Integrated Ocean Observing System Update

Kathleen Bailey | NOAA / U.S. IOOS

Observational Data Workshop

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Authorizing legislation

Integrated Coastal Ocean Observing System (ICOOS) Act (P.L. No 111-11, March 2009)

Global Component

- US contribution to Global Ocean Observing System (GOOS)
- 1 of 15 Regional Alliances of GOOS

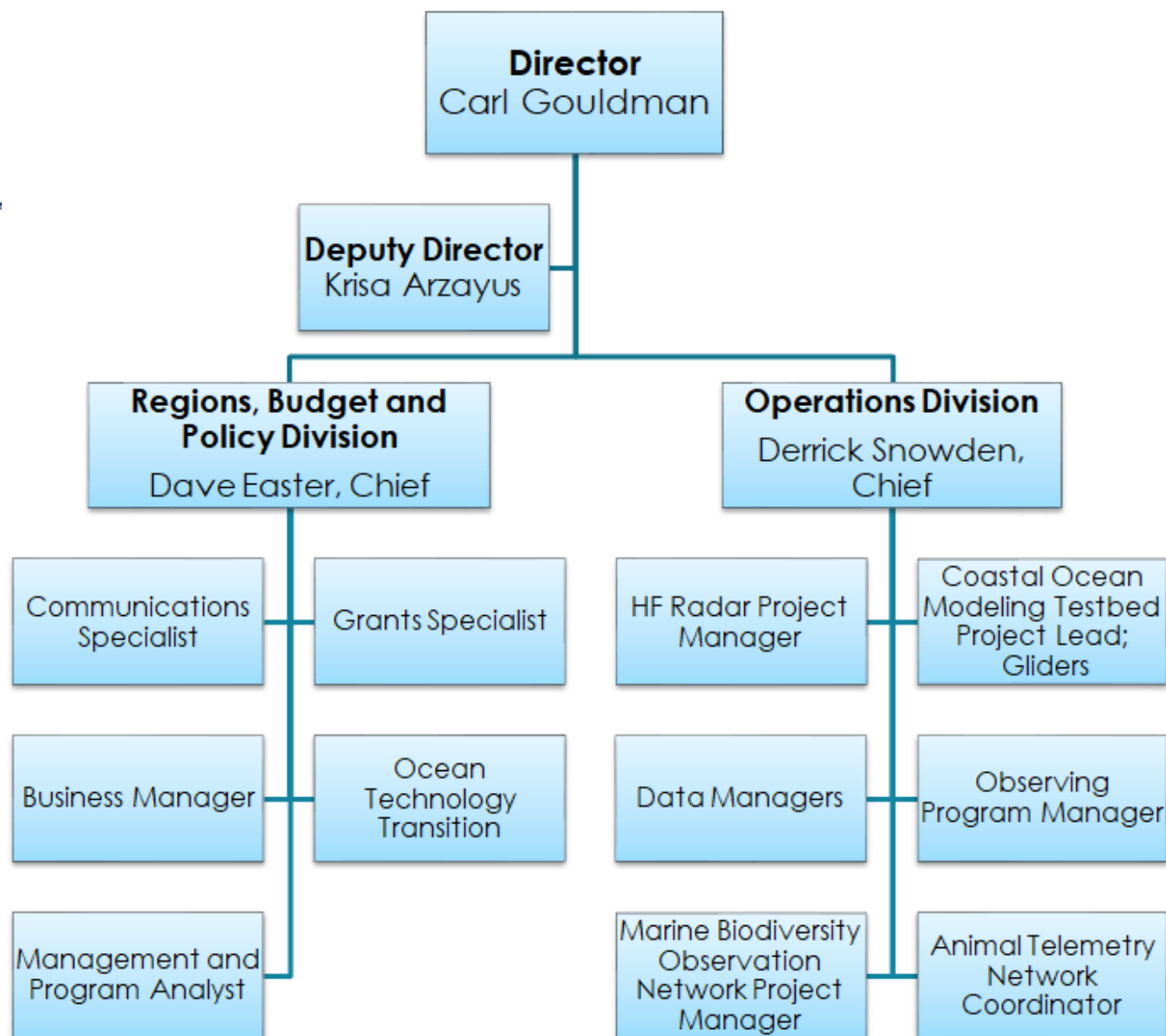**National Component**

- 17 Federal agencies

Regional Component

- 11 Regional Associations (RA)
  - Stakeholder driven
  - Academia, state/local/tribal government, private industry

NOAA/NOS IOOS Office

- Kathleen Bailey (POC) – kathleen.bailey@noaa.gov
  - o Observing systems and data products

- Micah Wengren – micah.wengren@noaa.gov
  - o Data Management System architect; IOOS Data Catalog

- Tiffany Vance
  - o Real-time data portal; cloud computing

- Becky Baltes
  - o Gliders, Coastal Ocean Modeling Testbed

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IOOS Regional Observing Assets

Coastal Moorings

Shore Stations

HF Radar

Sub-surface gliders

Wave Buoys

Animal Telemetry, Marine Biodiversity

Photo credits: Rutgers/CODAR/Dan Costa/PacIOOS/K. Millikan

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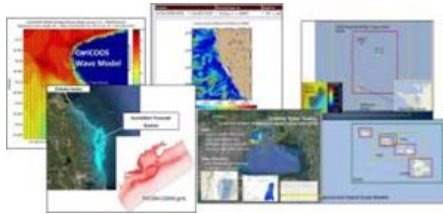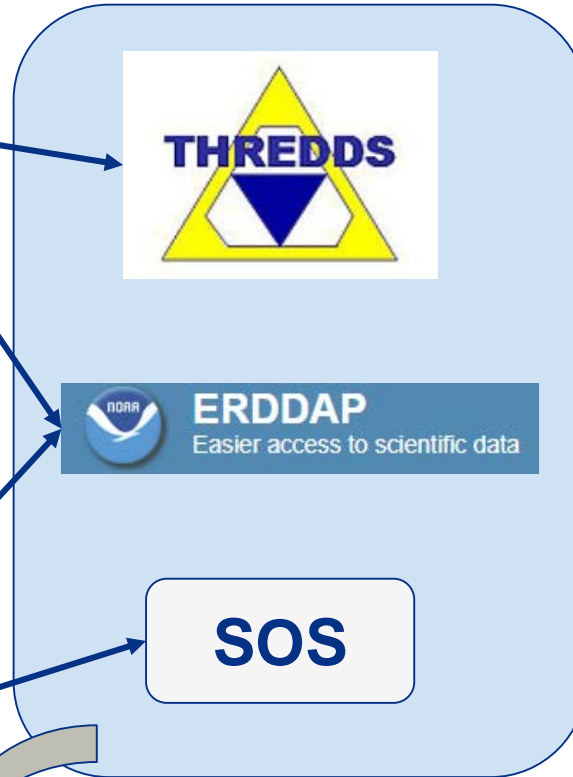
IOOS RA Data Management

Ocean information...

- Reformatted into common file formats (netCDF-CF + ACDD)
- QA/QC

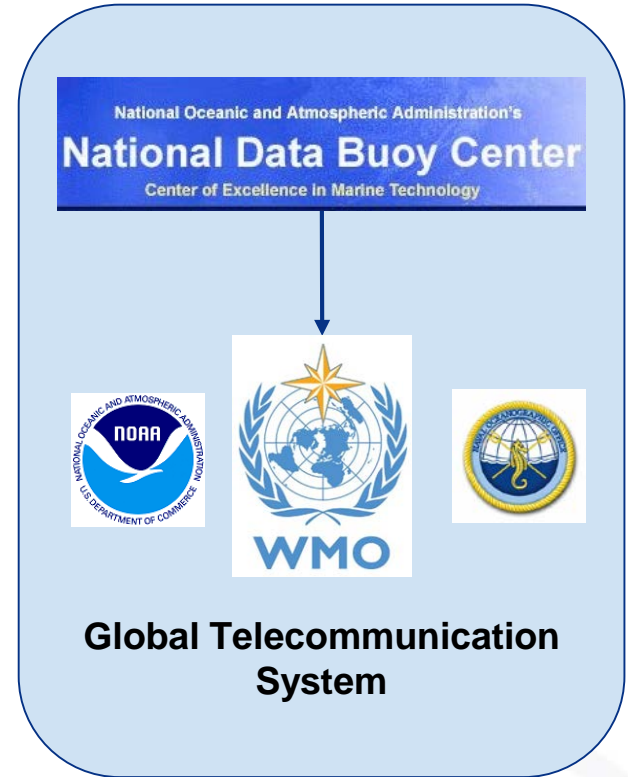**...is published via web service APIs:**

THREDDS

ERDDAP Easier access to scientific data

SOS

Real-time data are disseminated via the GTS:

National Oceanic and Atmospheric Administration's
National Data Buoy Center
Center of Excellence in Marine Technology

WMO

Global Telecommunication System

Observations are archived at NCEI:

NCEI
NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION


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Regional Associations are NOAA Certified

- 10 of the 11 RAs are NOAA Certified, to date
- Organizational and data management practices meet NOAA standards
  - Requirements defined in the ICOOS Act
- Civil liability coverage through NOAA
- The RAs are an extension of NOAA.

HF Radar Network – Surface Currents

- ~140 Radars owned & operated by non-Federal partners
- Funding for O&M, data management via NOAA/IOOS
- New HFR: Gulf of Mexico (mouth of Mississippi R), Washington, Great Lakes, Florida, and Alaska
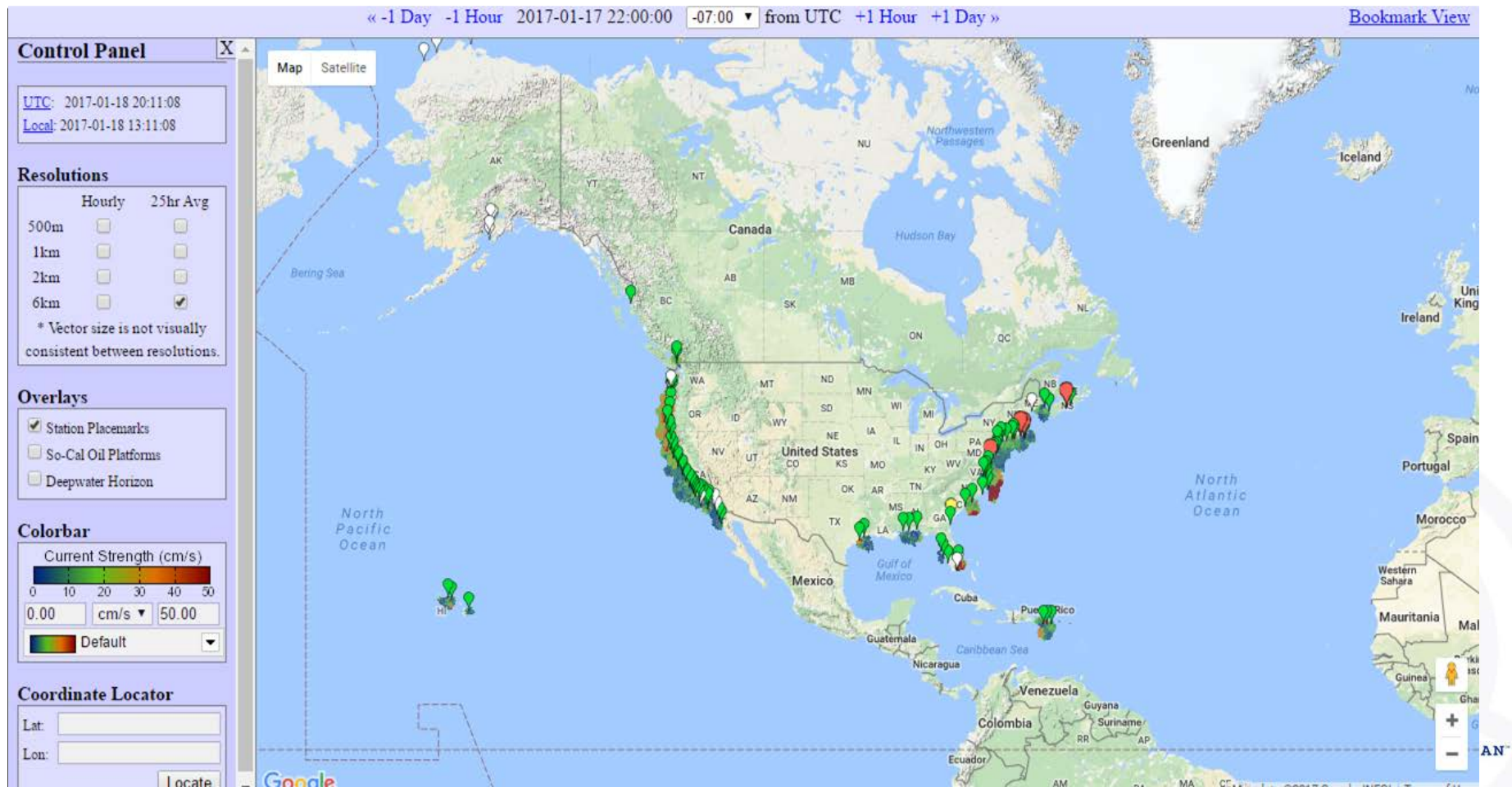
HFR Network Data Infrastructure

- HFR data submitted to the National HFR Data Assembly Center (HFRNet)
- QC processing
- Archiving (NCEI)
- Real-time distribution to non-federal and federal partners (GTS)
- Data served by operational node at NDBC and research/developmental node at Scripps. Failover server at Rutgers.
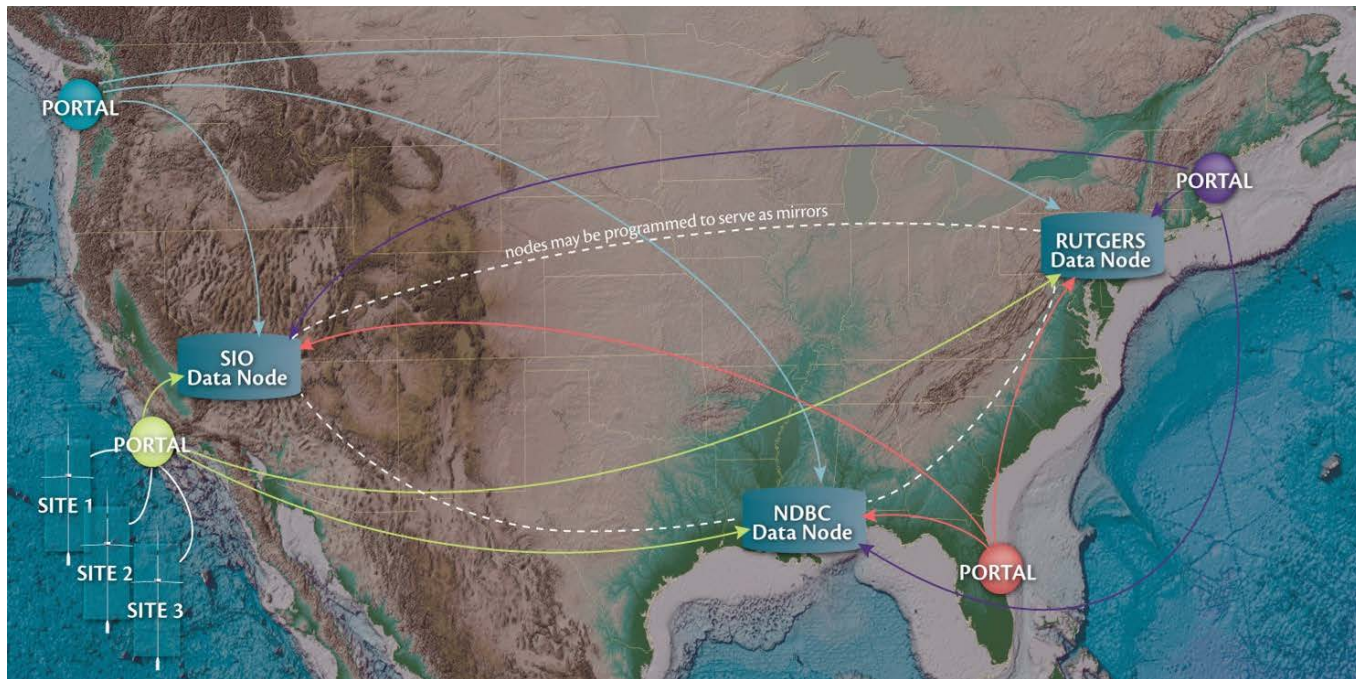
IOOS Glider Network

- RA glider data submitted to the National Glider Data Assembly Center (NGDAC)

- National standards to ease exchange of data from regional glider operators

- \> 50,000 glider days since 2008 by IOOS RA operators
  - Navy (funded by Shell) glider data will be delivered to the DAC this year (8 gliders in GoM)

- QC, archival at NCEI

- Real-time distribution to non-federal and federal partners (GTS)

QARTOD
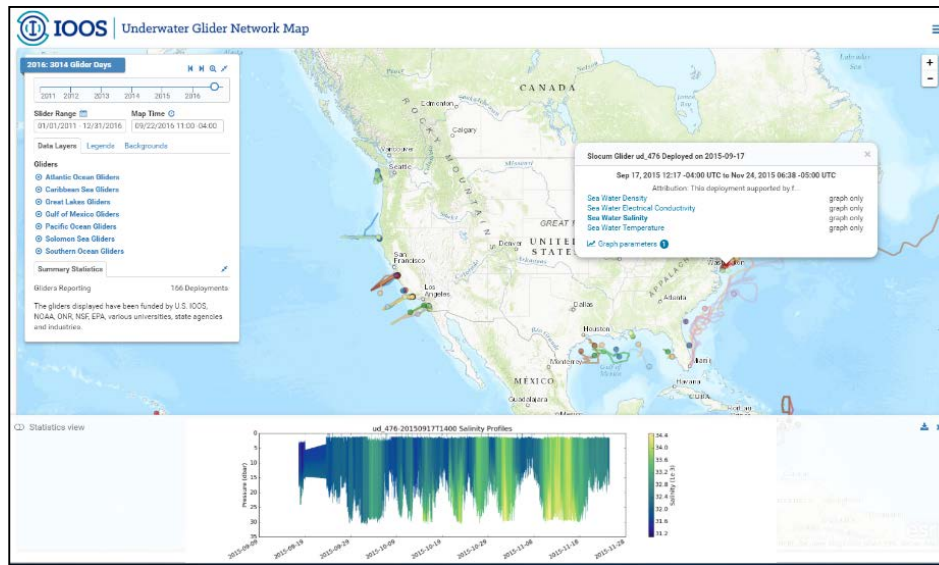
Real-Time Quality Control of:
- Passive Acoustics
- Phytoplankton
- HF Radar
- Dissolved Nutrients
- Winds
- Water Level
- In-Situ Surface Waves
- Ocean Optics
- In-Situ Temperature and Salinity
- Dissolved Oxygen
- In-Situ Currents
- Oceanographic Data QC Flags

White paper: "Implementation of Real-time Quality Control of Underway Oceanographic and Meteorological Data from NOAA vessels."
- Coordination with OMAO

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Ocean Data Challenges

- QC - implementing QARTOD
    - Climatology tests, how to display flags, managing PIs vs RAs QC
- Open data access via web vs closed access on GTS
    - Ensuring RA modelers have access to same datasets as NCEP modelers
    - Need to build open access mirror of the GTS through services
    - Data availability in NCEP data tanks; tracking availability
    - Marketing these data to the modelers
- Metadata – presentation and consistency of attribution; ensuring providers use the same vocabularies and definitions (room for interpretation).

- Occurring now
- Highlights:
  - QARTOD implementation/improving collaboration across the RAs, PIs
  - Getting RA model output into AWIPS
  - ERDDAP is the future, being widely used internationally. General support for adopting this across the IOOS RAs.
  - System monitoring/metrics - need to track usage, system health
    - Who is using IOOS data and how?
    - But need to ask the right questions, and consider context (e.g. weather events driving users to the data)

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Questions?

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