

Caribbean GeoPortal Webinar #3

Good decisions need good data... a look at good practices on data sharing



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.

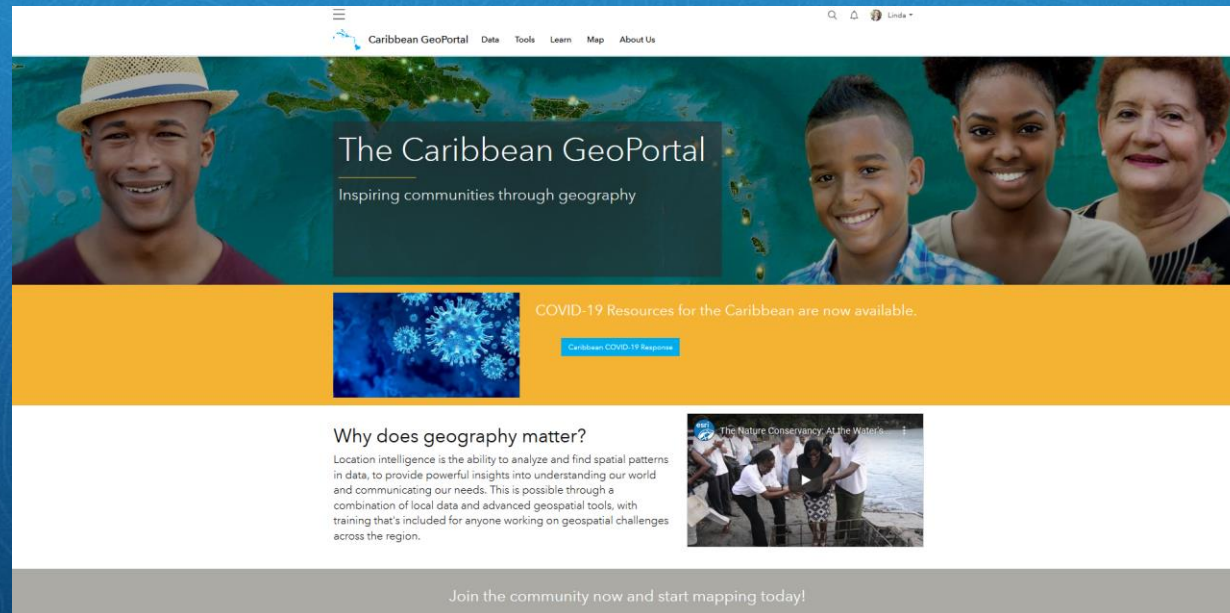


Start time: The webinar will start at 7:00 am Pacific/10:00 am Eastern



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

Good decisions need good data... a look at good practices on data sharing



Caribbean GeoPortal





UN-GGIM:Americas

REGIONAL COMMITTEE OF
UNITED NATIONS
ON GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT
FOR THE AMERICAS



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. Paloma Merodio
Vice President, INEGI
President, GGIM Americas
Co-Chair GGIM IAEG SDGs



Mr. Sean McGinnis
GeoPortal Program Manager
Esri



Mr. Rolando Ocampo
Director Statistics Division, ECLAC



Dr. Bheshem Ramlal
Senior Lecturer
UWI, St. Augustine, Trinidad
and Tobago

Today's Presenters



Ms. Kim Valentine

*Acting NOAA Geospatial Information
Officer (GIO)*



Dr. Austin Becker

*Associate Professor and Chair,
Department of Marine Affairs,
University of Rhode Island*



Ms. Valrie Grant

*OECS GIS Consultant
President, UNGGIM Americas Private
Sector Network*



Mr. Noah Hallisey

*Graduate Student
Department of Marine Affairs,
University of Rhode Island*

Today's Presenters



Mr. Robert Graham
HydroSpatial Director, TCarta



Mr. Alvaro Monett
Regional Geospatial Advisor, ECLAC



Ms. Carol Fisher
*Program Manager & Lead Hydrographer,
TCarta*

Agenda

Introduction	Overview	Data Publishers	Partners	Conclusion
Importance of Data Sharing for the Caribbean	Data Curation Meta Data Tags and more	Different types of data ... Different data publishers	Examples of what the Academic and Private Sector offer	Resources Questions

Importance of Data Sharing for the Caribbean

Paloma Merodio

Importance of Data Sharing for the Caribbean

Rolando Ocampo



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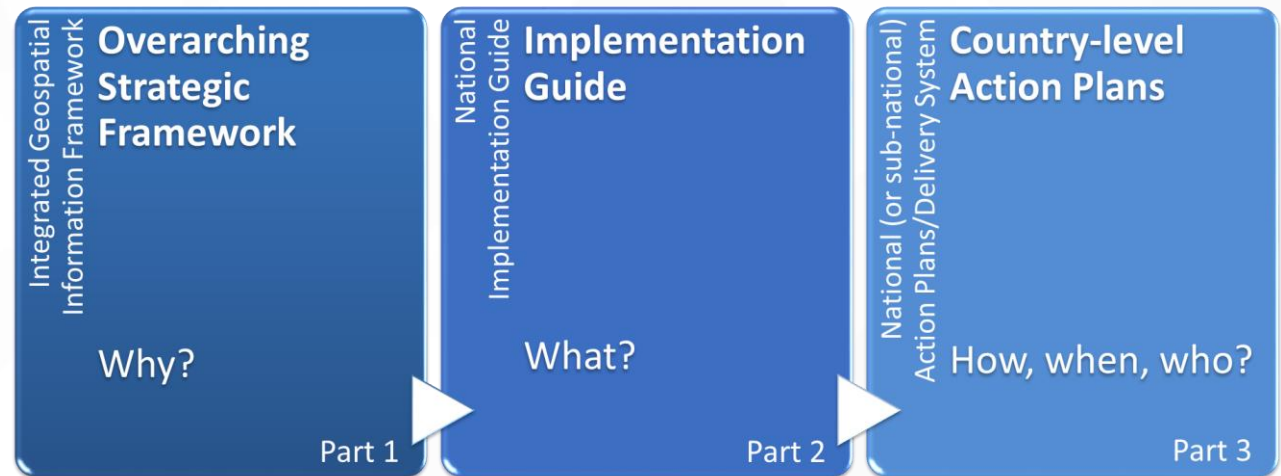
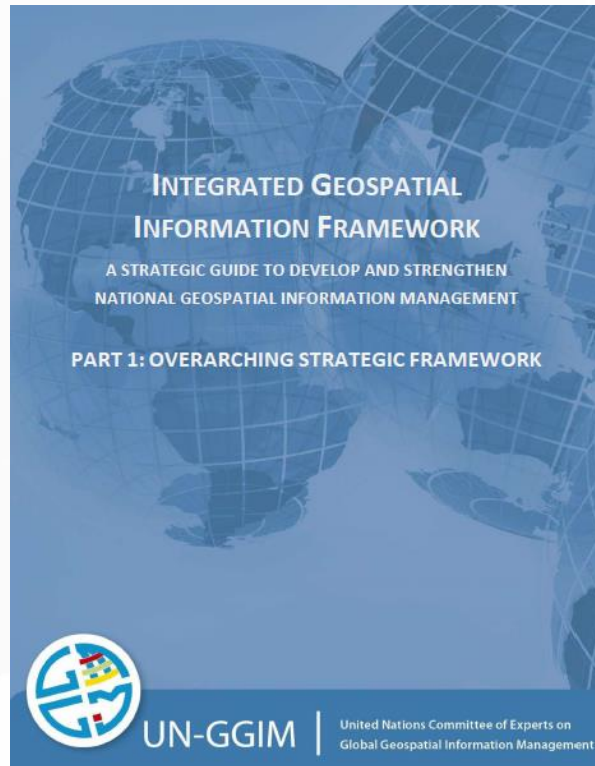
ECLAC support to data sharing in the LAC Region

Webinar #3: Good decisions need good data... a look at good practices on data sharing

Rolando Ocampo
Director Statistics Division
ECLAC

21 September 2021

Providing technical assistance to strengthen geospatial information management in the countries of the region, taking as a reference the IGIF



Assisting subregional projects on geospatial and statistical information



Caribbean Geospatial Development Initiative: CARIGEO

The Caribbean Geospatial Development Initiative aims to improve Geospatial Data Infrastructures at the national and regional level in the Caribbean, building on recent and ongoing developments.

ECLAC in the role of Technical Secretary of CARIGEO and UN-GGIM: Americas leading the initiative

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Caribbean Geospatial Development Initiative
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EXECUTIVE FORUM

October 30th 10:00-11:30 EDT

SPEAKERS

Dr. the Hon. William F. Duguid, J.P., M.P. Minister of Housing, Lands and Maintenance, Barbados	H. E. Dr. June Soomer Secretary General, Association of Caribbean States	Diane Quarless Director, Subregional Office for the Caribbean, ECLAC
NG Siau Yong Director Geospatial and Data & Chief Data Officer, Singapore	Elizabeth Stair CEO & Commissioner of Lands, National Land Agency, Jamaica	Diana Castillo-Trejo General Director, Statistical Institute of Belize

Assisting subregional projects on geospatial and statistical information

Capacity building project for the incorporation of disaster risk reduction and sustainable and inclusive adaptation to climate change in public investment in COSEFIN / SICA member countries



Carried out by the ECLAC Office in Mexico and the COSEFIN Secretariat, with the support of experts from ECLAC Headquarters.

Assisting subregional projects on geospatial and statistical information

ECLAC has played a role as a facilitator of the articulation and dialogue between the National Statistical Offices and the geospatial organizations of the region in two important projects:

Integration of statistical and geospatial information in Central America

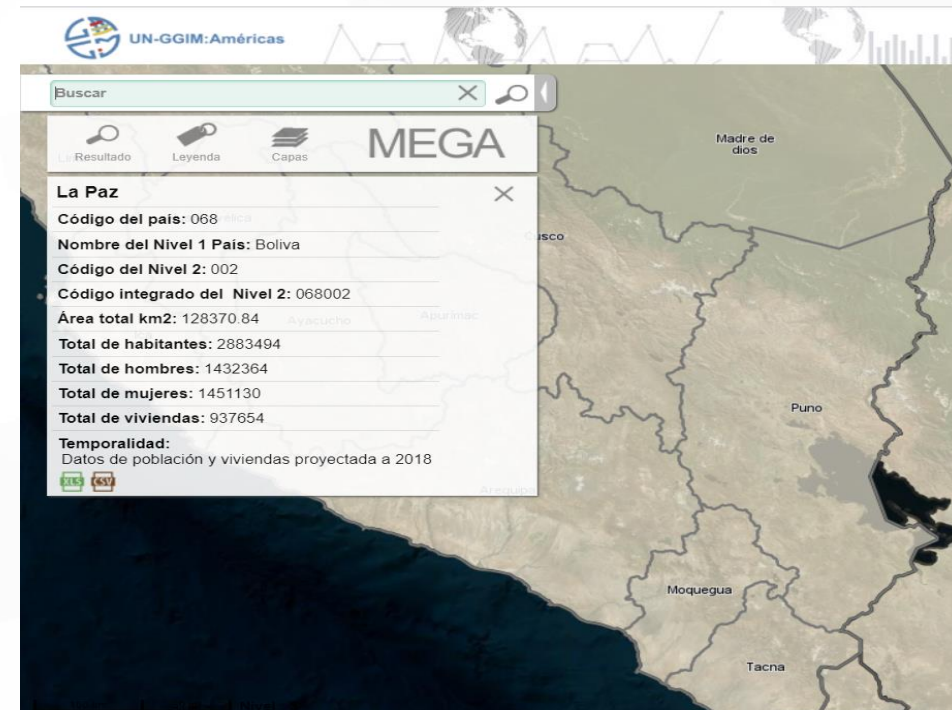


INTEGRATION OF STATISTICAL AND GEOSPATIAL INFORMATION IN CENTRAL AMERICA

A 2019 PAIGH TECHNICAL ASSISTANCE PROJECT



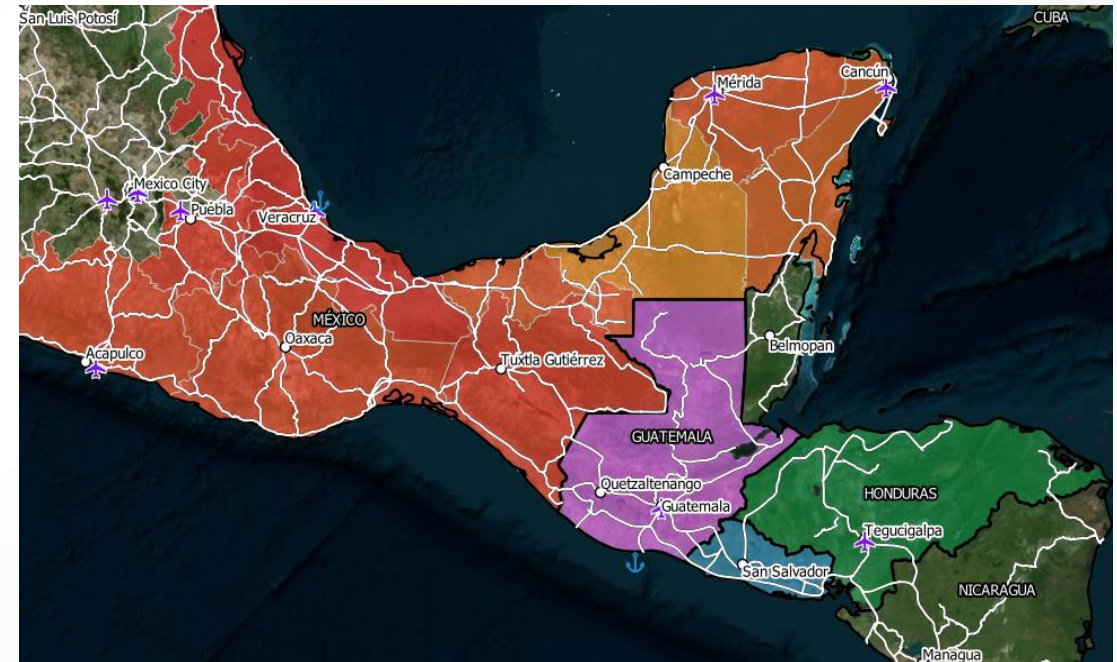
MEGA Project



Assisting subregional projects on geospatial and statistical information

Implementation of a Geoportal to support the Integral Development Plan (PDI) of El Salvador, Guatemala, Honduras and South-Southeast of Mexico

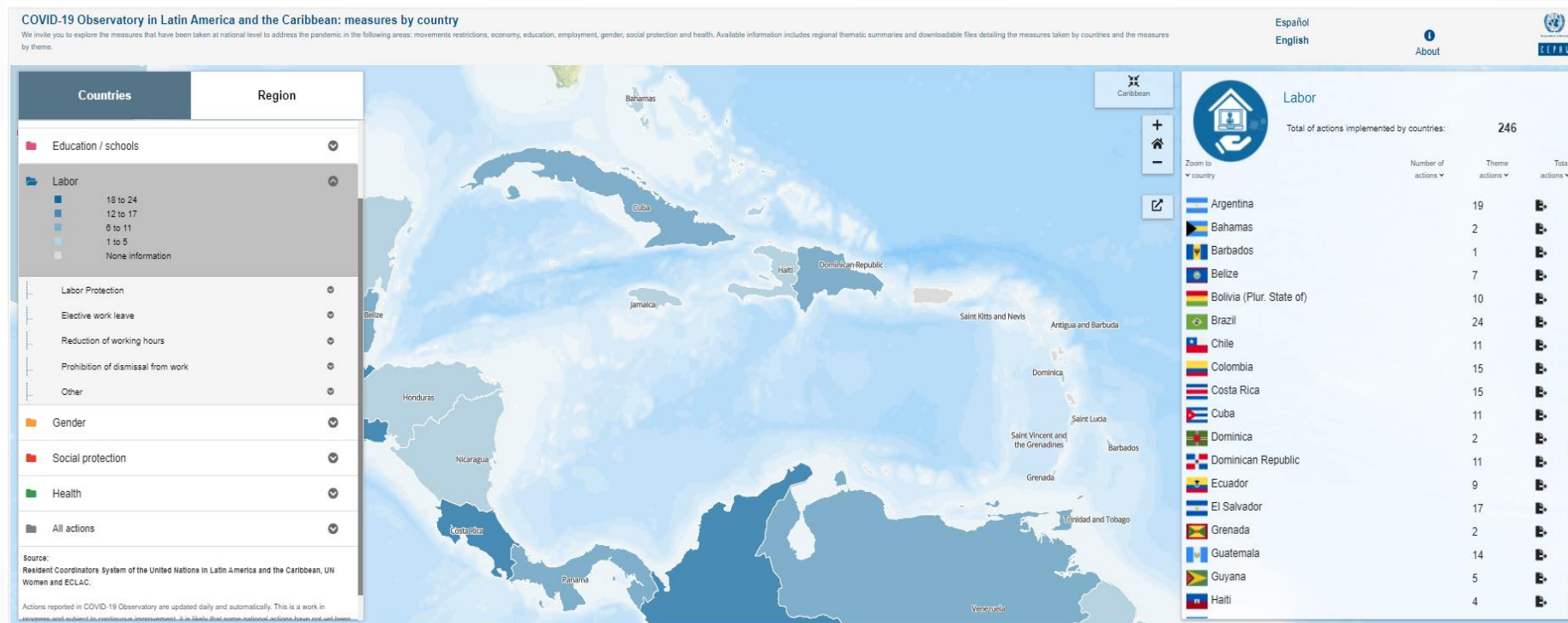
- ✓ Using **Open Source** technologies
- ✓ Construction of a **content manager** for uploading and updating data related to projects and actions in the territory in the PDI geoportal.
- ✓ **Georeferencing** of the projects and actions carried out by the United Nations Agencies, Funds and Programs, plus national public actors, within the framework of the PDI.



Implementing platforms: Geoportal at the ECLAC COVID-19 Observatory

Information at national and regional level by type of actions

- 8 types of measurements.
- Total actions implemented by all countries.
- Percentage of countries that implement the action.
- Number of actions by subtopics.



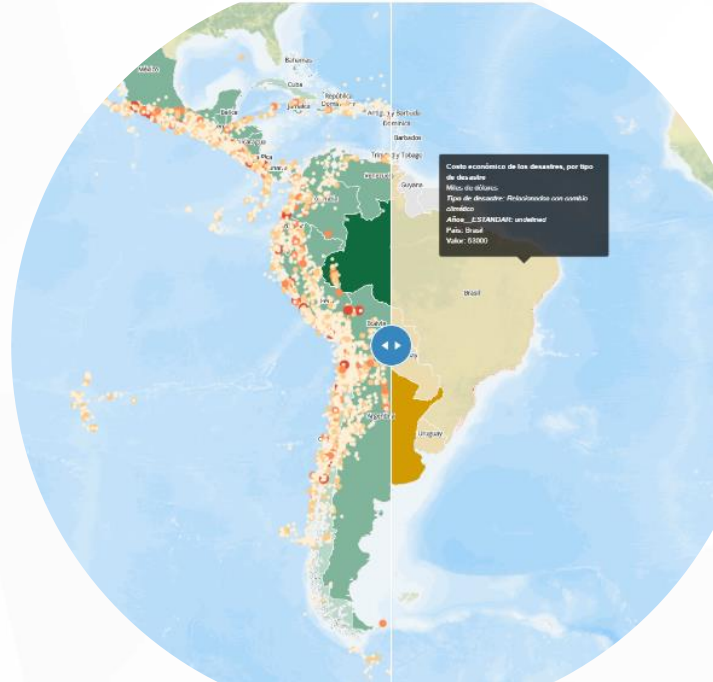
Implementing platforms: New version of CEPALSTAT and its geospatial component

Indicators

Statistics and Indicators
Environmental

- Physical conditions
 - Atmosphere, climate and weather
 - Mean temperature change
- Geological and geographical characteristics
- Land cover, ecosystems and biodiversity
- Environmental quality
- Energy resources
- Land
- Biological resources
- Water resources
- Emissions to air
- Natural extreme events and disasters
- Human settlements
- Environmental governance and regulation

Geoportal



Tabulator

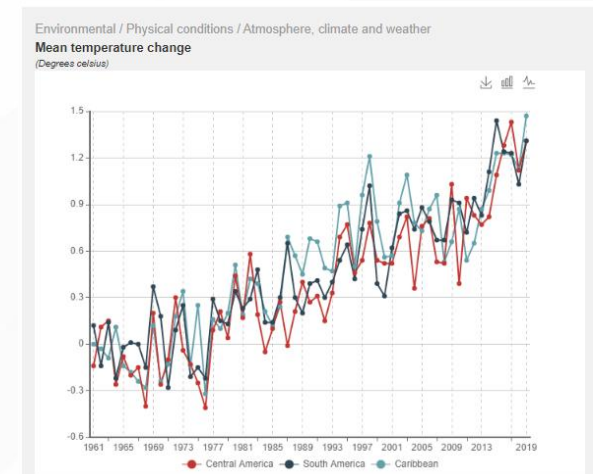
Country: search...
 Argentina
 Bahamas
 Barbados
 Bolivia (Plurinational State of)
 Brazil
Select all Clear all

Years: search...
 1990
 1991
 1992
 1993
 1994
Select all Clear all

Institutional coverage: search...
 Central government
 General government
 Nonfinancial public sector
Select all Clear all

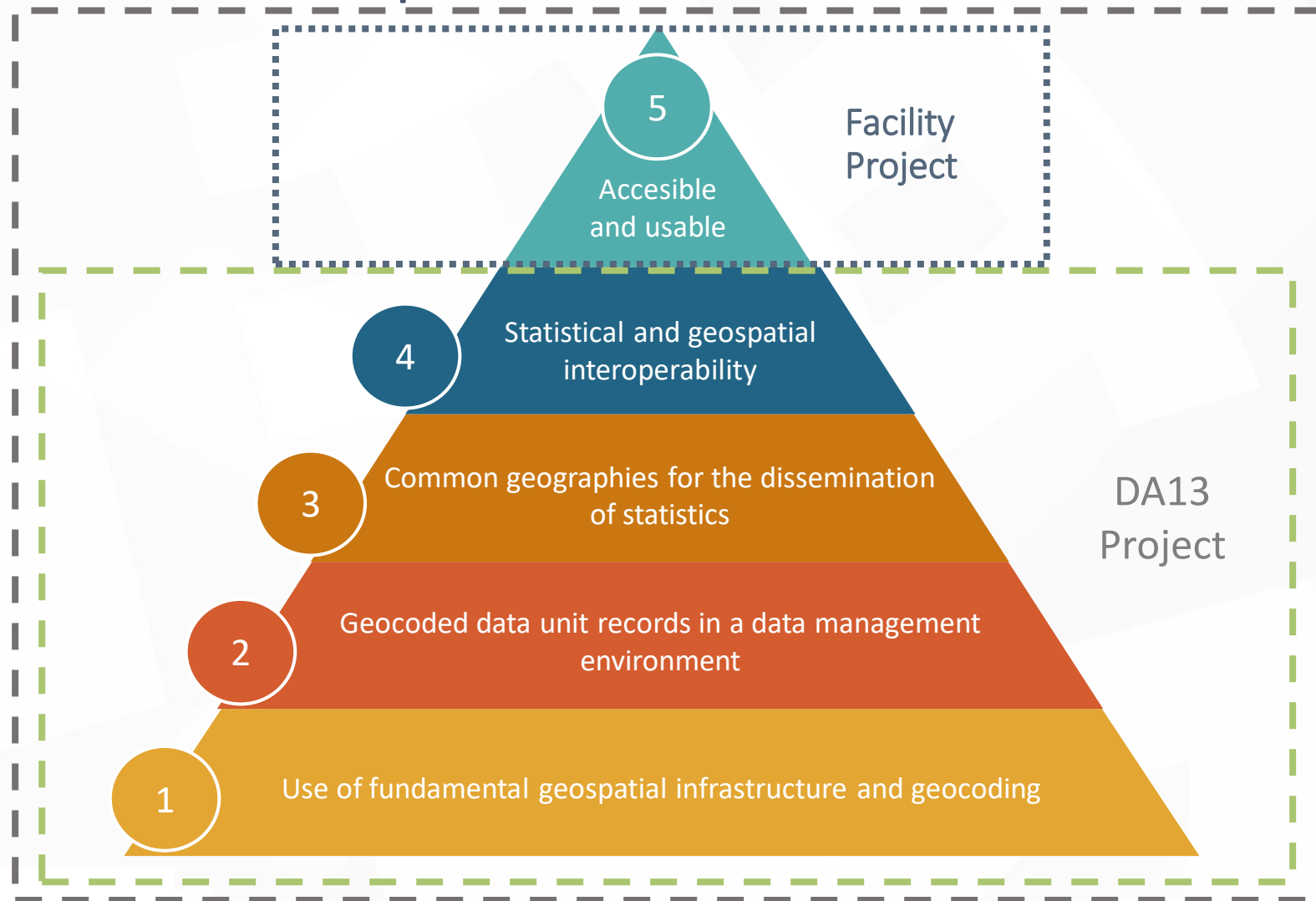
Classification of the functions of government: search...
 Social expenditure
 Environmental protection
 Housing and community amenities
 Health
 Recreation, culture and relation
Select all Clear all

Tabulator



CEPALSTAT is the integration of decoupled components that communicate with each other through APIs and open standards.

Developing projects to support the implementation of the five principles of the Global Statistical and Geospatial Framework



Hosting GeoSUR platform in ECLAC (migration in process)



- Hosting in ECLAC of data assets present in the GeoSur program
- Publication and maintenance of existing geoservices (Respecting the access levels determined by the entities that own the data)
- Reassembly of platforms with open source technologies
- Technological support to regional geospatial projects (MIAS, MIAC, etc.)

Moving forward

- ✓ Continue with efforts to strengthen national capacities in geospatial information management, with an emphasis in the IGIF.
- ✓ Enrich the regional data ecosystem from ECLAC platforms and projects.
- ✓ Collaborate to achieve regional interoperability objectives.
- ✓ Strongly support the integration of statistical and geospatial data at regional and country level.
- ✓ Continue the support to CARIGEO Initiative j



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Thank you

Webinar #3: Good decisions need good data... a look at good practices on data sharing

Rolando Ocampo
Director Statistics Division
ECLAC

21 September 2021

Data Curation, Meta-Data, Tags, Title and more

Dr. Bhemesh Ramlal, Sean McGinnis



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Basics of good data sharing

Questions:

What are some of the basics that anyone should follow when thinking about sharing their data?



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Basics of good data sharing

Questions:

What are some of the basics that anyone should follow when thinking about sharing their data?

What is data curation all about?

Why is data curation important to data sharing?



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Different types of data being published

Question:

What different types of data do you see being shared today?



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Different types of producers

Question:

Are there differences in quality and level of detail that you see depending on who is producing data?



Available options to share data

Questions:

Not every agency is leveraging Web GIS.

Where do I begin?

Can I use the geoportal?

What are my options?



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Open Source

Question:

I am currently using open-source tools, can I share my data to the Caribbean GeoPortal?



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Communicate effectively with public and partners

Question:

Citizens/Civil Society 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

Data Publishing

NOAA, OECS

Kim Valentine

Acting NOAA Geospatial Information Officer (GIO)



CARIGEO Webinar #3 - Caribbean Geoportal

Data Publishing Session

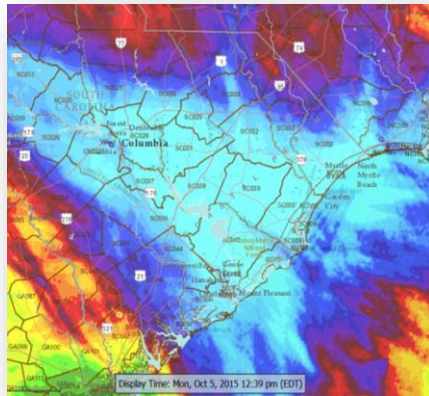
Kim Valentine,

Acting NOAA Geospatial Information Officer (GIO)



GIS Supports NOAA's Mission

Science, Service and Stewardship



- To understand and **predict changes** in climate, weather, oceans and coasts
- To **share that knowledge and information** with others
- To **conserve and manage coastal and marine ecosystems** and resources

Geospatial is in NOAA's DNA

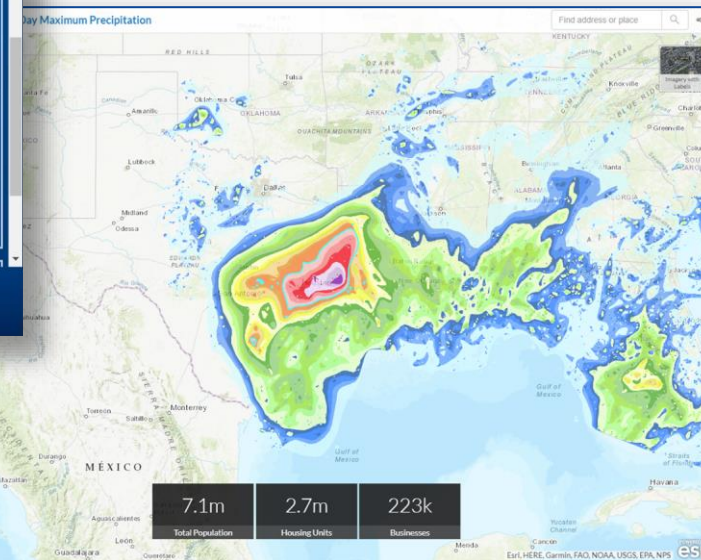
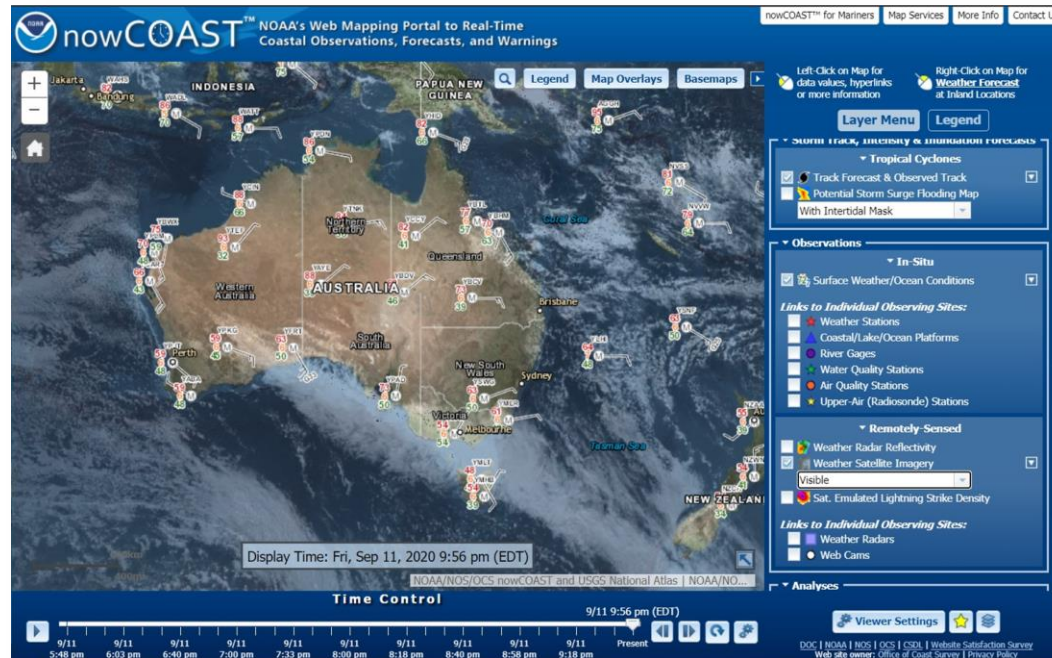


Geospatial technologies provide the framework to collect, store, analyze, and disseminate 'NOAA's Environmental Intelligence'

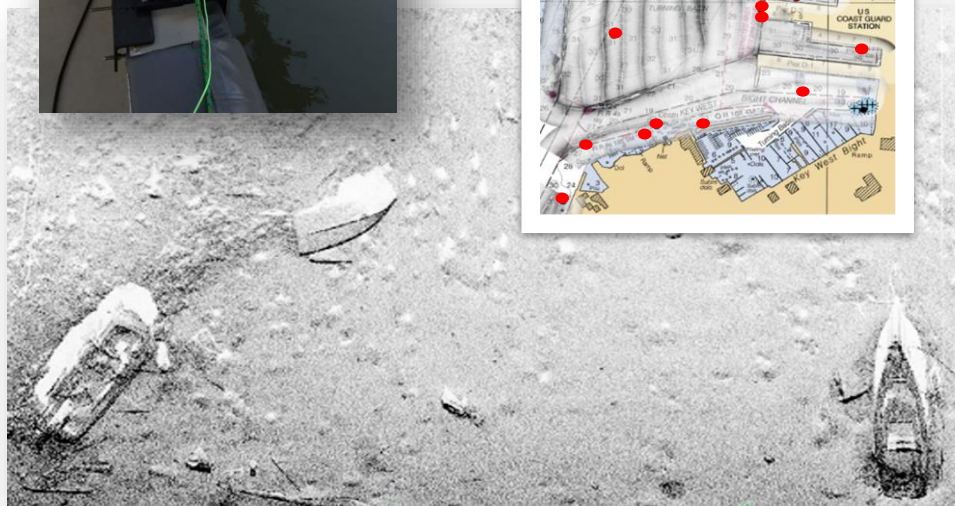
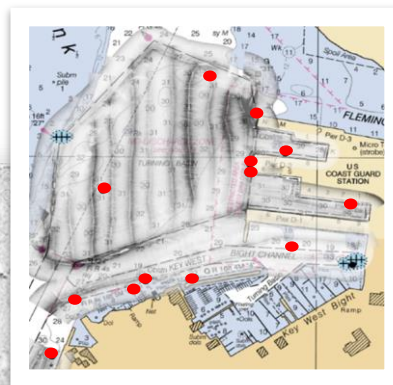
A Wealth of Observational Platforms



Enhancing Access to Weather Data – Building a Weather-Ready Nation

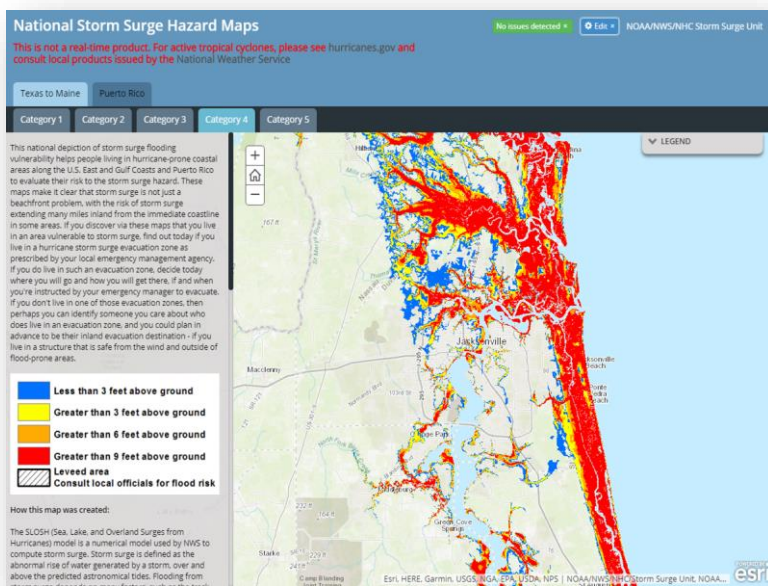


Assessing Impacts – Helping Communities Recover More Quickly

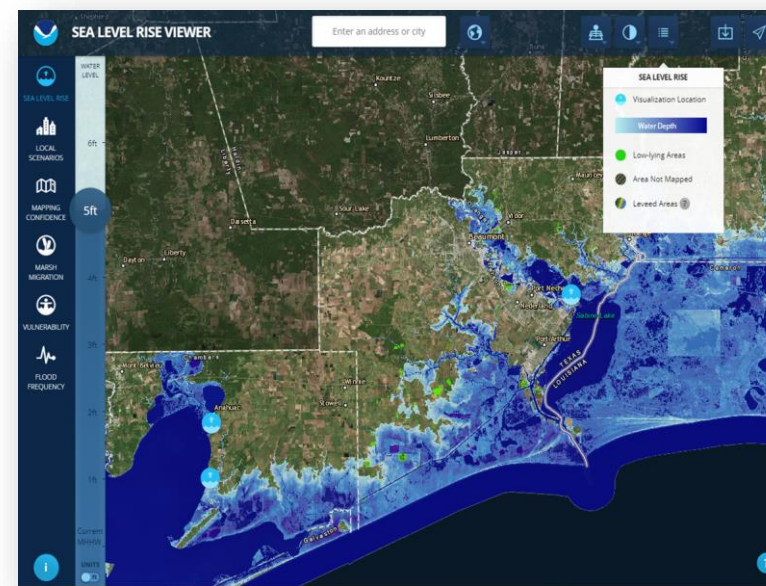


Visualizing Tropical Storm and Climate Impacts

Understandable Storm Surge Water on Land Forecasts

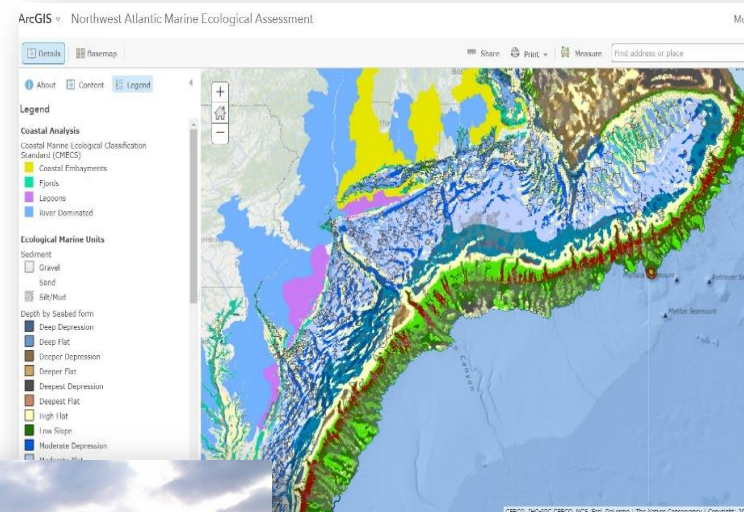
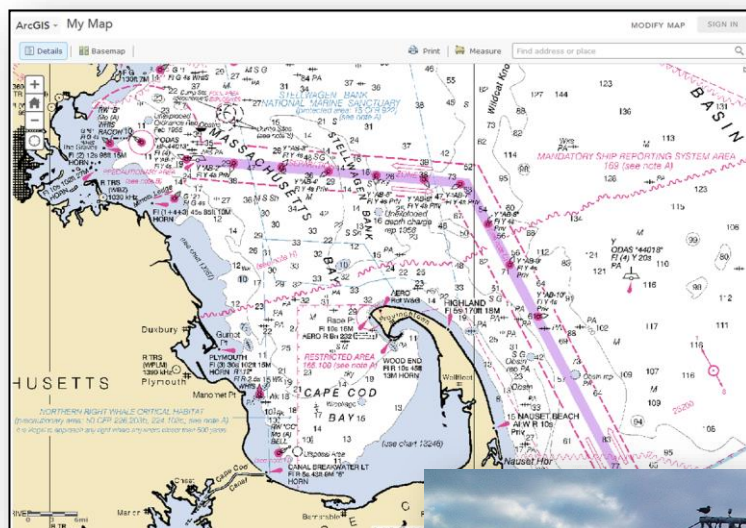


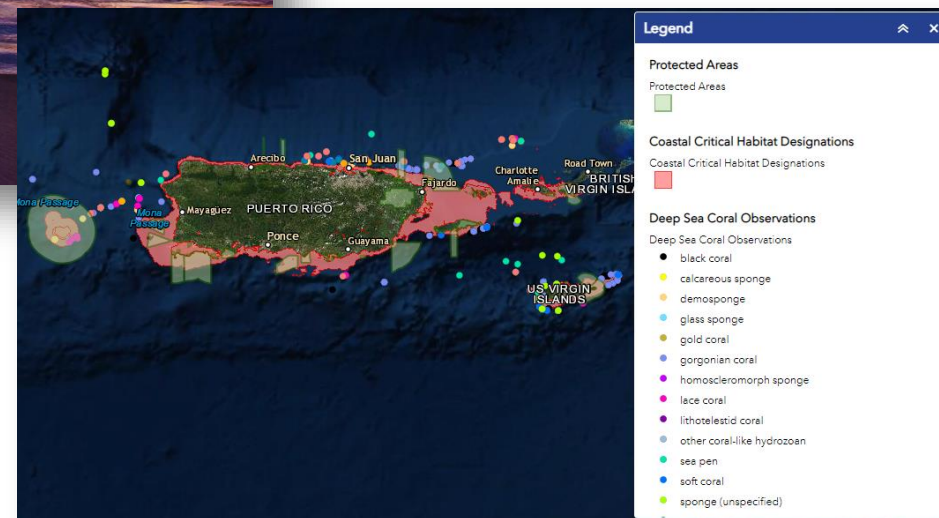
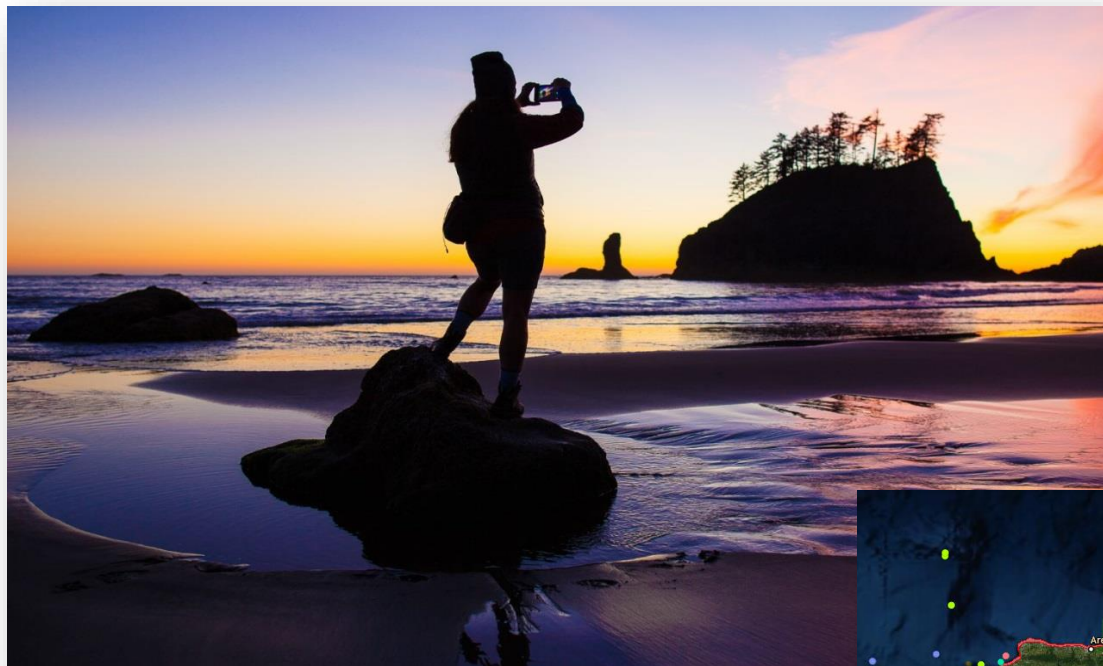
Interactive Tool to Visualize Sea Level Rise Impacts



Nautical Charting – Powering the Blue Economy

Ocean Stewards – Safe & Productive Fisheries



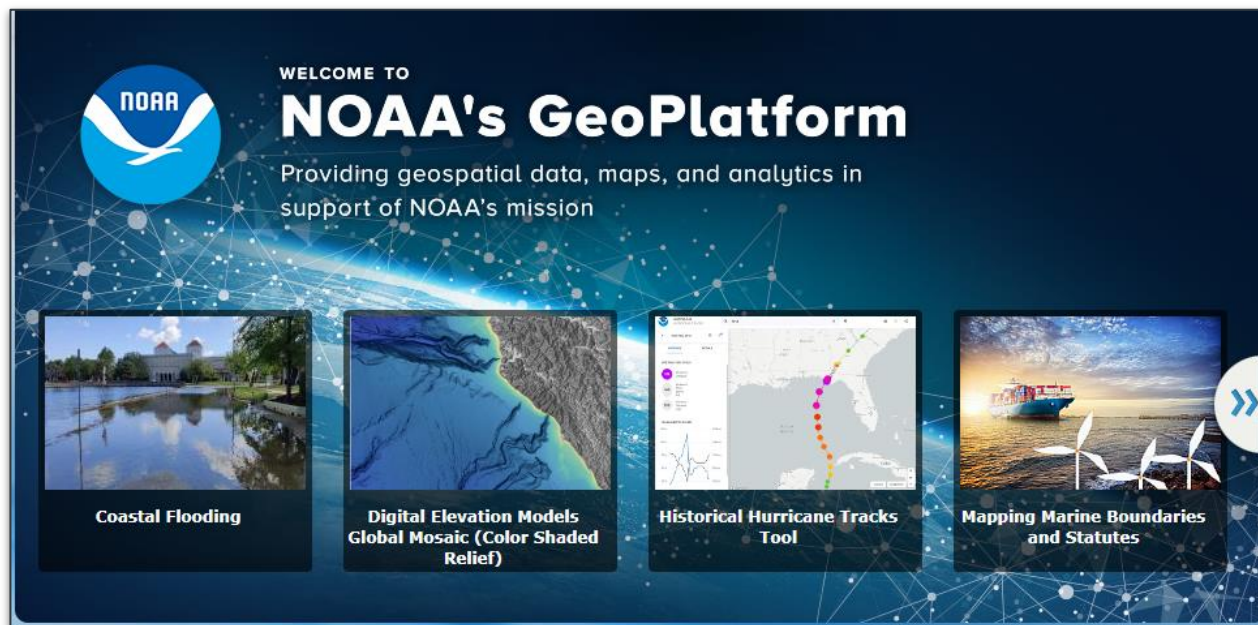


Protecting Special Coastal and Ocean Resources





NOAA GeoPlatform



- +6800 Users
- +8000 Public Items
- ~1000 Public Story Maps

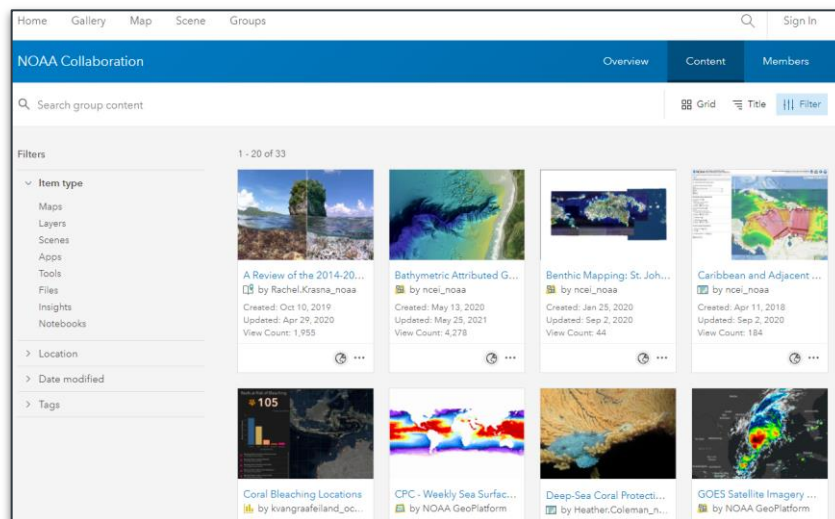
<https://noaa.maps.arcgis.com/home/index.html>

The NOAA GeoPlatform provides an open platform for sharing NOAA's geospatial maps, applications, and services.



Caribbean GeoPortal

NOAA's Content Group and Hub on the Caribbean GeoPortal provides access to Caribbean regional datasets and services



<https://caribgeoportal.maps.arcgis.com/>

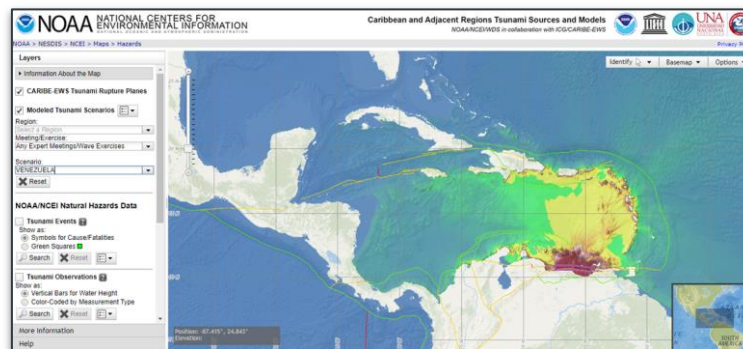


<https://noaa-caribbean.hub.arcgis.com/>

Caribbean GeoPortal

Apps and Story Maps

Caribbean and Adjacent Regions Tsunami Sources and Models (CATSAM)

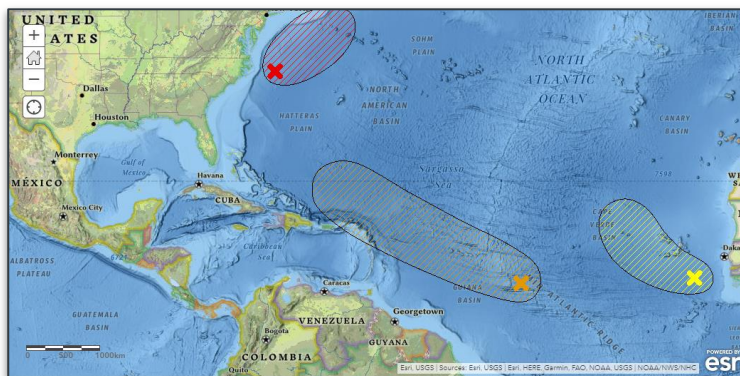


Hurricanes and Corals in the 2017 Atlantic Hurricane Season

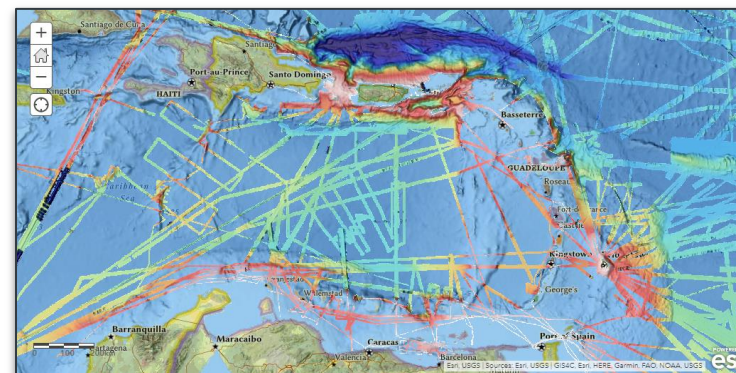


Data & Services

Atlantic Hurricane Forecast



Multibeam bathymetry



Thank You!



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Home / Offices / Regional Collaboration Network / Regions / Southeast and Caribbean Region

Southeast and Caribbean Region

Regional Collaboration Network home | Southeast & Caribbean Region home | Regional Profile | Regional Team | Feature Activities | NOAA Caribbean

NOAA in the Caribbean

Highlights

Winter 2021 edition of the NOAA in the Caribbean Newsletter is now available

Winter 2021 | Volume 10 | Issue 1

NOAA Southeast and Caribbean Regional Team | CaribbeanNews@noaa.gov

NOAA IN THE CARIBBEAN

CONNECTING NOAA & PARTNERS ACROSS THE CARIBBEAN

-Highlights-

NOAA in the Caribbean Biannual Meeting Update

While there was hope that we would be able to host the NOAA in the Caribbean biannual meeting in-person for 2021, current travel restrictions and the state of the COVID-19 pandemic make planning for a large event difficult.

As a result, there will not be an in-person meeting in 2021. The NOAA in the Caribbean team are working on plans for a 2021 virtual meeting, similar to the 2020 Caribbean Community Webinar that had over 175 attendees. More information will be announced in the future.

The executive committee is investigating the possibility of providing simultaneous translation services for Spanish language interpretation at this meeting. Please take this short [Google Form](#) about your interest.

If you have any questions or want more information, please contact CaribbeanNews@noaa.gov.

-Feature Stories-

- [Caribbean Coral Maps: Revealing the World Beneath the Waves of Puerto Rico and USVI](#)
- [NOAA Fisheries Proposes Critical Habitat for Five Threatened Caribbean Corals](#)
- [National Coral Reef Monitoring Program's U.S. Status Report](#)
- [Early Life Ecology of the Invasive Lionfish \(*Pterois* spp.\) in the Western Atlantic](#)
- [Coral Disease Response in US Virgin Islands](#)
- [New NOAA-led Drought Update Reports Improve Early Warning in Puerto Rico and U.S. Virgin Islands](#)
- [NOAA strategy addresses stony coral tissue loss disease](#)

-Announcements-

- [General Announcements](#)
- [Grant Opportunities](#)

<https://www.noaa.gov/regions/noaa-in-caribbean>

Valrie Grant

OECS GIS Consultant

President, UNGGIM Americas Private Sector Network

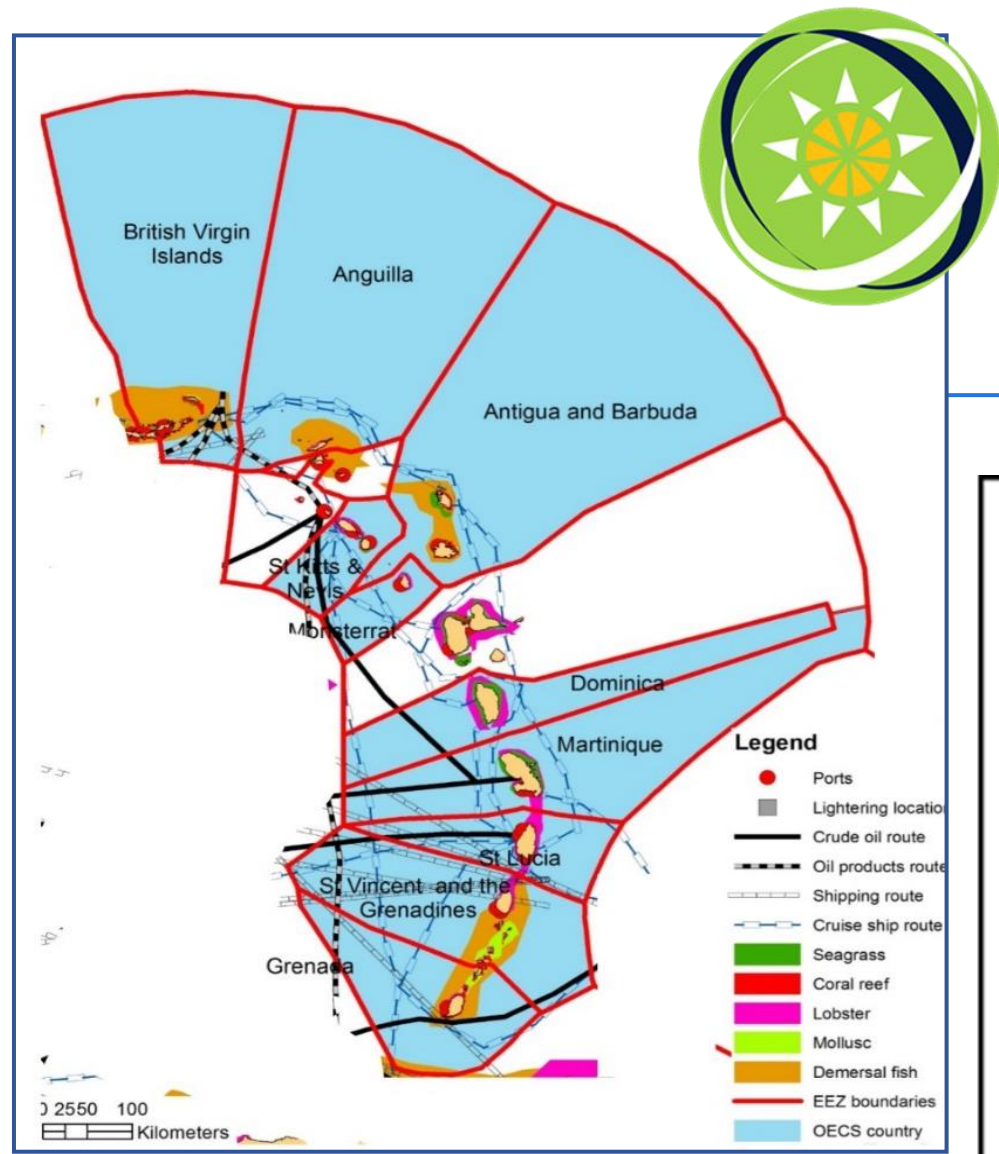


**Organisation of
Eastern Caribbean States**

Good Decisions Need Good Data –

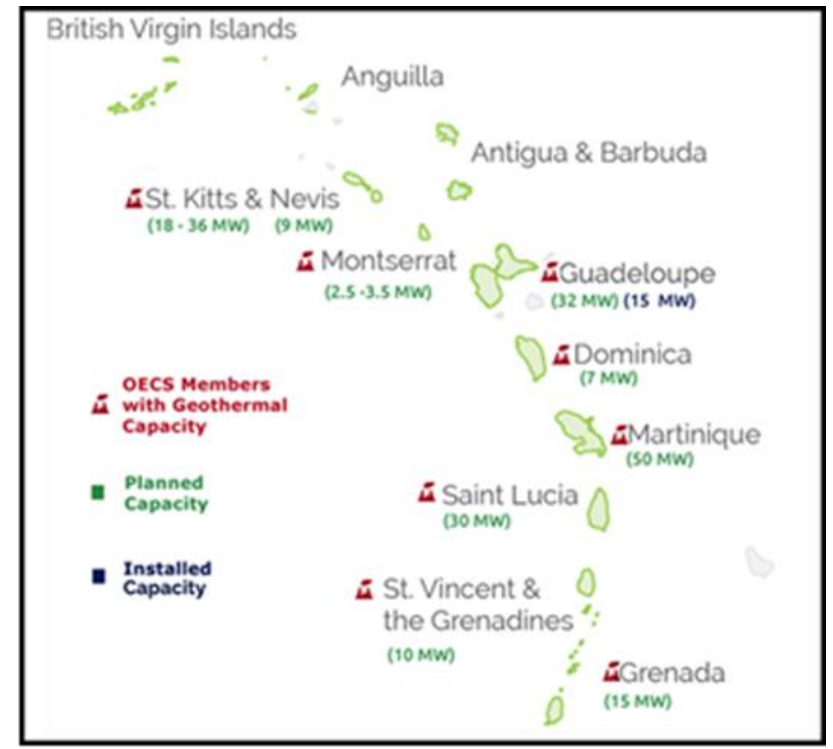
A Look at Best Practice Data Sharing in the OECS

CARIGEO Webinar – September 21, 2021

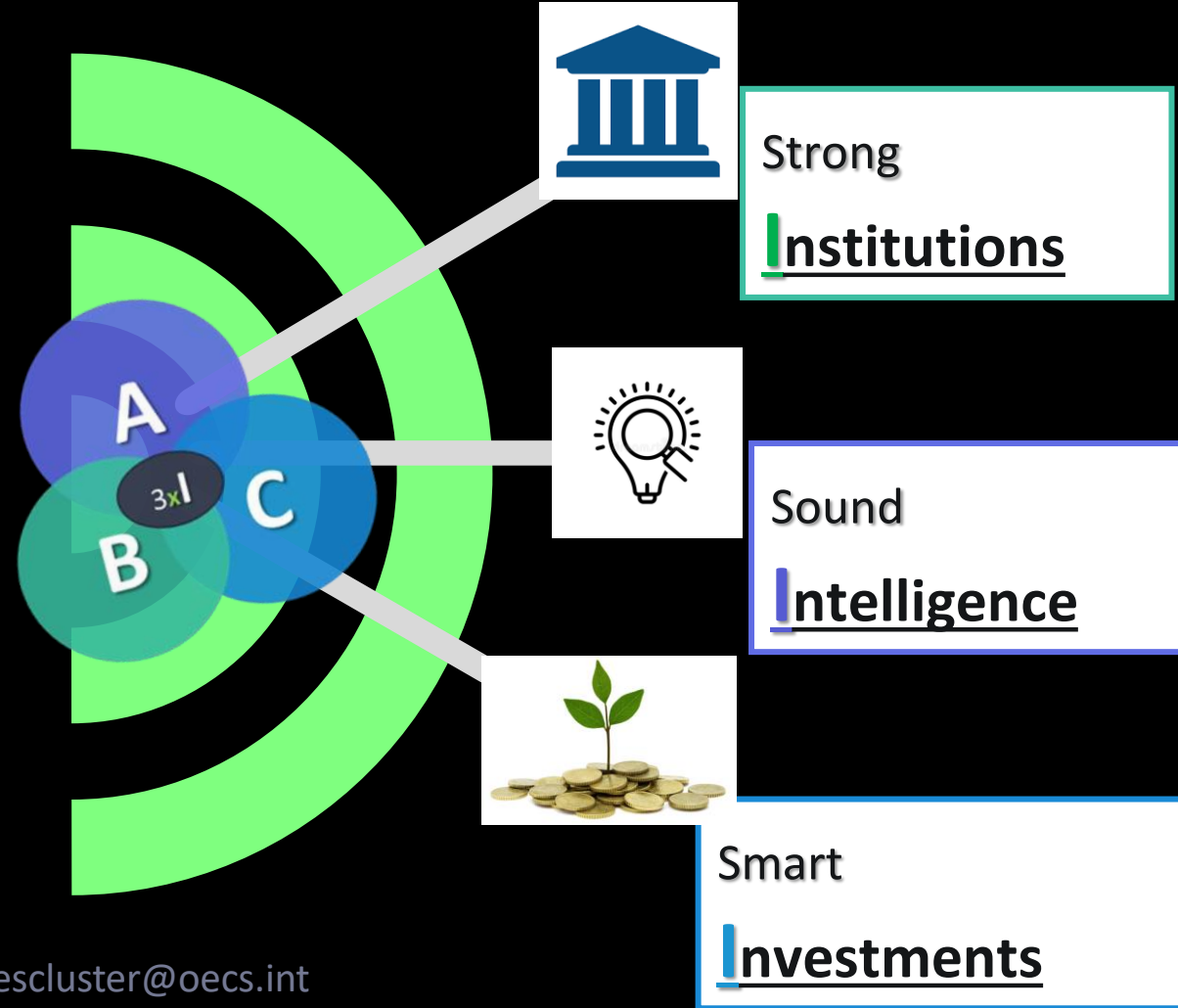
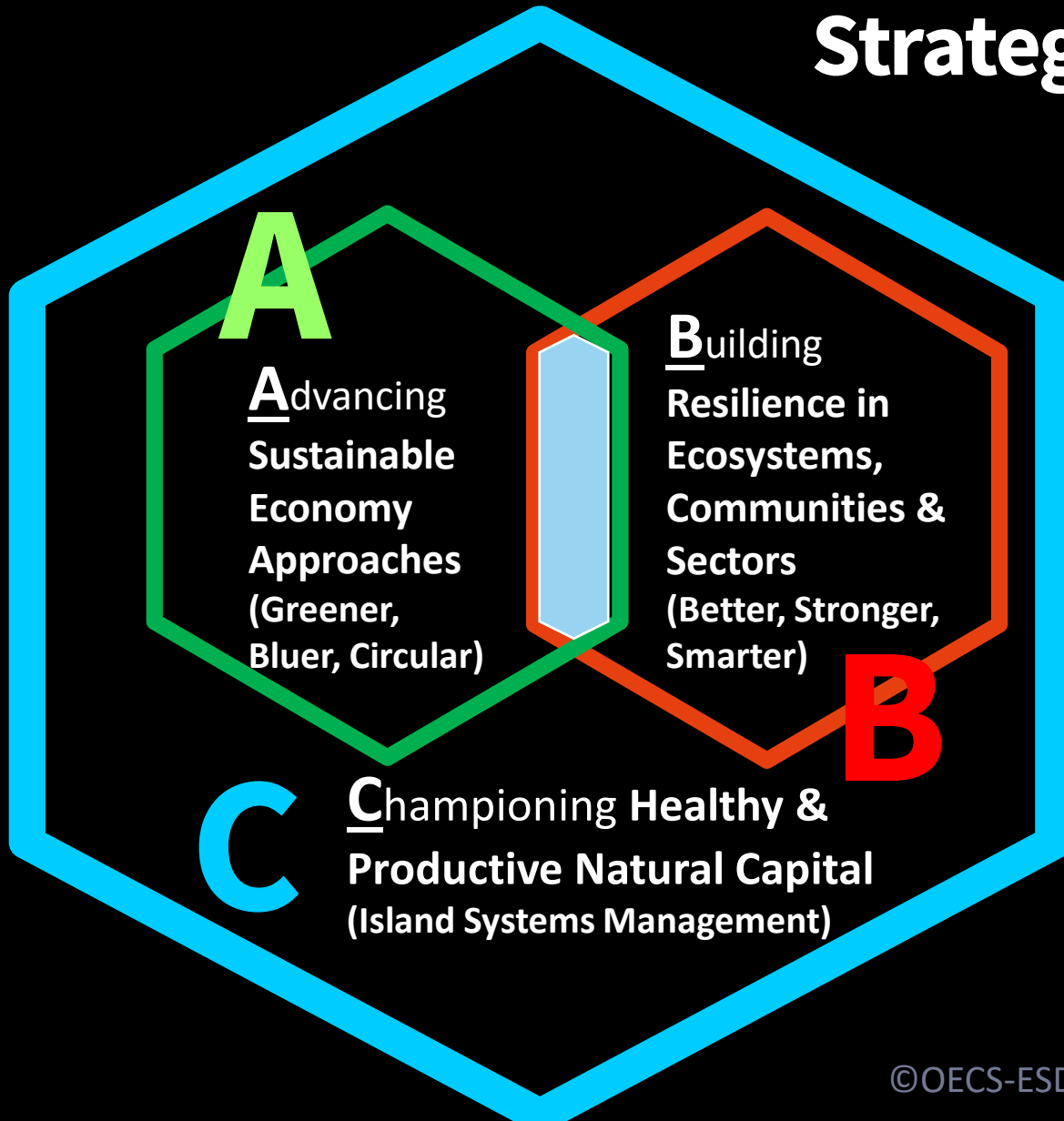


*Transnational negotiations to formally delimit the EEZ boundaries of certain States remain ongoing; there is no implied acceptance on boundaries that have not been negotiated.

**+ Vulnerability
x Opportunity**



Strategic Approach



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Enabling Actions




Partnerships



Good Governance




Capacity Development



Education & Outreach



Research & Systematic Observation



Data, Information & Knowledge



Monitoring, Evaluation & Learning



Regional Cooperation



Equity & Inclusivity



Innovative & Sustainable Financing Mechanism



Good Governance

Principle 10 of the 1992 Rio Declaration on Environment and Development



PRINCIPLE

ACCESS INFORMATION JUSTICE

Principle 10
of the Rio Declaration on Environment and Development guarantees that all persons, particularly those in vulnerable situations, have access to timely and reliable information, can participate significantly in the decisions that affect their lives and have access to justice in environmental matters, thereby contributing to the implementation of the Sustainable Development Goals

- Ensure equal access to justice
- Effective, accountable and transparent institutions
- Ensure inclusive, participatory and representative decision-making
- Ensure public access to information and protect fundamental freedoms
- Non-discriminatory laws and policies for sustainable development

“Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have **appropriate access to information concerning the environment** that is held by public authorities, ... and the **opportunity to participate in decision-making processes**. States shall facilitate and **encourage public awareness and participation by making information widely available**. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.”





Education &
Outreach

Access to information is key to ensuring transparent and inclusive public participation for environmental sustainability. Stakeholders need to be adequately **educated, informed, empowered and engaged to participate meaningfully in environmental decision making**, enhanced advocacy, attitudes and practices.



Data, Information
& Knowledge

Data, information and knowledge are fundamental tools and intellectual capital: organizational learning to support decision making and actions; coherence and synergy in data collection processes, capacity to strengthen national and regional reporting; **ensures that the most pertinent, reliable, timely and up-to-date data and information are available and easily accessible for everyone.**



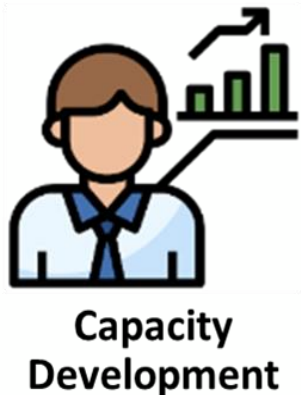
Monitoring,
Evaluation &
Learning

It is important to **apply knowledge gained from experience, evidence and analysis to improve development outcomes** and ensure accountability for the resources used to achieve them.





Policy formulation, planning, management decisions and developmental interventions should be based, as far as possible, on the **best available science**, knowledge and evidence of the natural, social, and economic processes that affect the environment and sustainable development. **Decision makers should be able to obtain and understand high quality science, data and best practice to facilitate sustainable use of island terrestrial, marine and coastal resources.** This will enable a risk-based approach that allows consideration of uncertainty in decision-making.

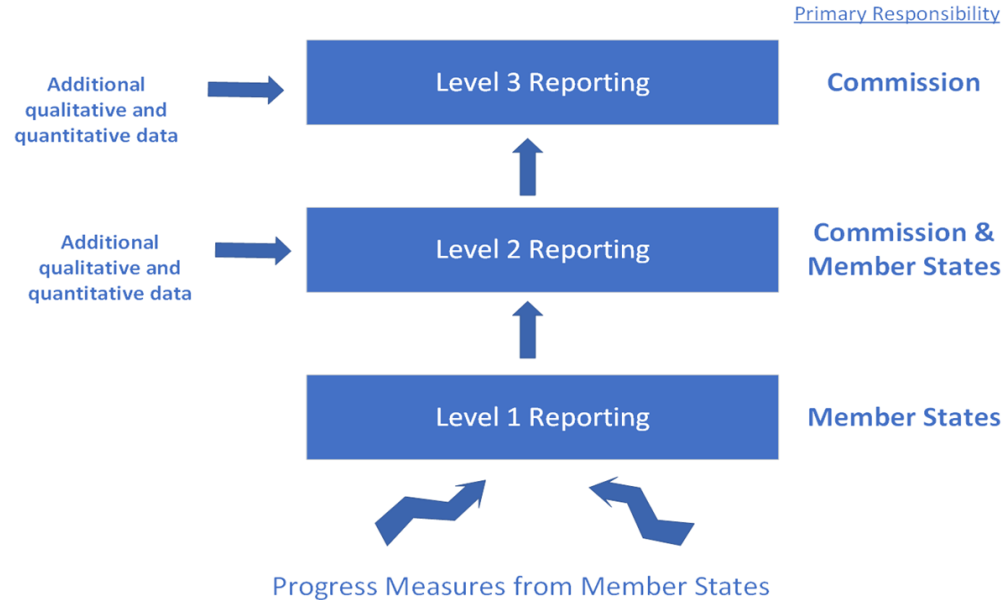


Components of capacity include skills, systems, structures, processes, values, resources and powers that confer a range of capabilities. It can occur **at the level of the individual, the organization, communities, sectors, ecosystems and the enabling environment.**





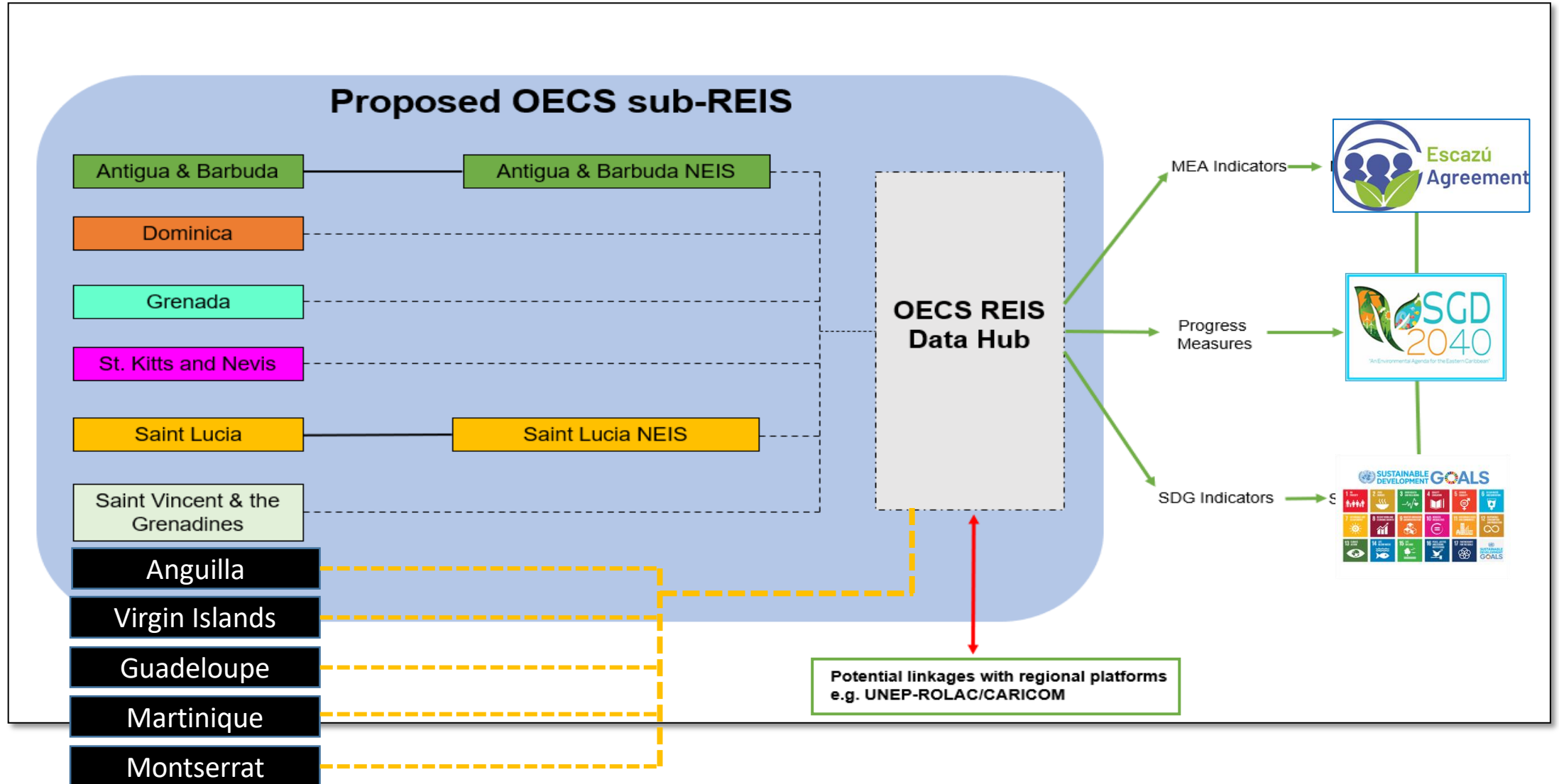
Reporting Framework & Challenges



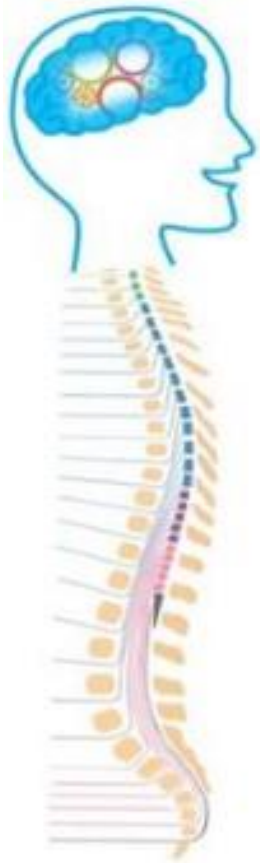
- Perceived heavy burden vs limited resources available
- Difficulties in accessing or producing required source data
- Perceived fatigue by Member States with multiple requests from multiple agencies
- Inadequate cooperation and coordination among parties involved in the process
- Duplication due to same information produced several times for different purposes
- Absence of compelling value proposition



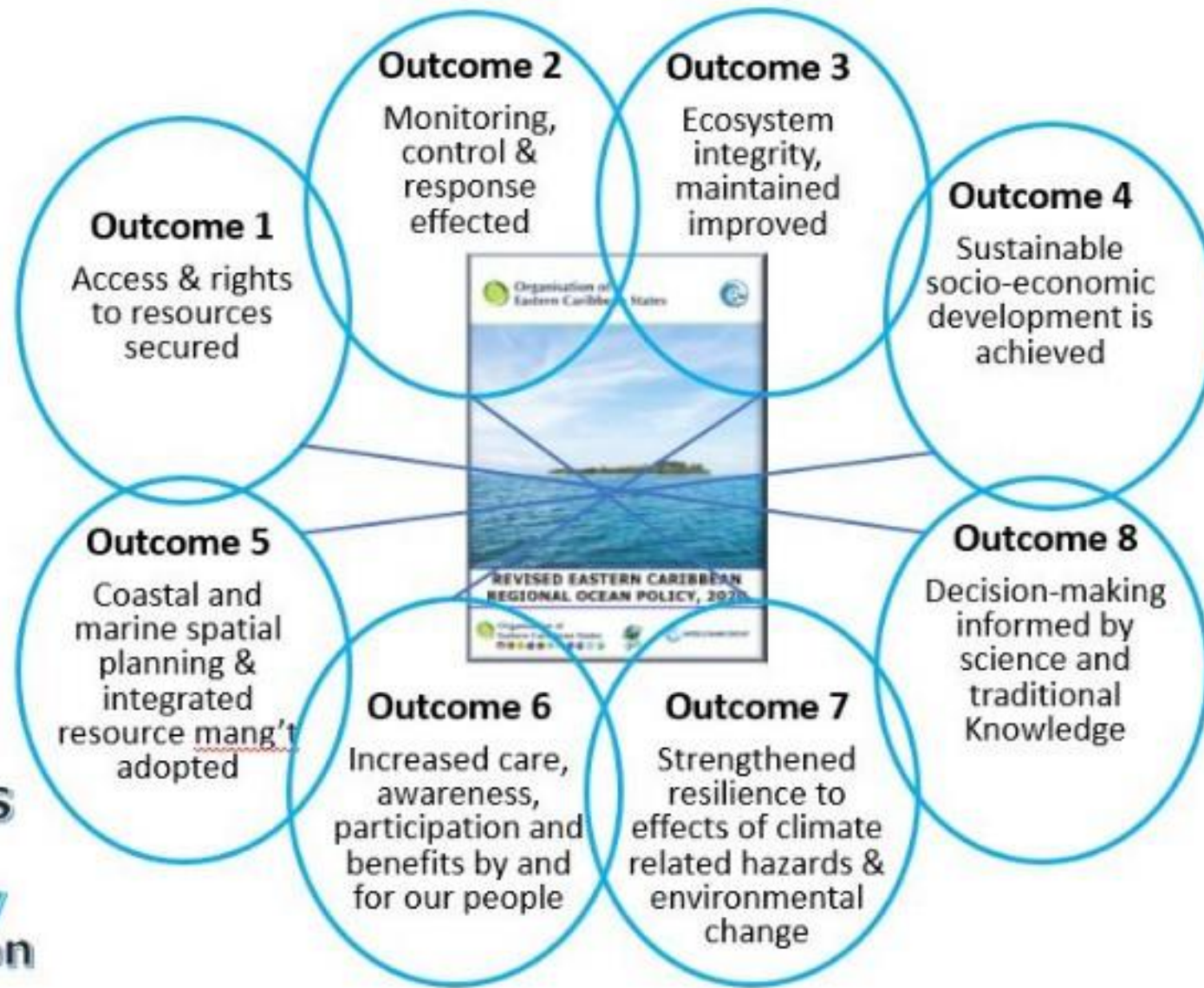
Proposed OECS EIS Structure



OECS Regional & National Blue Economy Outcomes



The OECS
Blue
Economy
Foundation



Holistic, Visionary,
Integrated

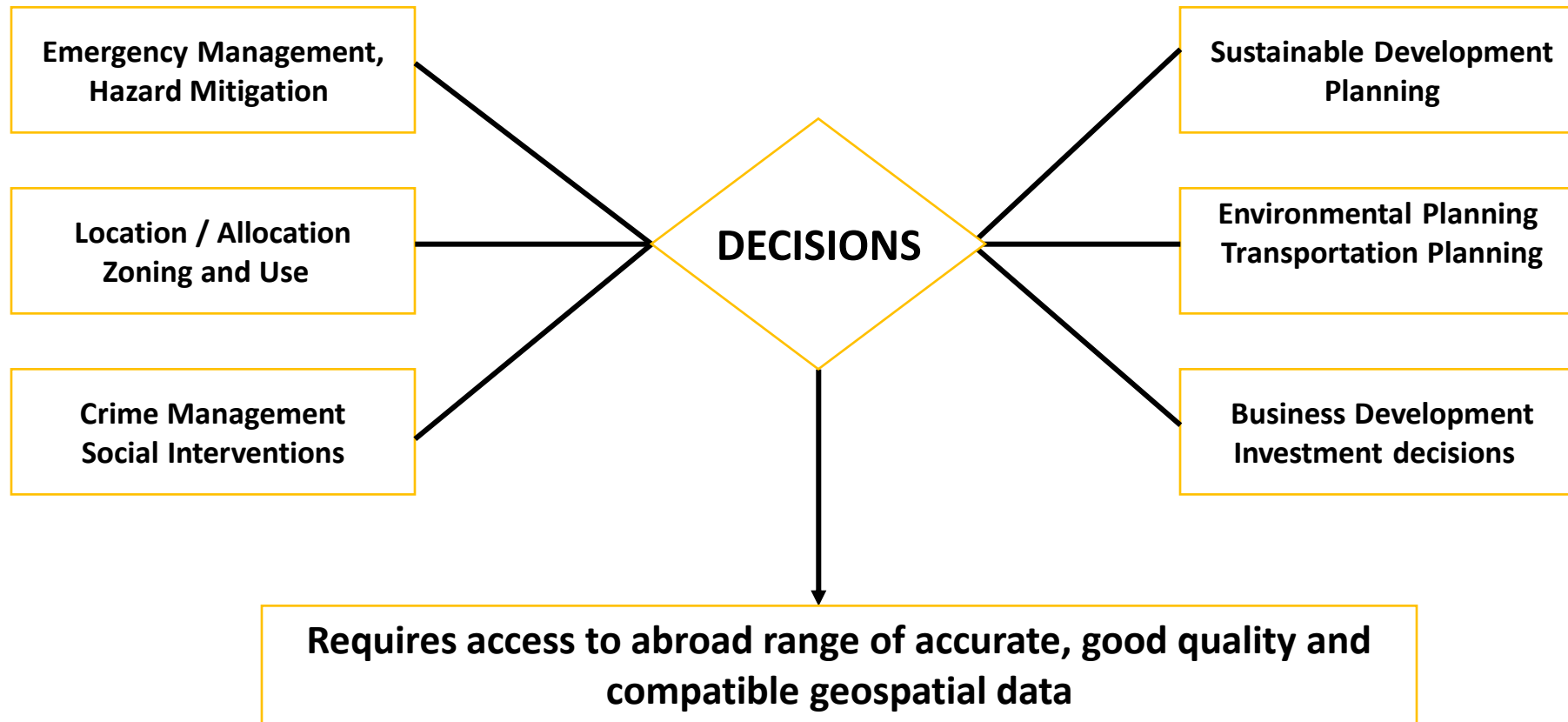


OGT
&
NOGCs



The Need for Geospatial Data

Geospatial Data has become the foundation for decision making at all levels of government and private institutions



Current Initiatives with Geospatial Component

- Caribbean Regional Oceanscape Project (CROP)
- Regional Health Project
- School Connectivity Mapping Project
- Enhanced Country Poverty Assessment Project
- Saint Lucia Fire Service GIS



Strategic Direction

Formalizing	Formalizing Geospatial Information within the OECS Commission
Assisting	Assisting Member States in their shared commitment to processes of sustainable development
Maximizing	Maximizing Geospatial Information Benefits for Member States



The Strategic Plan

- The Strategic Plan outlines six (6) goals with the ultimate aim of driving the change within the Commission
- These include:
 - Successfully complete any current Projects and establish future dependency with a GIS component
 - Development of a Mechanism to Facilitate Data Discovery
 - Develop Regional Shared Services Capabilities
 - Ensure Accountability and Effective Development and Management of regional Geospatial Resources
 - Establish Regional Capacity Building Programme
 - Establish Leadership for the National Geospatial Community



Geospatial in Support of SDGs

A Major Goal

- make available and accessible geospatial data, products and services to all users, to facilitate planning, sustainable use, management and development of the resources in the OECS

SDGS - Goal 17

Target 17.8

- Enhance capacity building support to developing countries to increase the availability of reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location...



THANK YOU



Environmental Sustainability Division
Organisation of Eastern Caribbean States

escluster@oecs.int



Open Q/A

Partnering

Academic and Private Sector Partners making a difference

***Mr. Robert Graham and
Ms. Carol Fisher***

TCarta



Publishing Data on GeoPortal TCarta Marine

Caribbean Geoportal Webinar
29 Sep 2021

Carol Fisher - Hydrographer
Robert Graham - Hydrospatial Data Director

Dr. Austin Becker and Mr. Noah Hallisey

*Department of Marine Affairs,
University of Rhode Island*

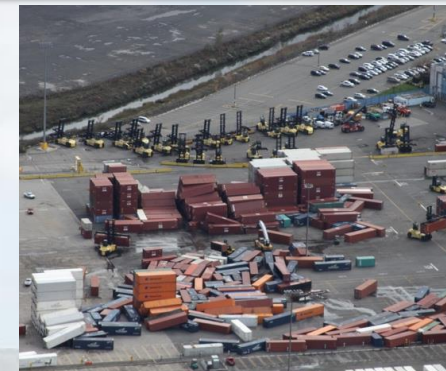
Geospatially Inventorying Critical Coastal Infrastructure: A Case Study in the Caribbean

CARIGEO Webinar # 3 **Best Practices on Data Sharing** **Sept. 21, 2021**

Lead PI: Dr. Austin Becker
Student Researcher: Noah Hallisey

Department of Marine Affairs, University of Rhode Island
Kingston, Rhode Island 02881

Climate change challenges



Doubling of Cat 4 and 5
tropical storms



Sea levels to rise
(0.75 – 1.9 meters or more by 2100)



More inland
flooding



1-in-100 year storm event of today



1-in-3 year storm event of 2100

Hurricane Sandy photos courtesy Mary Lee Clanton, Port of NYNJ

(Bender et al. 2010; Grinsted et al. 2013; Rahmstorf 2010; Emanuel 2013; IPCC 2012; Tebaldi et al. 2012)

Caribbean SIDS challenges



- 60% of the region's population and 70% of economic activity within two miles of the coast
- Productive sectors, particularly tourism, are at risk given the proximity of infrastructure critical to development sited in low lying coastal areas
- Caribbean nations could face climate-related losses in excess of US \$22 billion annually by 2050.

(Ramon Espinosa, Associated Press (Puerto Rico, Hurricane Maria); Jack Bauman 2017, <https://www.guidester.com/caribbean-travel-after-hurricane/> (Hurricane Irma); Babun and Smith 2013 <https://www.uschamberfoundation.org/blog/post/hurricane-season-2013-strong-ports-save-lives/31450> (Hurricane Georges)); The Inter-American Development Bank 2014

The Need: Good modeling requires good data!

THE PROJECT CASE STUDIES WORKSHOPS METHODOLOGY TOOLS RESOURCES FORUM CONTACT Search

Climate change impacts and adaptation for coastal transport infrastructure in the Caribbean

Welcome to SIDSport-ClimateAdapt

This web-based platform showcases the activities, findings and outputs of the UN Development Account project "Climate change impacts on coastal transport infrastructure in the Caribbean: enhancing the adaptive capacity of Small Island Developing States (SIDS) (UNDA 14150)" which was implemented by the United Nations Conference on Trade and Development (UNCTAD) in collaboration with a range of partners, including UNECLAC, UNDP, UNEP, the Caribbean Community Climate Change Centre, OECS Commission, as well as the EC/JRC and international and regional academic experts, among others.

Drawing on earlier related work by UNCTAD, the project was initiated with the aim to strengthen the capacity of policy makers, transport planners and transport infrastructure managers in SIDS to (a) understand climate change impacts on coastal transport infrastructure, in particular seaports and airports, and (b) take appropriate adaptation response measures.

Key project deliverables include national case studies focusing on two vulnerable SIDS in the Caribbean (Jamaica and Saint Lucia) as well as a transferable methodology for assessing climate-related impacts and adaptation options for coastal transport infrastructure in SIDS. The case studies and methodology were reviewed and refined at a technical expert meeting and were presented and discussed at national and regional capacity-building workshops. All documentation, in particular the national case studies (Jamaica and Saint Lucia), the methodology and useful tools and guidance material, as well as related relevant information on the topic of climate change adaptation for coastal transportation infrastructure is presented.

This platform is intended to facilitate information sharing, communication and dialogue among relevant stakeholders and interested parties. Experts and interested parties are invited to subscribe on the forum and share additional material of relevance.

For any questions and comments, do not hesitate to contact us.

News

Climate change impacts on seaports: a growing threat to sustainable trade and development

UNCTAD published a recent article underlining the growing threat to sustainable trade and development due to climate change impacts on seaports. A brief overview of the increasing hazards and impacts of sea level rise on ports under climate change illustrates the urgent case for action, especially in vulnerable countries such as small island developing States [...]

[Read more](#)

Understanding vulnerability for the entire region

- Data standardization standardized approaches for risk and vulnerability assessment
- Regional resiliency planning (decision support tool)
- Identify gaps and challenges (scenarios and impacts)

Project goals

Climate risk models need (e.g., surge and SLR): Elevation Data, Bathymetry Data, **Asset Data**

1. **Regional inventory** of critical coastal infrastructure land use (ports, airports, energy facilities, water facilities) updated at five-year intervals and publicly available via the web
2. **Risk assessment** for the region and for individual assets and asset classes at national or regional levels

Approach – Heads Up Digitizing

Manual transposing information from an image into points, lines, and polygons in a digital file

The World Imagery basemap, available to all GIS users on ArcGIS Online provides 1 meter (m) or better satellite and aerial imagery in many parts of the world and 15 m or 2.5m worldwide.

The imagery is compiled from a variety of the best-available commercial and community sources.



Example of a digitized seaport

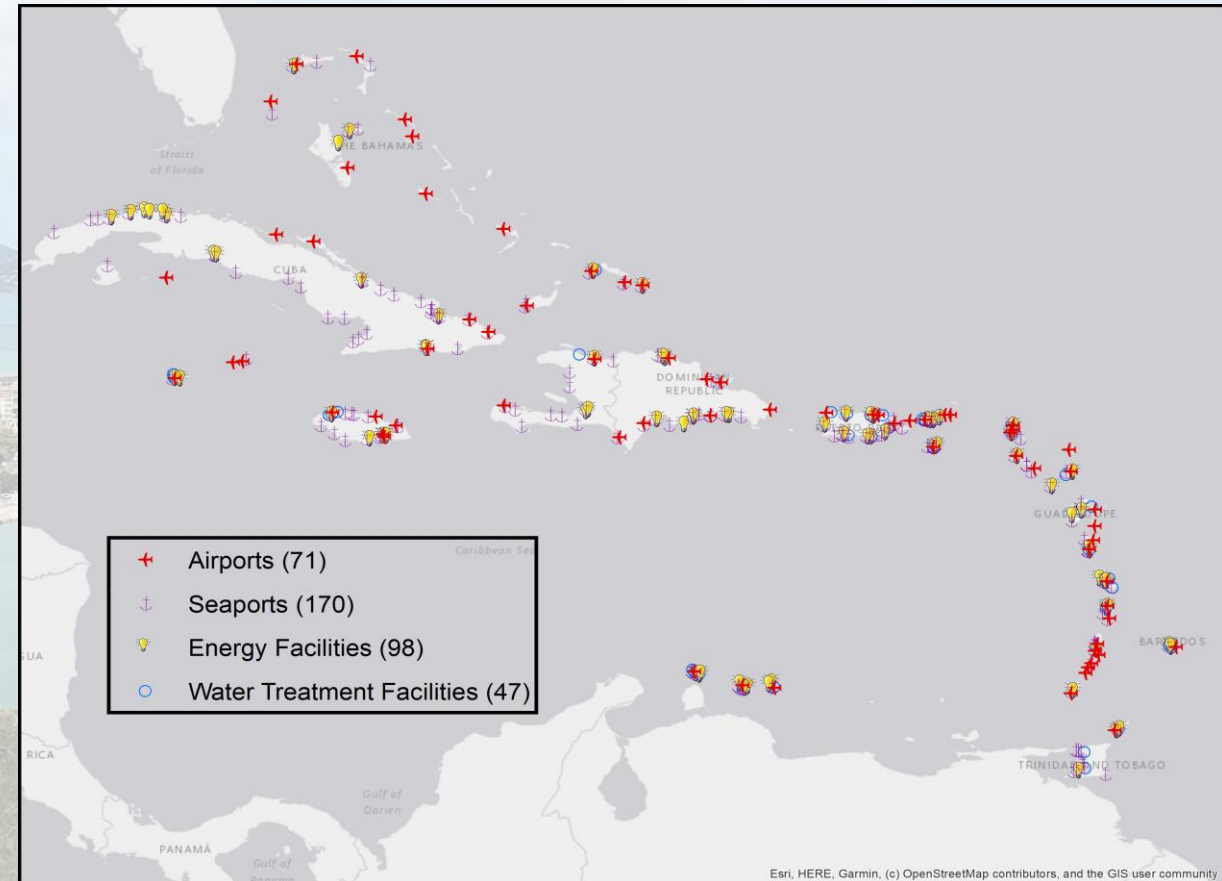
Study Area - Caribbean

28 Island Nations and Territories

Among most vulnerable region in the world to natural hazards/climate change

Mapped land use, buildings, structures, and impervious surfaces (parking lots/storage areas) for four critical infrastructure types <1km from coast:

- Airports
- Seaports
- Energy Facilities
- Water & Wastewater Treatment Facilities



Standardized Operating Procedure

1. Clear directions for mappers to develop similar geospatial data
2. Details how decisions should be made regarding drawing lines, classification, and scale
3. Results in systematic and repeatable procedures for creating geospatial data




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3.3.2. Energy facility features to be mapped

Separate polygons will be used to map energy facility features. Table 7 provides a list of all potential energy facility features.

Table 7 - Energy facility features to be mapped

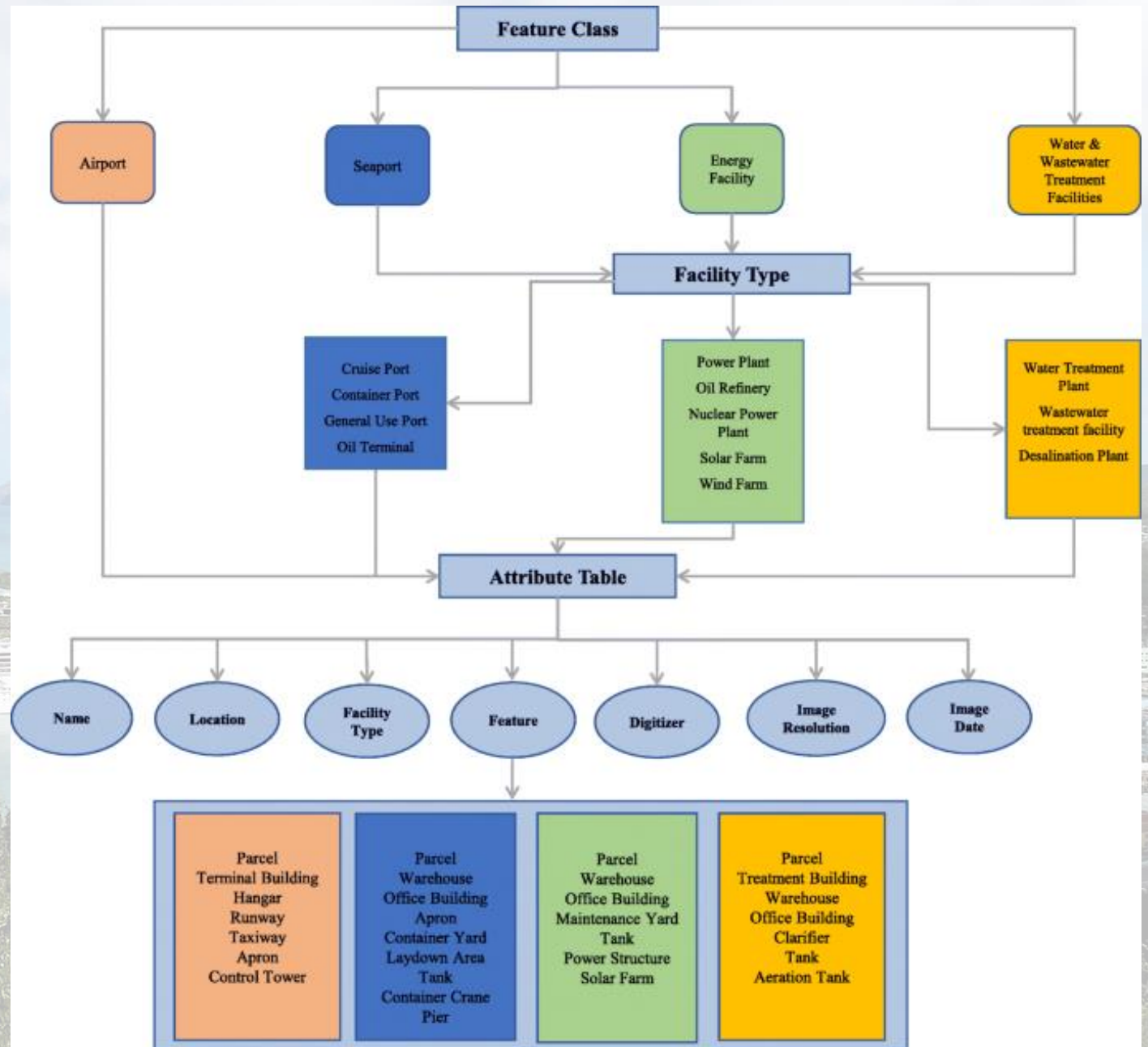
Feature	Description	Mapped Example
Parcel	The entire land area owned by the governing body of the facility that encompasses all assets owned by that governing body	
Warehouse	Buildings that are primarily used for storage	
Office Building	Buildings that are designated as office space for employees	

Workflow

Step 1: Define the parcel boundary for a facility, which included the entire land area owned by the facility

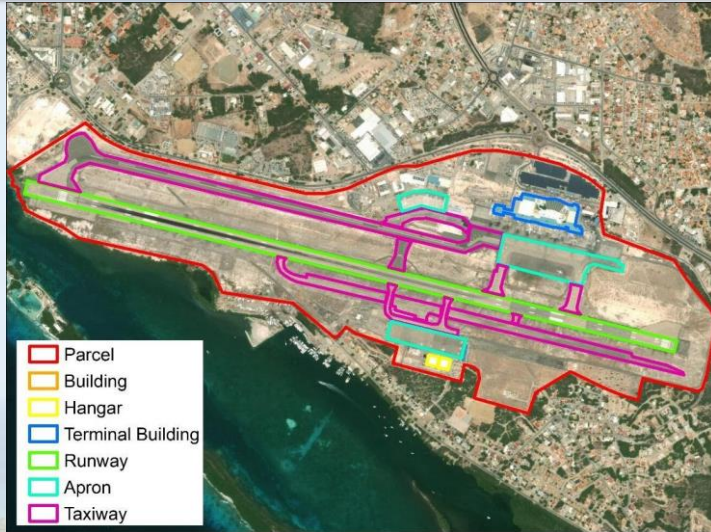
Step 2: Draw polygons of key assets for each facility type, including buildings, storage tanks, parking areas, etc.

Step 3: Enter detailed information for the asset in the attribute table, such as the feature type and date of the imagery used



Decision making process for mapping critical infrastructure

Mapped examples



Airport



Seaport



Energy Facility



Wastewater Treatment Facility

Summary of results

Infrastructure Type	# of facilities	Total footprint (ha.)		# of features mapped	
		Parcels	Paved Surfaces	Buildings	Tanks
Airports	71	10,589	1,876	671	N/A
Seaports	170	3,704	793	1,494	735
Energy Facilities	98	4,619	91	1,718	2,280
Water & Wastewater Treatment Facilities	47	206	0.32	174	81
Total	386	19,118	2,760.32	4,057	3,096

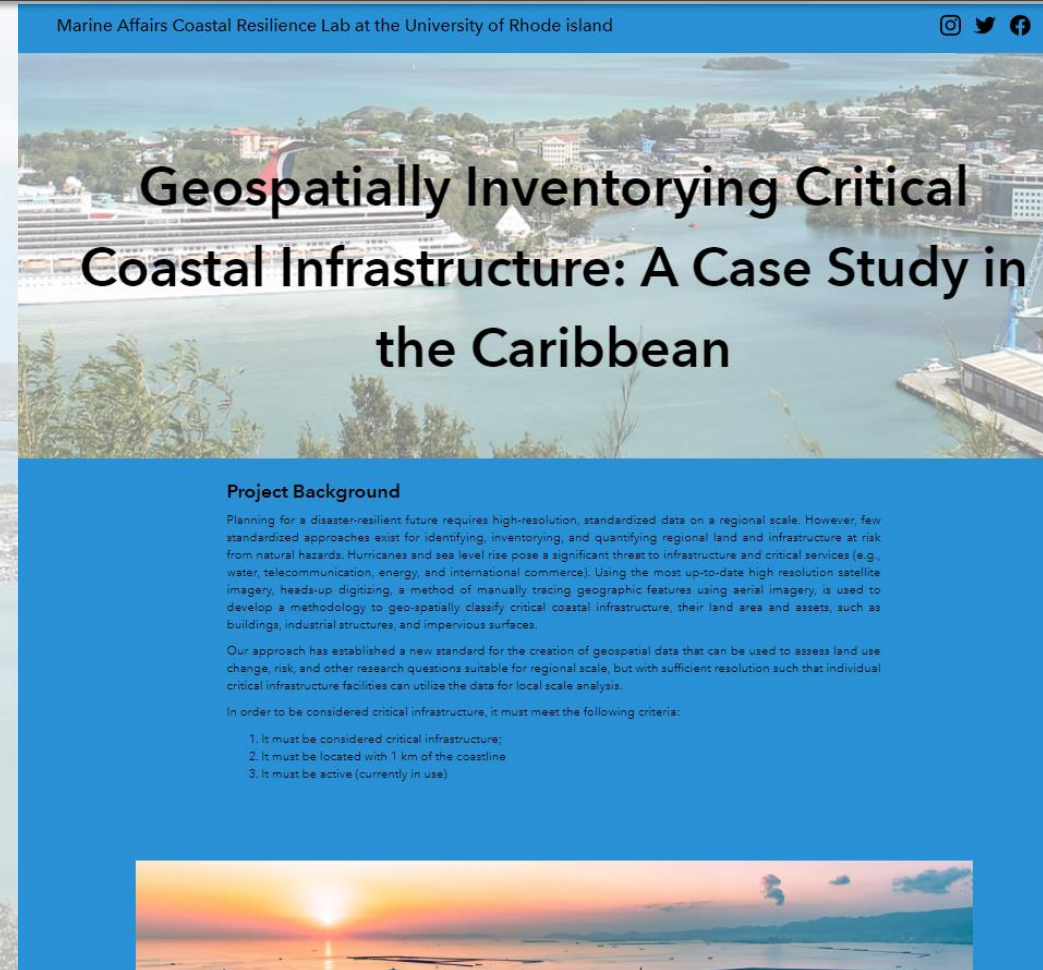
Applications & Final Products

Increase capacity for regional hazard and vulnerability assessments to guide resiliency planning with regional institutions:

- Credit rating agencies
- Insurance
- Planning
- Research
- Disaster relief and response
- Increased capacity to communicate, transfer and manage information in support of emergency response activities; before, during, and after disaster events;

Methodology published in the **Journal of Infrastructure Preservation and Resilience**

Becker, A., Hallisey, N.*, Bove, G. (2021). Toward Regional Hazard Risk Assessment: A Method to Geospatially Inventory Critical Coastal Infrastructure Applied to the Caribbean. *Journal of Infrastructure Preservation and Resilience*.



Marine Affairs Coastal Resilience Lab at the University of Rhode Island

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Geospatially Inventorying Critical Coastal Infrastructure: A Case Study in the Caribbean


Project Background

Planning for a disaster-resilient future requires high-resolution, standardized data on a regional scale. However, few standardized approaches exist for identifying, inventorying, and quantifying regional land and infrastructure at risk from natural hazards. Hurricanes and sea level rise pose a significant threat to infrastructure and critical services (e.g., water, telecommunication, energy, and international commerce). Using the most up-to-date high resolution satellite imagery, heads-up digitizing, a method of manually tracing geographic features using aerial imagery, is used to develop a methodology to geo-spatially classify critical coastal infrastructure, their land area and assets, such as buildings, industrial structures, and impervious surfaces.

Our approach has established a new standard for the creation of geospatial data that can be used to assess land use change, risk, and other research questions suitable for regional scale, but with sufficient resolution such that individual critical infrastructure facilities can utilize the data for local scale analysis.

In order to be considered critical infrastructure, it must meet the following criteria:

1. It must be considered critical infrastructure;
2. It must be located within 1 km of the coastline;
3. It must be active (currently in use).



Caribbean Critical Coastal Infrastructure

Caribbean Critical Coastal Infrastructure

Country
The Bahamas

Airports

✈️ 16

Last update: a few seconds ago

Energy Facilities

💡 15

Last update: a few seconds ago

Seaports

⚓ 35

Last update: a few seconds ago

WWTF

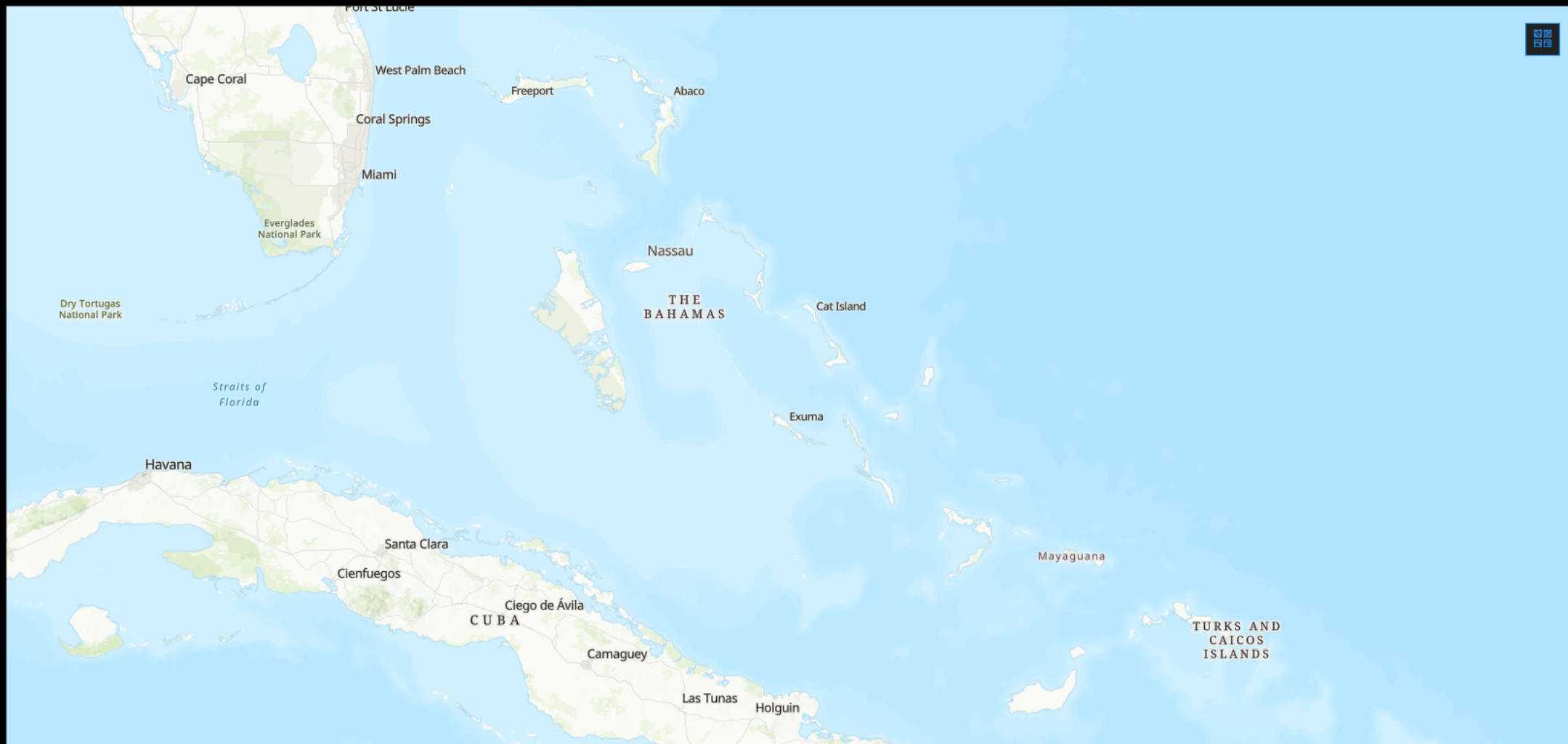
💧 1

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"Please cite this work as:
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"Caribbean Critical
Infrastructure" Dataset available
at <https://www.arcgis.com/apps/dashboards/10b2265d767421a9b424781>



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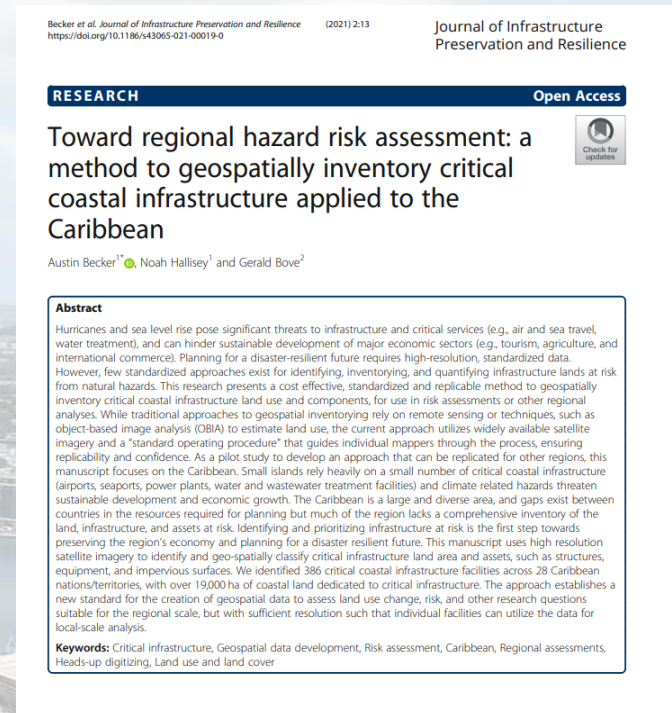
Funding

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Link to Caribbean Hub: <https://caribbean-coastal-critical-infrastructure-inventory-uri.hub.arcgis.com/>

Link to Caribbean Dashboard: www.arcgis.com/apps/dashboards/10fb2265d767421a9b4247817fa667bc

Link to Publication: <https://link.springer.com/content/pdf/10.1186/s43065-021-00019-0.pdf>



Becker et al. *Journal of Infrastructure Preservation and Resilience* (2021) 2:13
<https://doi.org/10.1186/s43065-021-00019-0> Journal of Infrastructure Preservation and Resilience

RESEARCH Open Access

Toward regional hazard risk assessment: a method to geospatially inventory critical coastal infrastructure applied to the Caribbean

Austin Becker^{1*}, Noah Hallisey¹ and Gerald Bove²

Abstract

Hurricanes and sea level rise pose significant threats to infrastructure and critical services (e.g., air and sea travel, water treatment), and can hinder sustainable development of major economic sectors (e.g., tourism, agriculture, and international commerce). Planning for a disaster-resilient future requires high-resolution, standardized data. However, few standardized approaches exist for identifying, inventorying, and quantifying infrastructure lands at risk from natural hazards. This research presents a cost effective, standardized and replicable method to geospatially inventory critical coastal infrastructure land use and components, for use in risk assessments or other regional analyses. While traditional approaches to geospatial inventorying rely on remote sensing or techniques, such as object-based image analysis (OBIA) to estimate land use, the current approach utilizes widely available satellite imagery and a "standard operating procedure" that guides individual mappers through the process, ensuring replicability and confidence. As a pilot study to develop an approach that can be replicated for other regions, this manuscript focuses on the Caribbean. Small islands rely heavily on a small number of critical coastal infrastructure (airports, seaports, power plants, water and wastewater treatment facilities) and climate related hazards threaten sustainable development and economic growth. The Caribbean is a large and diverse area, and gaps exist between countries in the resources required for planning but much of the region lacks a comprehensive inventory of the land, infrastructure, and assets at risk. Identifying and prioritizing infrastructure at risk is the first step towards preserving the region's economy and planning for a disaster resilient future. This manuscript uses high resolution satellite imagery to identify and geo-spatially classify critical infrastructure land area and assets, such as structures, equipment, and impervious surfaces. We identified 386 critical coastal infrastructure facilities across 28 Caribbean nations/territories, with over 19,000 ha of coastal land dedicated to critical infrastructure. The approach establishes a new standard for the creation of geospatial data to assess land use change, risk, and other research questions suitable for the regional scale, but with sufficient resolution such that individual facilities can utilize the data for local-scale analysis.

Keywords: Critical Infrastructure, Geospatial data development, Risk assessment, Caribbean, Regional assessments, Heads-up digitizing, Land use and land cover

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What is your job title?

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Survey of Caribbean Disasters Programs or Initiatives

A program can be a very specific initiative or project focused on a target region or thematic area in disasters. Including disaster preparedness, response, and recovery.

Agency Name *

Number of initiatives in disasters? *

▼ Please Complete for Each Initiative

Initiative or Project Name *

Description

Keywords for Discovery of Project

- Tornadoes & Severe Storms
- Hurricanes & Tropical Storms
- Floods
- Wildfires
- Earthquakes
- Drought
- Human Caused
- Health Related

Point of Contact Name

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Webinar #2

Leveraging the Caribbean GeoPortal for Disaster Planning and Management

Webinar #3

Metadata, Maintenance & Best Practices on Data Sharing

Wrap-up

Alvaro Monett, UN-ECLAC

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The banner features a dark blue background with a subtle map of the Americas. On the left, there are overlapping green and blue circular shapes. A circular logo with a stylized globe and colorful segments is positioned on the left side. The text is centered and right-aligned, with 'UN-GGIM:Americas' in large white letters. 'SAVE THE DATE' is in red and green, and '8th VIRTUAL SESSION' is in red and green. The dates 'NOV / TUESDAY 16, THURSDAY 18 AND FRIDAY 19 2021' are at the bottom in green and white. Navigation arrows are visible on the left and right sides.



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