Example Ocean and Coastal Observation Products

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GEO Blue Planet Activities

Organized around Core Action Areas

Stakeholder Engagement – Knowing what the information needs are

Cooperation and Co-design – Building tools that meet information needs

Capacity Development – Strengthening and transferring capabilities

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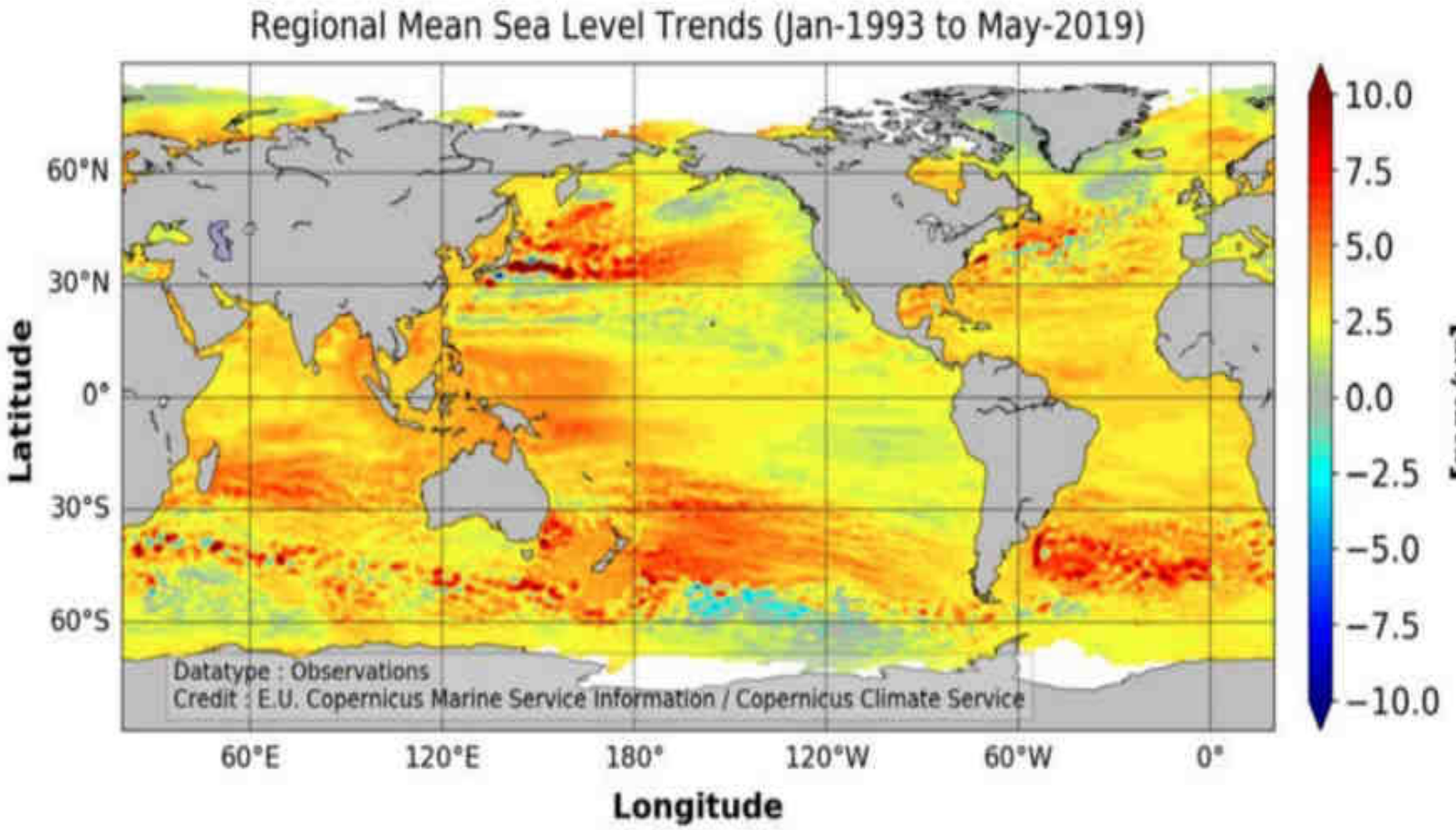
Earth Observations in Support of Ocean and Coastal Adaptation

- Earth Observations can support the sustainability of coasts by:
- Providing data on rates of Sea Level Rise
- Water temperature & ocean acidification
- Shifts in species distribution
- Early warning systems for flooding
- Assessing signs and rates of coastal erosion



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Sea Level Rise Product Example

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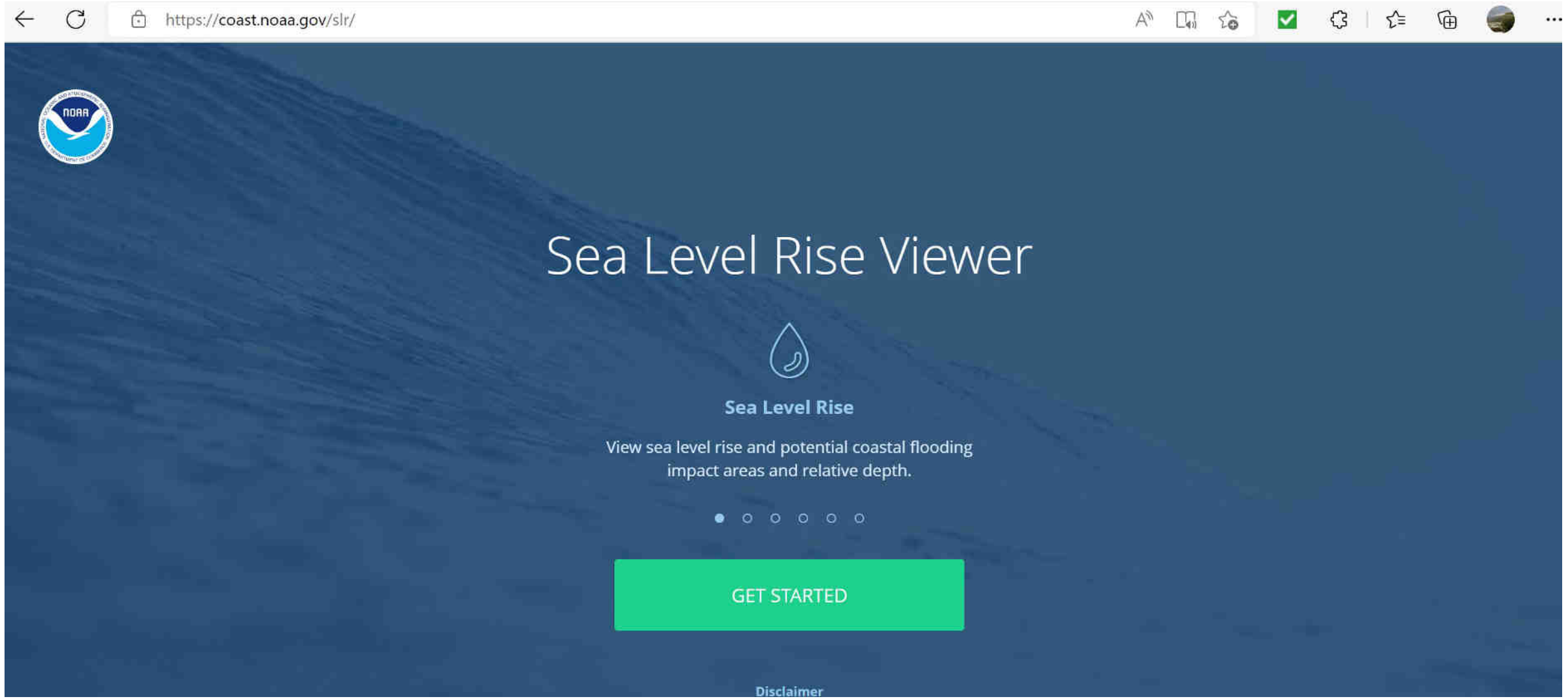
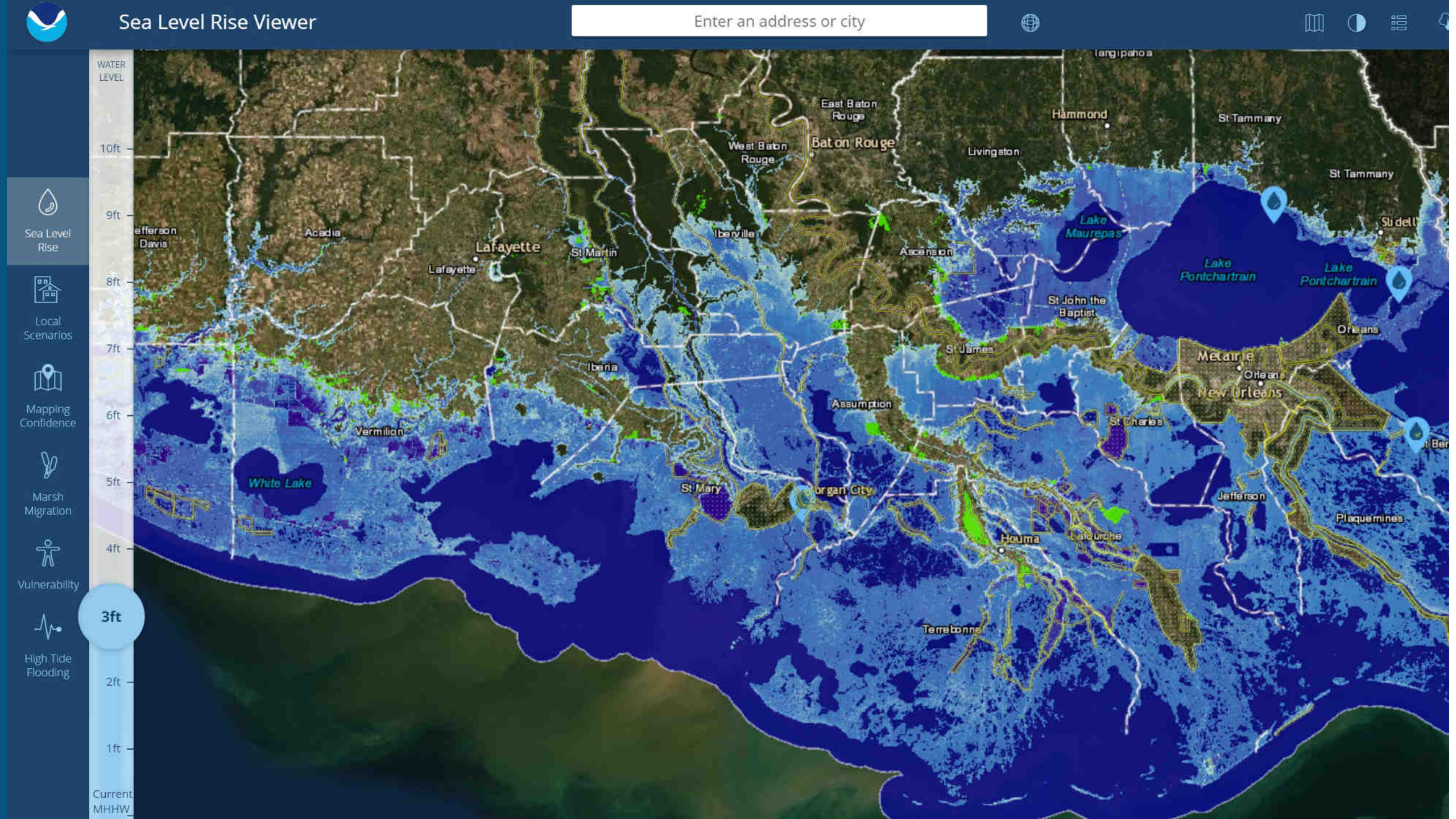
NOAA Sea Level Rise Viewer




Sea Level Rise Viewer
Enter an address or city
WATER LEVEL
10ft
9ft
8ft
7ft
6ft
5ft
4ft
3ft
2ft
1ft
Current MHHW
Sea Level Rise
Local Scenarios
Mapping Confidence
Marsh Migration
Vulnerability
High Tide Flooding
East Baton Rouge
West Baton Rouge
Baton Rouge
Hammond
Livingston
St Tammany
Lake Maurepas
Lake Pontchartrain
Slidell
Acadia
Lafayette
St Martin
Iberville
Ascension
St John the Baptist
Orleans
Metairie
New Orleans
St James
Iberia
Assumption
St Charles
Vermilion
White Lake
St Mary
Jefferson
Plaquemines
Houma
Terrebonne

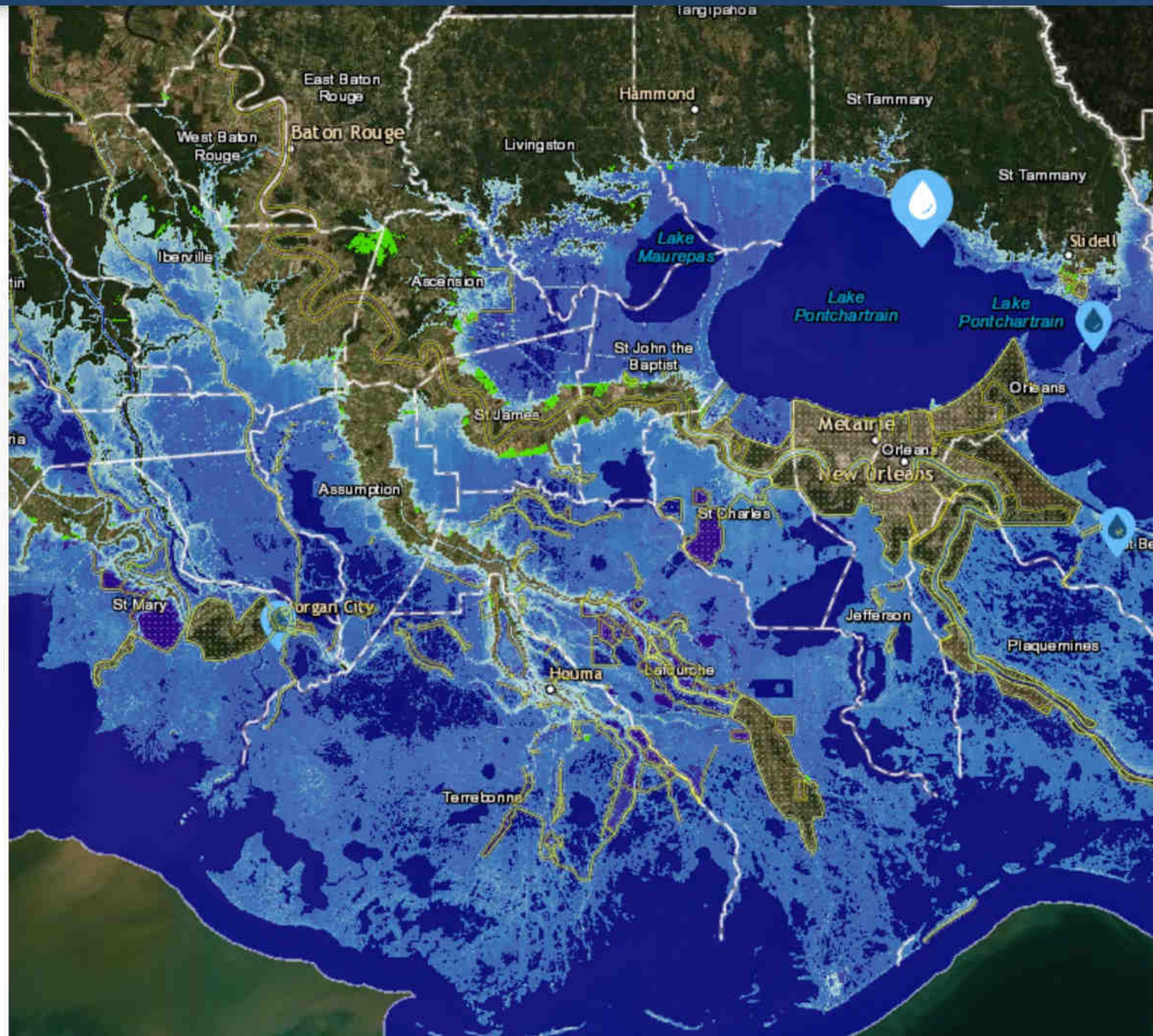
Sea Level Rise
Local Scenarios
Mapping Confidence
Marsh Migration
Vulnerability
High Tide Flooding

WATER LEVEL

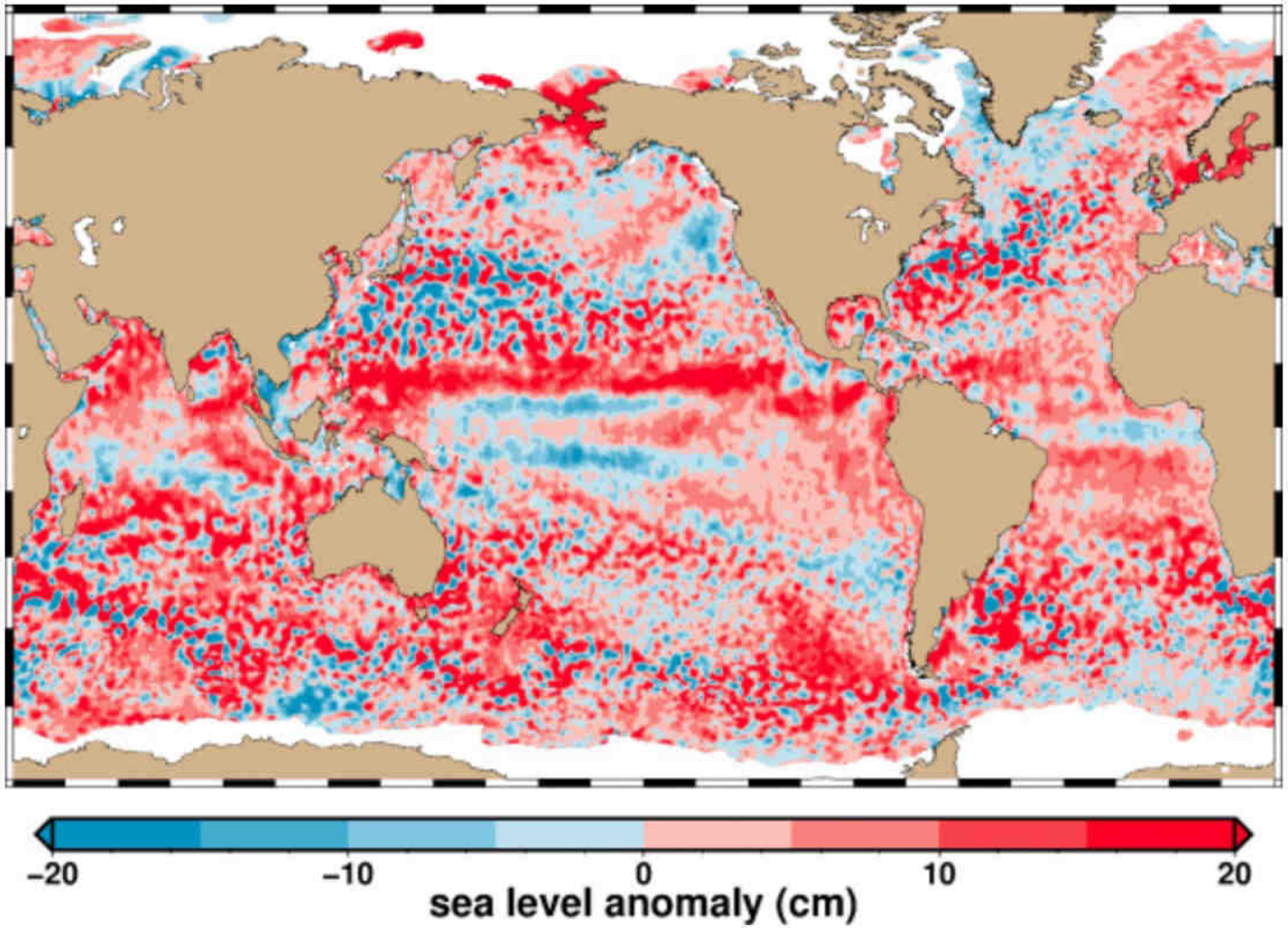
10ft
9ft
8ft
7ft
6ft
5ft
4ft
3ft
2ft
1ft
Current

Fontainebleau State Park

Use the slider to view a simulation of sea level rise at this location.



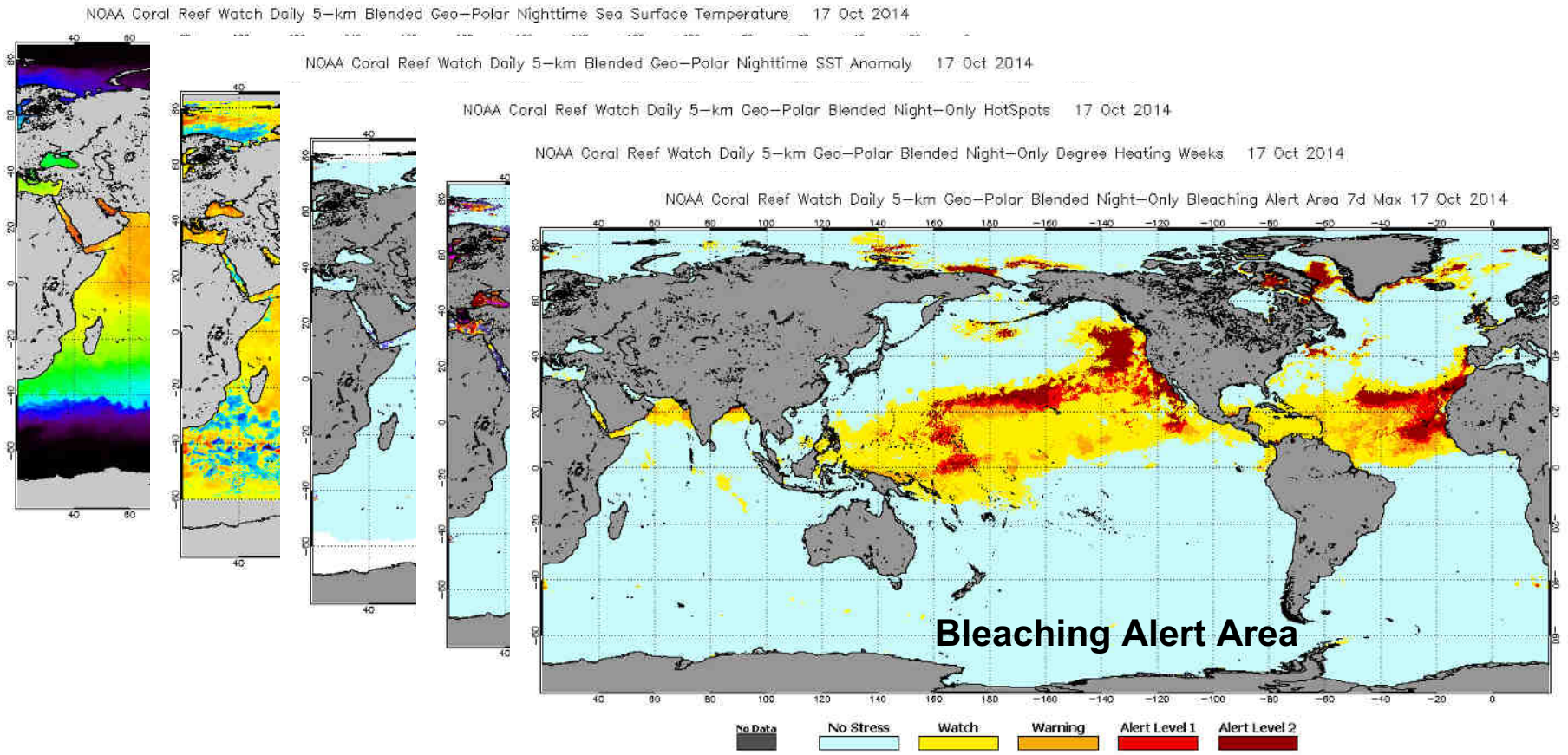
NOAA Satellite Sea Level Anomaly Product



Global map of sea level anomalies for June 26, 2017 produced using the NOAA Laboratory for Satellite Altimetry's daily near-real time dataset.

Temperature Stress

NOAA Coral Reef Watch



Ocean Acidification

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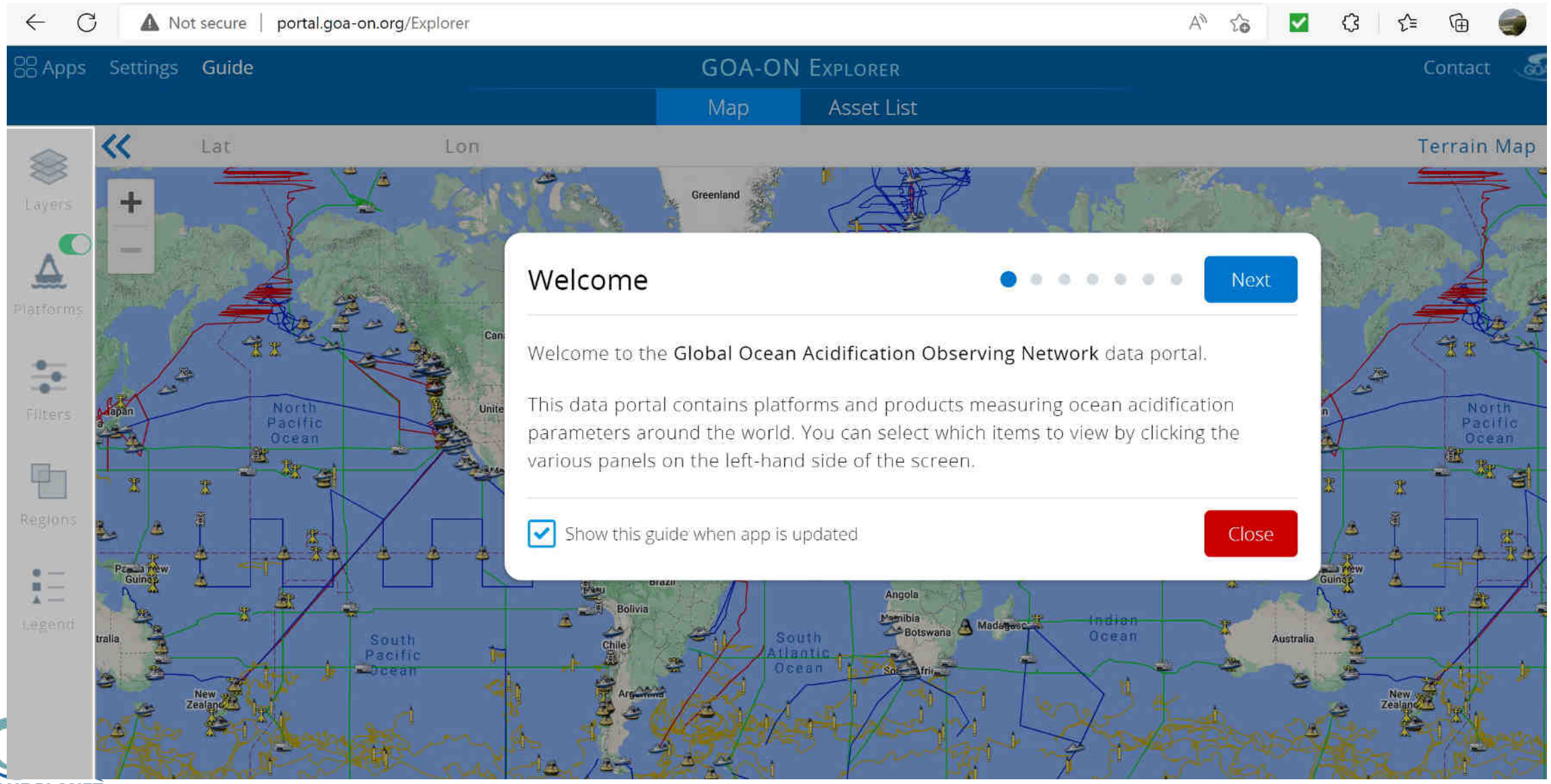
Global Ocean Acidification Network



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Shifts in Species Distribution

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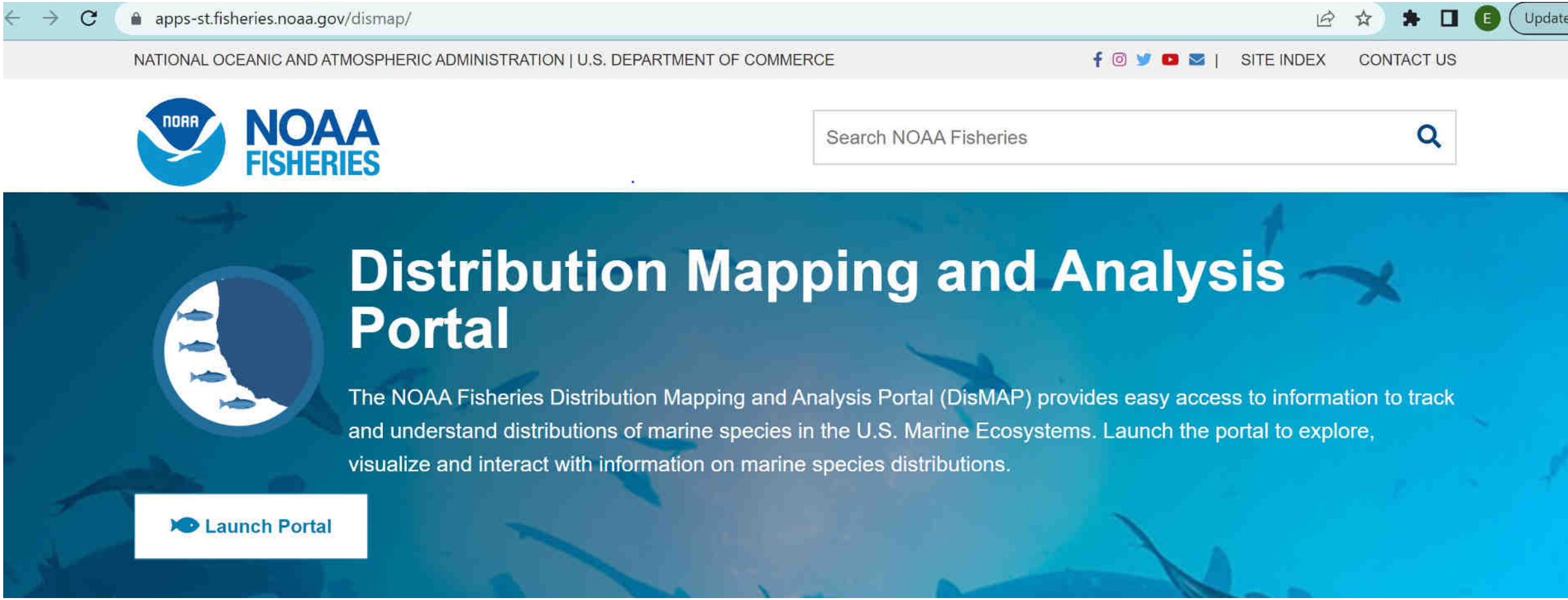
NOAA fisheries tool example



Fisheries tool example

Welcome to the Distribution Mapping and Analysis Portal (DisMAP)!

To help meet the growing demand and need for information on species distributions, the NOAA Fisheries Office of Science & Technology developed DisMAP, as a visualization, analysis, data-sharing and discovery tool to provide easy access to information on changes in marine species distribution through time. For more information on how the data was collected, processed, and analyzed for use in this portal please see the Technical Document and metadata. This first release focuses on fisheries-independent bottom trawl survey data in the US, but future iterations of the portal will seek to include additional survey data and model outputs.

To get started:

Use the icons on the left side panel to navigate between modules, or click 'Go' next to the modules name below. Currently, two modules are available, the Single Species Analysis, and Regional Summary modules.

Single Species Analysis

Explore visual and numerical representation of several key metrics that define the range and distribution of individual species over time.

Go

Regional Summary

Explore how communities have changed over time at the regional Level (e.g. species richness and average changes in latitude)

Go

Regional Summary

X

Use this module to explore the aggregate change in location of marine species caught in a survey at a regional level. As species distributions respond to many environmental and biological factors, looking at changes at the community level, aggregating across all species or across species groups, allows for a more complete picture of the general trends in marine species distributions in a region.

Select DataSet:

Gulf of Alaska

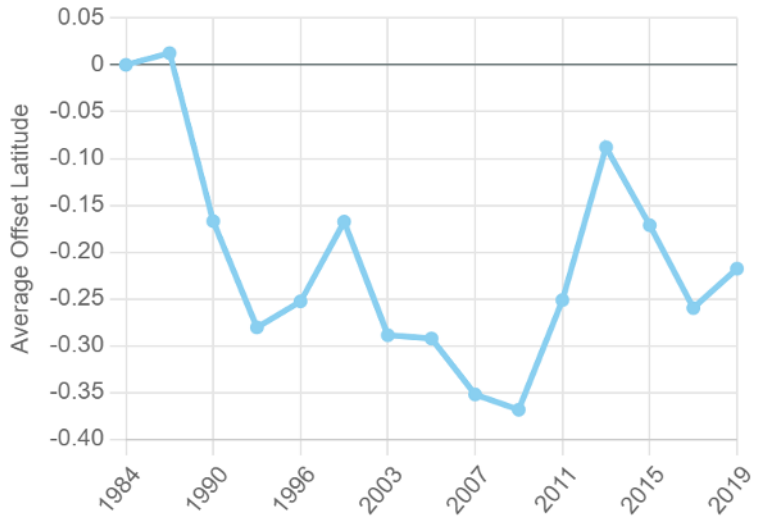
Data Type:

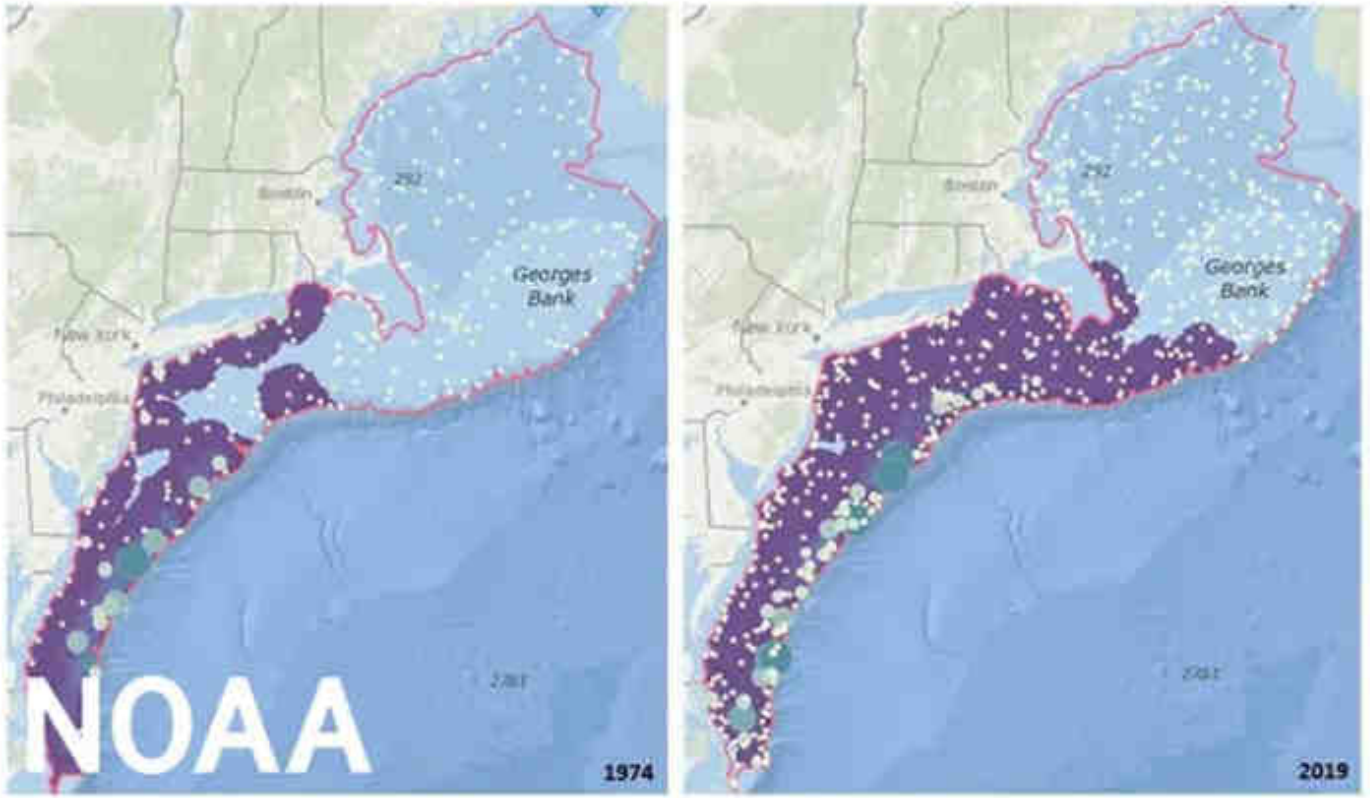
- (●) Species Richness
- ( ) Species Diversity (coming soon)

The graphs below show the annual change in the latitude and depth averaged across species that are caught every year in the selected survey dataset

Change in Average Latitude

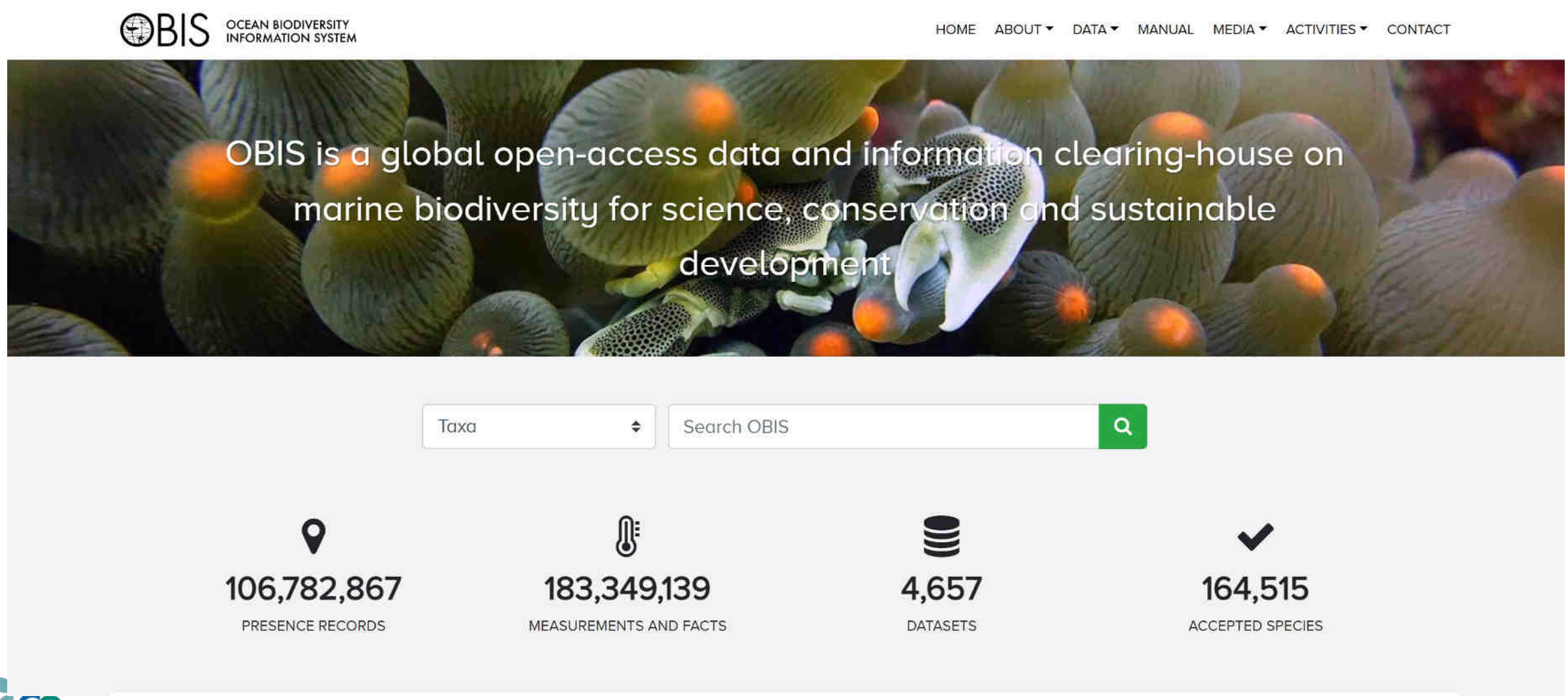
Marine fish and invertebrates in this region have shifted on average **0.21 degrees (24.16 km) south** from **1984** to **2019**





Maps from the Distribution Mapping and Analysis Portal show changes in black sea bass distribution from 1974 to 2019. Black sea bass expanded approximately 140 miles north over this period of time. Photo courtesy of NOAA.

Marine Biodiversity Observation Network: OBIS



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Scombridae Rafinesque, 1815

Kingdom Animalia > Phylum Chordata > Subphylum Vertebrata > Infraphylum Gnathostomata > Class Actinopteri > Subclass Teleostei > Order Scombriformes > Family Scombridae

accepted name

Rank	Family
Status	accepted
Aphia ID	urn:lsid:marinespecies.org:taxname:125559
NCBI ID	8224
Common names	bonitos, mackerels, makrellfamilien, makrellfamilien, makrillfiskar, tunas, サバ
Environments	marine, brackish, freshwater

report issue to mapper

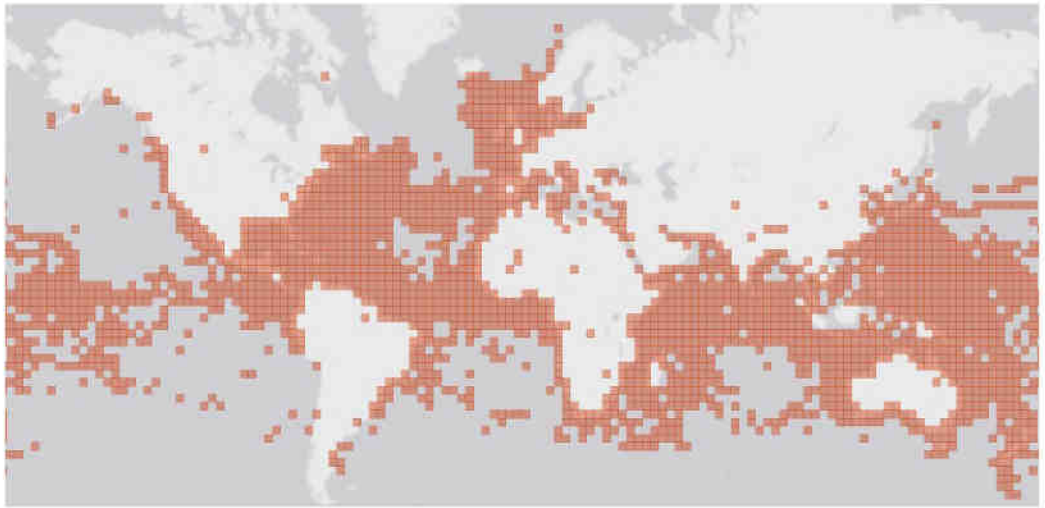
CHILD TAXA

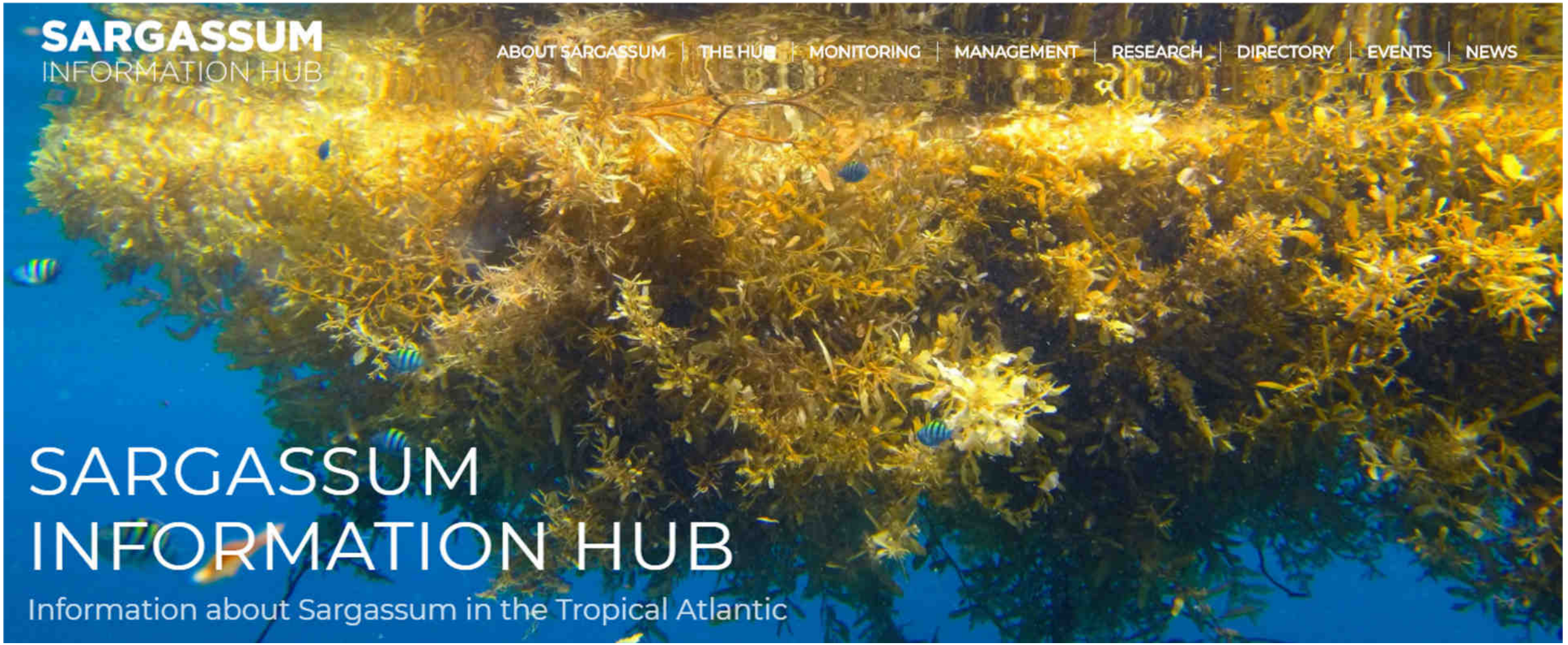
Subfamily	Gasterochismatinae
Subfamily	Scombrinae
Genus	Pneumatophorus unaccepted

STATISTICS

Occurrence records	955,633
› Species level	925,664
Absence records	115,982

DISTRIBUTION





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United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

IOCARIBE

AtlantOS

AIR CENTRE
ATLANTIC INTERNATIONAL RESEARCH CENTRE

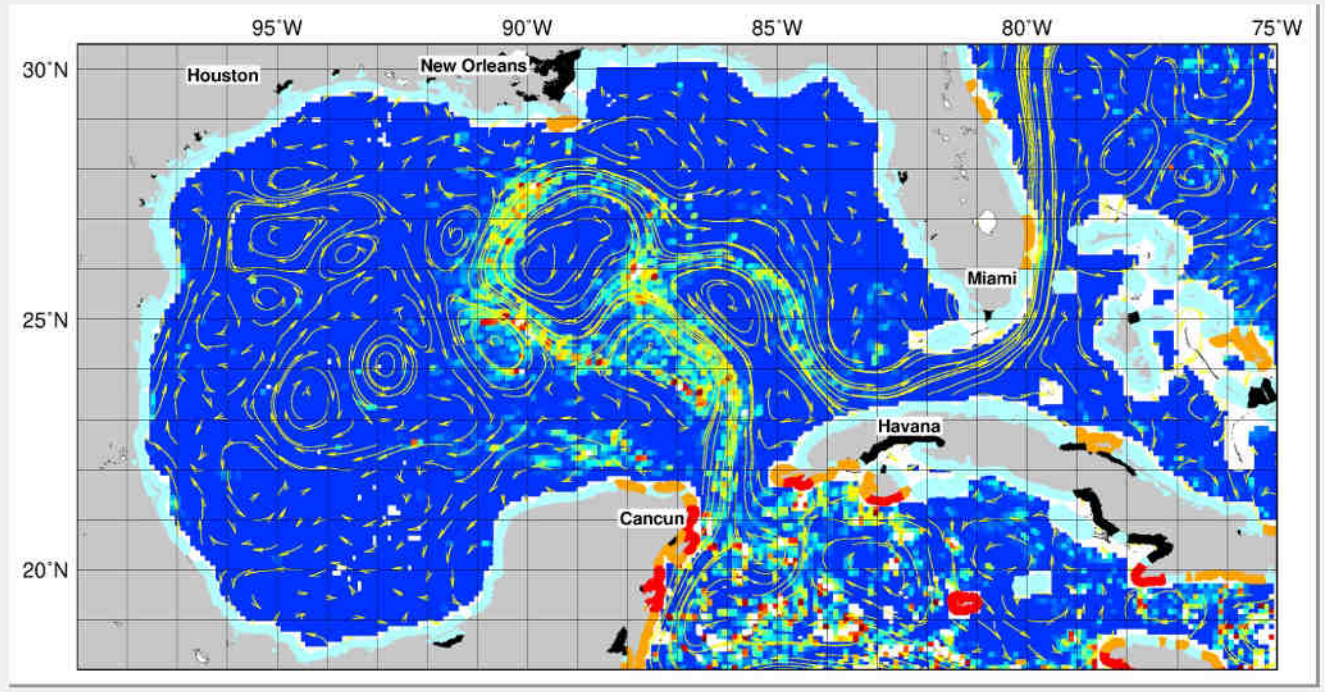
Sargassum: NOAA CoastWatch

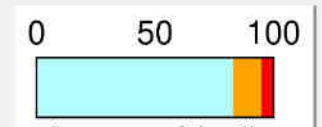
https://www.aoml.noaa.gov/phod/sargassum_inundation_report/

National Oceanic and Atmospheric Administration
Atlantic Oceanographic and Meteorological Laboratory
Physical Oceanography Division (PhOD)

NOAA ▾ Our Division ▾ Research ▾ Ocean Observations ▾ quick search ... Popular topics...

Gulf of Mexico



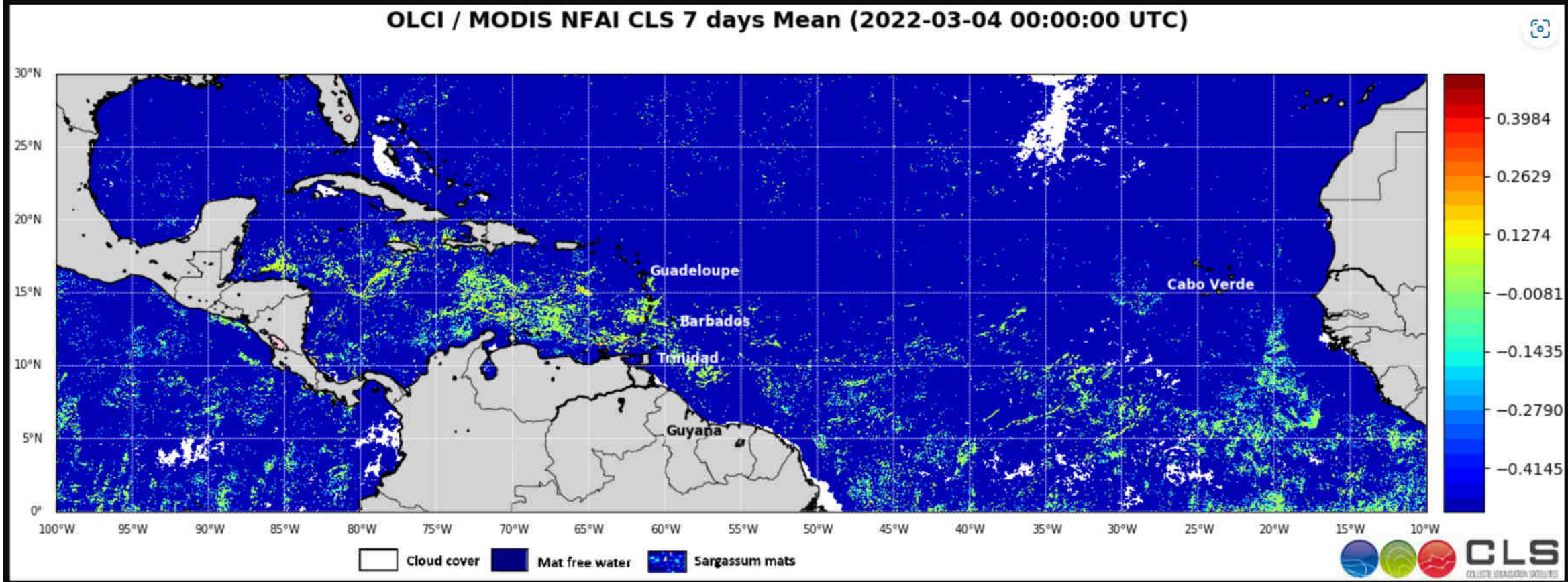


Risk Levels

- High
- Medium
- Low
- No Data

Sargassum: CLS

https://datastore.cls.fr/wp-content/uploads/sargassum/CARI/CLS_SARGA_ATL_2022-03-04.png



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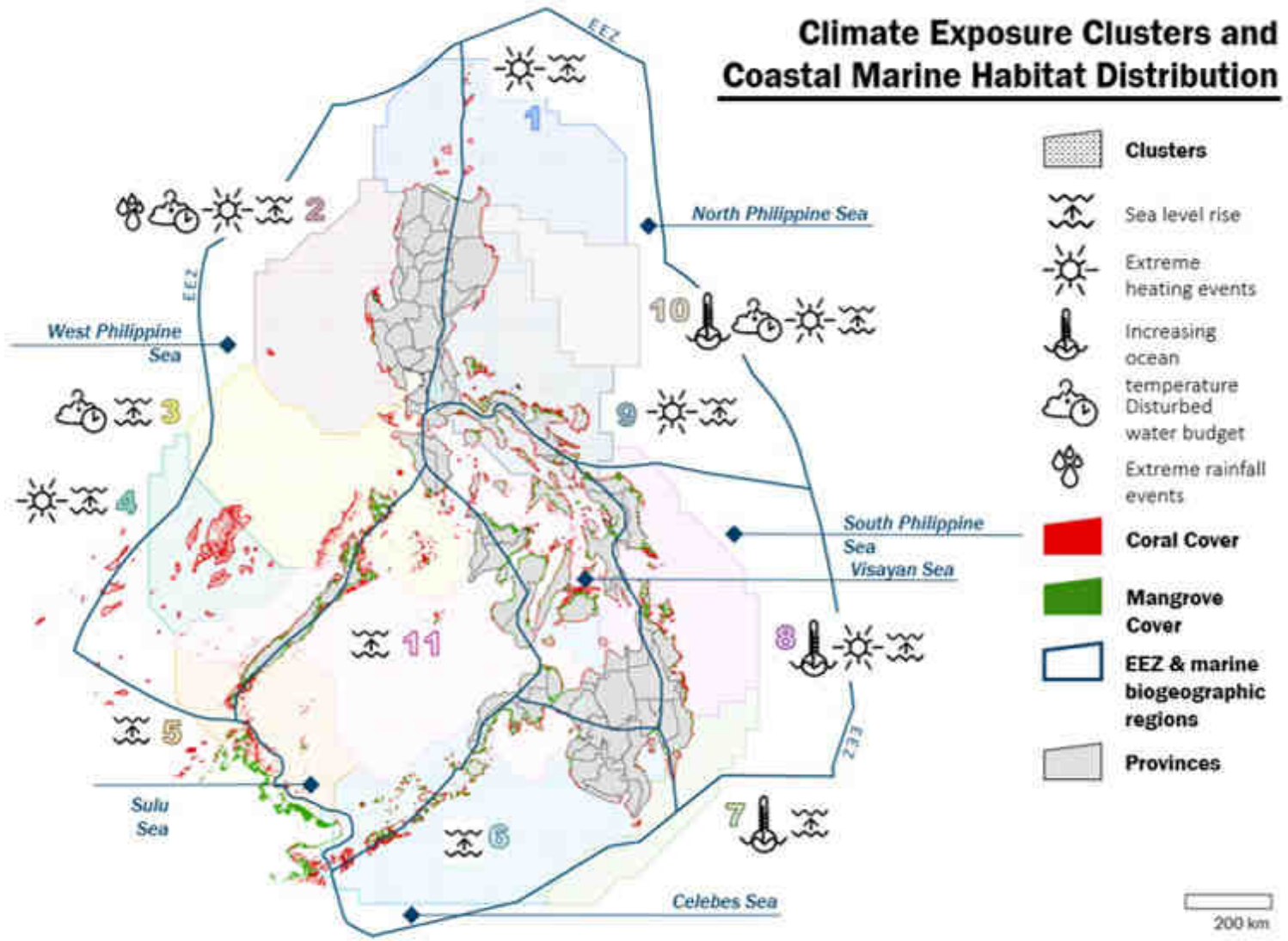
Ecosystem mapping example

Parameter	Method of Calculation
Trends	
Temperature	slope (from AVHRR: http://apdrc.soest.hawaii.edu)
SSH	slope (from Topex Poseidon/JASON: http://www.aviso.oceanobs.com/)
Anomalies	
Temperature	intensity of positive anomaly[3] (from AVHRR)
Precipitation	intensity and frequency of positive anomaly[4] (from TRRM http://trmm.gsfc.nasa.gov)
Model Scenarios	
Precipitation	changed from current normal based on PAGASA scenarios for 2050 – the HadCM3Q0 AIB and the ECHAM4 A2

Climate Hazard Clusters and Coastal Marine Habitat Distribution



LTDavid et al., UPMSI

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Coastal Flooding

Wave-driven flood forecasting on reef-lined coasts

WaveFoRCE

Wave-driven Flood-forecasting on Reef-lined Coasts Early warning system

Integrating Water and Coastal Datasets

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NOAA

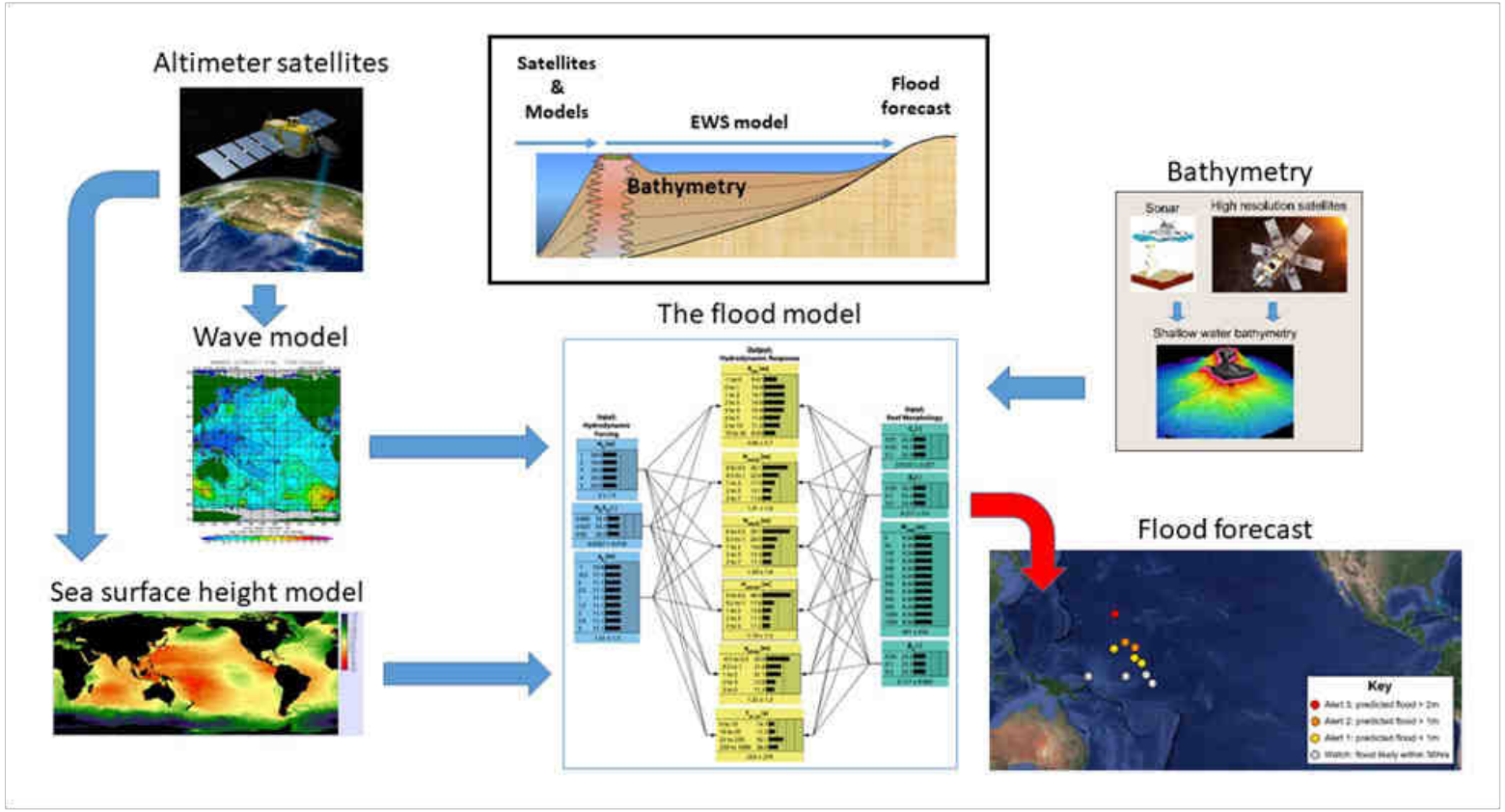
USGS science for a changing world

Deltares Enabling Delta Life

CSIRO

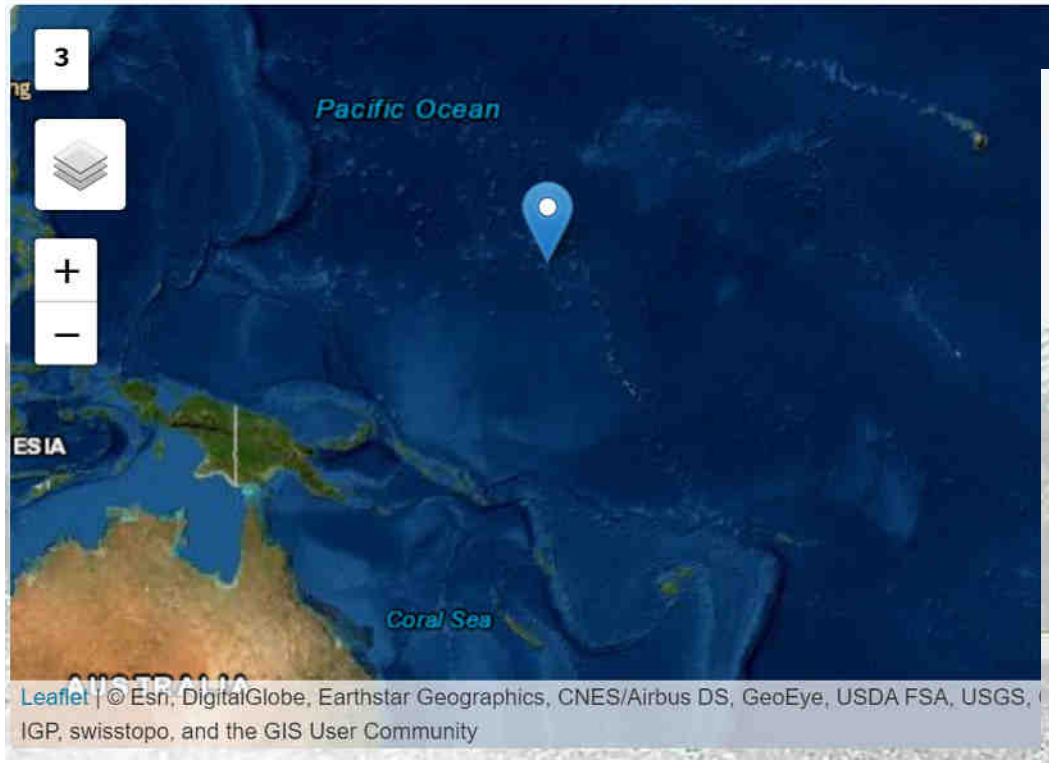
WaveForce

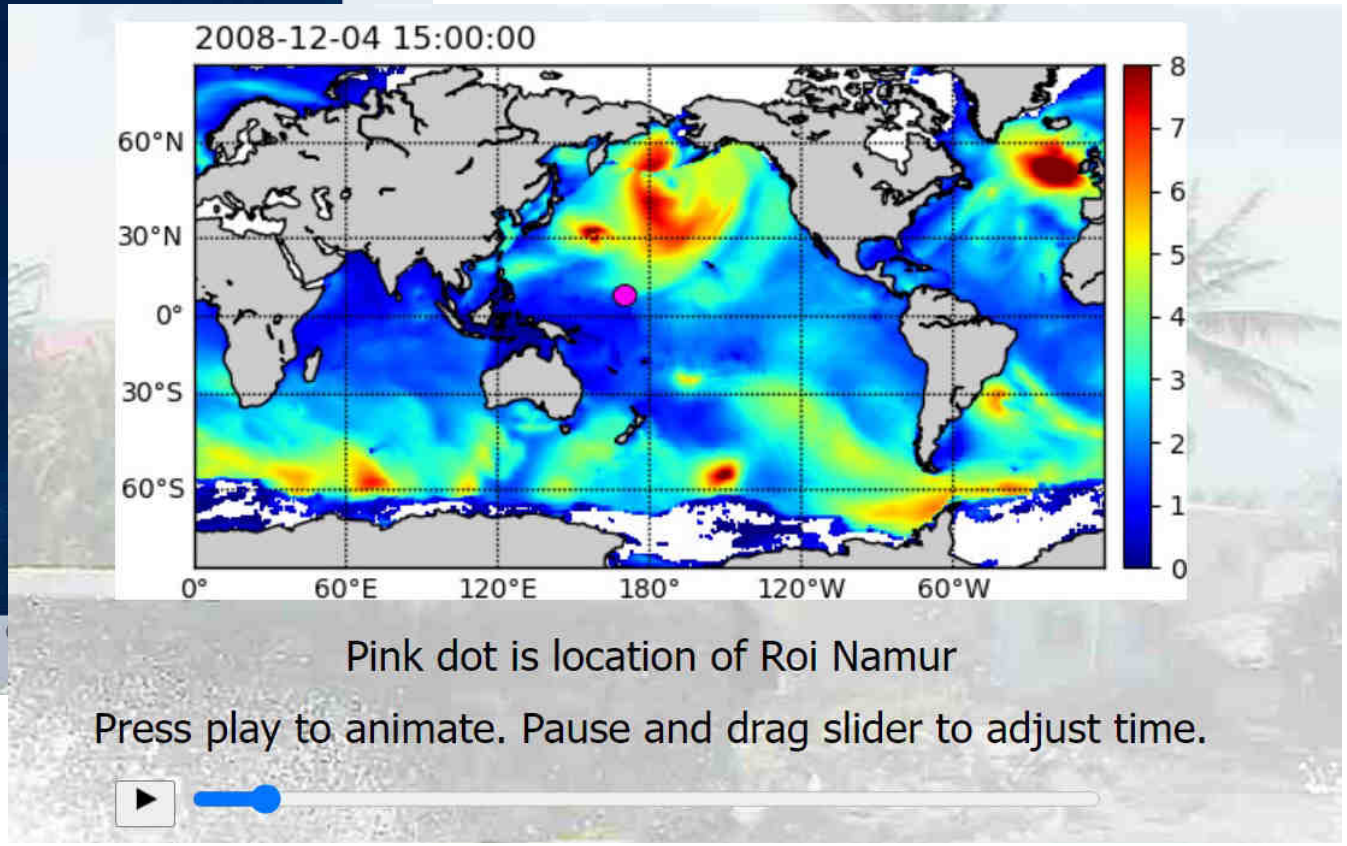
WaveForce system: three components



WaveForce

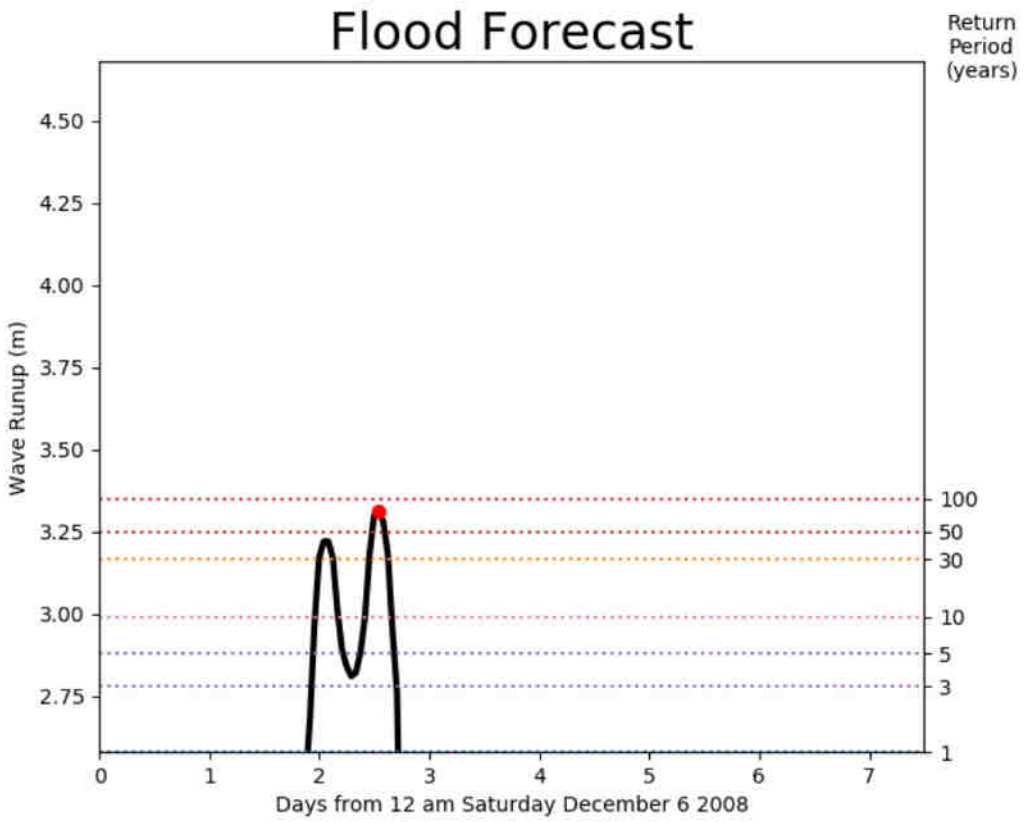
WaveFoRCE





WaveForce

WaveFoRCE



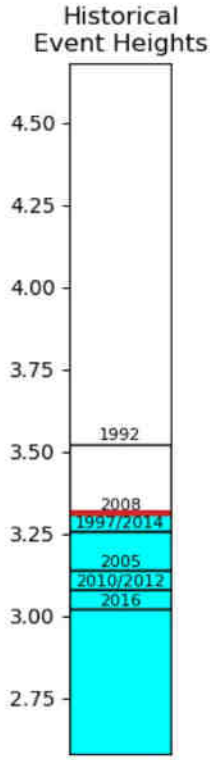


Photo courtesy of Chiqui Chiquito

Event Start	Event Duration	Number of Peaks	Peak Height (m)
07-Dec-2008 21:30:00	19 hours 40 minutes	2	3.31

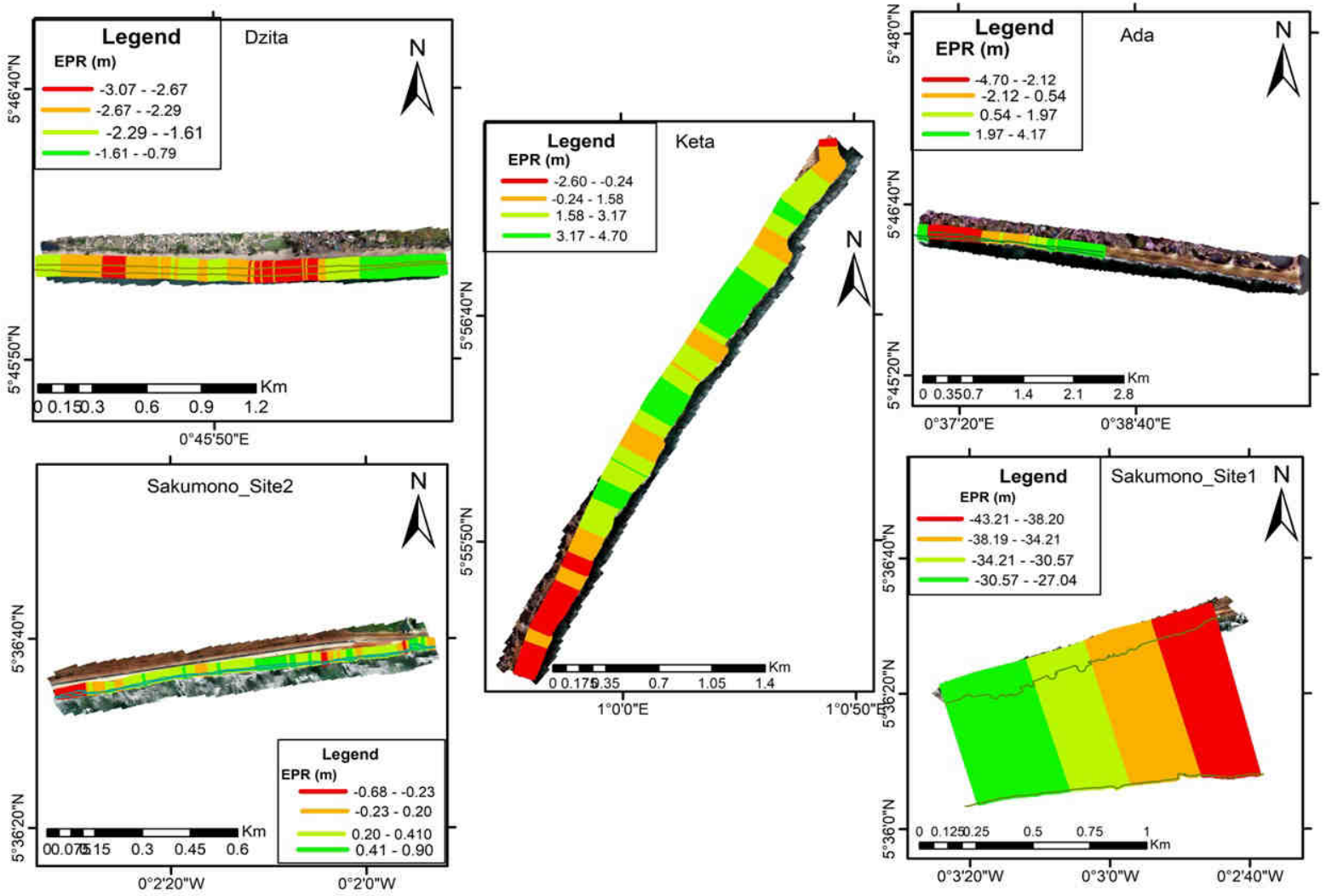
Coastal Erosion

Beach Changes on the Eastern Coast of Ghana

Shoreline changes between 2005 and 2021 for selected sites in the east

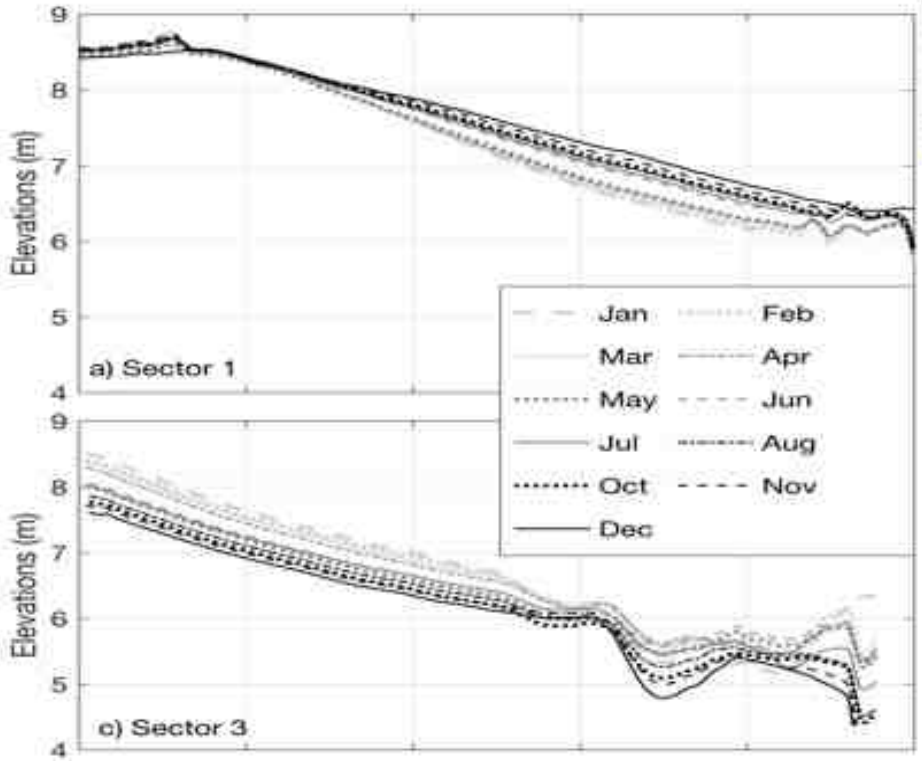
- Ghana's coast can be placed in 3 geographical sections: east, central and west.
- Selected sites are Keta, Dzita, Ada and Sakumono

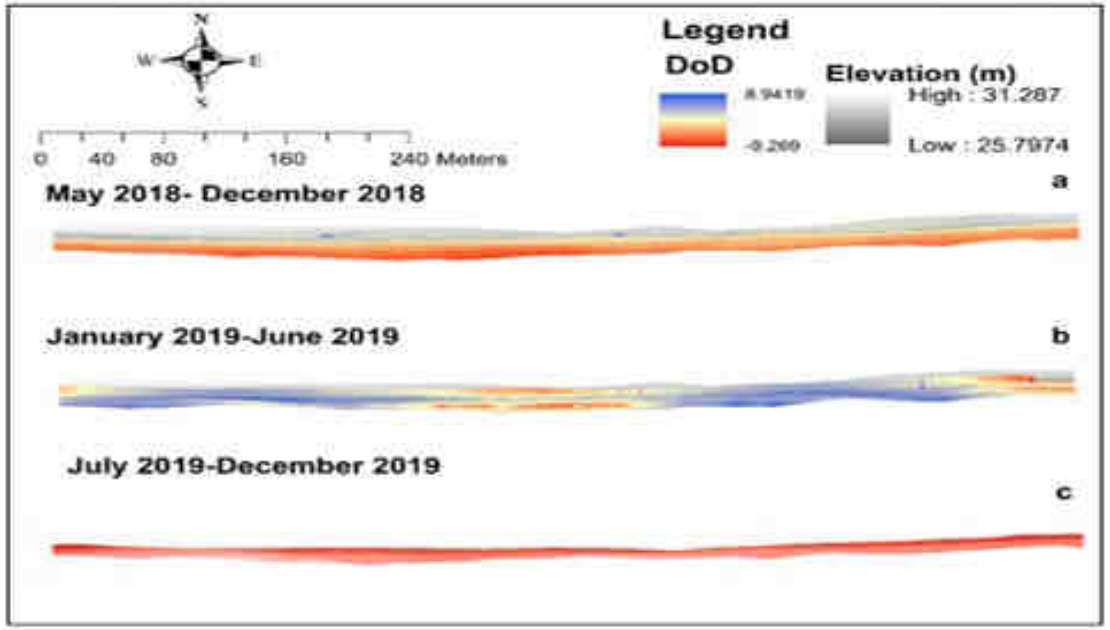
- Erosion rates in the East vary between 2 and 17 m per year on average depending the spatial scale



Beach changes from Drone systems e.g., Dzita

Brempong et al., 2021
Angnuureng et al., 2019, 2020, 2022
Jayson-Quashigah et al., 2019, 2021





Beach topo, profiles and Sediment volume changes could be done with drone flights, DGPS, and dumpy level (Angnuureng et al 2022)

Need help finding the right data and tools for the ocean and coasts? Contact us!

info@geoblueplanet.org