

The National Estuarine Research Reserves System-Wide Monitoring Program

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NOAA Office for Coastal Management

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NOAA OFFICE FOR COASTAL MANAGEMENT
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Home About Regions Primary Programs

Regions We Serve
West Coast

Gulf Coast Southeast and Caribbean Northeast and Mid-Atlantic Great Lakes West Coast Pacific Islands

NOAA's Office of Ocean and Coastal Resource Management and the Coastal Services Center joined forces to become the new Office for Coastal Management. [Learn more](#)

Coastal Programs

Coastal Zone Management
Federal and state partnership efforts with a common goal: smart coastal management.

Coral Reef Conservation
Supporting the management and science needed to preserve this resource.

Digital Coast
Look here to find coastal management data, tools, and training.

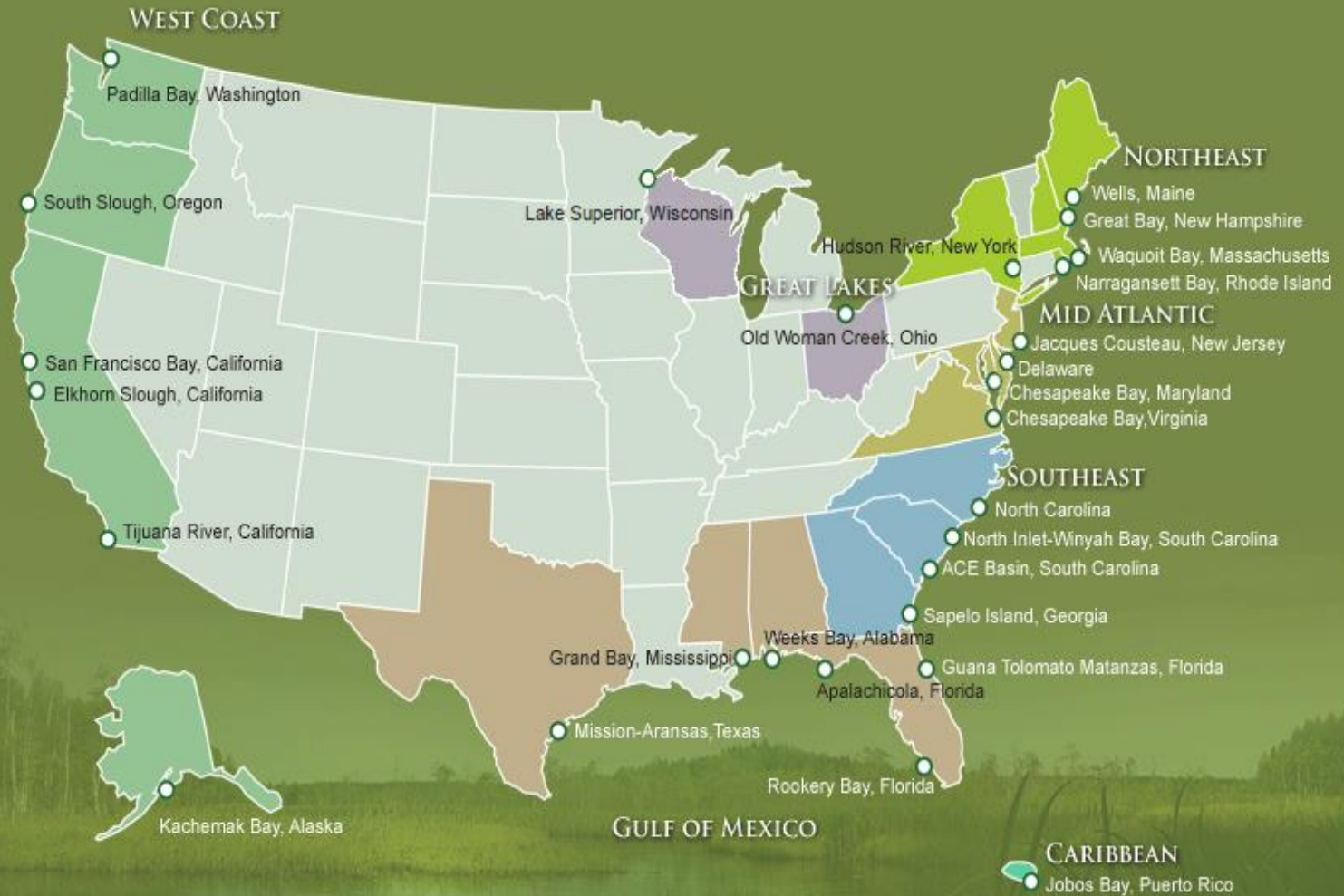
National Estuarine Research Reserves
Coastal conservation sites where conservation, science, and community education come together.

Office for Coastal Management





NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM



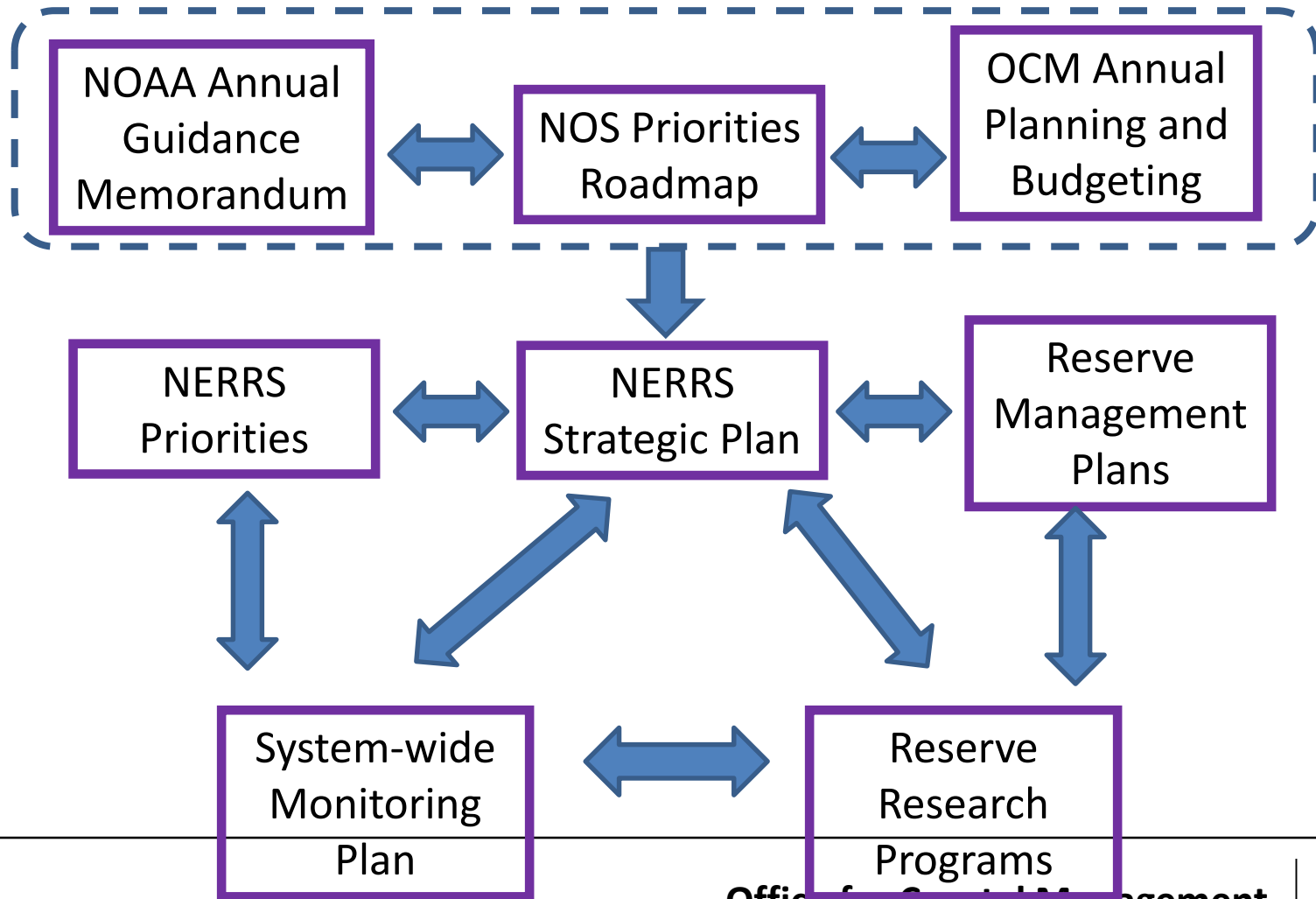
Reserves are protected for:

- Long-term research and monitoring
- Education
- Resource stewardship

~1.3 million acres of estuarine lands and waters are protected in 28 reserves, including the newest Lake Superior National Estuarine Research Reserve on the St. Louis River



Strategic planning for NERRS Research and Monitoring



The National Estuarine Research Reserve System (NERRS)

System-Wide Monitoring Program (SWMP)

Mission: Develop quantitative measurements of short-term variability and long-term changes in the water quality, biological systems, and land-use and land cover characteristics of estuaries and estuarine ecosystems for the purposes of understanding how human activities and natural events can impact ecosystems and to inform effective coastal zone management.

Established in 1995 with periodic enhancements, the program consists of three major program elements:

- Abiotic indicators of water quality and weather
- Biological monitoring
- Watershed, habitat, and land use mapping.

Hallmark of the NERRS:

Telemetered data
and
standard protocols and
instrumentation
plus...

Research programs aimed at
understanding ecological drivers of
change *at each reserve*



Mission-Aransas NERR SWMP station

The Database Is “Big”

(<http://cdmo.baruch.sc.edu/>)

28 Reserves and 20 years of data

- More than 63 million water quality and weather observations
- More than 102 thousand dissolved nutrient values

Water Quality and Nutrient Data

112 water quality stations (four per reserve)

59 telemeter real-time data

Meteorological Data

28 weather stations (one per reserve)

All are telemetered via GOES

Biological Monitoring

- Vegetation monitoring
- Plankton
- Benthos
- Marsh Birds
- Invasive Species
- Nekton

Abiotic Monitoring

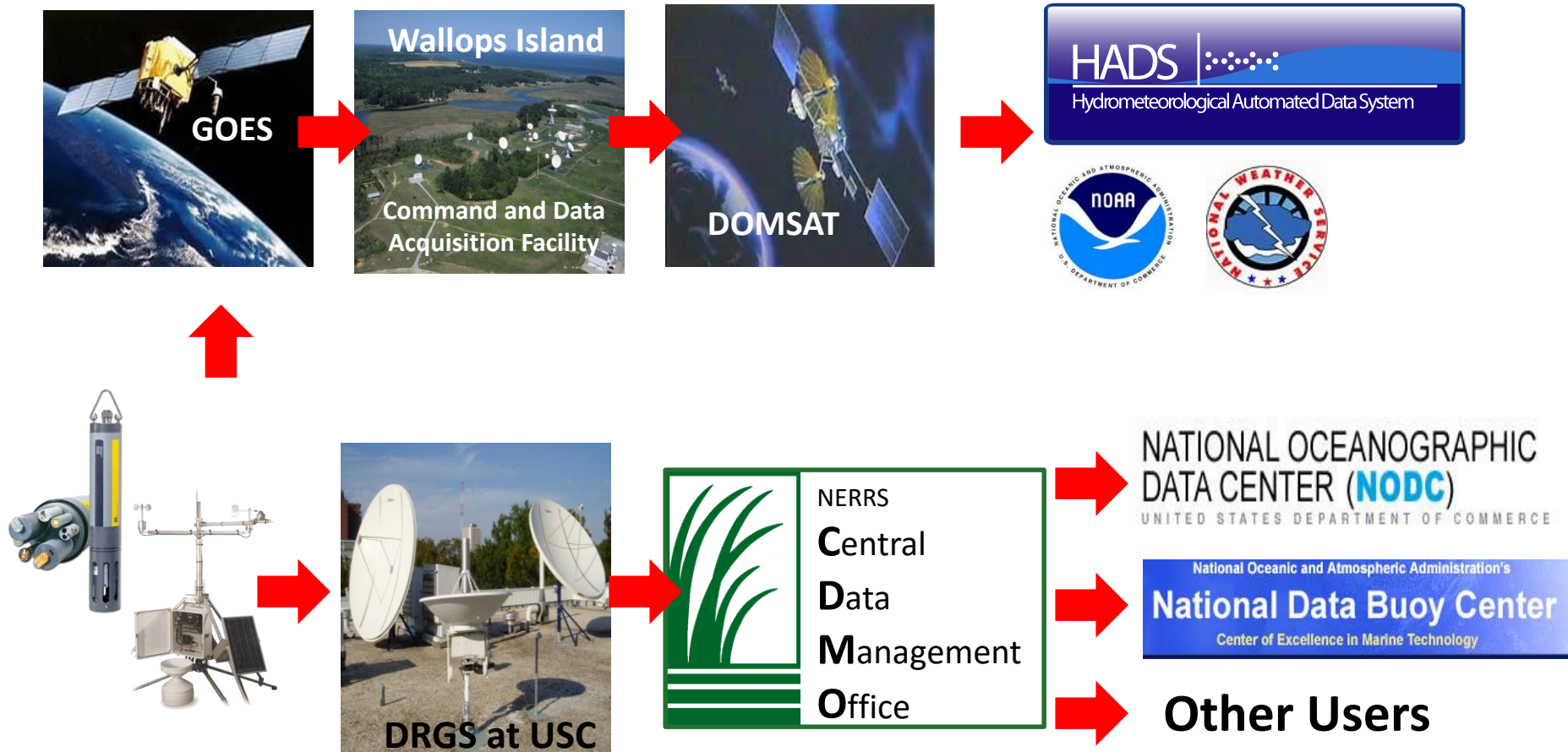
Water Quality:

- Temperature, Salinity, pH, DO, Turbidity, Chlorophyll, and Depth
- Data collected every 15 minutes
- Minimum four stations per reserve
- Monthly and diel nutrient grab samples (NO_3^- , NO_2^- , NH_4^+ , PO_4^{3-})
- Telemetry requirements
- Consistent technology and protocols

Meteorological:

- Air temperature, Atmospheric Pressure, Relative Humidity, Precipitation, PAR, Wind speed and Direction
- Data collected every five seconds
- Minimum one station per reserve
- Telemetry requirements
- Consistent technology and protocols

Near-Real Time SWMP Data Flow



Centralized Data Management Office

(<http://cdmo.baruch.sc.edu/>)

NERRS Centralized Data Management Office was established to support the System-Wide Monitoring Program.

It is headquartered at the North Inlet-Winyah Bay Reserve in South Carolina, with close association to the University of South Carolina and Belle Baruch Institute.

Central Data Management Office

Primary responsibilities:

- Support for SWMP data and information management
- Archived and real-time data accessibility and data usage tracking
- Operational technical support services
- Annual technician training
- Technical support for special projects and external reviews

Weather	Water Quality	Nutrient	Total
14,449,989	48,845,952	102,378	63,398,319

Data records as of March 29, 2016

Questions?

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