

Why CARIBO?

Ocean currents are intensifying with climate change and stronger fronts are expected to lead to enhanced variability. **Nowhere will increasing "ocean storminess" have more impact than at the western boundary.** Here, sources of remote and local oceanic variability converge over steeply sloping topography to pump nutrient-rich waters onto the shelf, shift sediments, and affect sea level, in close proximity to biodiverse ecosystems and large human populations.

- Ocean storminess at the western boundary will influence:
- Coastal sea level and flood risk
 - Productivity, food chain length, & fisheries
 - Carbon cycling and export
 - Shallow and cold water coral biodiversity
 - Larval transport and recruitment
 - Sediment deposition and coastal geomorphology

What is CARIBO?

Innovative, multi-disciplinary, multi-scale, observations at the inflow and outflow of the **Caribbean Seas, one of the ocean's most biologically diverse ecosystems serving 38 countries/dependencies with large inequities in governance and wealth.**

- Measuring ecosystem and climate parameters, including sea level, carbon export, and nutrients
- Hi-resolution mapping of water masses and mixing
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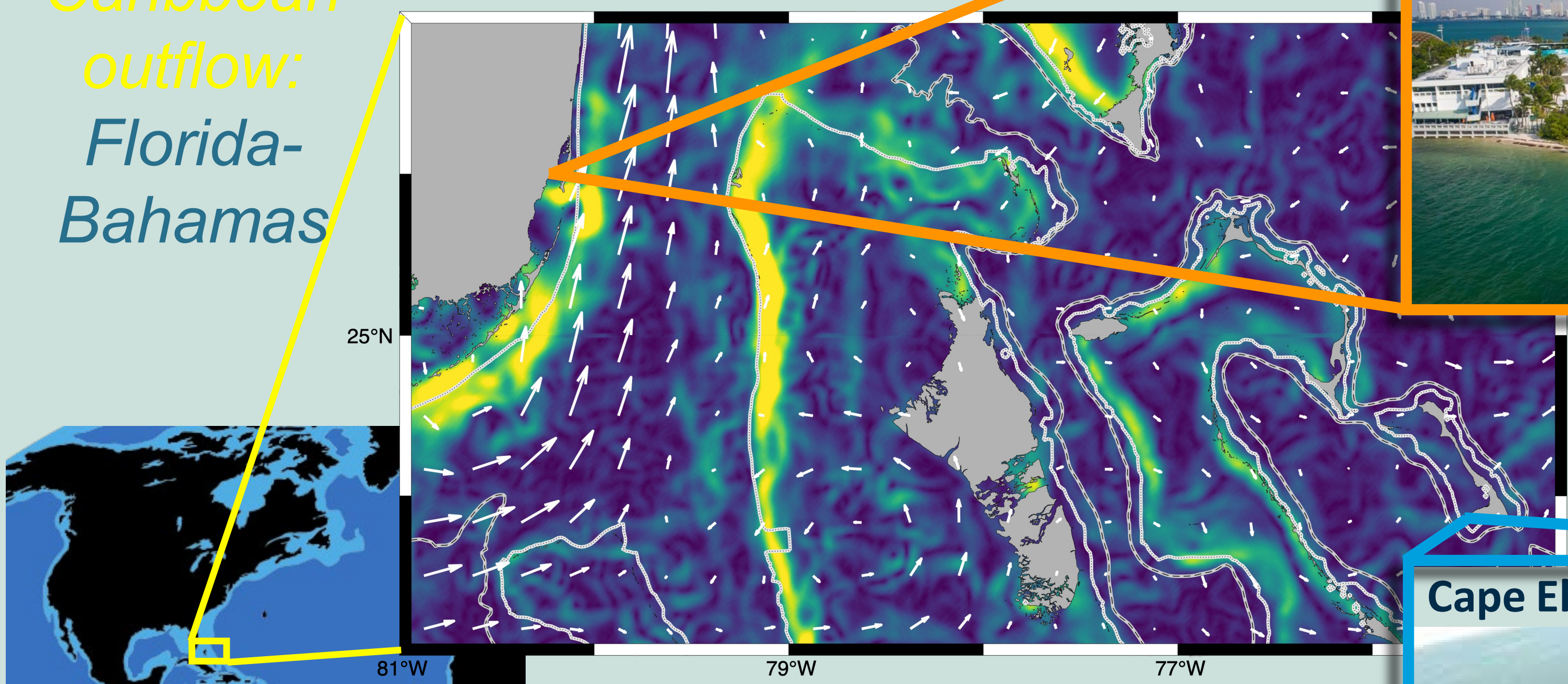
UN Decade Challenges

New data and knowledge (5&9); Ecosystem sustainability and resilience (2&3); Collaboration, capacity development, and equitability (4&7); Transforming citizen relationships with the ocean (10)

Caribbean Observatories (CARIBO)

Ocean storminess and its impacts on shelf/slope environments and ecosystems

Caribbean outflow: Florida-Bahamas



UM Rosenstiel School, Miami

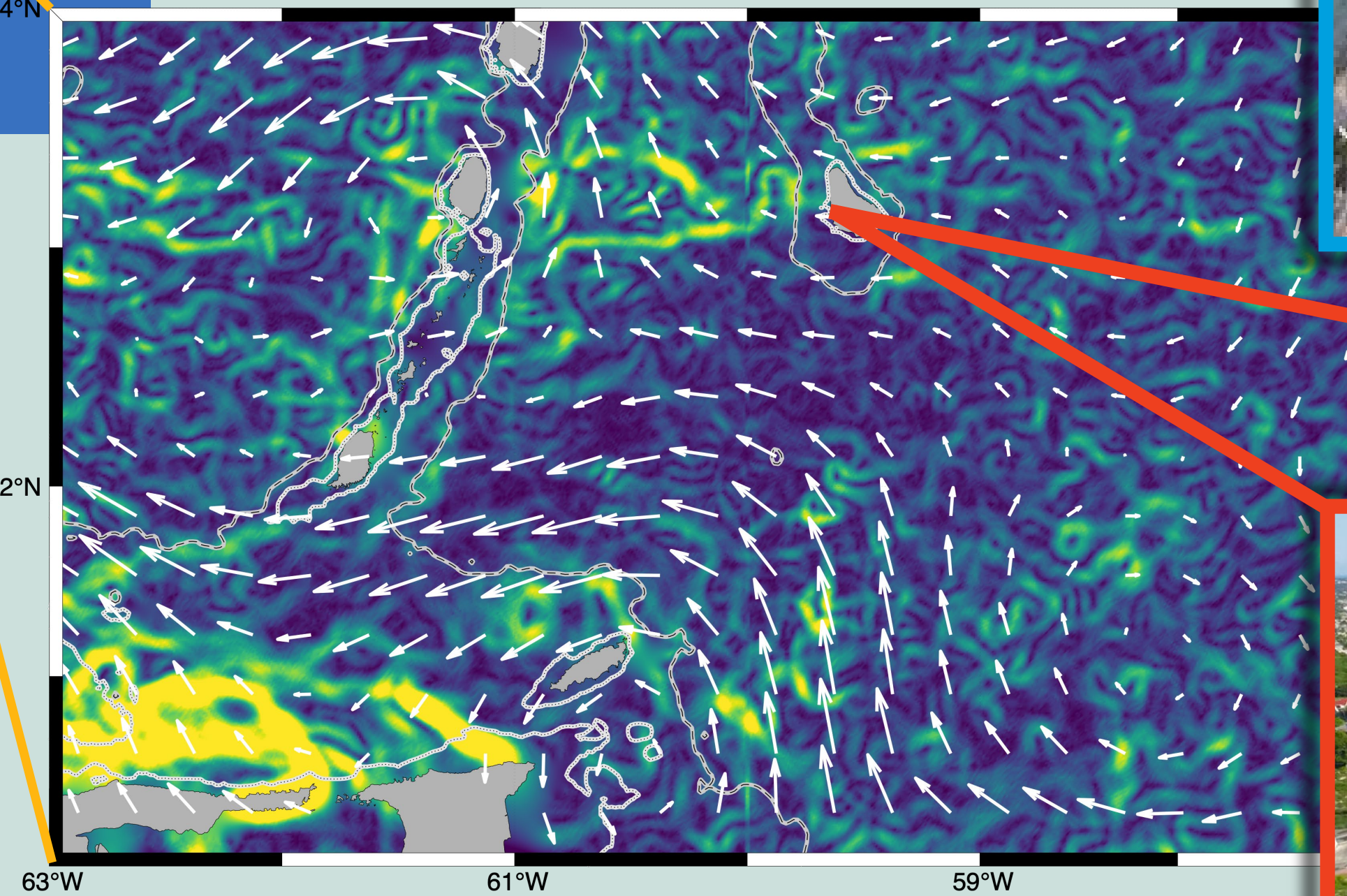


SST fronts highlight oceanic storminess and upwelling/downwelling

Cape Eleuthera Institute, Bahamas



Caribbean inflow: Barbados



Mean ocean currents from glob-ocean
Snapshot SST gradients from GHR SST



UWI Cave Hill, Barbados

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Vision & Impact

- **Integrated observing strategy** with potential to transform our understanding of how climate change may alter western boundary current storminess and impact our coastal environment and ecosystems
- **Co-designed, solution-oriented observatories** in partnership with Caribbean institutions for the benefit of healthy ocean margins and equitable, resilient coastal communities
- **Geo-local collaborations** to build stronger, more inclusive, interdisciplinary teams, to maximize local community engagement, and to minimize our carbon footprint

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Engagement

- Education: Live-streaming labs to schools; undergraduate marine science cruises, citizen science projects
- Public-Private partnerships: Coastal communities, resource management authorities, the United Nations IOCARIPE, international NGOs, Miami-Dade County, Frost Museum of Science.
- End-users: Open science, open data, innovative data visualization

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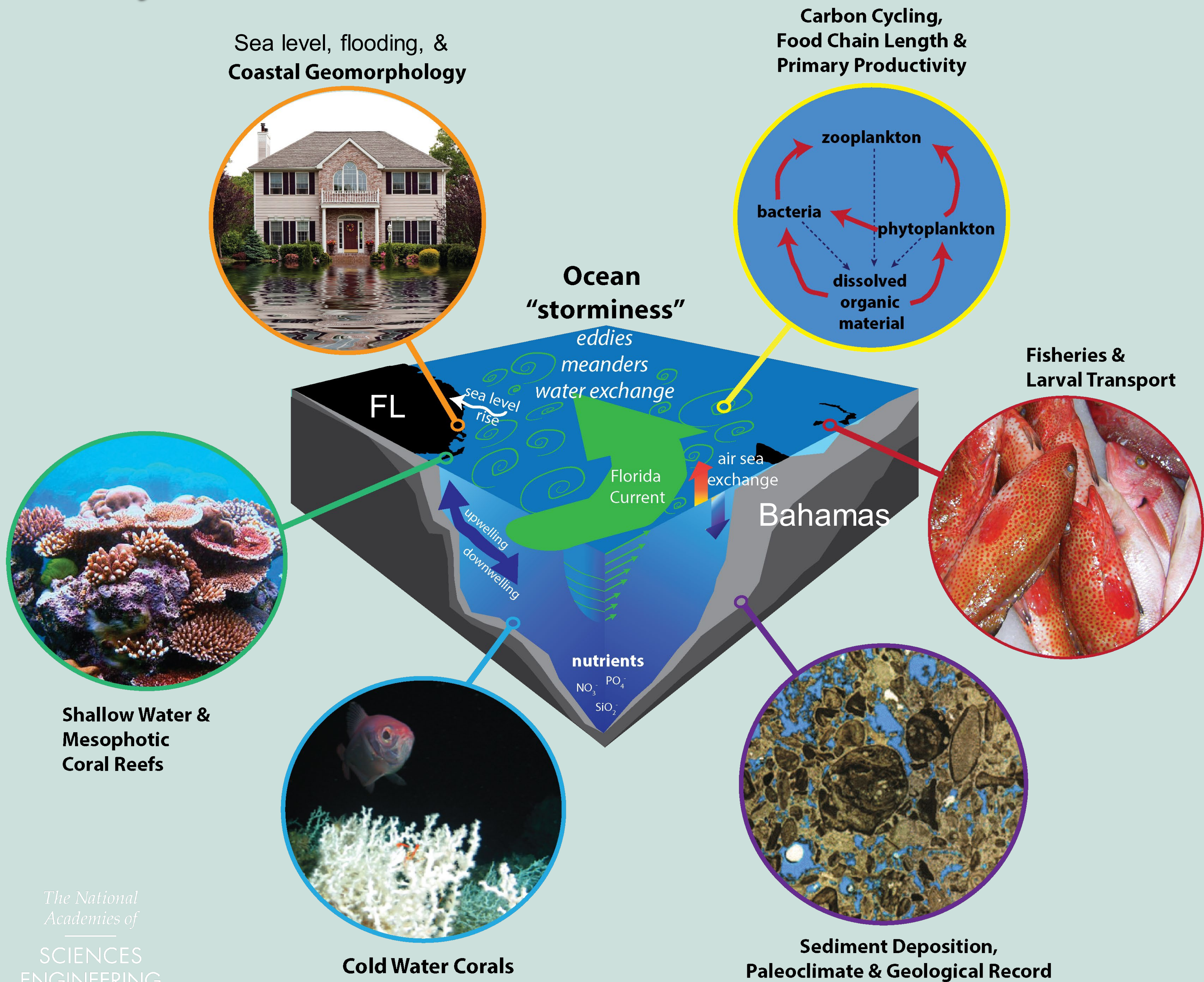
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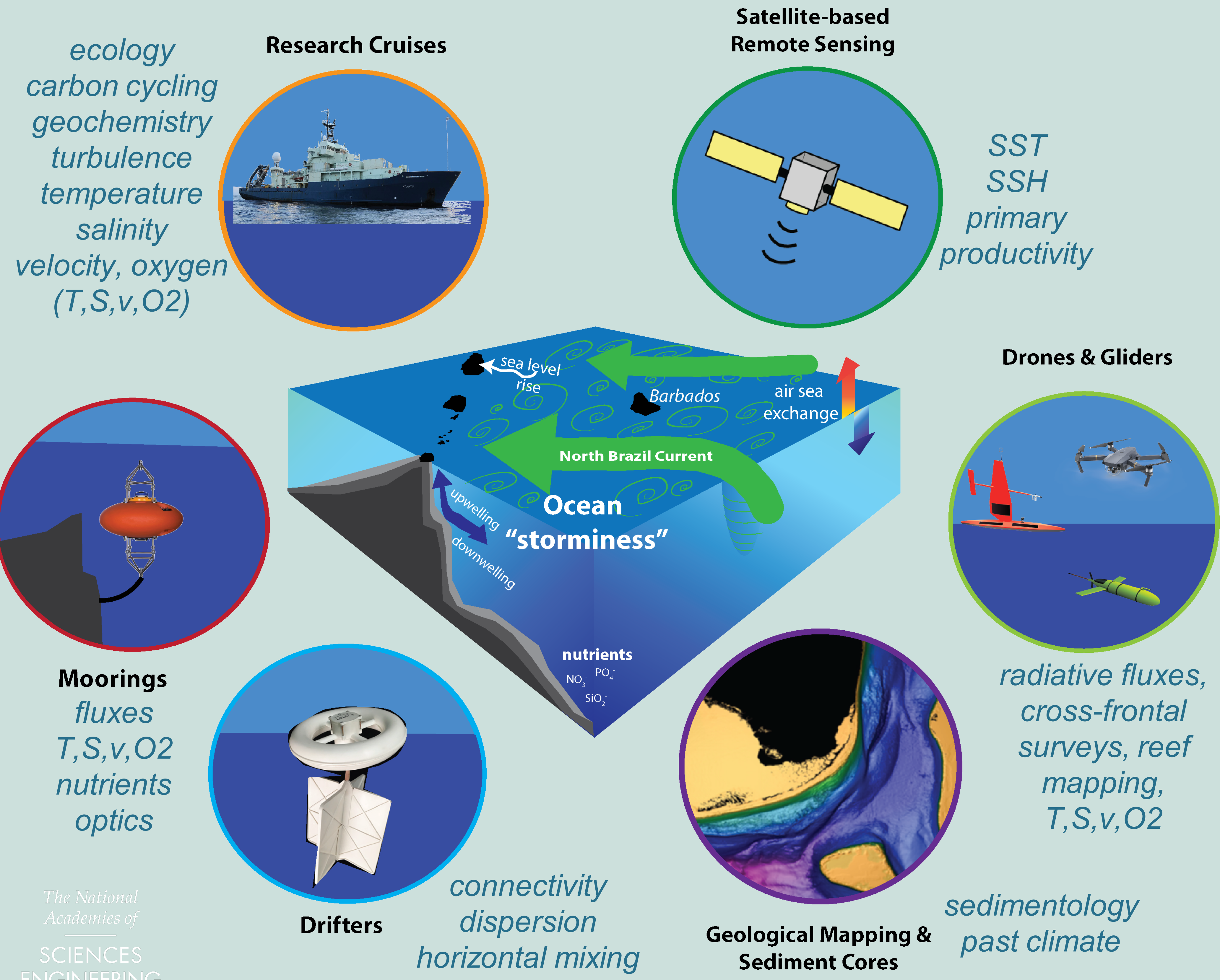
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UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE





Cape
Eleuthera
Institute



UWI
CAVE HILL CAMPUS
BARBADOS, WEST INDIES

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