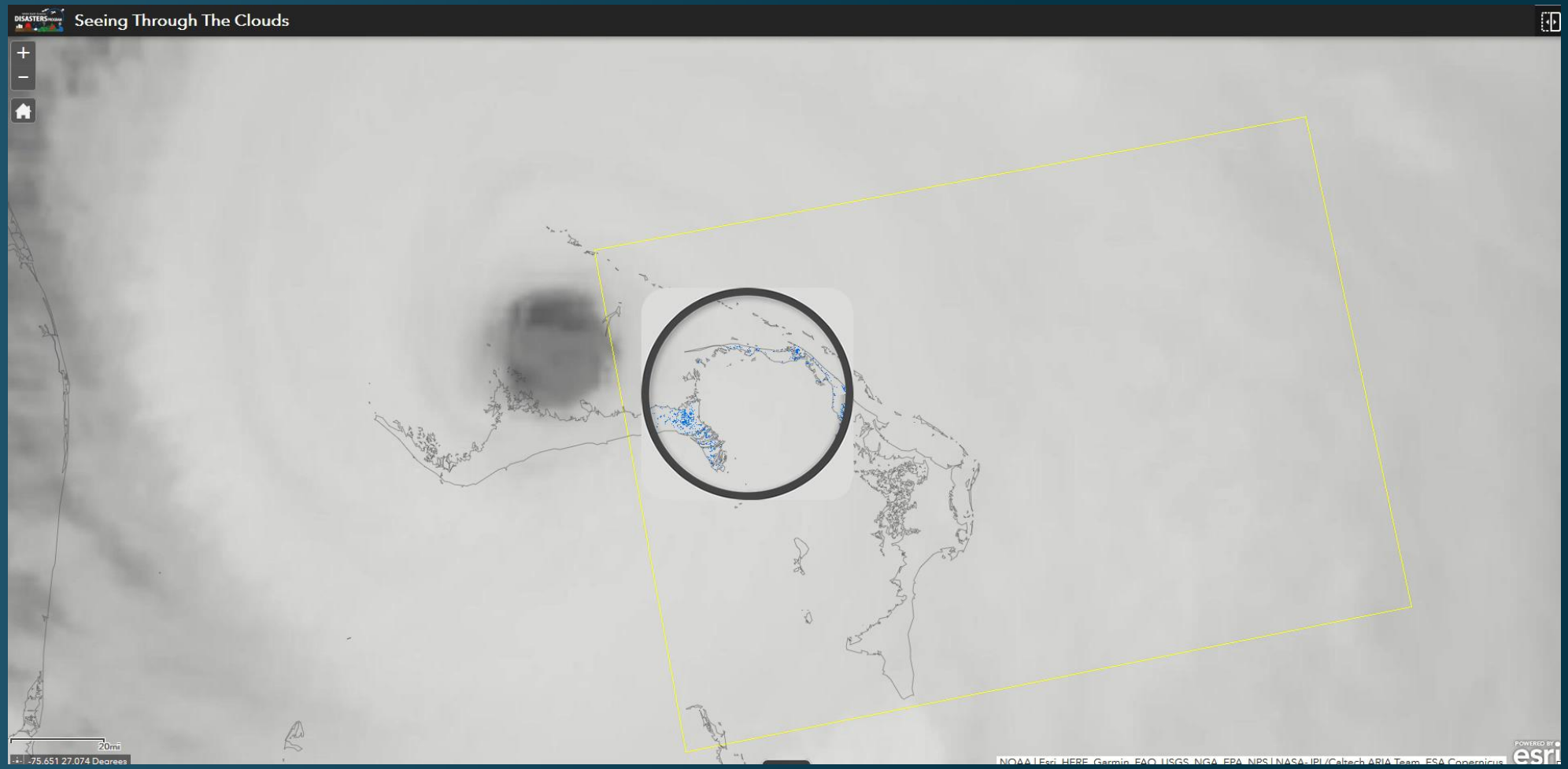
# Story Maps

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



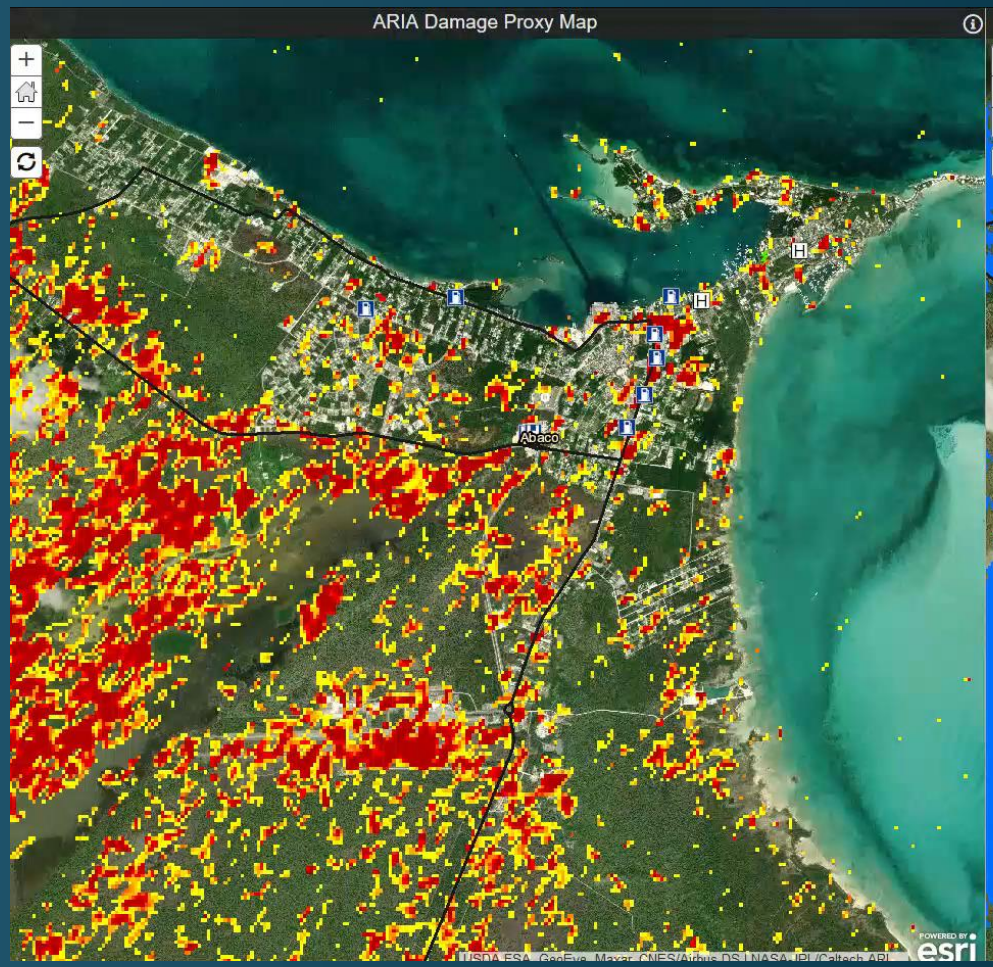
# Interactive widgets and web apps

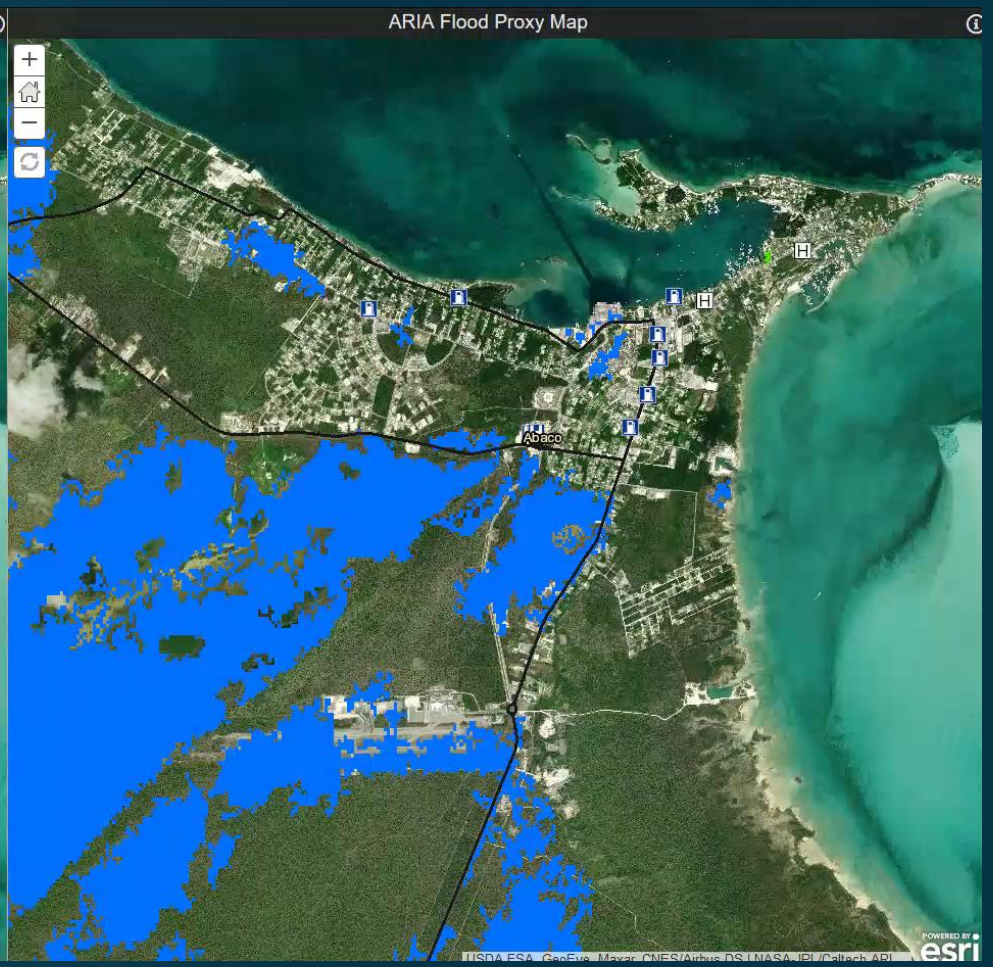
- Help Explain Products
- Show ways to use data



# 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

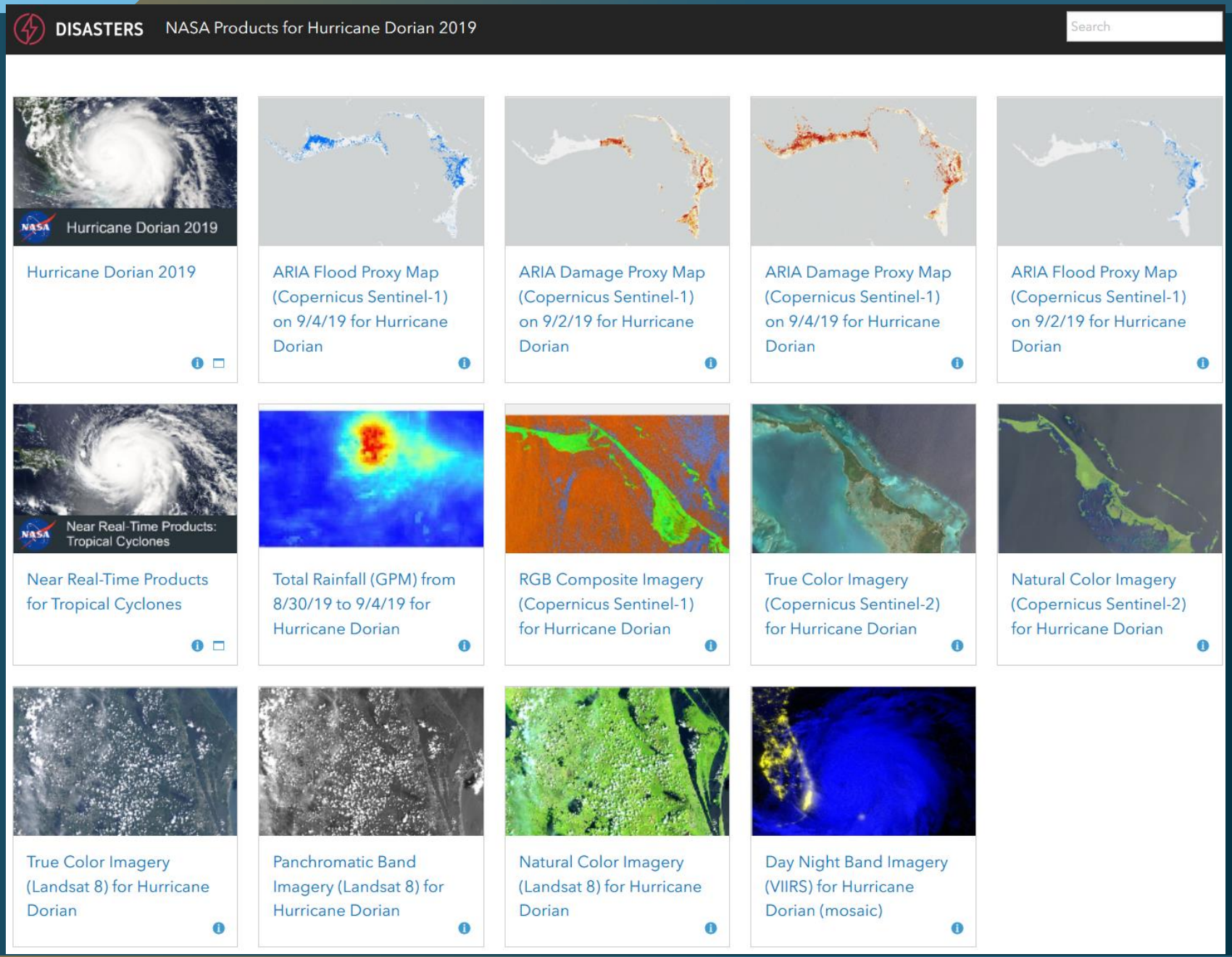


# Product Gallery

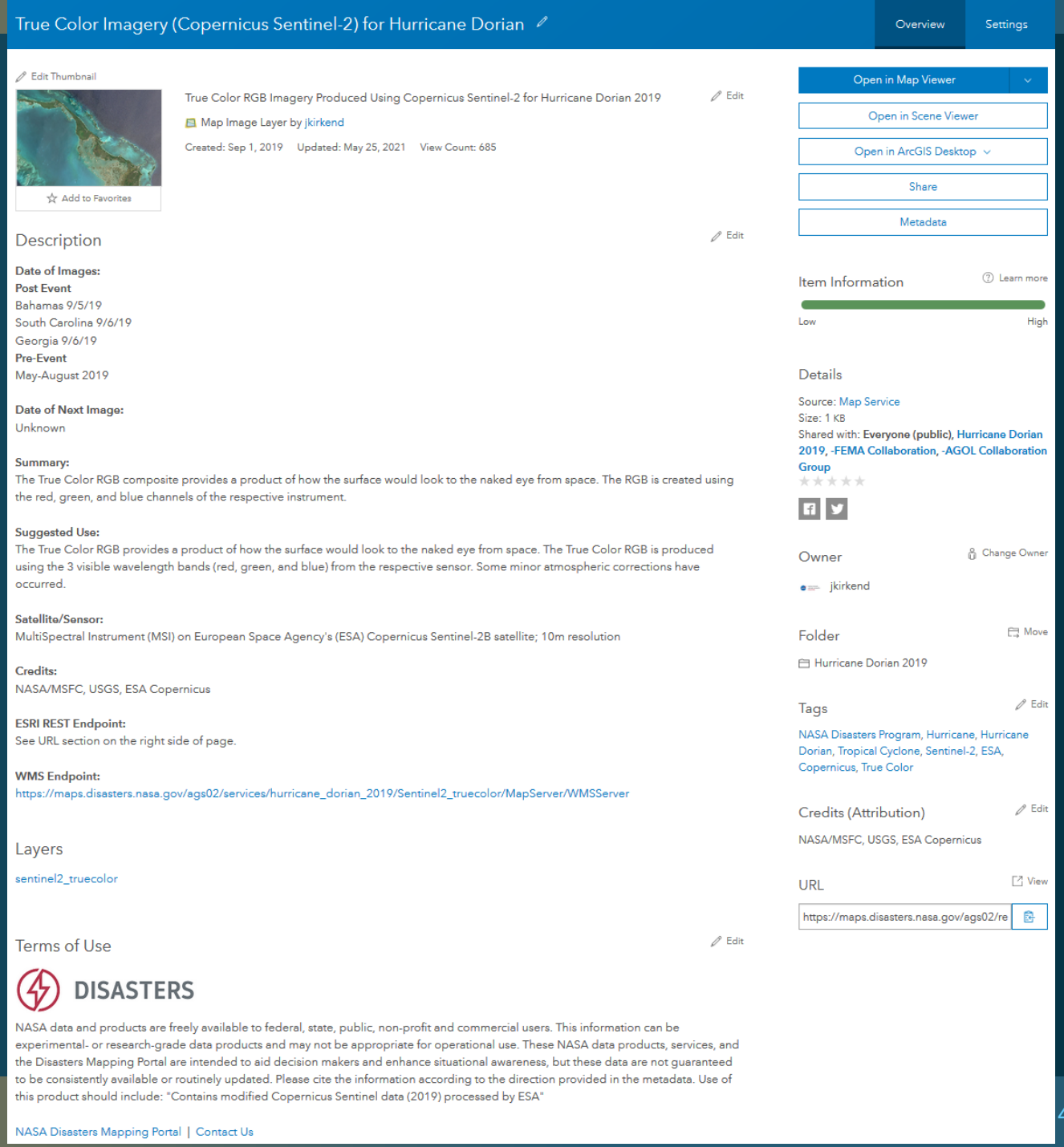
## Hurricane Dorian

- Event Specific Products
- Relevant Near Real-Time Products and Dashboards
- Story Map



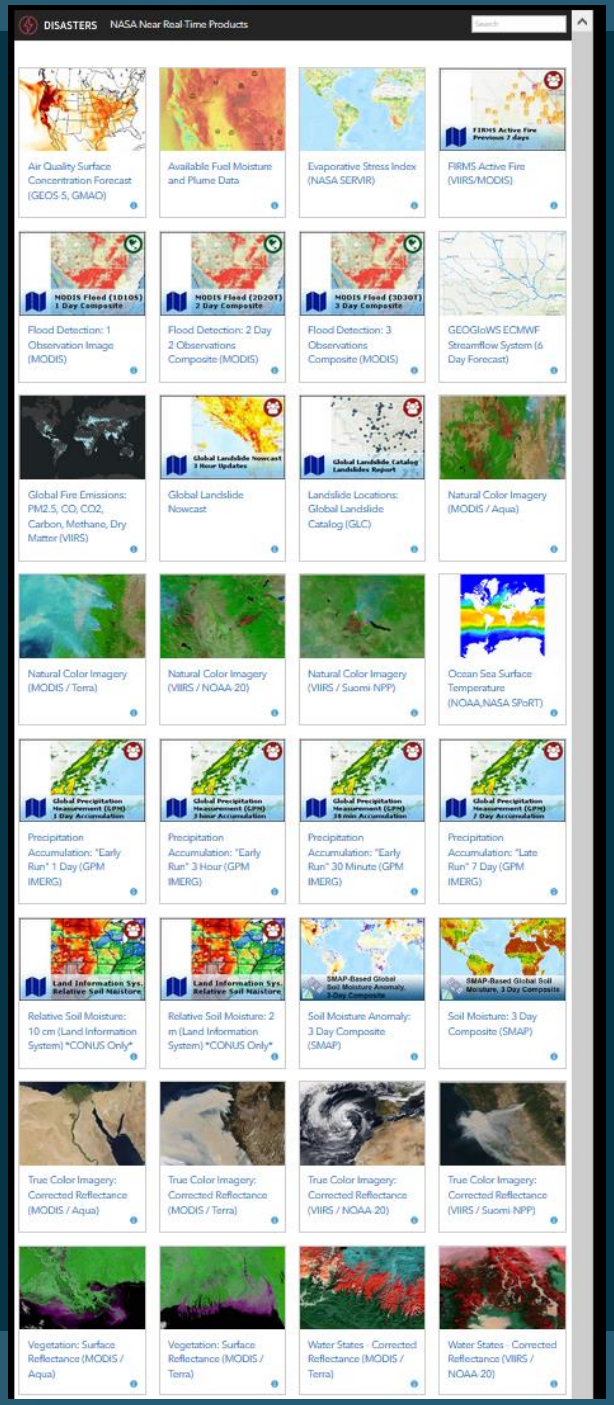
# Item Details Page

- Date of Image(s)
- Summary
- Suggested Usage
- Satellite/Sensor
- Credits
- REST Endpoint
- WMS Endpoint
- Data Download Link When Possible
- Terms of Use
  - 100% Free To Access
  - Open To All Users
- Contact Us link



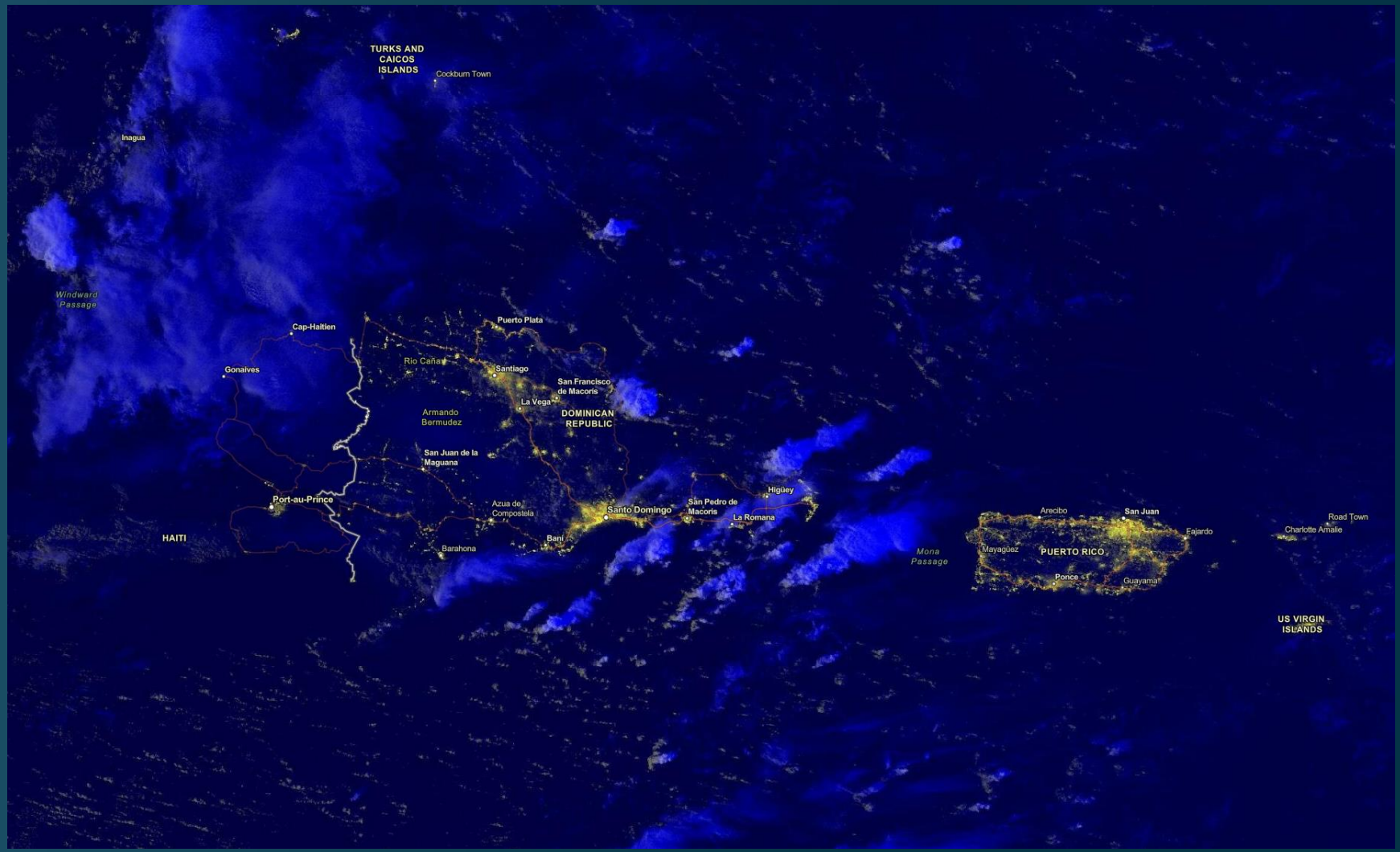
# Near Real-Time Products

- 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)



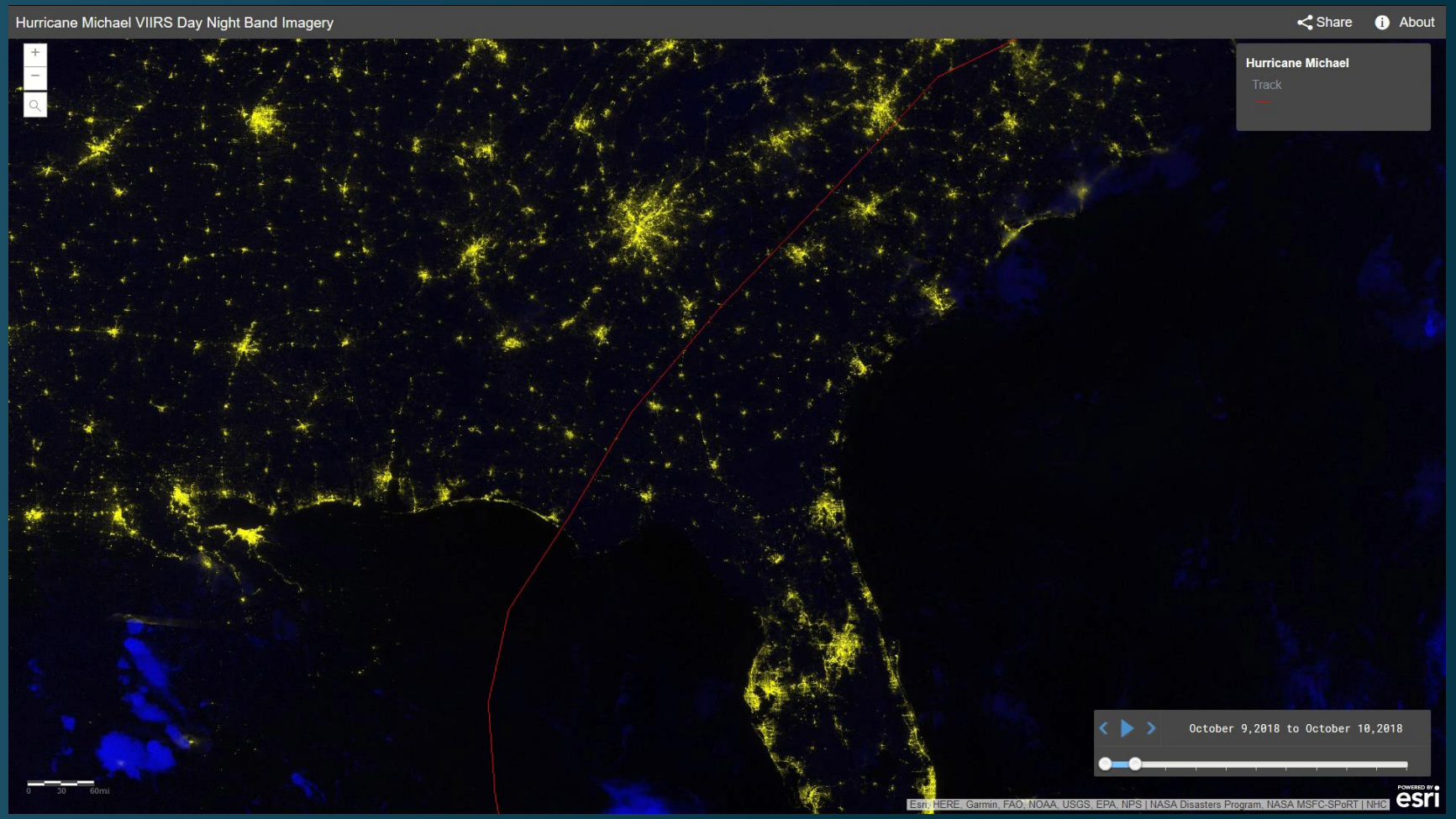
# Black Marble Nighttime Blue/Yellow Composite

- 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



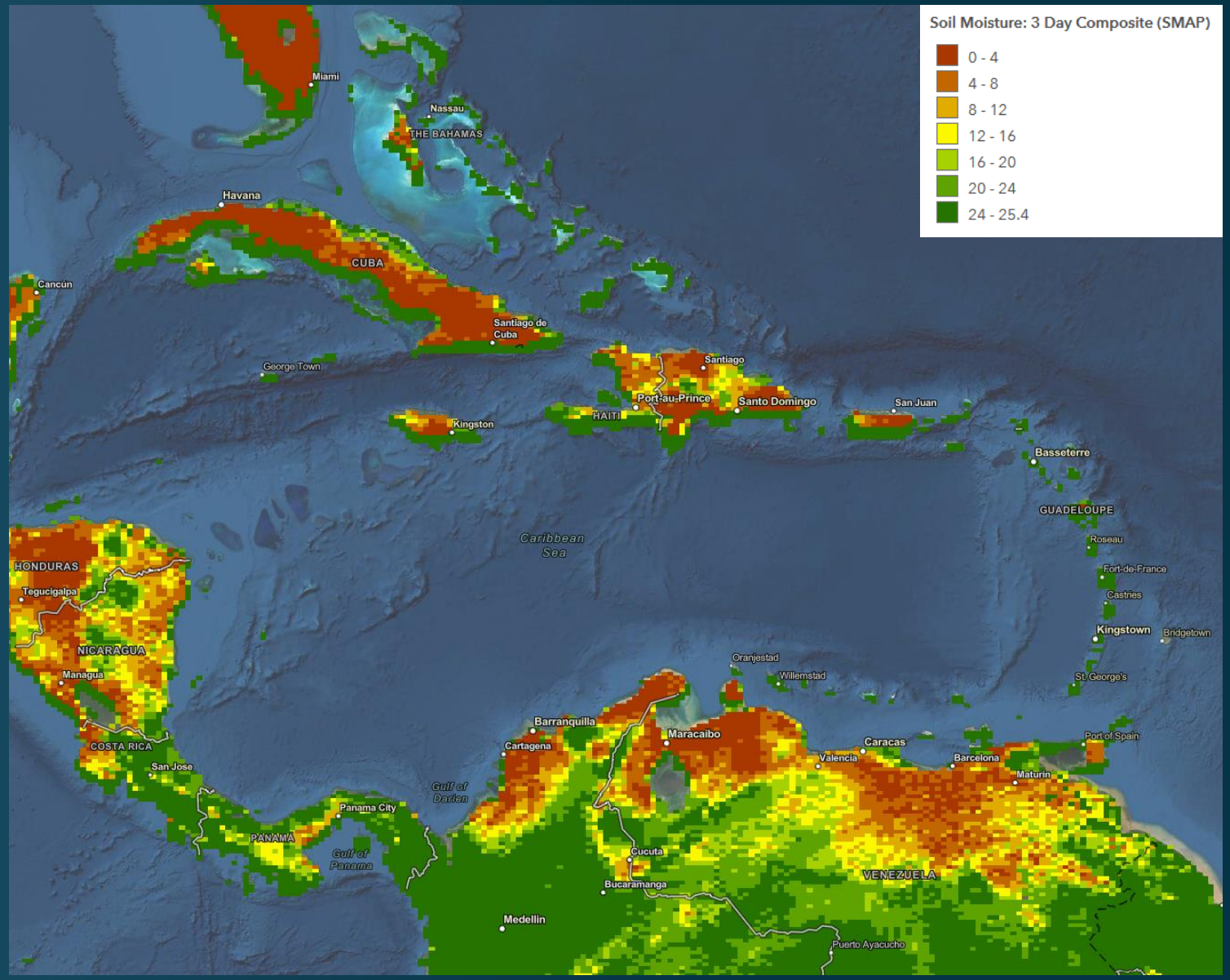
# Hurricane Michael 2018
## Black Marble Nighttime Blue/Yellow Composite

- Darker image due to older algorithm
- Multiple towns lost power along track (red)



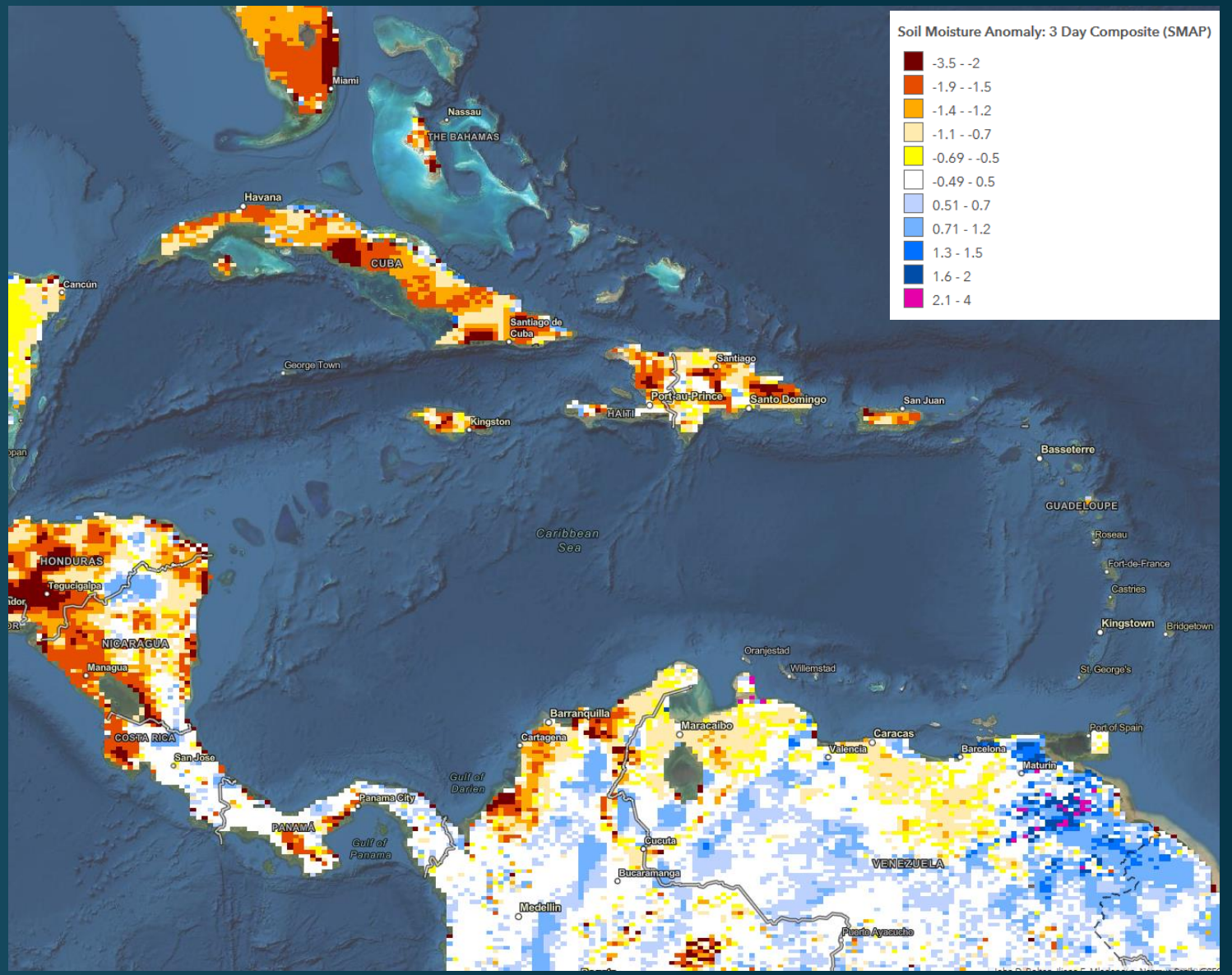
# Soil Moisture

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



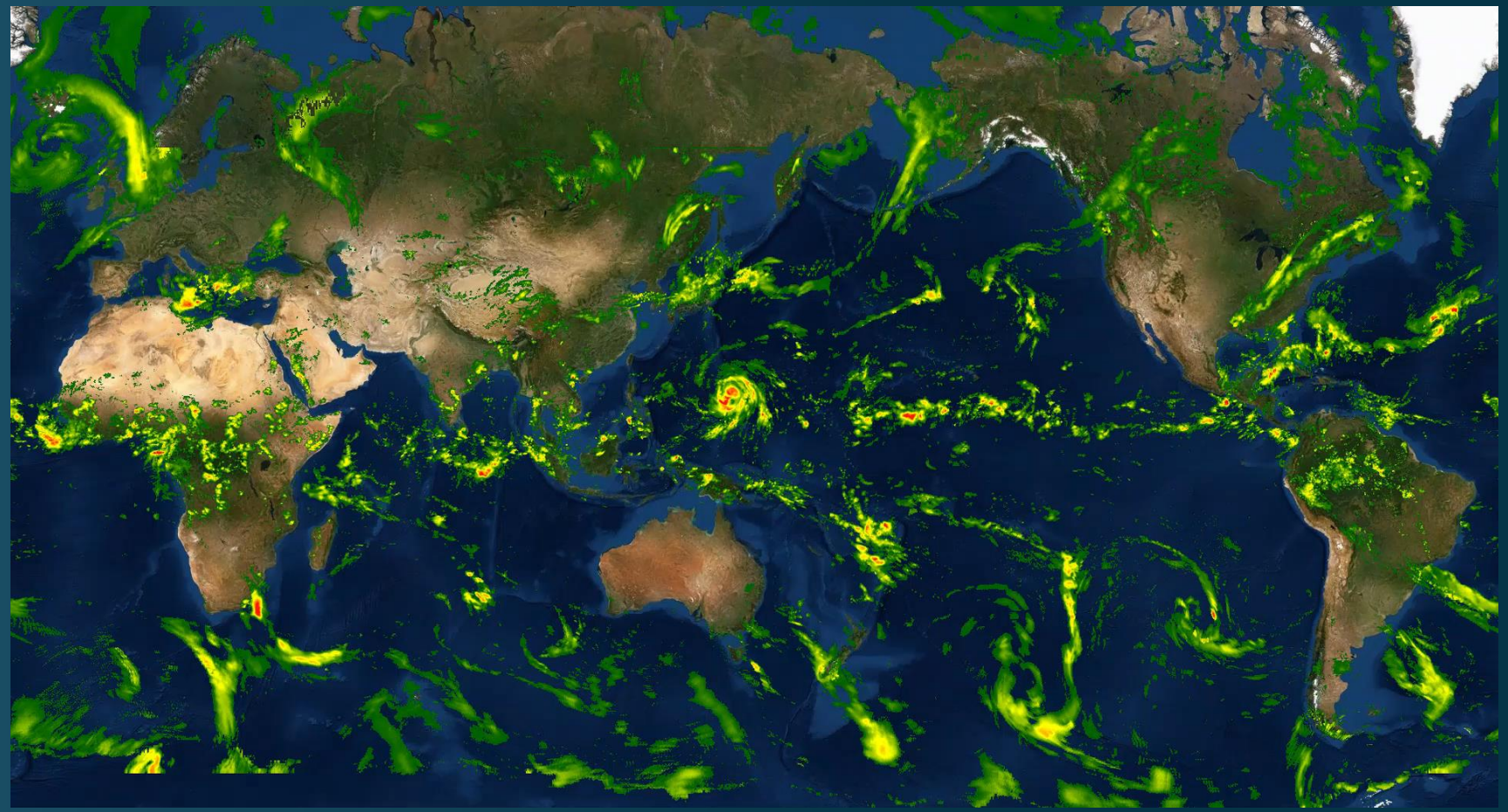
# Soil Moisture Anomaly

- 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



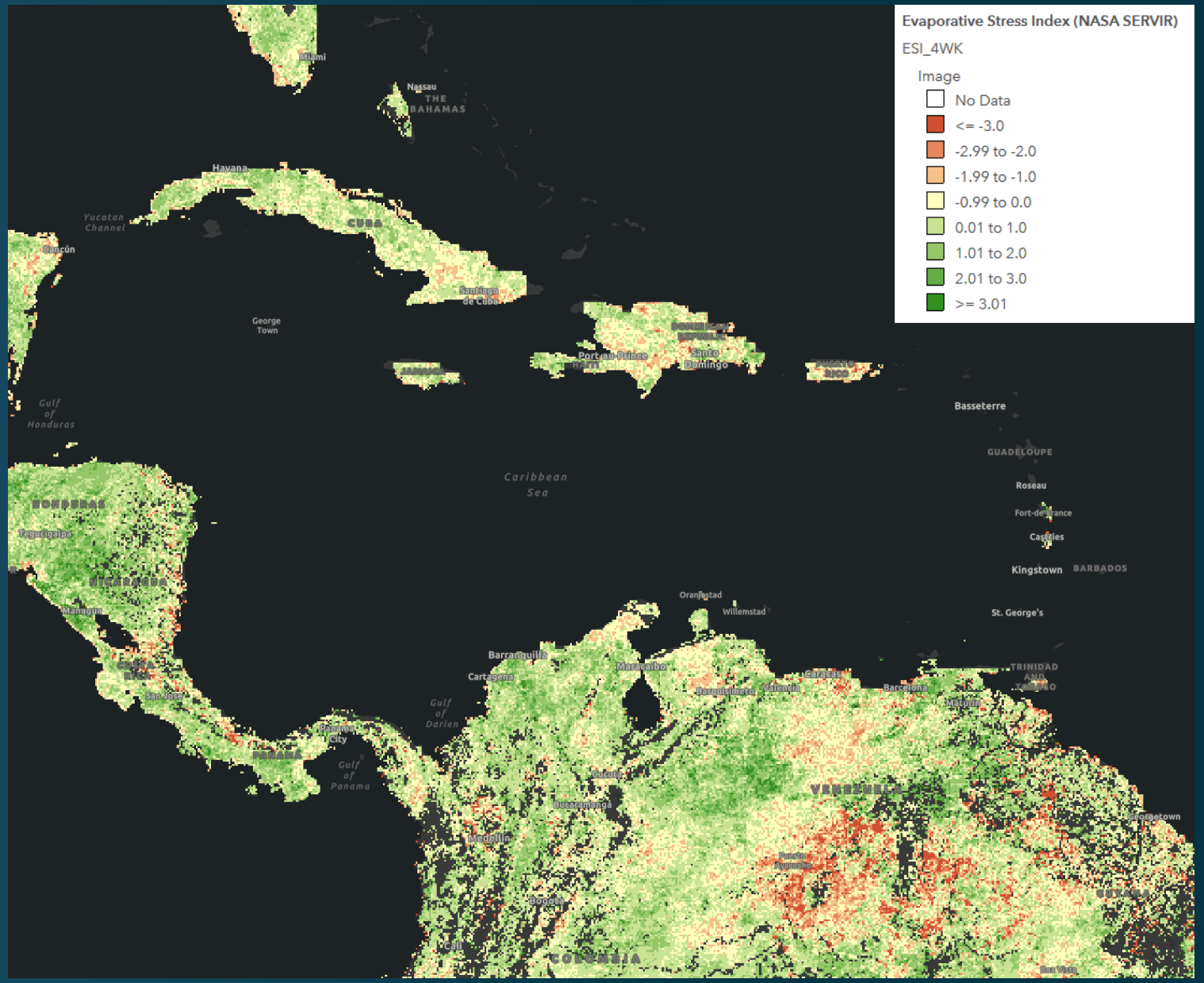
# Global Precipitation Measurement Products

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



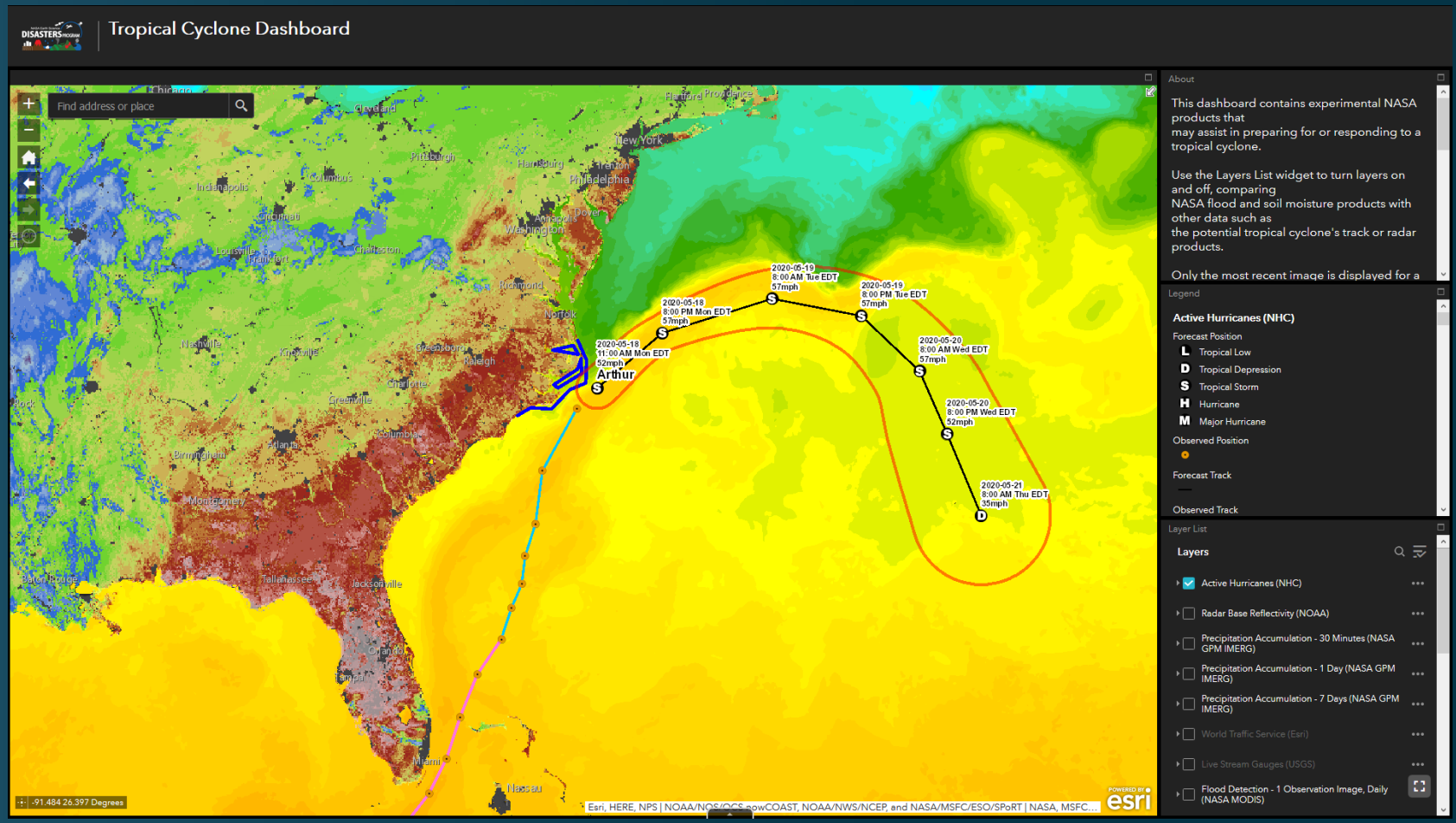
# Evaporative Stress Index

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

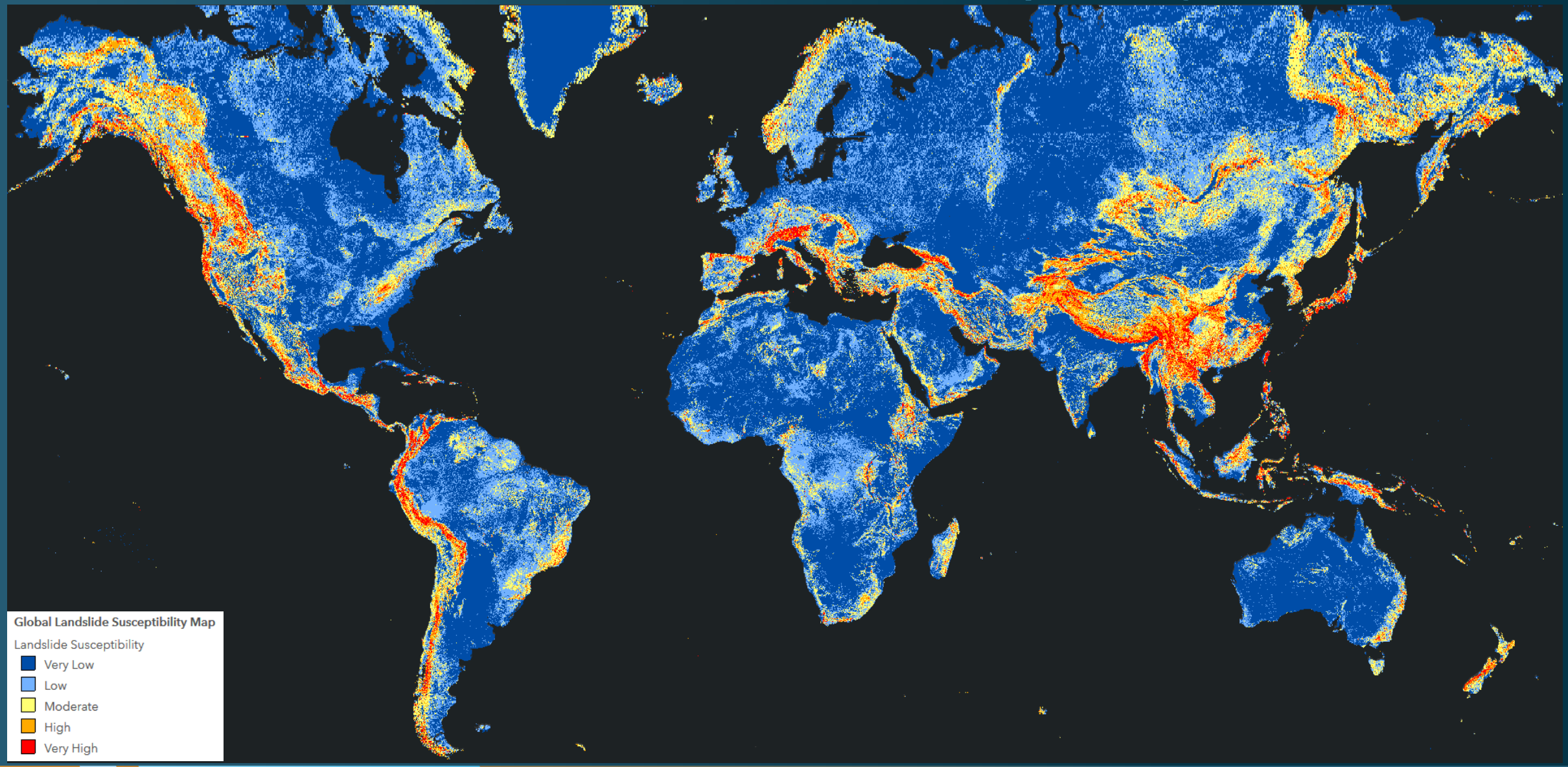


# Tropical Cyclone Dashboard

- 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)



# Global Landslide Susceptibility

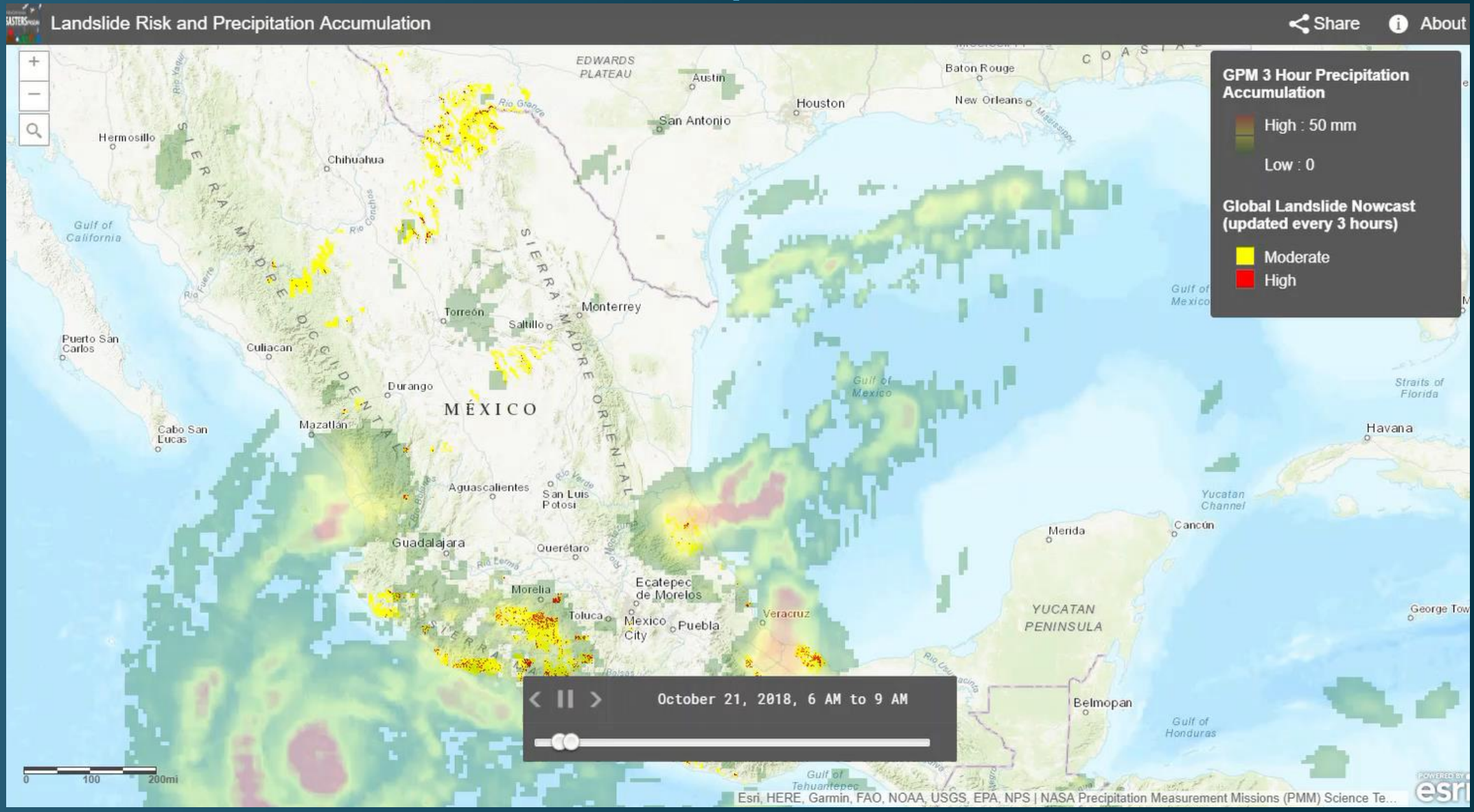



**Available for download at:**
https://pmm.nasa.gov/applications/global-landslide-model

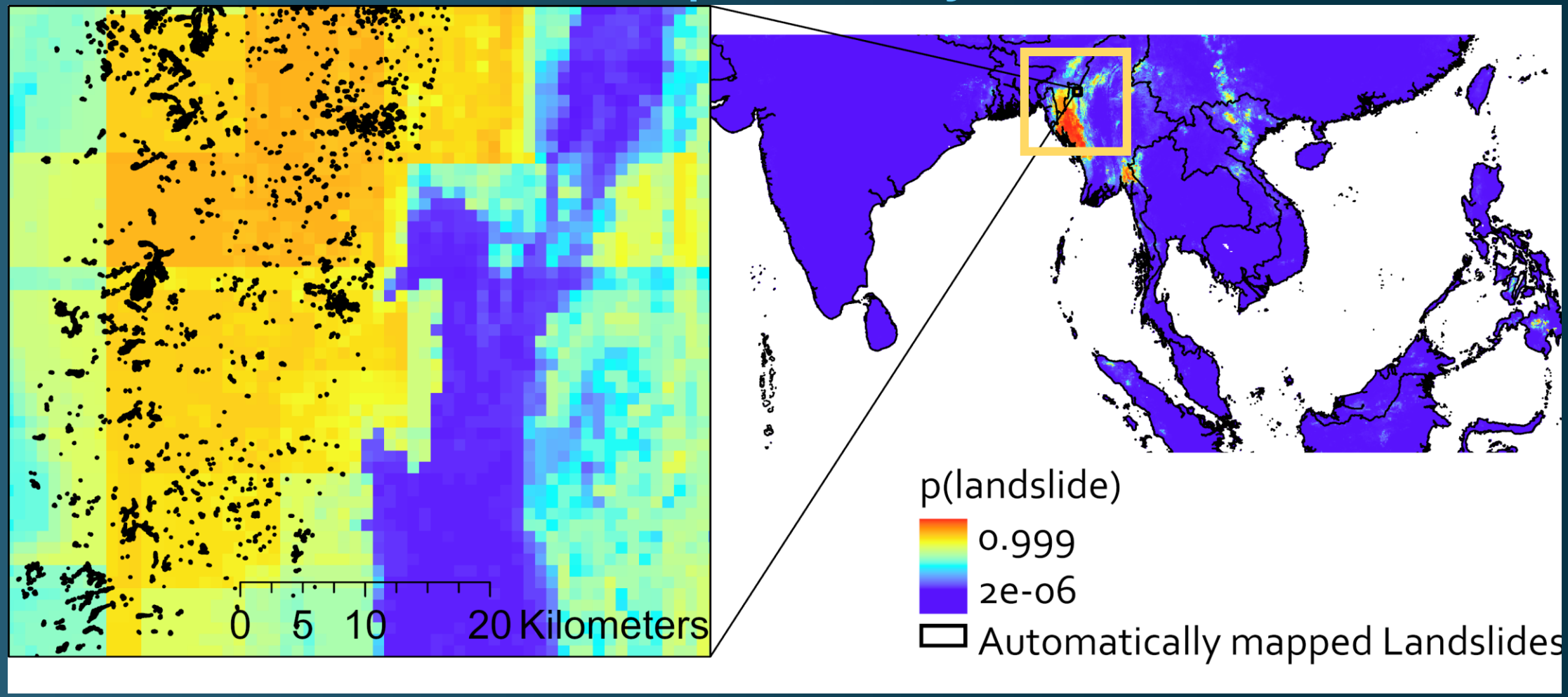
Stanley and Kirschbaum 2017

Stanley et al., 2017

# NASA GPM and LHASA Output for Hurricane Willa, 2018

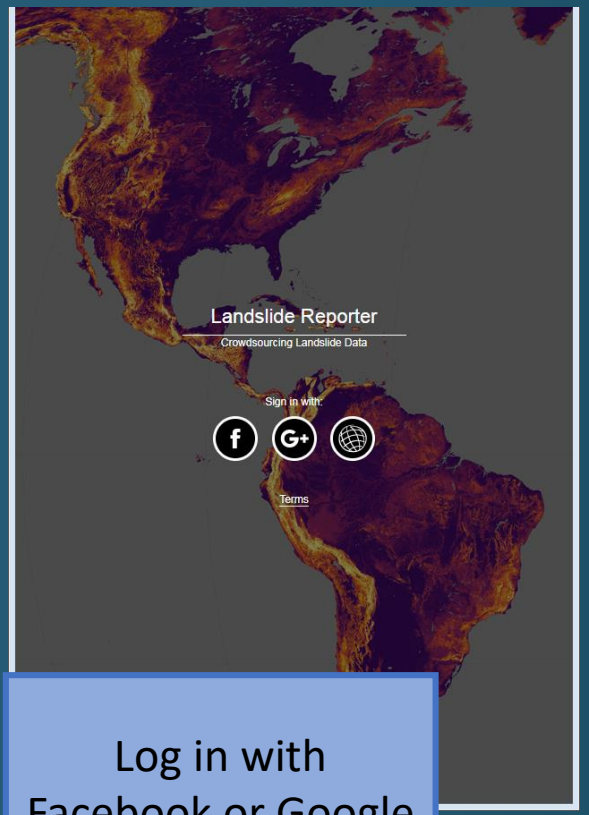


# LHASA 2.0 Output for Cyclone Komen

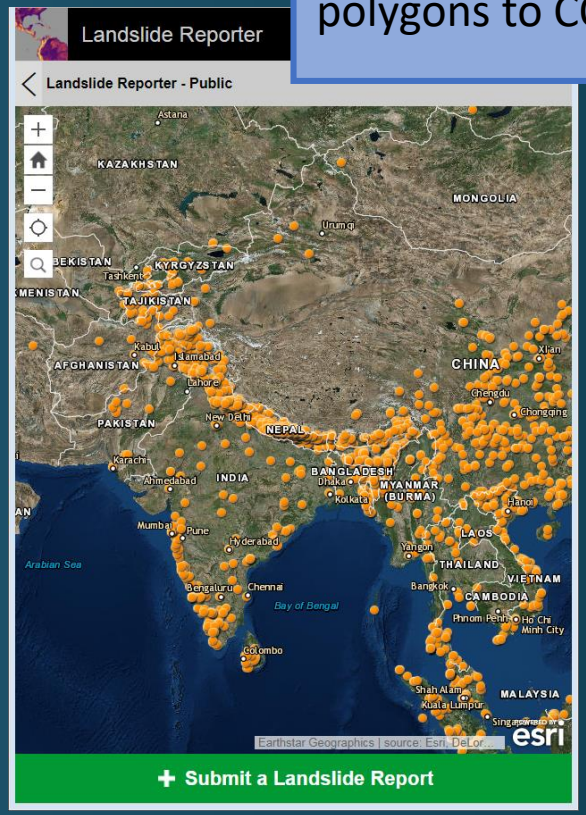



LHASA 2.0 outputs probabilities of landslide occurrence between 0 and 1 in nearly real time. The global model is intended highlight areas at high risk of landslides. One such area was Myanmar's Chin state during Cyclone Komen. The model correctly identified an area impacted by many landslides (left, black), but also showed hazard across much of the region.

# Landslide Data needed!




Log in with Facebook or Google

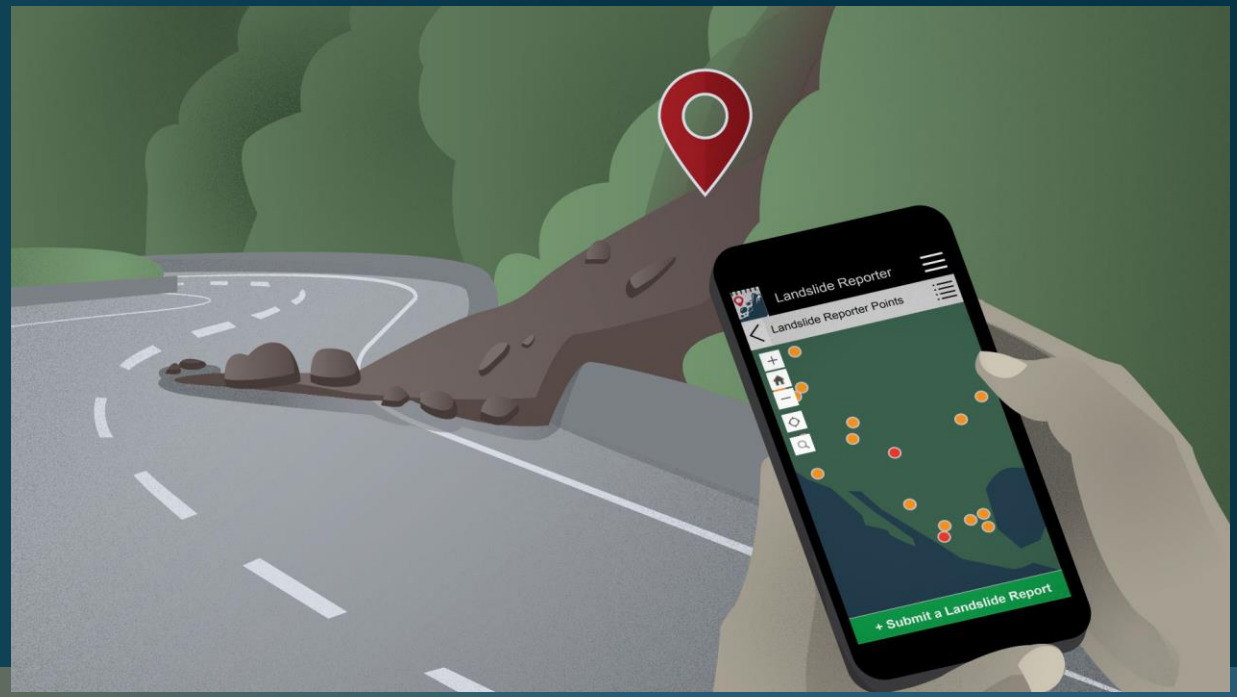



Send new points or polygons to COOLR

Report landslides you see

https://landslides.nasa.gov

Citizen scientists are helping NASA expand the global landslide map, one landslide at a time!



# Questions?

Caribbean GeoPortal NASA Page

https://www.caribbeangeoportal.com/pages/nasa-disaster-maps

Portal Questions:

HQ-Disasters-GIS@mail.nasa.gov

Request Disaster Support:

HQ-Disasters-EM@mail.nasa.gov

Landslide Questions:

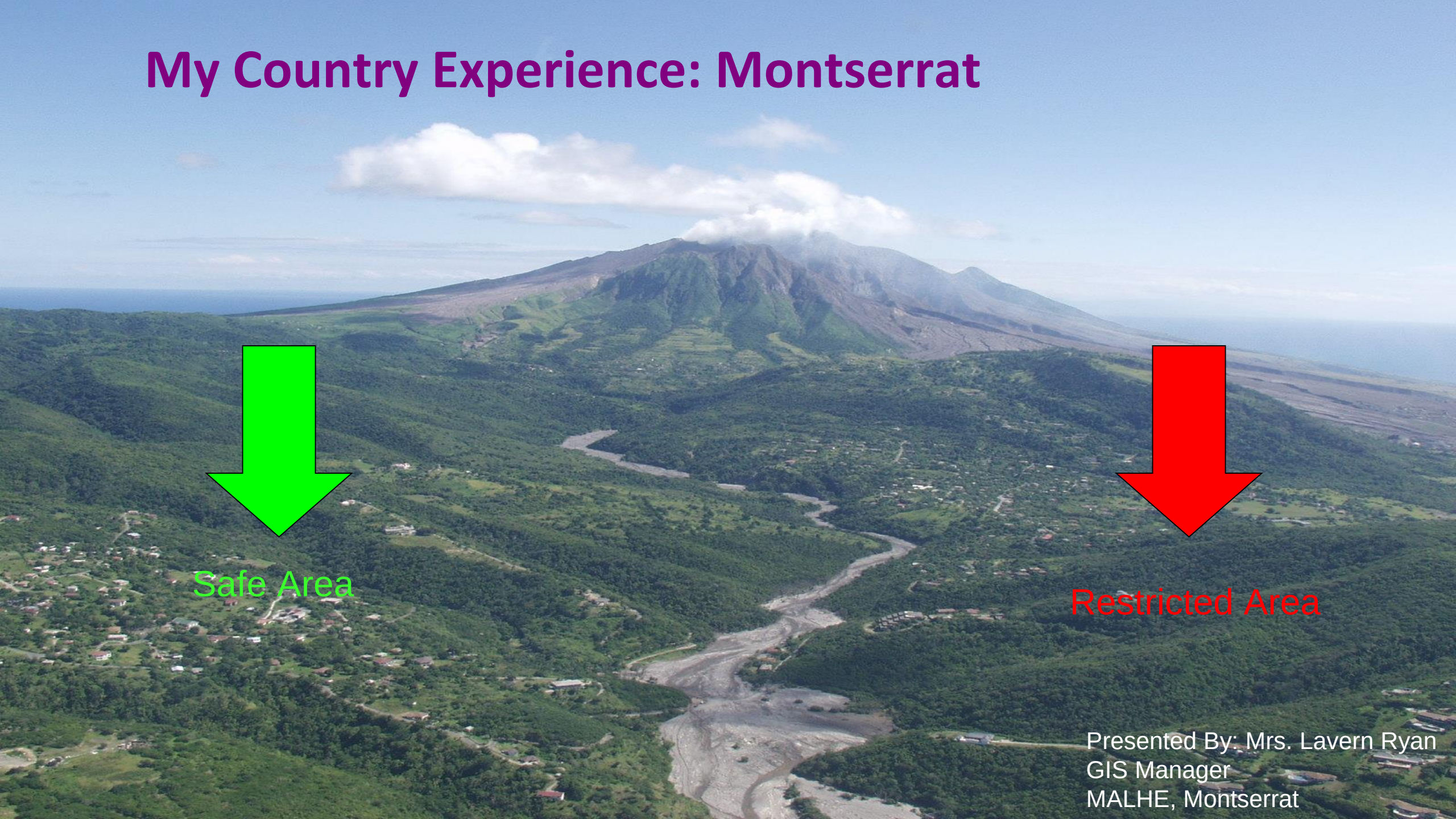
robert.a.emberson@nasa.gov

# Open Q/A

# Responding to an event, experiences and lessons learned

Lavern Ryan, Montserrat

# My Country Experience: Montserrat




Presented By: Mrs. Lavern Ryan
GIS Manager
MALHE, Montserrat

# Column collapse

# Pyroclastic flow (20 May 2006)

# Pyroclastic Flow and Surges Impacting the Sea

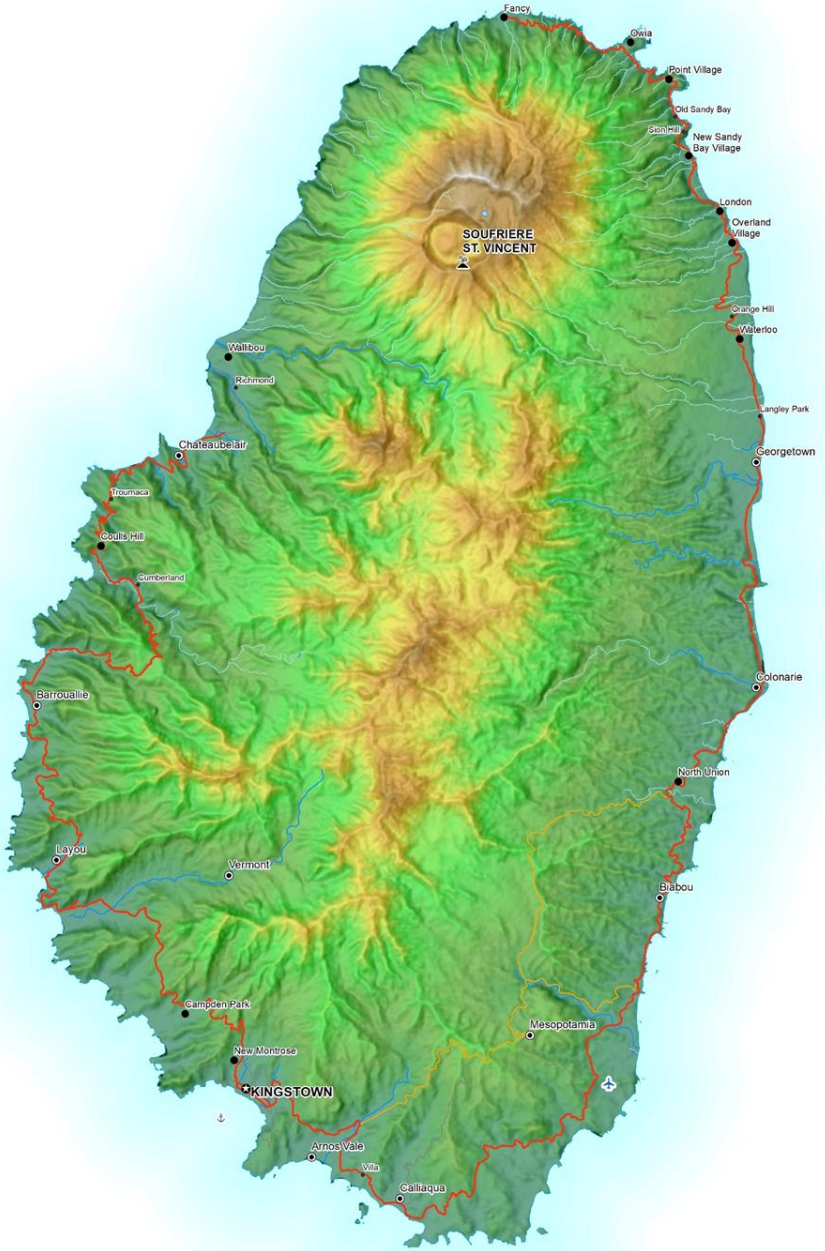
# The Capital Plymouth, buried by Mudflows (1997)

# Ashfall on an occupied community

# Ash deposited on vehicles


EMERGENCY DEPARTMENT
GIFT OF THE BRITISH PEOPLE
TOYOTA RAV4

# La Soufrière: St. Vincent



# Caribbean Section Member: Lavern Ryan - Response Deployment

# Caribbean Section Member: Mike Clerveaux - Response Deployment

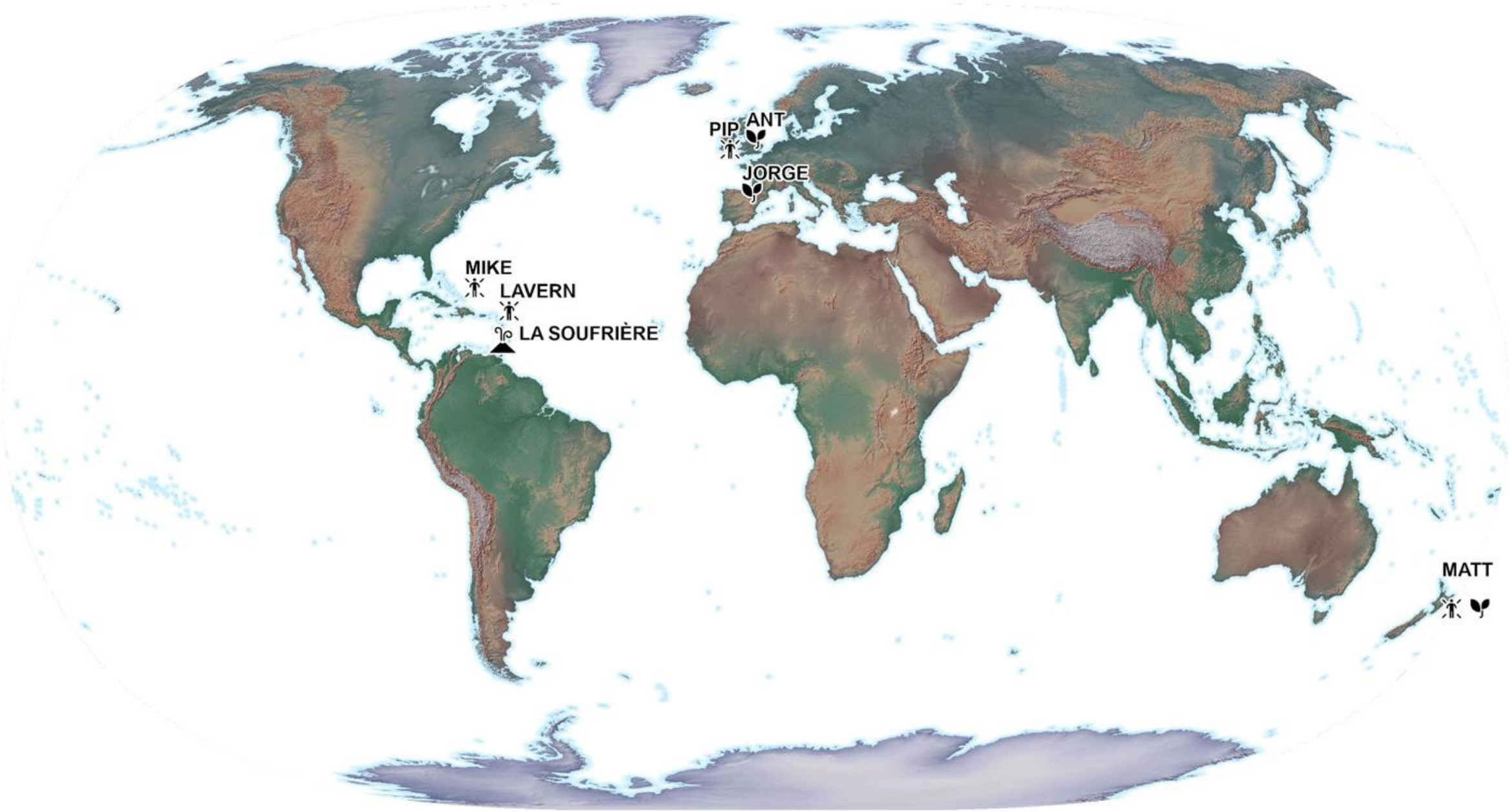
**Mr. Mike Clerveaux**
**Hazard Mitigation and**
**GIS Manager, DDME TCI**
**REMOTELY DEPLOYED**
**TO SUPPORT ST VINCENT**
**AND THE GRENADINES**


"This experience is both humbling and rewarding as a Humanitarian and GIS Specialist."

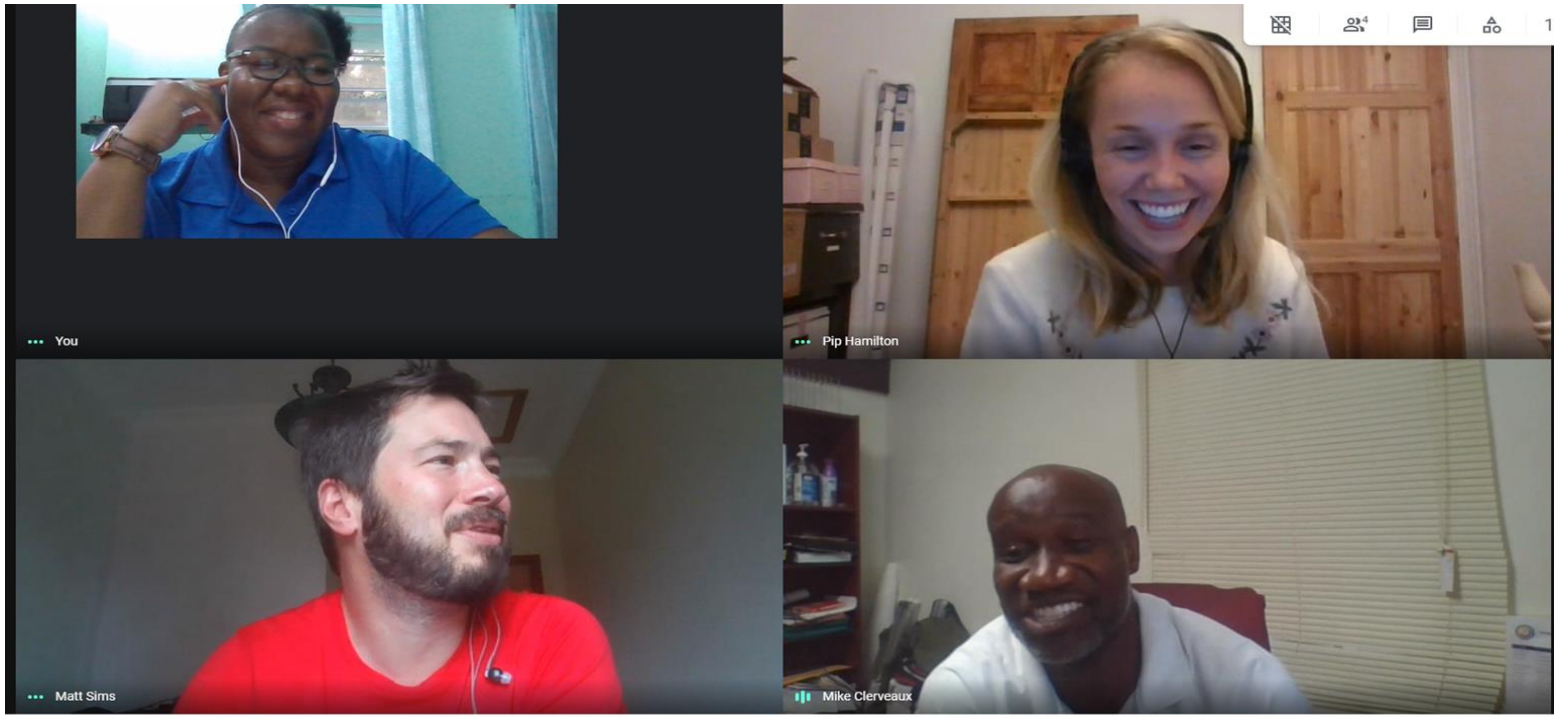
M.Clerveaux

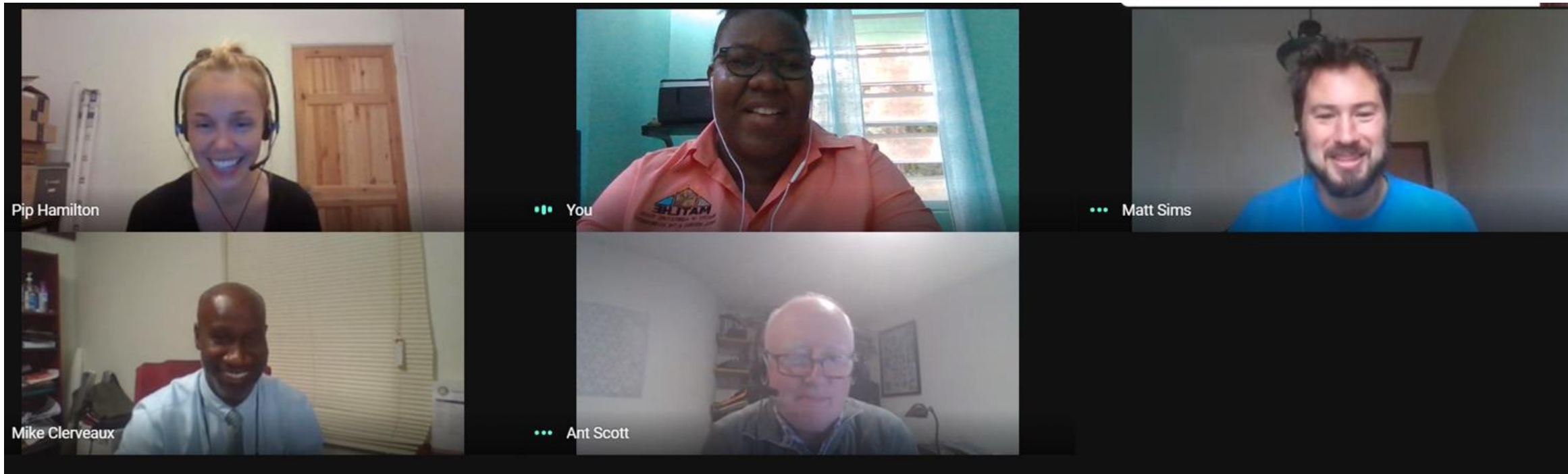


WWW.GOV.TC/DDME @ DDME.TCI


PIP
ANT
JORGE
MIKE
LAVERN
LA SOUFRIÈRE
MATT

# Daily Team Meetings: Remote Response

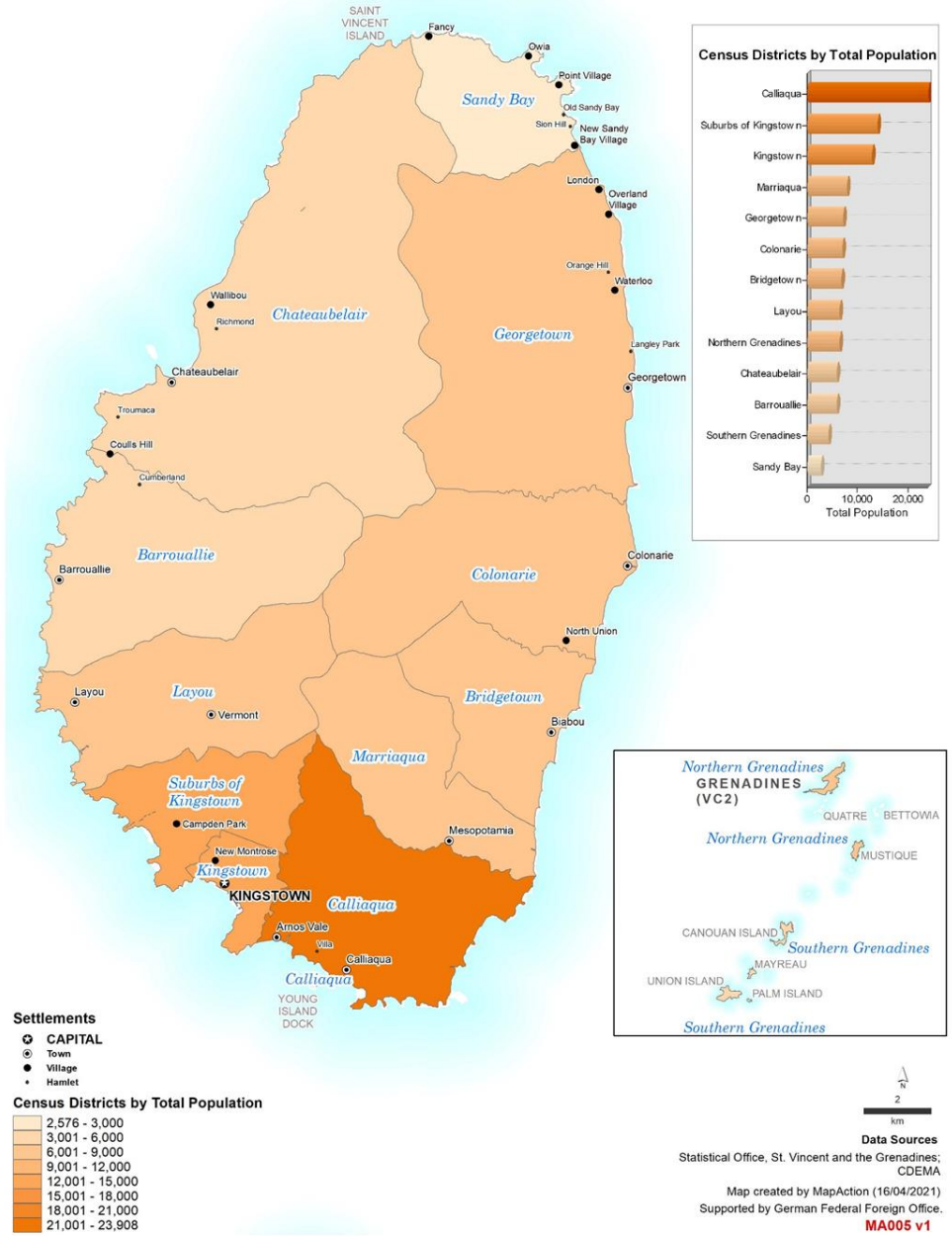


# Requests


- Support CDEMA
- Support AA and IM cells in RCC

# St Vincent and the Grenadines: La Soufrière volcano
## Population Baseline (derived from Census 2012)



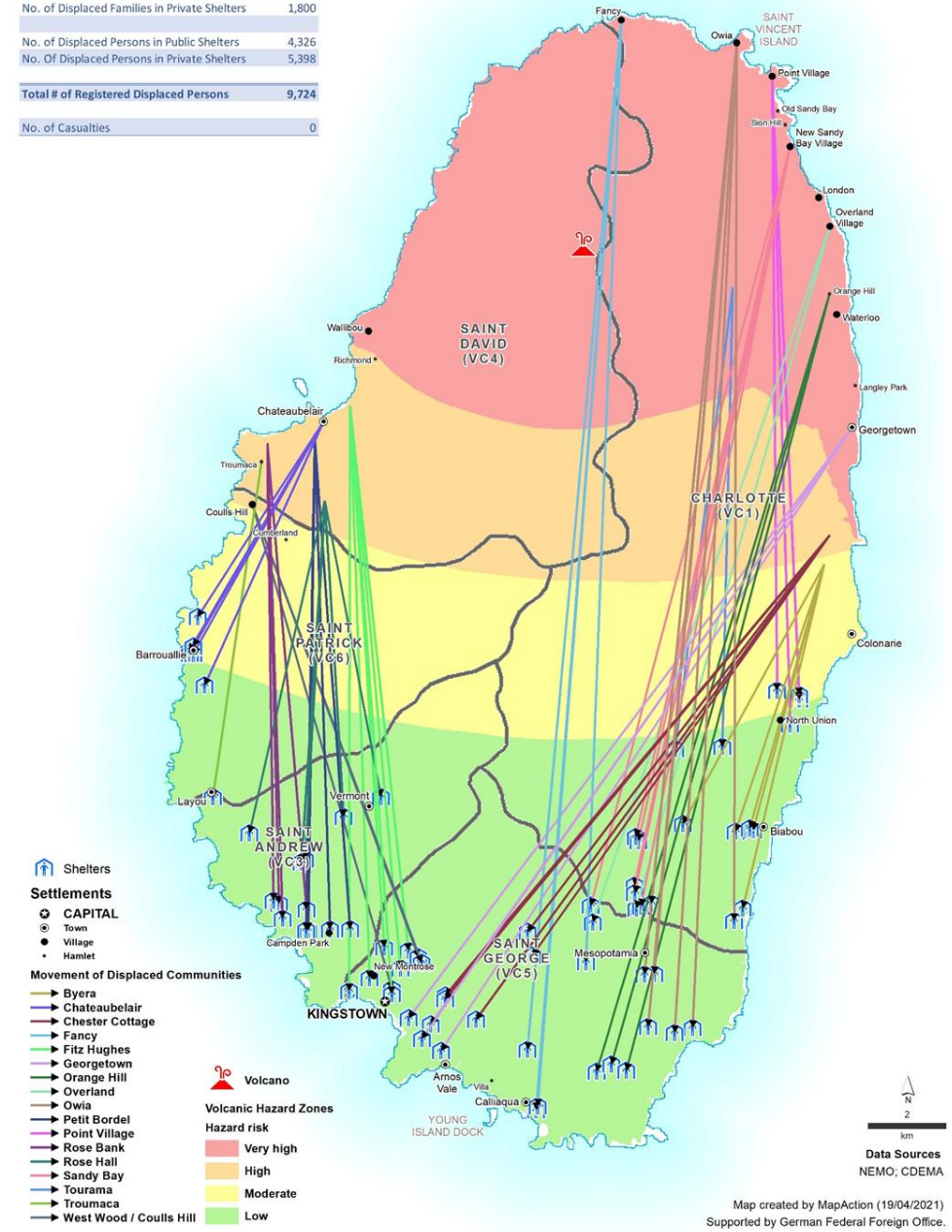

**Data Sources**
Statistical Office, St. Vincent and the Grenadines; CDEMA

Map created by MapAction (16/04/2021)
Supported by German Federal Foreign Office.

**MA005 v1**

# St Vincent and the Grenadines: La Soufrière volcano
## Overview of Affected Areas & Affected Population (as of 18 Apr 2021)

| Shelters Report @ April 18, 2021 | |
|---|---|
| Public Shelters | 85 |
| No. of Displaced Families in Private Shelters | 1,800 |
| | |
| No. of Displaced Persons in Public Shelters | 4,326 |
| No. Of Displaced Persons in Private Shelters | 5,398 |
| | |
| **Total # of Registered Displaced Persons** | **9,724** |
| | |
| No. of Casualties | 0 |



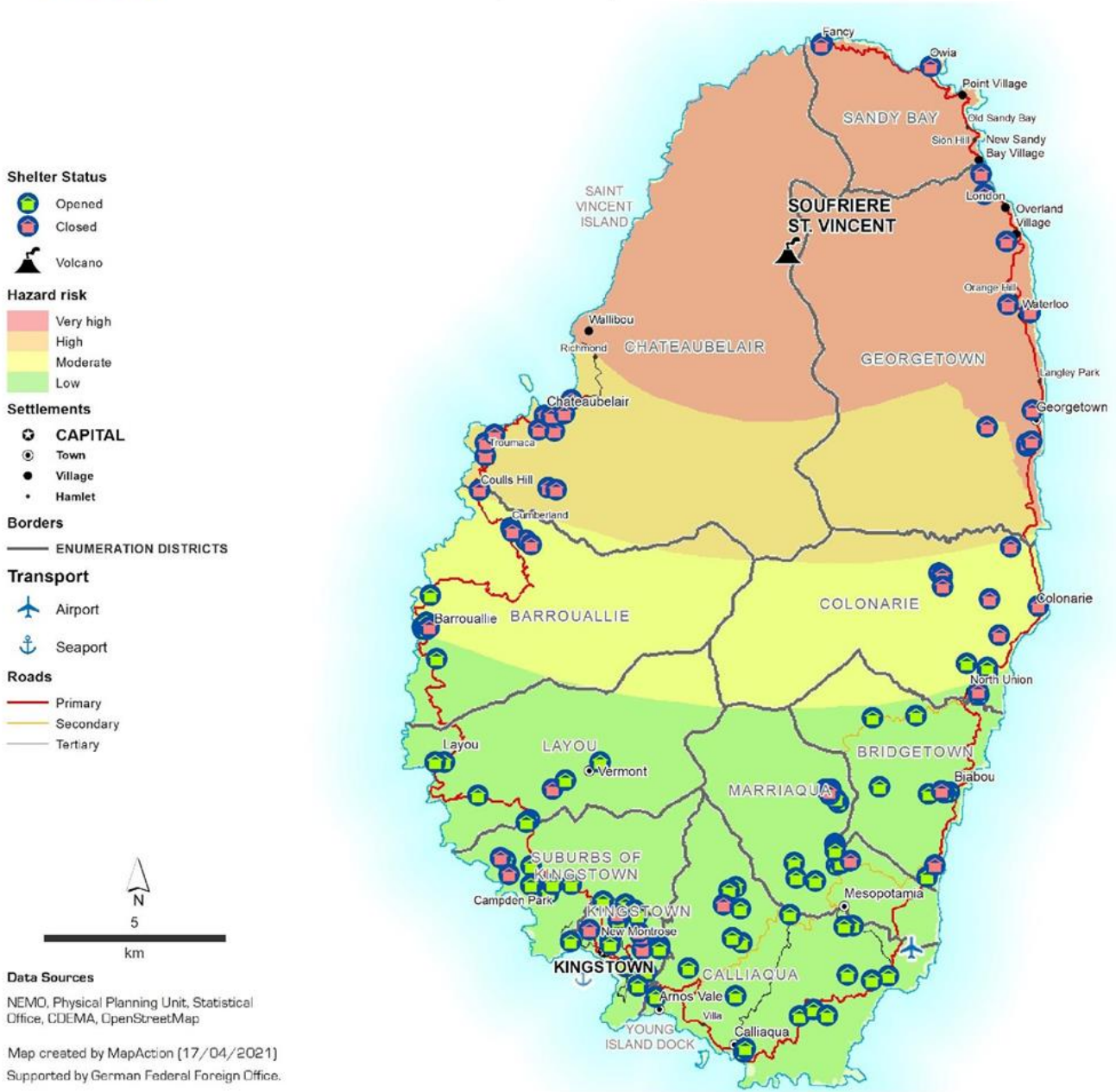

**Data Sources**
NEMO; CDEMA

Map created by MapAction (19/04/2021)
Supported by German Federal Foreign Office.

**MA006 v2**

# St Vincent and the Grenadines: La Soufrière volcano

## Location and status of shelters (as of 17 Apr 2021)




**Shelter Status**

- Opened
- Closed
- Volcano

**Hazard risk**

- Very high
- High
- Moderate
- Low

**Settlements**

- CAPITAL
- Town
- Village
- Hamlet

**Borders**

- ENUMERATION DISTRICTS

**Transport**

- Airport
- Seaport

**Roads**

- Primary
- Secondary
- Tertiary

N

5

km

**Data Sources**

NEMO, Physical Planning Unit, Statistical Office, CDEMA, OpenStreetMap

Map created by MapAction (17/04/2021)

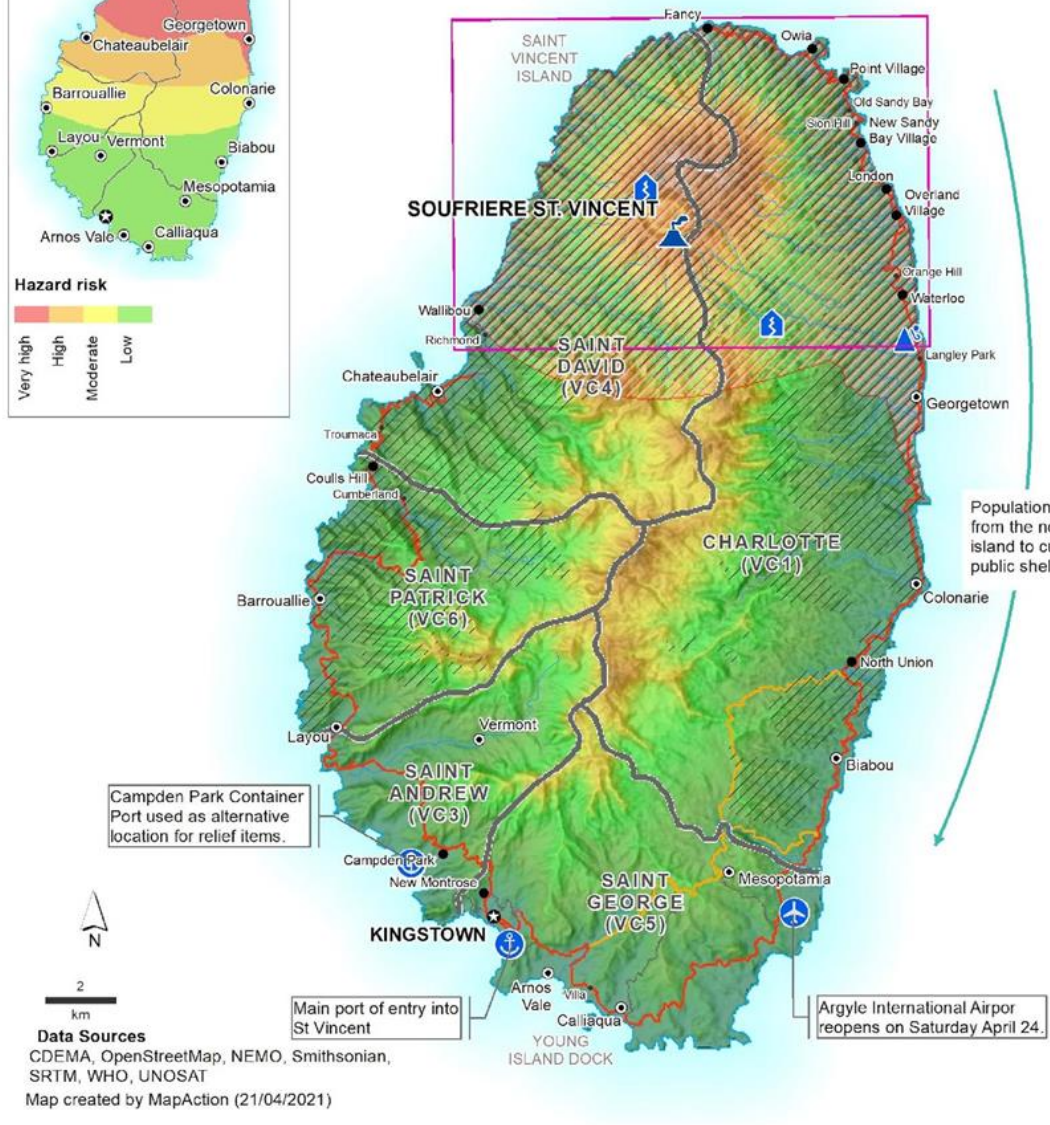
Supported by German Federal Foreign Office.

LA SOUFRIÈRE EVACUATION SHELTERS ACTIVATED

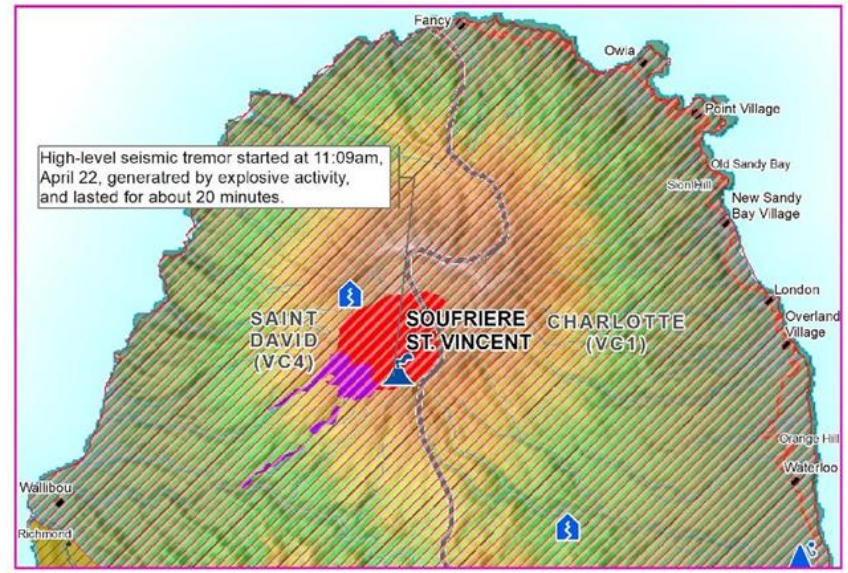
| Name | Location |
|---|---|
| New Grounds Primary School | New Grounds |
| North Union Secondary School | North Union |
| South Central Windward Learning Resource Centre | North Union |
| Diamonds Government School | Diamonds |
| Lowmans Windward Anglican School | Lowmans Windward |
| Greiggs Primary School | Greiggs |
| St.John's Roman Catholic Church | Cane End |
| Emmanuel High School | Mesopotamia |
| Marriaqua Government School | Mesopotamia |
| Kingdom Life Tabernacle | Mesopotamia |
| Streams of Power Church | Carnierre |
| Evesham Learning Resource Centre | Evesham |
| Evesham Seventh Day Adventist | Evesham |
| Richland Park Government School | Richland Park |
| Richland Park Seventh Day Adventist Church | Richland Park |
| Richland Park Pentecostal Church | Richland Park |
| Kingstown Gospel Hall Church | Kingstown |
| The Church of Ascension | Sion Hill |
| Sion Hill Government School | Sion Hill |
| Dr. J.P. Eustace Memorial Secondary School | Edinboro |
| Lodge Village Government School | Lodge Village |
| Fundamental Bible Church | Gibson Corner |
| New Testament Church of God | Lodge Village |
| Church of God Worldwide Mission Pentecostal | Redemption Sharpes |
| Community Centre | Redemption Sharpes |
| Fair Hall Government School | Fair Hall |
| Calliaqua Anglican School | Calliaqua |
| St. Paul's Parish Hall | Calliaqua |
| Mt. Moriah S.D.A. Church | Belvedere |
| Apostolic Assemblies | Brighton |
| Brighton Government School | Brighton |
| Belmont Government School | Belmont |
| West St. George Secondary School | Belair |
| Kingdom Hall of Jehovah's Witnesses | Belair |
| Gomea Methodist Church and Pre School | Gomea |
| St. Theresa's Roman Catholic Church | Gomea |
| Glad Tidings Tabernacle Pre School | Gomea |
| Doris Mc Kie Learning Resource Centre | Upper Cane Hall |
| Dorsetshire Hill Evangelical Church | Dorsetshire Hill |
| Biabou Methodist Church | Biabou |
| South Windward Learning Resource Centre | Biabou |
| New Adelphi Secondary School | New Aldelphi |
| Argyle Primary School | Argyle |
| Mount Coke Methodist Church | Stubbs |
| New Prospect Primary School | Simon |
| Stubbs S.D.A Church | Stubbs |
| St. Clair Dacon Secondary School | Stubbs |
| Calder S.D.A Church | Calder |
| Calder Government School | Calder |
| Campden Park Secondary School | Campden Park |
| Community Baptist Church | Campden Park |
| Lowmans Leeward Anglican Primary School | Lowmans |
| Apostolic Faith Mission | Campden Park |
| Campden Park Wesleyann Holiness Church | Campden Park |
| Learning Resource Centre | Questelles |
| Clare Valley Community Centre | Clare Valley |
| Rillan Hill Community Centre | Rillan Hill |
| Roman Catholic Church | Rillan Hill |
| Paradise S.D.A Church | Vermont |
| Golden Years Centre | Buccament |
| Buccament Government School | Dubois |
| Layou Grace and Truth Church | Layou |
| Layou Miracle Church | Layou |
| Grace and Truth Church | Barrouallie |
| Barrouallie Methodist Church | Barrouallie |
| Barrouallie Government School | Barrouallie |
| Barrouallie Learning Resource Centre | Barrouallie |
| Central Leeward Secondary School | Peters Hope |
| Kingdom Life Ministries | Keartons |
| New Testament Church of God | Wilson Hill |
| Dorsetshire Hill Government School | Dorsetshire Hill |
| Faith Evangelistic Outreach Church | Sion Hill |

Please note that this list of active shelters are not exhausted. Contact the National Emergency Management Organization (NEMO) for further details.

# St Vincent and the Grenadines: La Soufrière volcano
## Situational Overview (as at 26 April 2021)


Population evacuated from the north of the island to currently 85 public shelters




**The volcano remains at alert level RED. Access to the volcano is strictly prohibited.**

### Affected population (as at 26 April 2021)

Total of 13,303 persons displaced

- 6,790 Persons are Registered in Private Homes
- 85 Public Shelters with 4,430 occupants
- 1,618 families in private homes
- 156 Persons Sheltered in Hotels
- 1,333 Persons in Private Homes are Registered to Feed at Shelters

**Events**: Landslide, Seismic, Volcano
Lava dome, Ash fall, Potential pyroclastic flow, Pyroclastic flow and surge, Very High Hazard, High Hazard
**Settlements**: CAPITAL, Town, Village, Hamlet
**Borders**: PARISH, Airport, Seaport
**Roads**: Primary, Secondary, Tertiary
River

**Data Sources**
CDEMA, OpenStreetMap, NEMO, Smithsonian, SRTM, WHO, UNOSAT

Map created by MapAction (21/04/2021)

MA011 v2

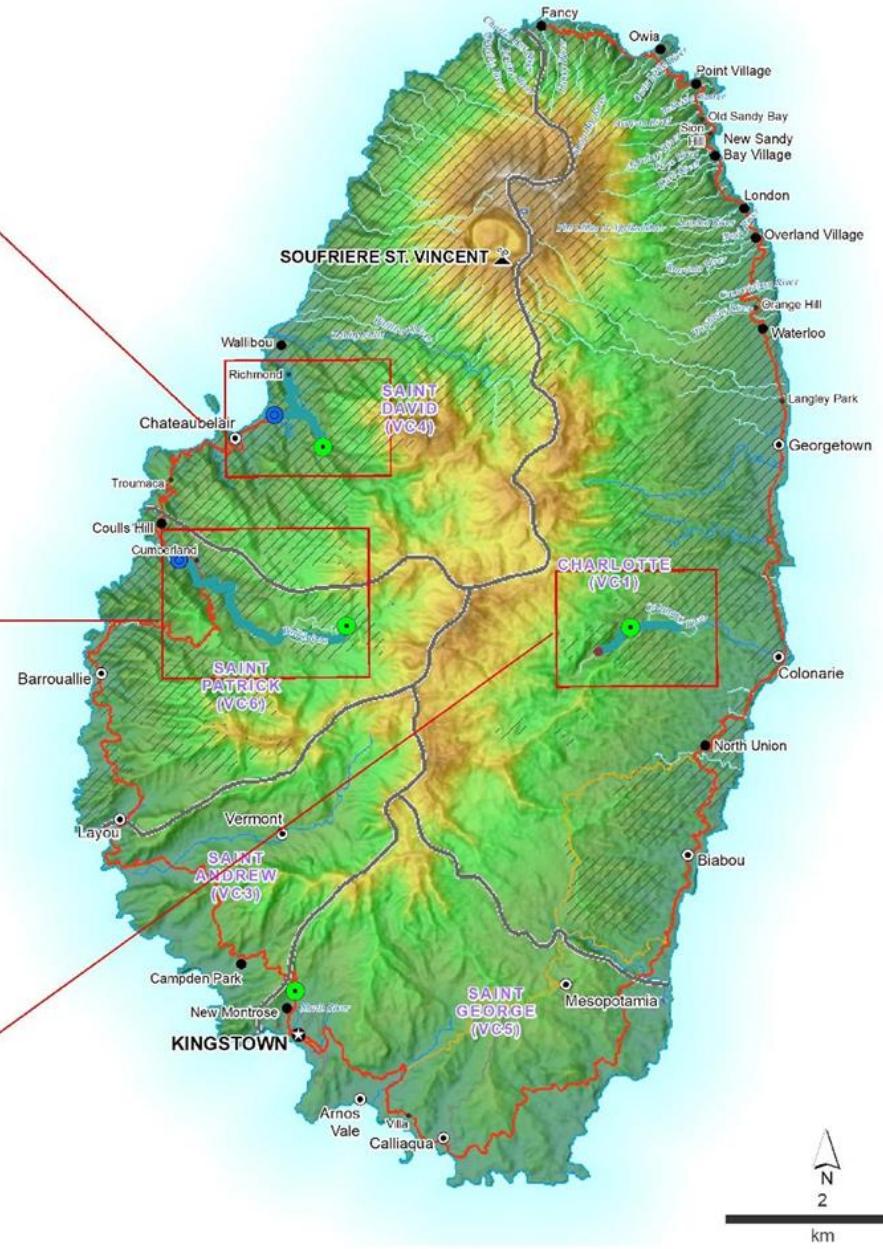
# St Vincent and the Grenadines: La Soufrière volcano

## Overview of known water resources

MAP ACTION

CDEMA CARIBBEAN DISASTER EMERGENCY MANAGEMENT AGENCY
Resilient States · Safer Lives





Dam
Hydro Power Plant

**Water System**
Tank
Pipe

**Settlements**
CAPITAL
Town
Village
Hamlet

**Borders**
PARISH

**Volcanic**
Volcano
Ash fall

**Roads**
Primary
Secondary
Tertiary

**Physical**
River
Stream
Waterbody
Wetland

**Data Sources**
CHAIM, GADM, OpenStreetMap, SRTM, Smithsonian, Nature Conservancy

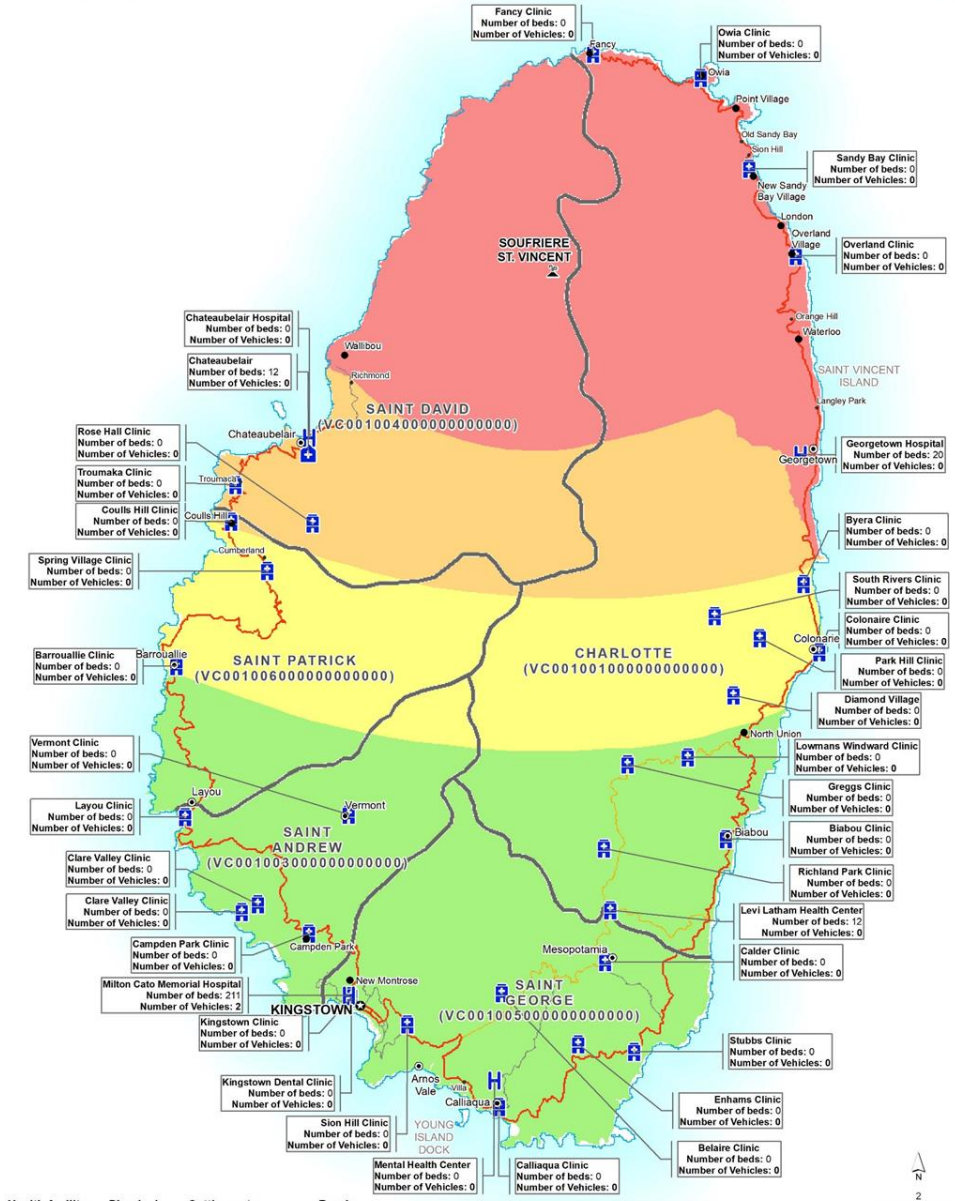
Map created by MapAction (23/04/2021)
MA016 v1

MAP ACTION

# St Vincent and the Grenadines: La Soufrière volcano

## Location and capacities of health facilities (as at 16 Apr 2021)

CDEMA




**Data Sources**

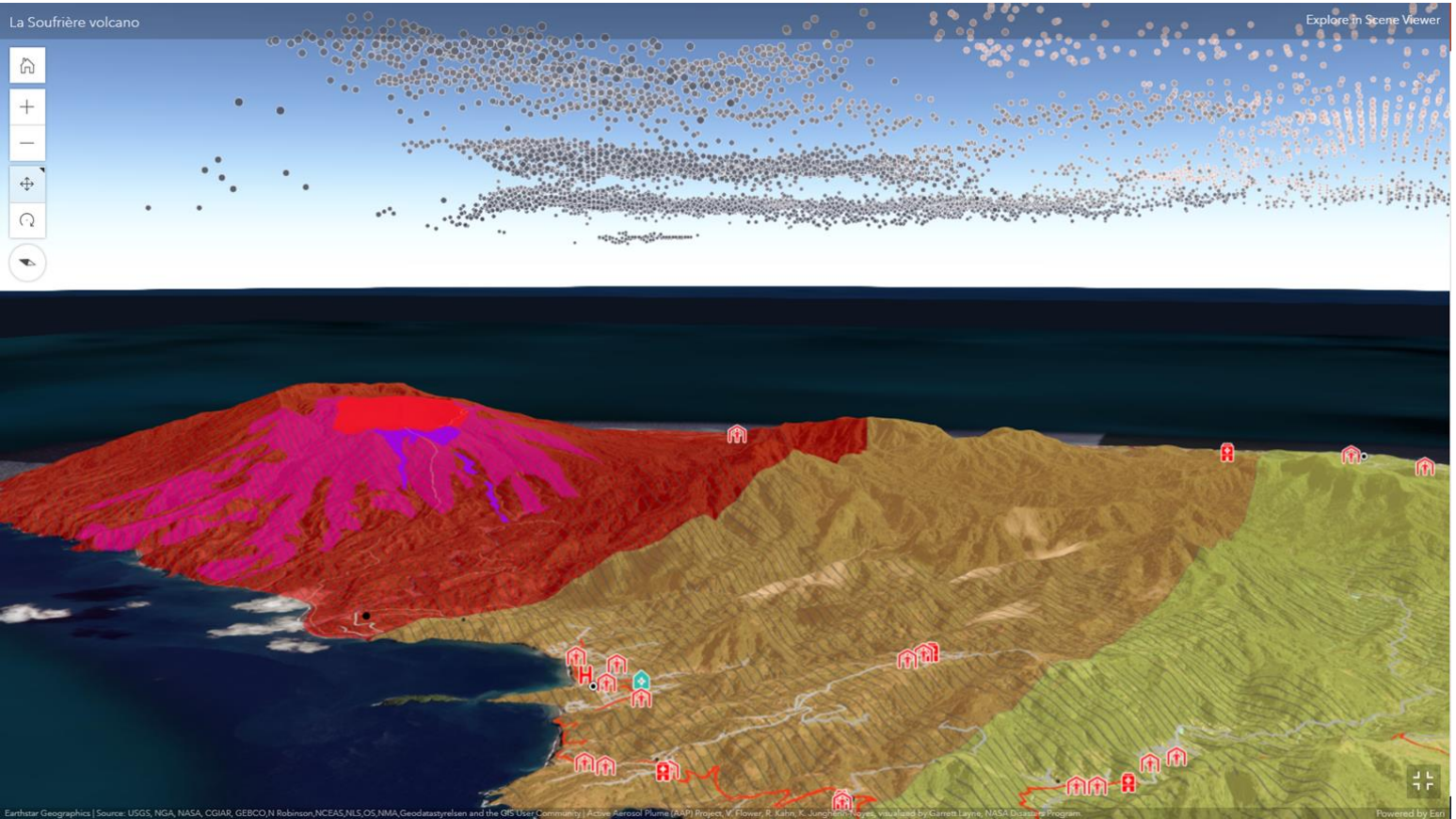
Government of St Vincent, NEMO, OpenStreetMap, Smithsonian, WHO

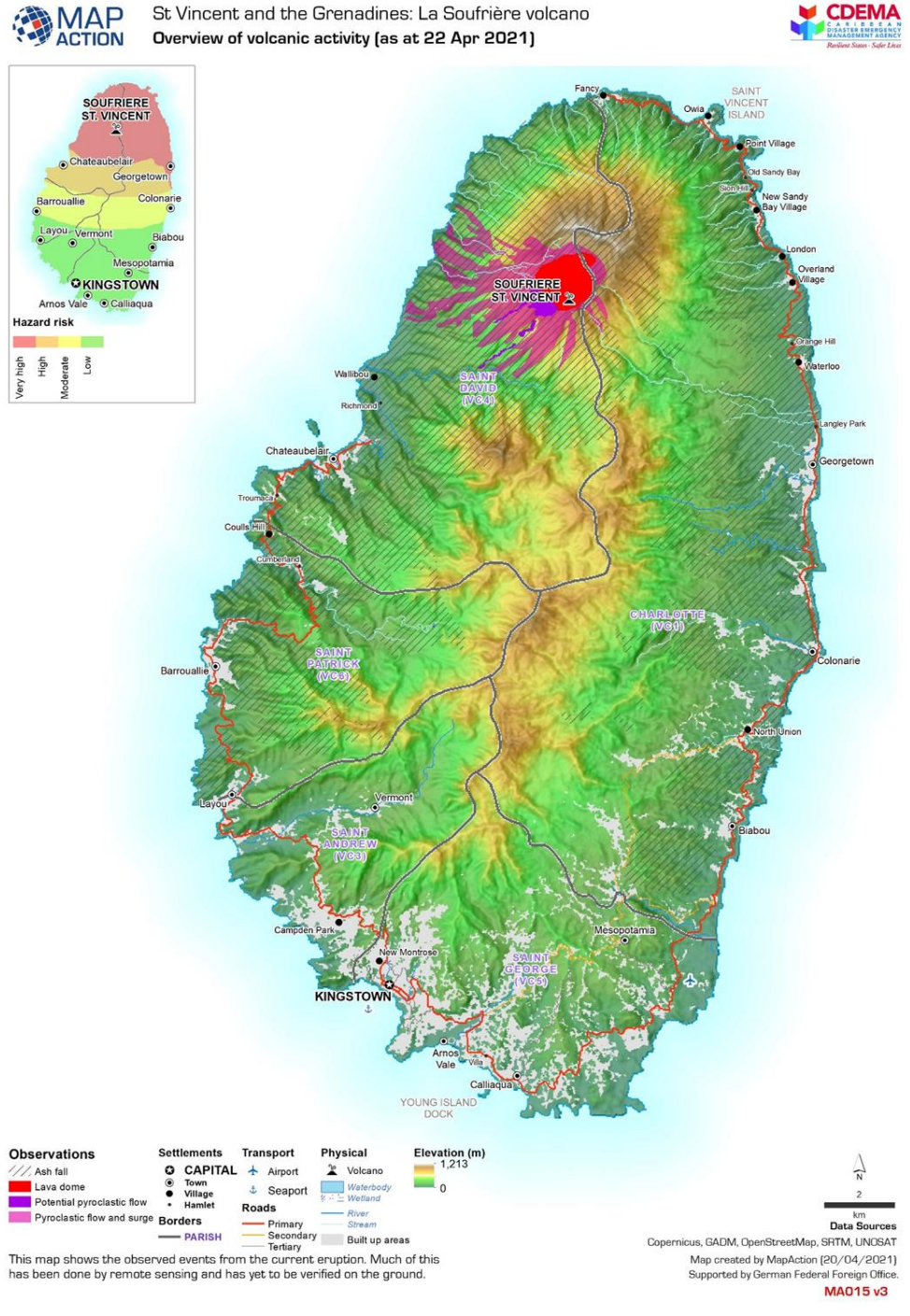
Map created by MapAction (16/04/2020)

Supported by German Federal Foreign Office.

MA013 v1

# Visit: Maps.mapaction.org



# Lessons Learnt from my Experience

- The importance of having up-to-date geospatial data
- The importance of having data easily accessible
- The importance for data to be easily shared with other persons who can help
- Geospatial data is a very important tool for timely decision making which can be the difference between life and death

- https://lavernrogersryan.com/responding-to-the-volcanic-eruption-in-st-vincent-and-the-grenadines-by-volunteering-for-remote-deployment/

# Responding to an event, experiences and lessons learned

Dornet Hull, St.Vincent and the Grenadines

# La Soufriere
# Volcanic Eruption April 9th 2021

## The road to recovery

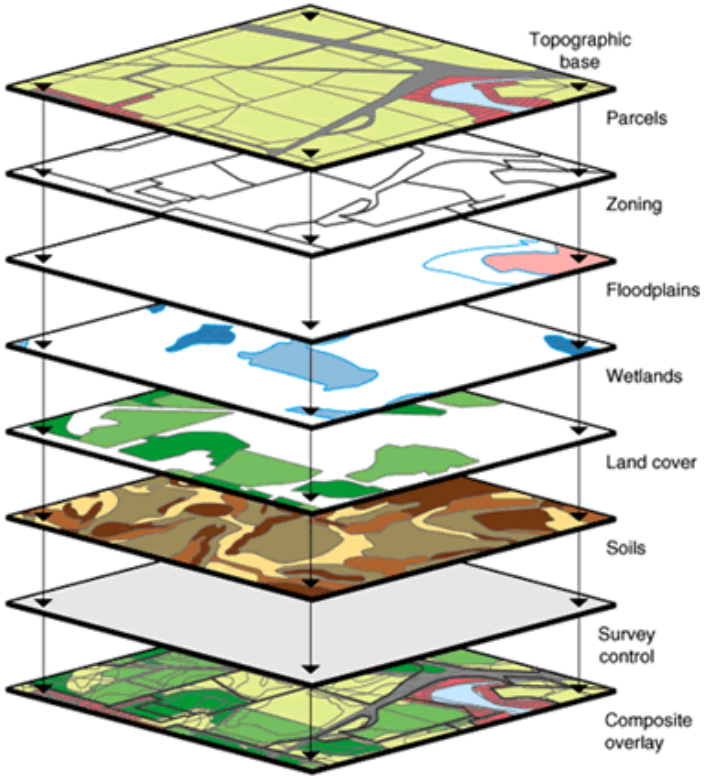
Author: Ms Dornet Hull

*Town Planner*
*Physical Planning Unit*
*St.Vincent and the Grenadines*

*Photo Credit : Paul Cyrus & Micheal Brackin*

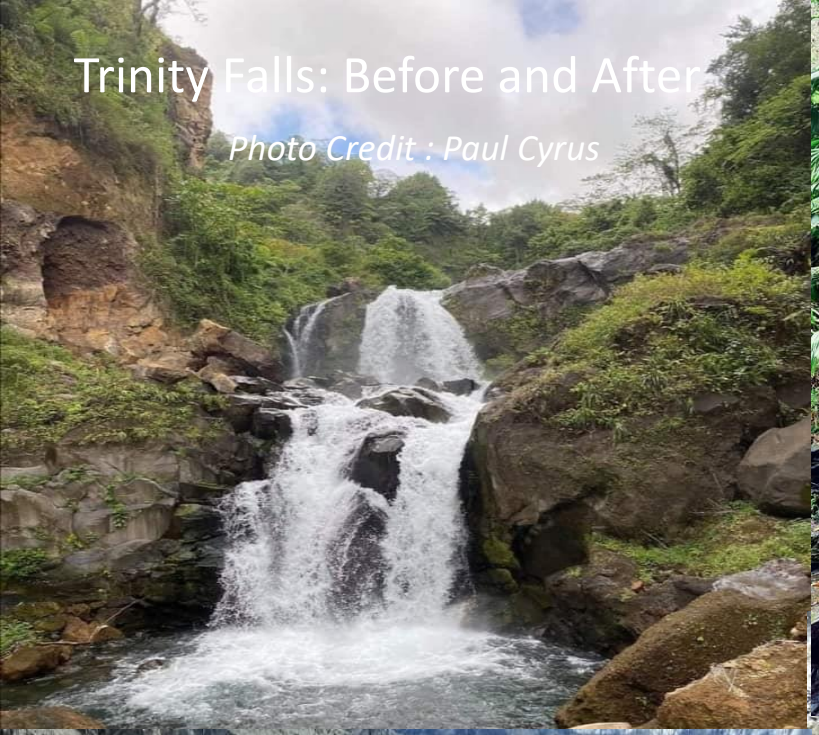
# Data Inventory

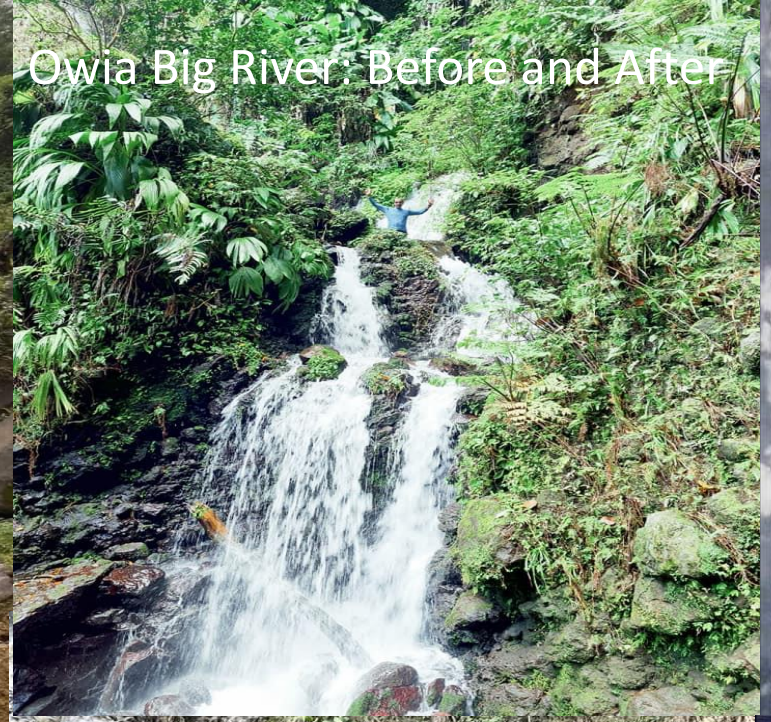
**What datasets do we have?**

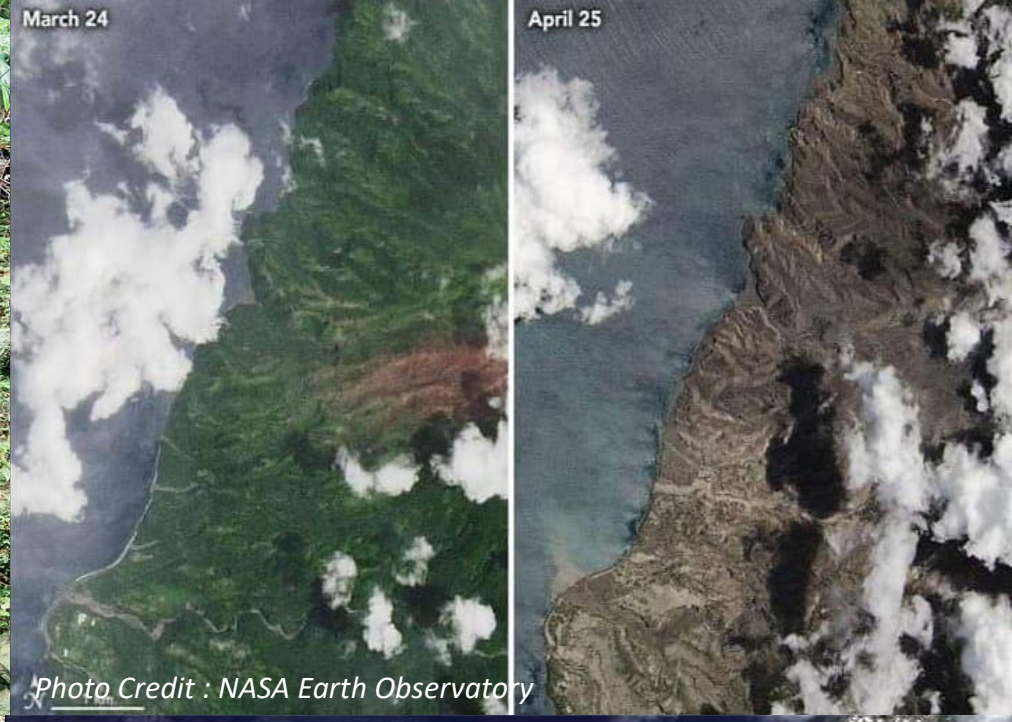



**What datasets do we need?**

- Agriculture
- Tourism
- Demographics
- Forestry
- Marine
- Transportation Network
- Water
- Infrastructure


Trinity Falls: Before and After
Photo Credit : Paul Cyrus


Owia Big River: Before and After


March 24
April 25
Photo Credit : NASA Earth Observatory


MAXAR


MAXAR
Petite Bordel & Chateaubelair: Before and After

# Identification

- Identify areas most likely to be impacted by lahars (mudflows) and pyroclastic density current.


*Pyroclastic Density Current*
*Photo Credit : Thomas Christopher MVO*

*Lahar Sandy Bay*
*Photo Credit : Paul Cyrus*

# Stakeholders

- Establish a board base committee:
- GIS Experts
- Development Planners
- Geologist/Volcanologist
- Engineers
- Architects
- Economic Planners
- Gender Specialist
- Disaster Management Specialist

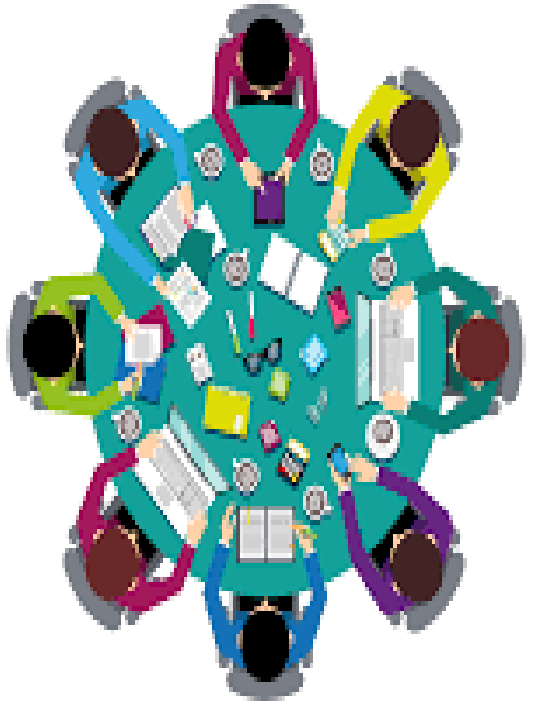




*Photo Credit : Paul Cyrus*

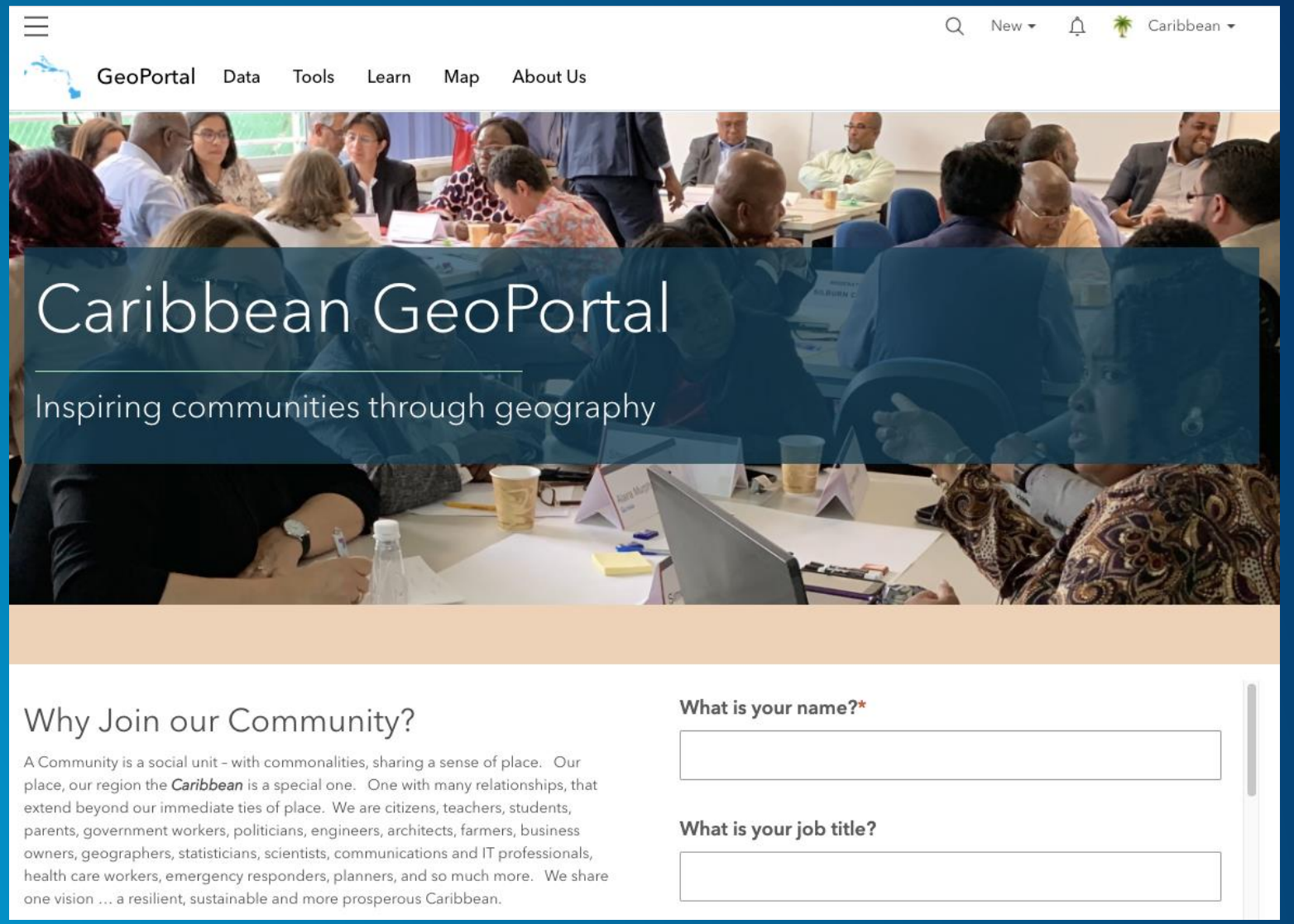
# Open Q/A

# Poll Question

Please Tick the Boxes that Apply to You

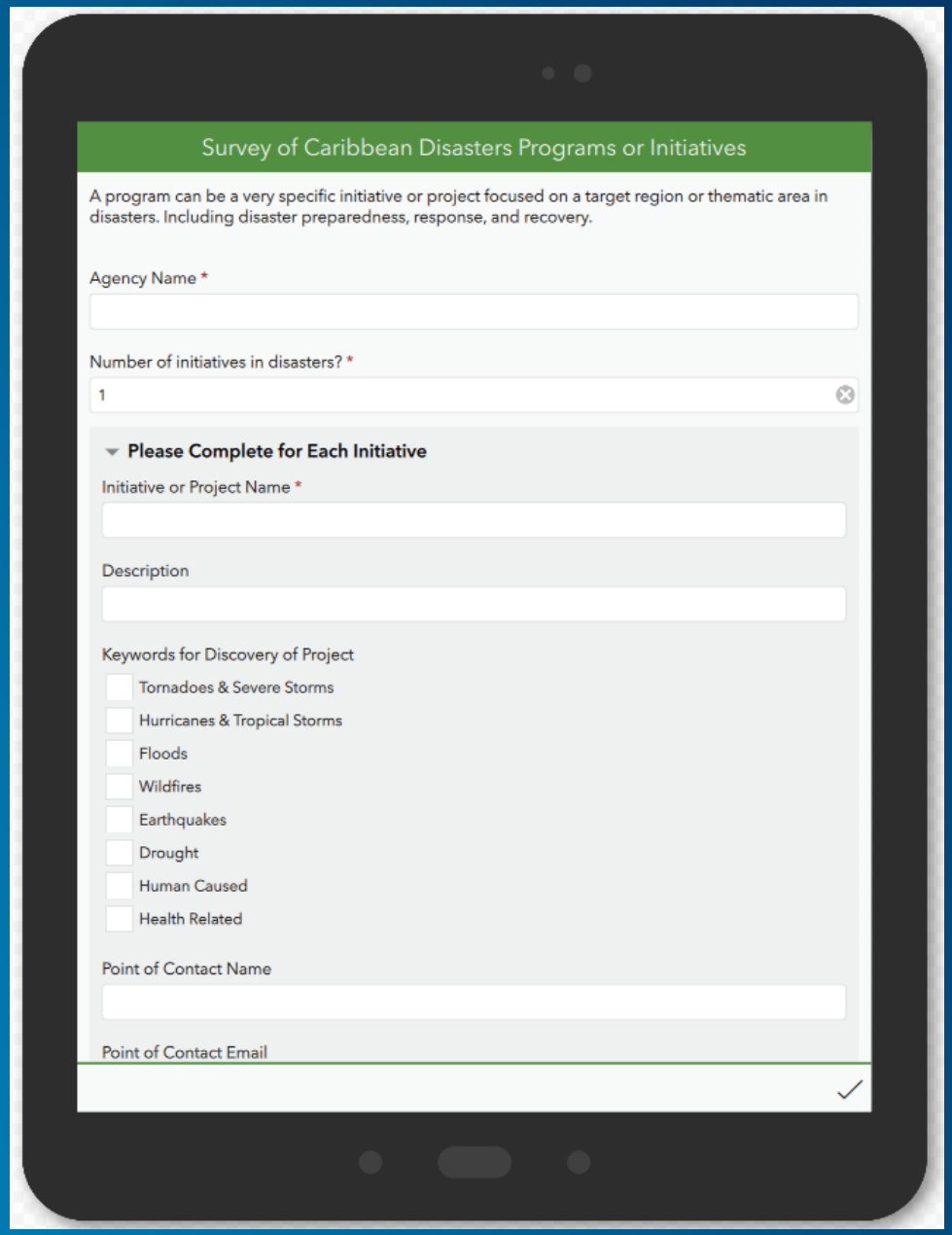
# Join us!

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN

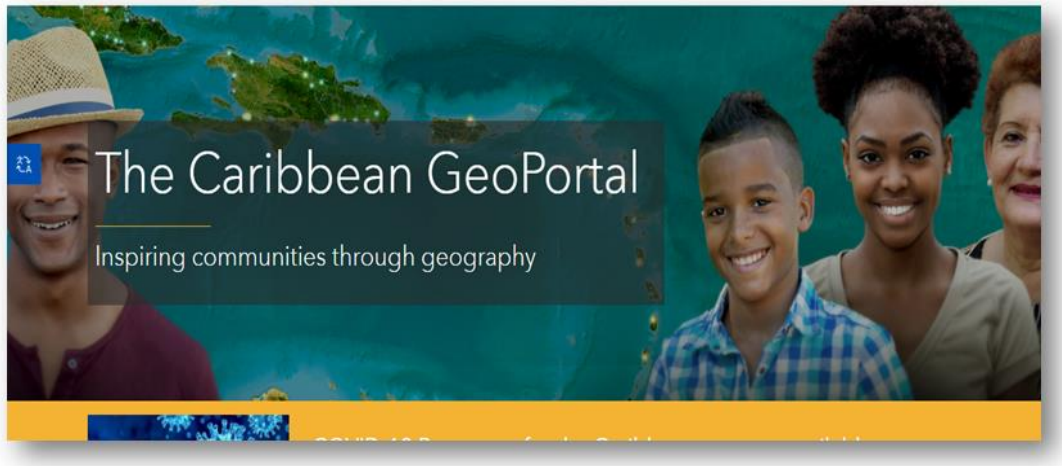


# Take our short survey to help us better understand what you are working on – and how we can help….

CARIGEO
Caribbean Geospatial Development Initiative
GEO-EMPOWERING THE CARIBBEAN

# Caribbean Geoportal Webinar series
## (April – August 2021)




Webinar #1:
**Learn 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**
(August 26, 2021)

# Caribbean GeoPortal


How will you use it?

https://www.caribbeangeoportal.com