

U.S. IOOS Program Updates

Carl Gouldman
August 4, 2020

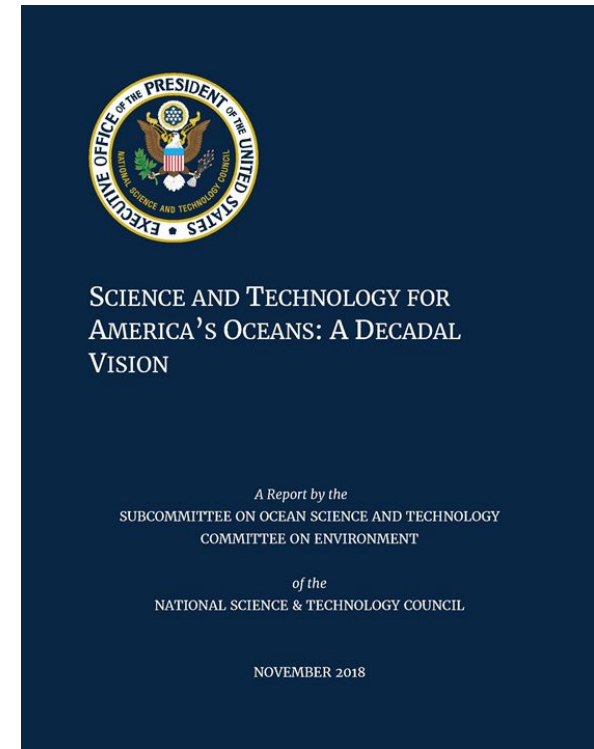


IOOS & Ocean Decades for the Future

- White House (OSTP) Science and Technology for America's Oceans: A Decadal Vision
- UN Decade of Ocean Science for Sustainable Development
- Supporting and implementing OceanObs'19 recommendations and preparing for OceanObs'29
- IOOS Grand Challenges & Actions including Essential Ocean Variables and Communities of Practice development



**2021
2030** United Nations Decade
of Ocean Science
for Sustainable Development



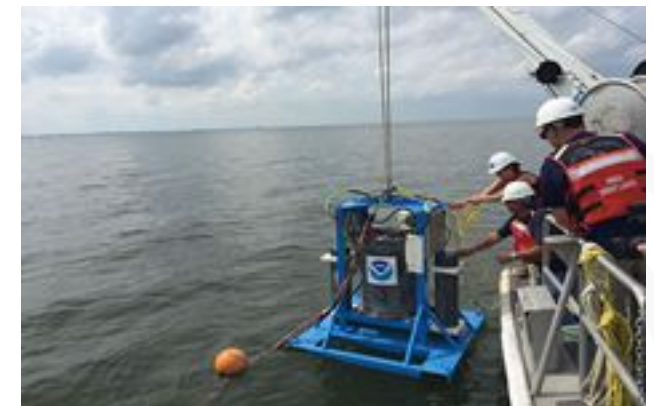
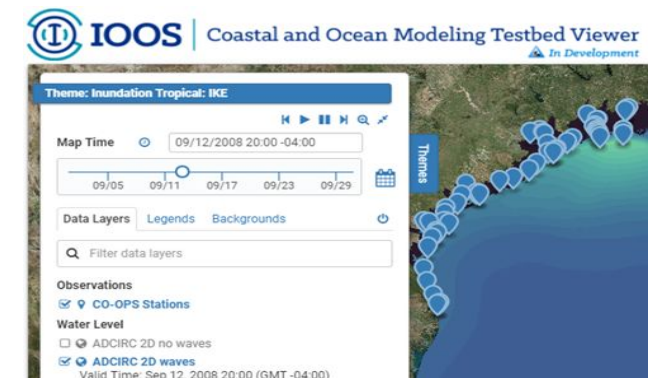
FY2020 IOOS Highlights

Implementing IOOS

- Weather Research and Forecasting Innovation Act 2017&19 – and EPIC implementation
- CENOTE Act 2018 (Commercial Engagement Through Ocean Technology Act)
- NOAA Water Initiative
- Blue Economy - Ocean Enterprise Study
- Supporting NOAA's 4 strategies – UxS, AI, Cloud, 'Omics
- Development of pilot performance measures (HFR, Gliders, Total met/ocean Obs)

Research and Development

- Coastal and Ocean Modeling Testbed (COMT) - Water Modeling, Forecasting, and Prediction
- Ocean Technology Transition - New Project Awards- FY2020
- Technology, Research and Innovation Workshops - IOOS & OAR



FY21 Annual Guidance Memo

U.S. IOOS⁺ Office
Fiscal Year (FY) 2021 Annual Guidance Memorandum
07/08/2020

Strategic Direction:

The U.S. Integrated Ocean Observing System (IOOS) is a collective effort among the U.S. IOOS Office, the Interagency Ocean Observation Committee (IOOC) and its agency programs, the IOOS Regional Associations (RAs), the U.S. IOOS Advisory Committee, and the IOOS Association. The U.S. IOOS Enterprise Strategic Plan (2018–2022) provides cross-cutting goals and objectives for the entire U.S. ocean, coastal, and Great Lakes observing system to address IOOS core capabilities which include: sustained observations; data management and communication; modeling and analysis; user-driven products and tools; and stakeholder engagement, outreach, and education.

Purpose:

This Annual Guidance Memorandum (AGM) provides planning guidance for the execution of the U.S. IOOS Office's budget and personnel resources within the National Ocean Service (NOS) of the National Oceanic and Atmospheric Administration (NOAA). It conveys U.S. IOOS Office strategic direction for all employees and partners engaged in executing the IOOS mission.

The identified priorities consider our major mission functions, fiscal support, external drivers, identified risks, and corporate opportunities. These priorities will guide the execution of the FY2021 Annual Operating Plan (AOP), and steer the individual efforts of the IOOS Office and the IOOS RAs toward accomplishing our strategic goals and objectives.

FY2021 Focus

In FY2021, the U.S. IOOS Office and the IOOS Enterprise will continue to support and enhance the delivery of information to support decision makers in protecting and enhancing lives and livelihoods to benefit people who have a stake in the health and the economy of our coasts, oceans, and Great Lakes. We will also continue to work with our Federal and nonfederal partners to deliver on the promise of IOOS envisioned by its founders two decades ago.

At the global level, IOOS will continue providing local, regional, and national lessons learned and advice to global ocean observing organizations. The IOOS Director serves as the U.S. Representative and Vice Chair to the Global Ocean Observing System (GOOS) Regional Alliances. We will continue to support the ocean observing community's prioritization of essential ocean variables, guided by the GOOS Framework for Ocean Observations. The U.S. IOOS Office will engage with the GOOS and use the OceanObs'19 conference (September 2019) to continue

Guiding Principles:

- Stakeholder-driven, science-based, and policy neutral
- Nimble and responsive services support diverse and evolving priorities and end-user needs
- Leveraged resources and innovation produce efficient, sustainable observing systems
- Integrated, high-quality and reliable data
- Easy and open exchange of information
- Networks of people, technology, and information
- Productive public-private partnerships

Strategic Plan Goals:

1. Sustain long-term, high-quality observations of ocean, coastal, and Great Lakes environments to address local, regional, and national needs.
2. Deliver standardized, reliable, and accessible data.
3. Support model predictions that address a wide range of user requirements.
4. Provide integrated, user-driven products and tools.
5. Partnerships and Organizational Excellence

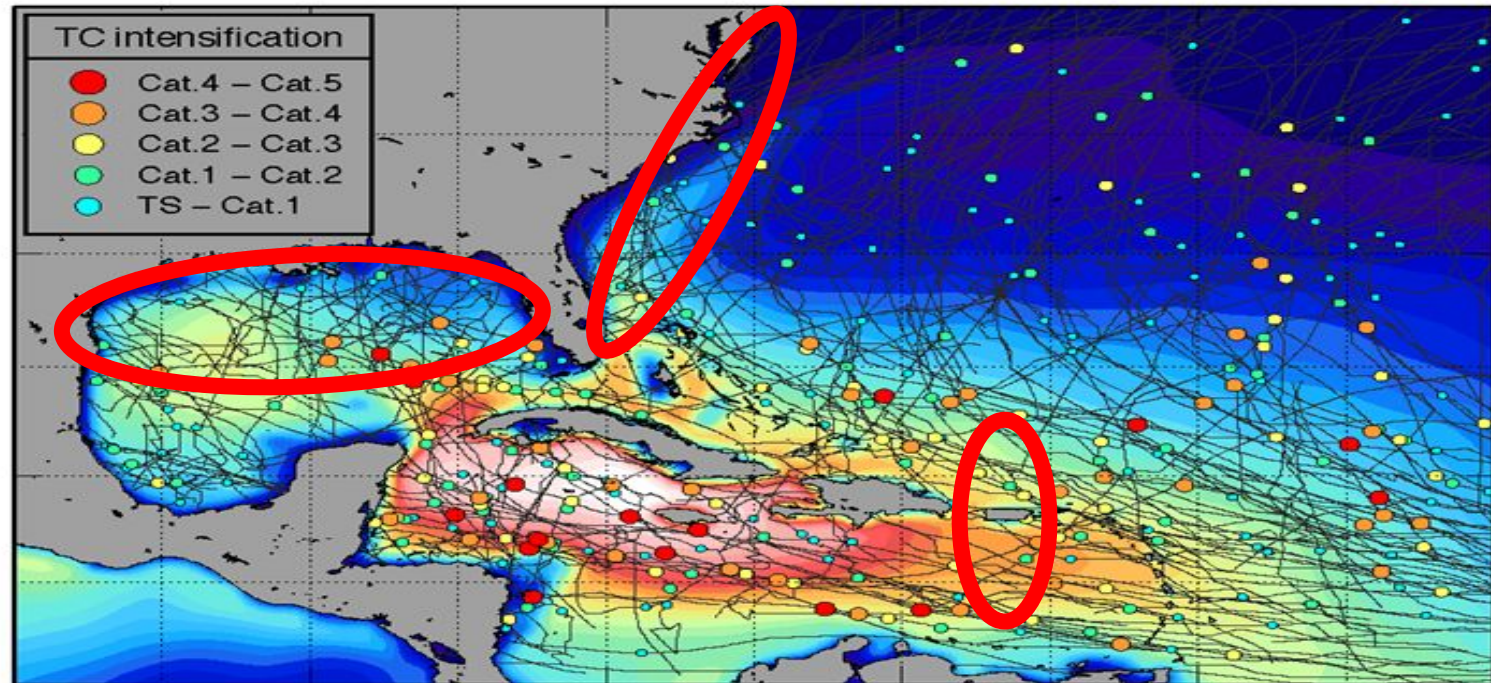
Underwater Gliders: Hurricane Intensity

Helping to improve Hurricane Intensity forecasts

- Throughout hurricane season, IOOS and its partners deploy Hurricane Glider survey lines in the Atlantic, Gulf of Mexico and Caribbean Oceans.
- These gliders collect data that help researchers and forecasters improve hurricane intensity forecasts.
- This partnership continues this year and is on track to deploy and operate 9 NOAA and 2 US Navy gliders in the Caribbean Sea and tropical Atlantic to provide high-quality ocean data used for weather forecasts.

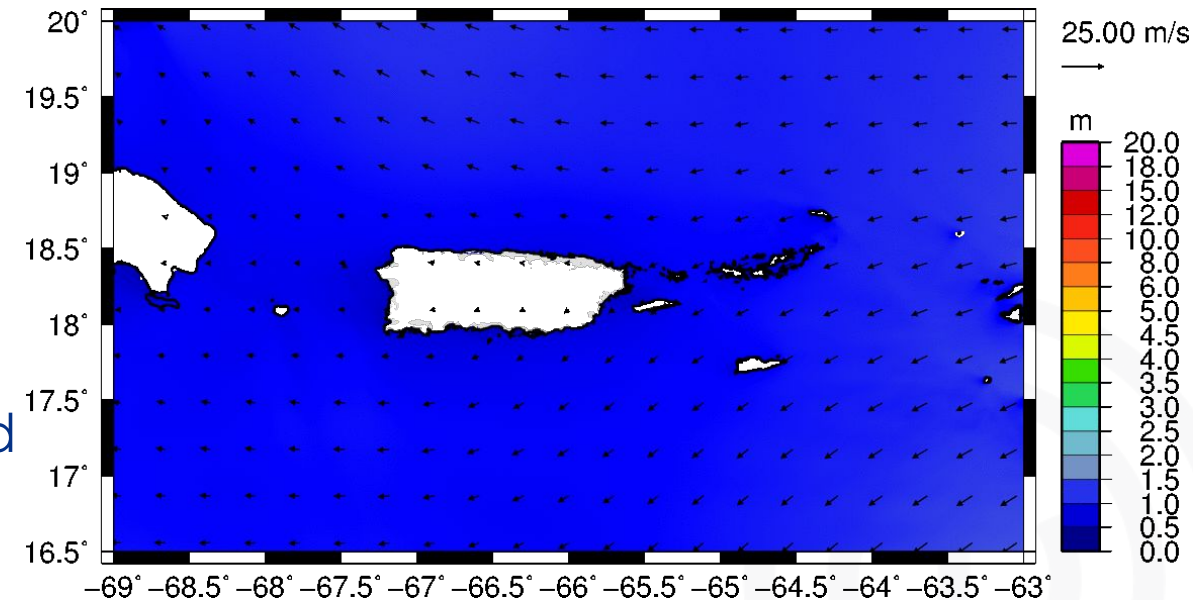


Partners include:
AOML, NAVY, USM,
Shell, IOOS Regional Associations



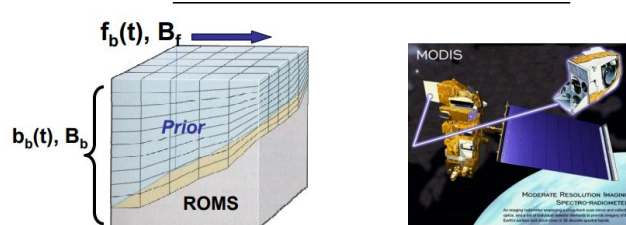
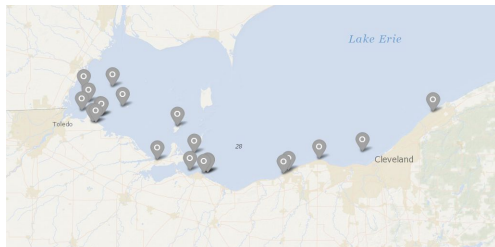
Modeling

- NOAA's Unified Forecast System (UFS) is a community-based, coupled, comprehensive Earth modeling system. One component of the UFS that is of particular interest to IOOS is the suite of operational coastal ocean predictions.
- Coastal Application Team which will ensure that the coastal prediction applications are developed in coordination with the overall architectural design of the UFS.
- First UFS Users Workshop - Jul 27-29
 - NOS and IOOS had a strong presence; several presentations described how the IOOS community-based modeling enterprise is supporting NOAA UFS.
- New NOS Modeling Portfolio Manager (hosted by IOOS) begins on August 16, 2020

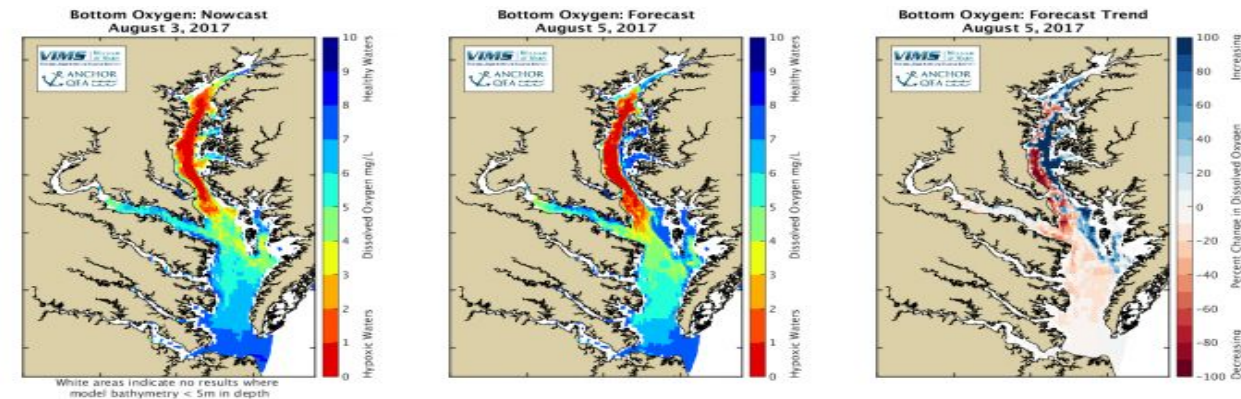


Ocean Technology Transition (OTT)

- The IOOS Ocean Technology Transition Program sponsors the transition of emerging marine observing technologies to operational mode.
- **Priority Focal Areas:**
 - HABs
 - Animal Borne Sensors
 - Ocean Acidification
 - Physical Ocean Observations

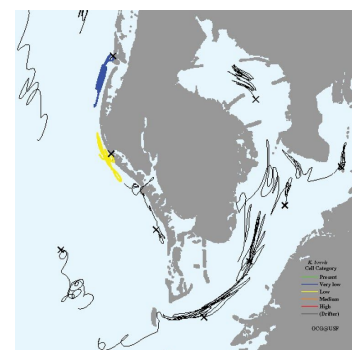
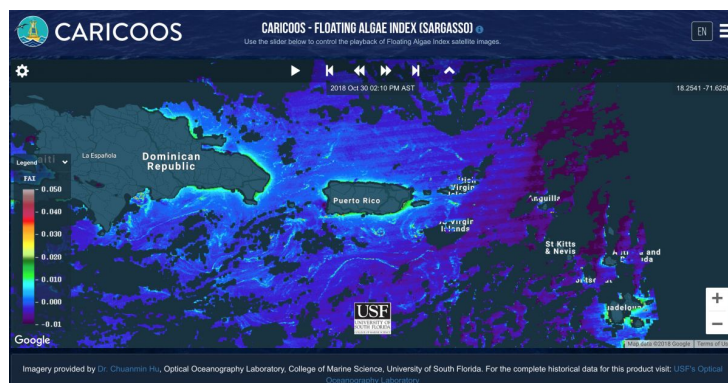
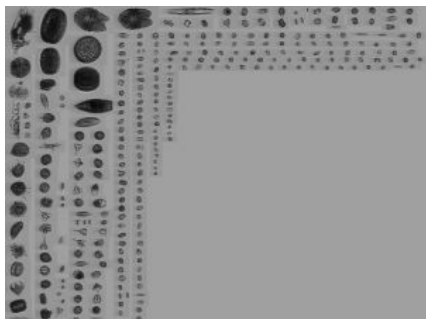


- The Coastal and Ocean Modeling Testbed, COMT, is a partnership of federal and non-federal partners
- COMT works to accelerate transition of coastal and ocean modeling research to operational ocean products and services.



Harmful Algal Blooms (HAB)

- IOOS and NCCOS are partnering to advance HAB research into operations
 - IOOS Regional Association HAB initiatives - <http://www.ioosassociation.org/habs-initiatives>
- Collaboration with NCCOS/MERHAB on transition planning for Pacific Northwest HAB Bulletin
- Funding for new HAB detection technologies through the OTT Program - <https://ioos.noaa.gov/project/ott-habs-hypoxia/>
- FY20 included \$1M to pilot five HAB observing network projects - AOOS, NANOOS, SCCOOS/CeNCOOS, GLOS, GCOOS



Regional Ocean Partnerships

- **Executive Order 13840:** Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States, emphasizes improved access to and use of federal data.
 - **Phase I** assessed regional federal geospatial data needs for ocean and coastal management.
 - **Phase II** documents how regional ocean data sharing and application capabilities can be improved.
- **Phase II** is underway and has two primary objectives for 2019/2020:
 1. Work with regional partners to refine data requirements and characterize existing regional data-sharing efforts.
 2. Work with the Data Working Group to design several “regional roundtables” in 2019 to further refine data requirements.
- Congress recognized the need to enhance regional ocean data sharing and application, and appropriated \$1.5 million in 2019 and 2020 to support “regional data portals” through NOAA’s Integrated Ocean Observing System (IOOS) and Office for Coastal Management (OCM). This supports the executive order’s direction to enhance capacity for sharing and integrating federal and non-federal data to better inform regional coastal, ocean, and Great Lakes management priorities.

Second Ocean Enterprise Study

- Survey to launch in Q2 FY20
- The Ocean Enterprise Study is a survey of the for-profit and not-for-profit businesses which support ocean measurement, observation and forecasting.
- New study will
 - seek to expand scope
 - create second data set to analyze growth and change over time
- Study Report to be published in 2021.

THE OCEAN ENTERPRISE

A study of US business activity in ocean measurement, observation and forecasting

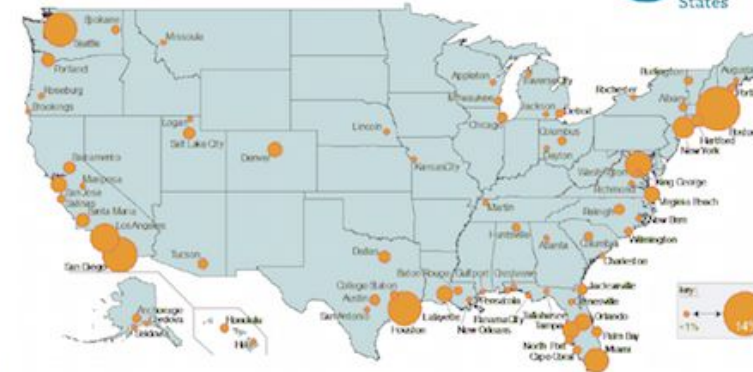
36
States



410
Companies



\$7B
annual revenue



THE OCEAN ENTERPRISE

A study of US business activity in ocean measurement, observation and forecasting



Prepared by
ERISS Corporation
The Maritime Alliance
February, 2016

PROVIDERS
observations

INTERMEDIARIES
value-added products

END USERS
emergency managers,
developers, city planners,
private sector

FY19 – FY20 Budget Review



IOOS funding summary FY2020

FY20 \$6.9M - 'National IOOS'

- Part of Navigation, Observations, and Positioning
 - Salaries and Benefits
 - Technical Service Contract
 - Office IT, operations, overhead
 - National Data Management Projects

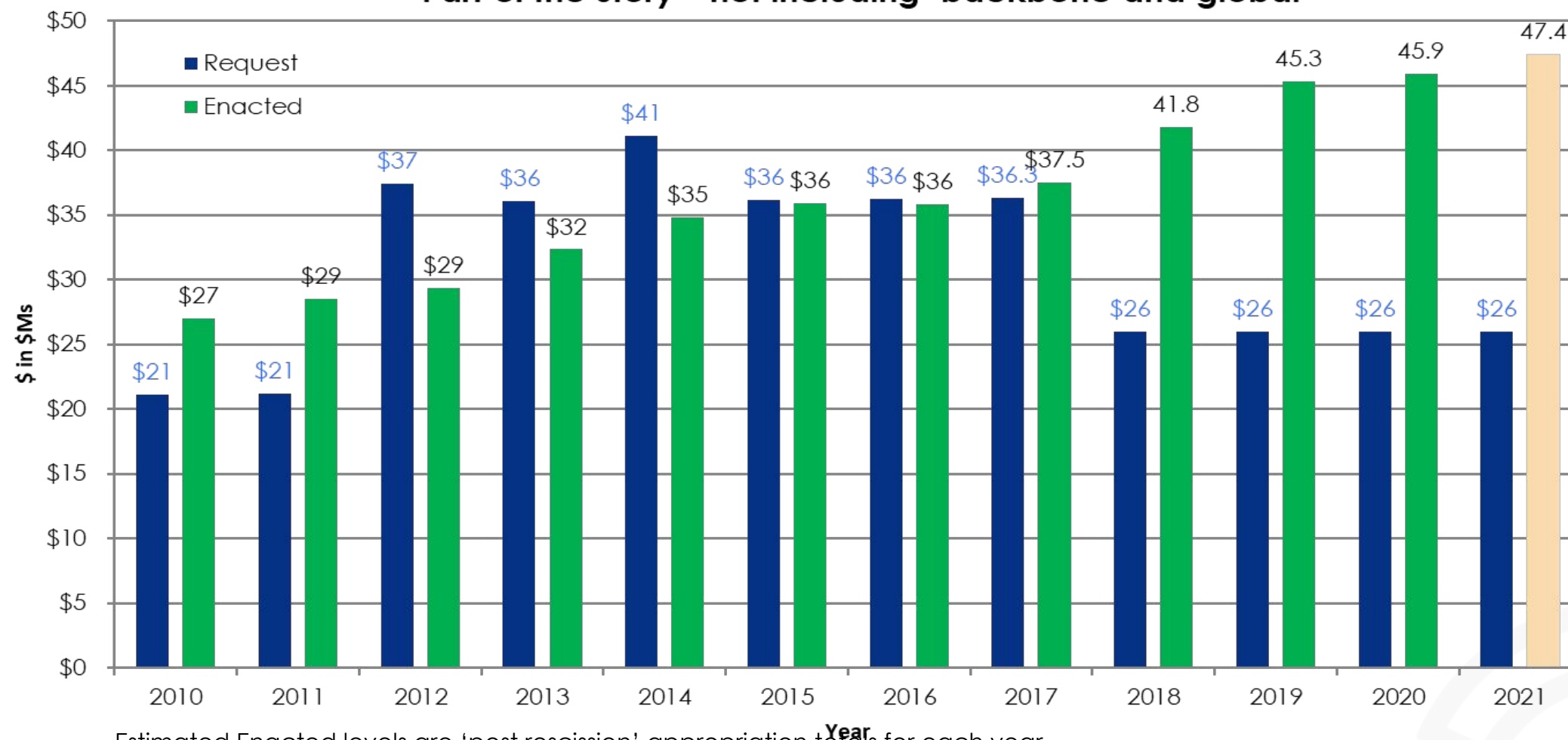
FY20 \$39M - IOOS Regional Observations

- Regional Association Cooperative Agreements (~\$34M)
- Alliance for Coastal Technologies – Sensor Evaluation Program (\$1M)
- Ocean Technology Transition Program ~\$2.7M
- Coastal Ocean Modeling Testbed Program \$~\$1M (plus \$1M leveraged)

FY20 ~\$6M Other NOAA, BOEM, NASA, Navy/ONR, USGS etc.

U.S. IOOS Enacted and President's Budgets FY10-21

NOS IOOS Request & Appropriation History
Part of the Story – not including 'backbone and global'



Estimated Enacted levels are 'post rescission' appropriation totals for each year

'Request' = the President's Budget Request

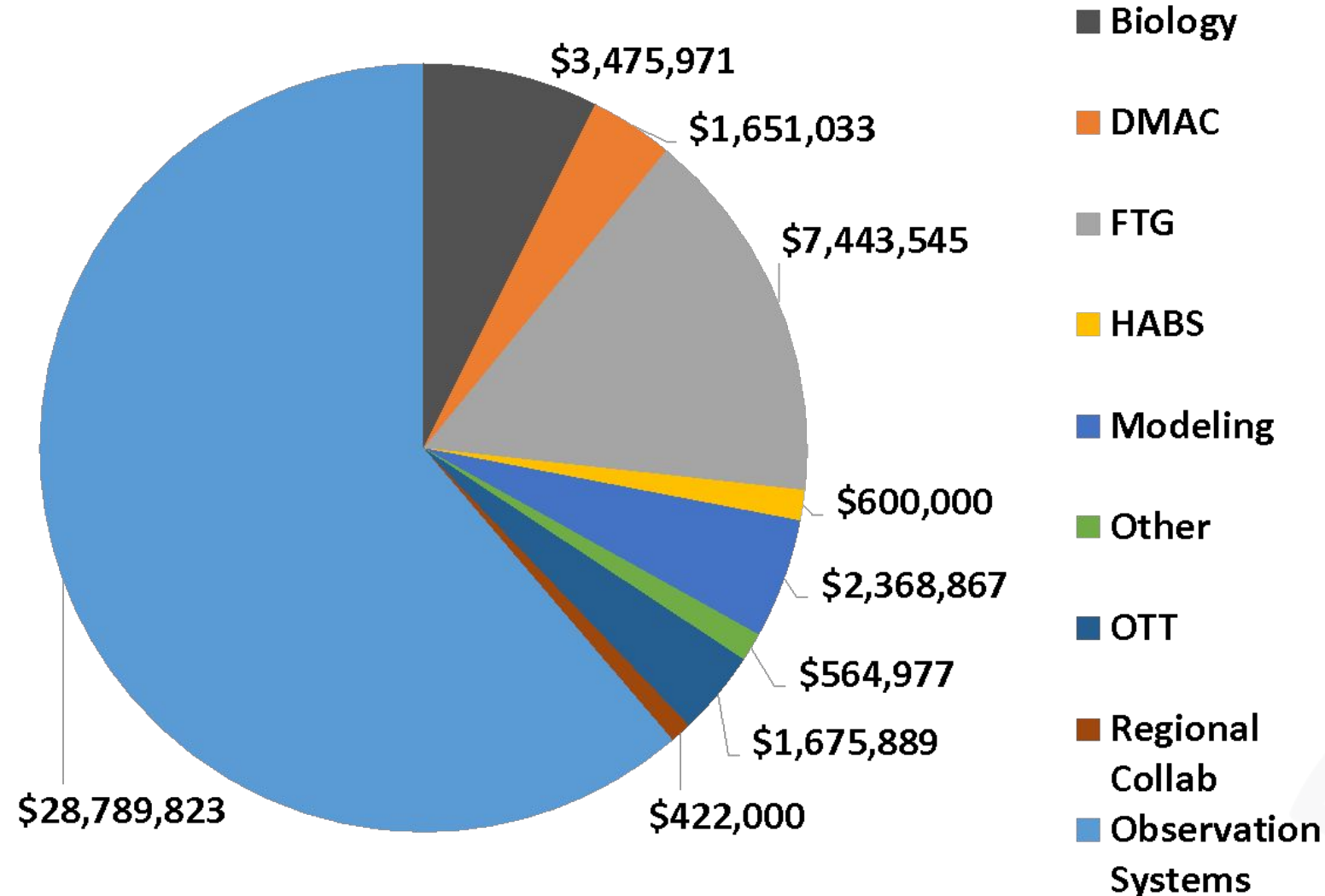
NOAA National Ocean Service - Navigation, Observations, and Positioning

'National IOOS' component FY21 House Mark \$6.9M & 'Regional IOOS Observations' \$40.5M

FY21 House Mark is first, next is Senate Mark, then Conference.

FY19 total 'outbound' funding = \$47M (repeat from Feb. 2020)

Does not count FY19 \$1.4M additional biology (MBON via NASA and Navy/ONR)



U.S. Integrated Ocean Observing System Program

Total Personnel:

FTE = 16
NOAA CORP = 1
CTR = 5
SEA GRANT FELLOW = 1

Carl Gouldman
Director, US IOOS

Krisa Arzayus
Deputy Director, US IOOS

Ben LaCour LCDR, NOAA
Executive Officer

Jack Oliva
Proj Mgmt Support

Laura Gewain (Griesbauer)
Executive Assistant

Michelle Harris
Knauss Fellow

Operations Division

Derrick Snowden
Division Chief

Kathy Bailey
Oceanographer/
Physical Scientist

Gabrielle Canonico
IOOS Biology Lead and
MBON Manager

(Vacant)
NOS Coastal Modeling Portfolio Manager

Rachel Horoschak
Office Manager

Hassan Moustahfid
Marine Biologist

Tiffany Vance
Physical Scientist/Data Manager

Micah Wengren
DMAC Systems Architect

Bill Woodward
Animal Telemetry Network Coordinator

Brian Zelenke
Surface Currents
Program Manager

Regions, Budget & Policy Division

Dave Easter
Division Chief

(Vacant).
Program Specialist

Kate Culpepper Communications
Specialist

Becca Derex
Policy Analyst

Debra Esty
Grants and Agreements

Kelly Jasion
Financial Management Specialist

Torie Ketcham
Info Mgmt Support

(Vacant)
Physical Scientist

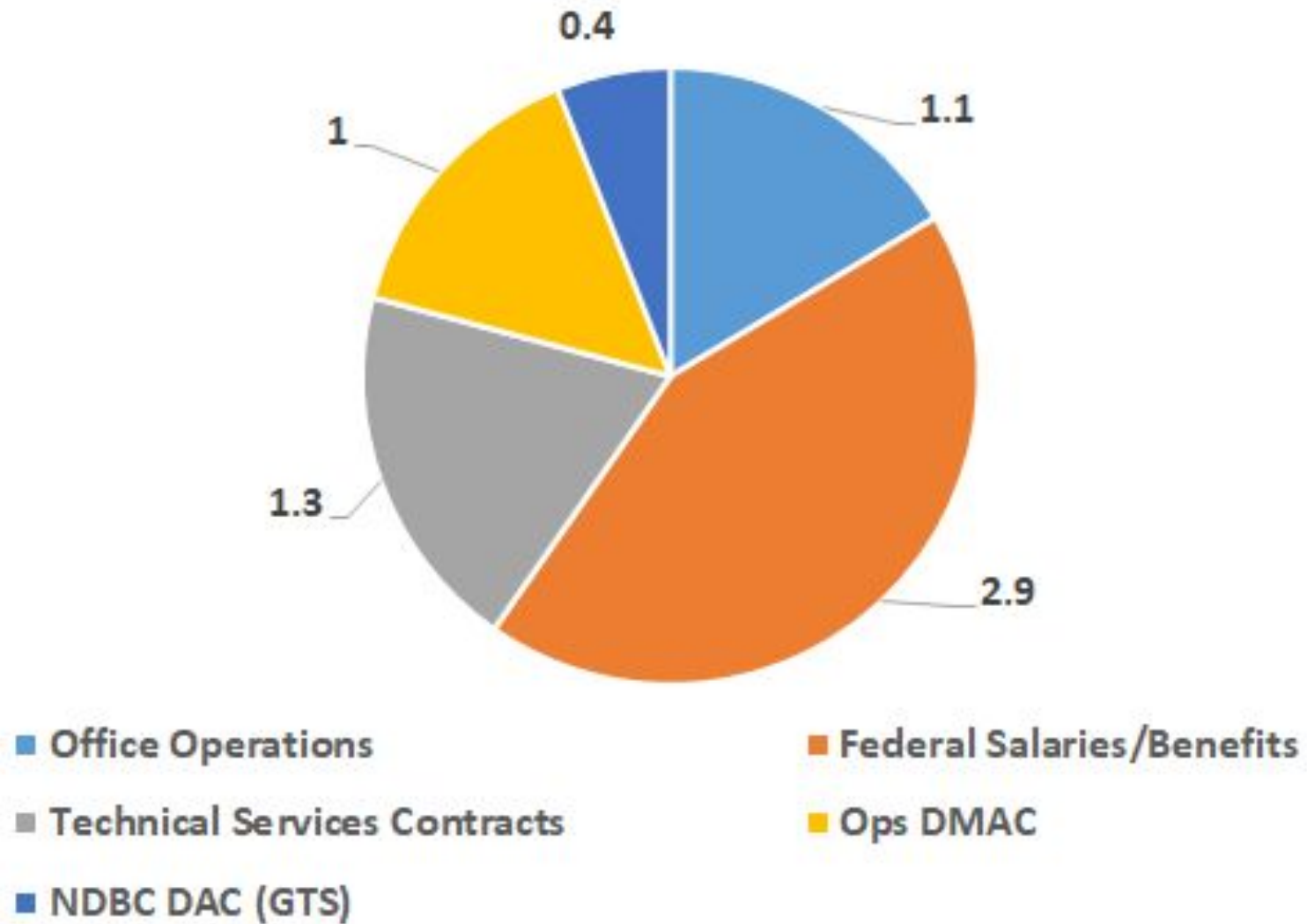
Brandy Spears
Cooperative Programs Specialist

Mequela Thomas
Environmental Compliance Coordinator

Oriana Villar
Regional Coordinator

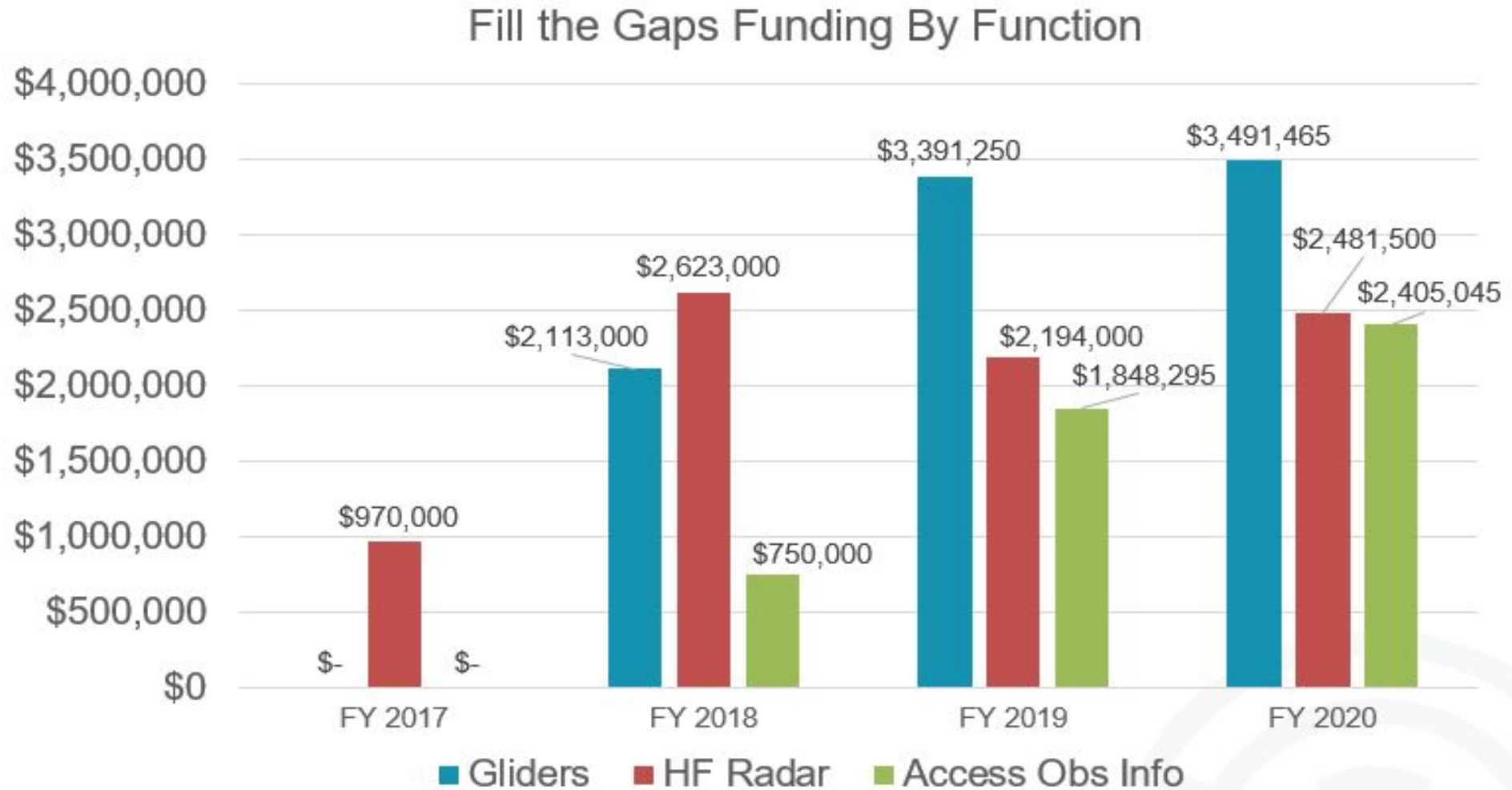
FY 20 “National” line = \$6.7M (after overhead)

Millions of \$



Only includes funds appropriated to U.S. IOOS Office within NOS/NOAA

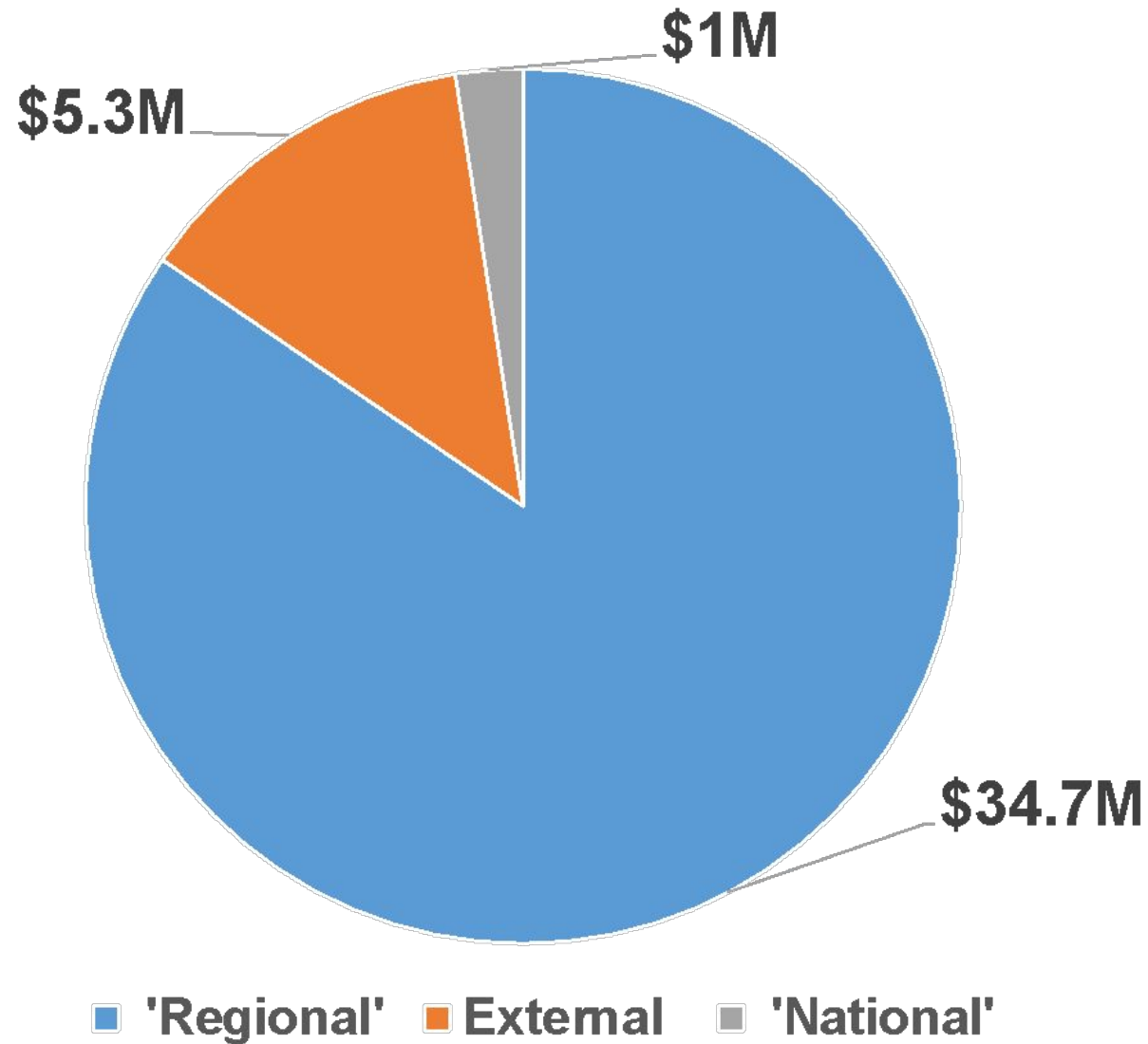
IOOS Fill The Gaps Funding 2017- 2020



Totals over the fiscal years: 2017= \$970,000 2018= \$5,486,000 2019= \$7,443,545 2020 = ~\$8.5M

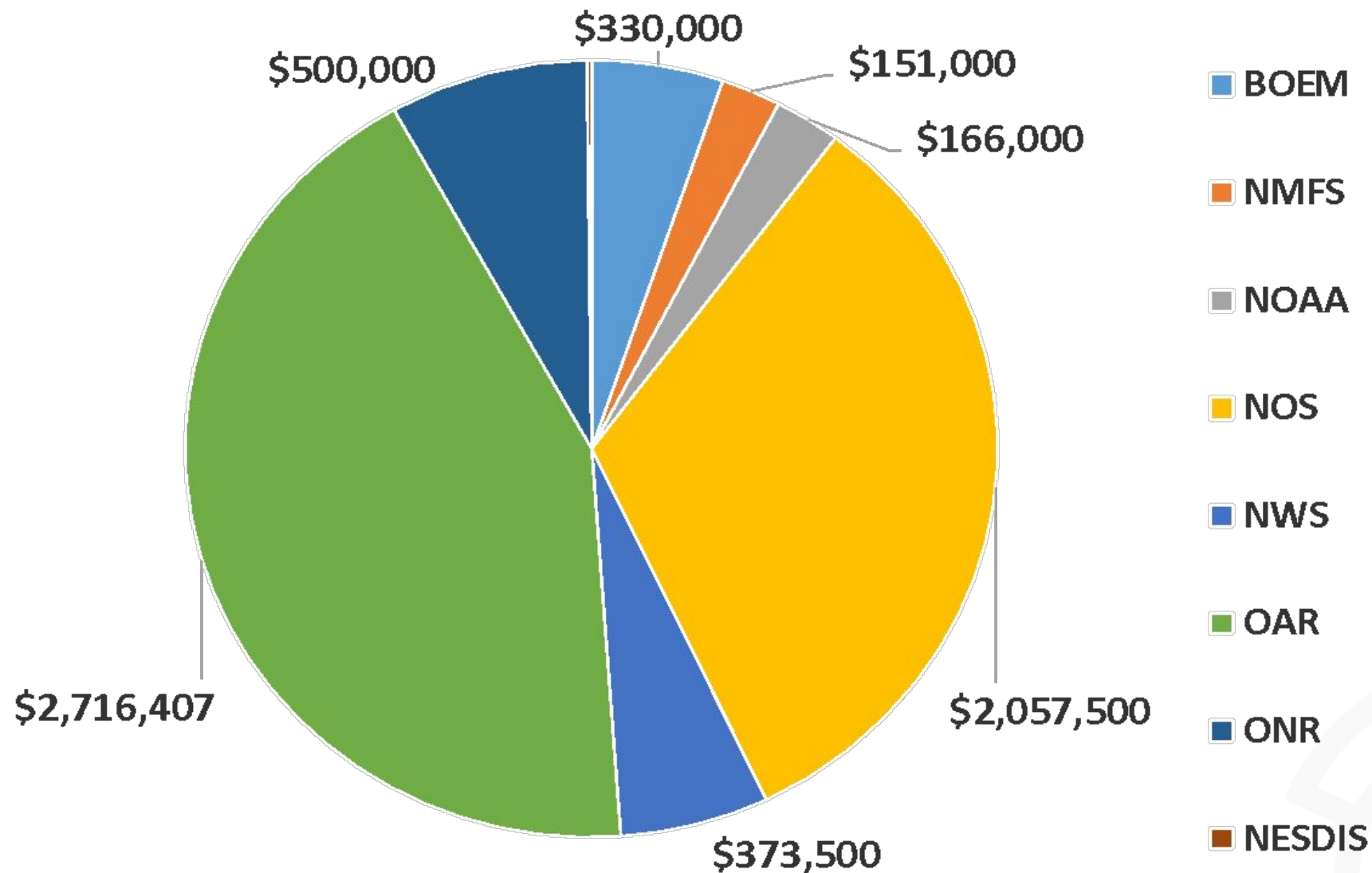
Back Up Slides

FY 19 Sources of \$s to IOOS Regions = \$41M



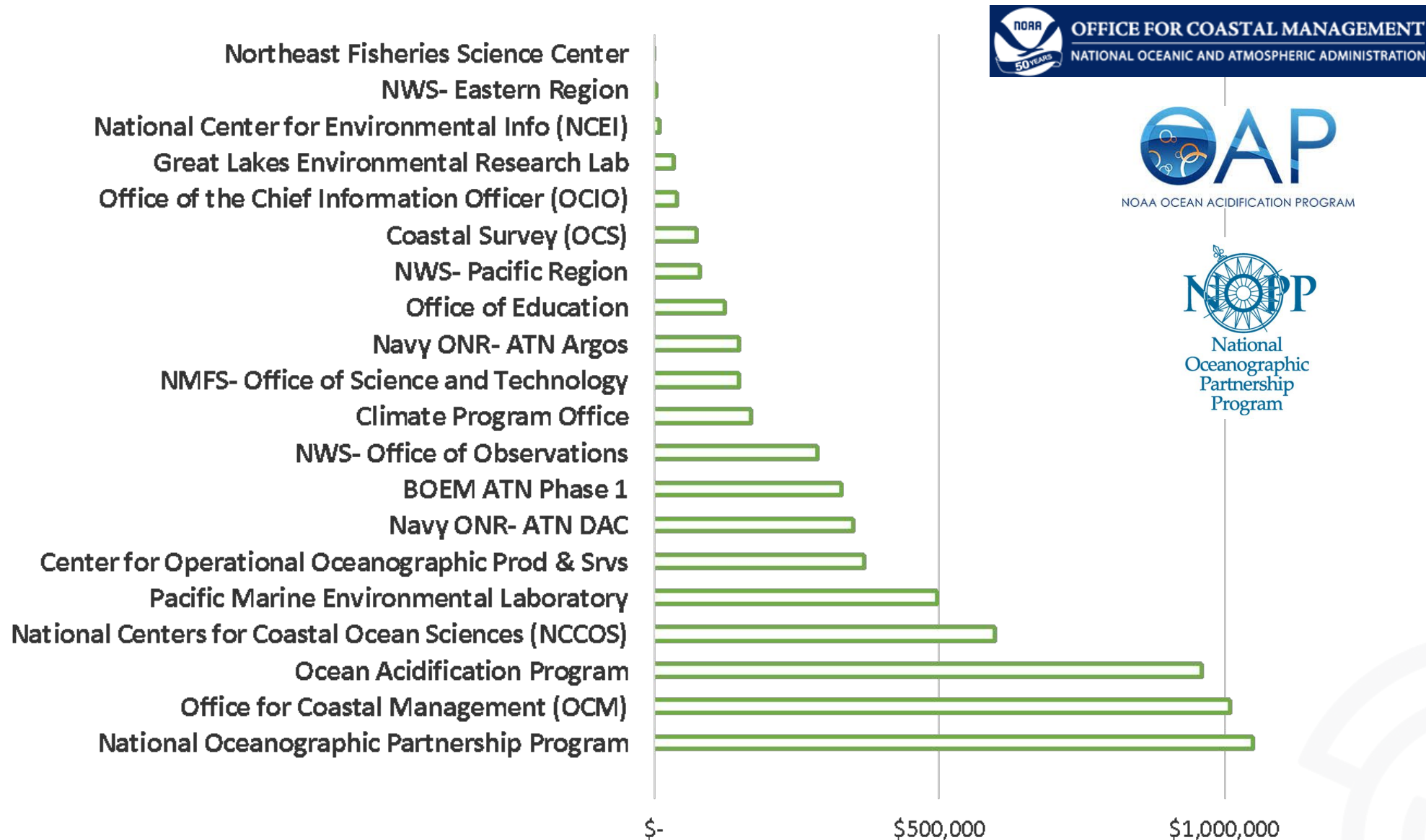
Only includes funds processed from IOOS Office within NOS/NOAA

FY 19 Line Office/Agency \$s into IOOS = \$6.3M



"IOOS" = US IOOS Office - NOS/NOAA

FY 19 \$6.3M Transferred In by Program



Weather Research and Forecasting Innovation Act 2017 & 2019

PUBLIC LAW 115–25—APR. 18, 2017
Title III / Sec. 301(a)(2)

INTEGRATION OF OCEAN AND COASTAL DATA FROM THE INTEGRATED OCEAN OBSERVING SYSTEM.—In National Weather Service Regions where the Director of the National Weather Service determines that ocean and coastal data would improve forecasts, the Director, in consultation with the Assistant Administrator for Oceanic and Atmospheric Research and the Assistant Administrator of the National Ocean Service, shall—

(A) integrate additional coastal and ocean observations, and other data and research, from the Integrated Ocean Observing System (IOOS) into regional weather forecasts **to improve weather forecasts and forecasting decision support systems**; and

(B) support the development of real-time data sharing products and forecast products in collaboration with the regional associations of such system, including contributions from the private sector, academia, and research institutions to **ensure timely and accurate use of ocean and coastal data in regional forecasts**.

(C) support increasing use of autonomous, mobile surface, sub-surface, and submarine vehicle ocean and fresh water sensor systems and the infrastructure necessary to **share and analyze these data in real-time and feed them into predictive early warning systems**. (C was added with NIDIS reauth. Act S2200 in 115th Cong.)

Also see ICOOS Act of 2009

https://cdn.ioos.noaa.gov/media/2017/12/Public_LawNo111-11HR-146_-PassedSigned_033009.pdf

Senate ICOOS Act Reauthorization Bill S. 914

<https://www.congress.gov/116/bills/s914/BILLS-116s914is.pdf>

NOAA S&T Focus Areas - Draft Strategies

Four Draft Strategies - intended to expand NOAA's application of these focus areas:

- Unmanned Systems
- Artificial Intelligence
- 'Omics
- Cloud Services

Will guide transformational advances in the quality and efficiency of NOAA's science, products, and services.



<https://nrc.noaa.gov/NOAA-Science-Technology-Focus-Areas>

Observations Ingested into GTS

Jan, Feb, and March for 2018-2020

