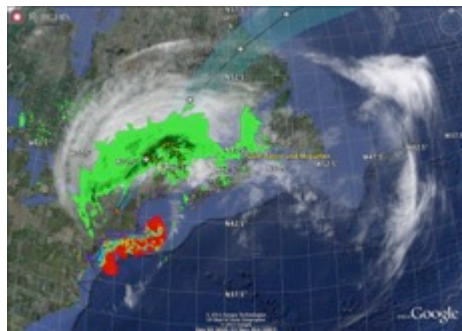
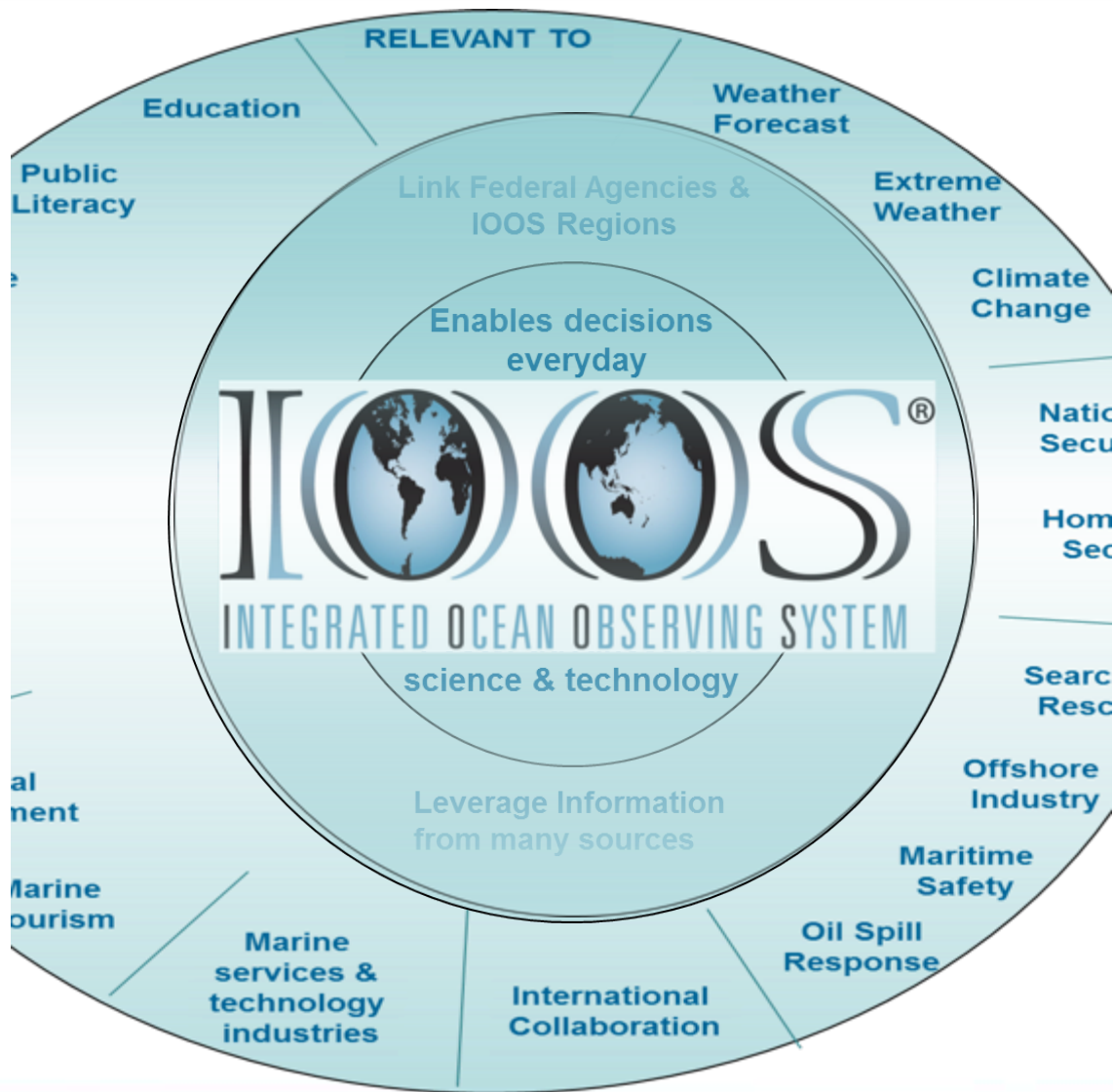


# U.S. Integrated Ocean Observing System (IOOS®)



Zdenka Willis, Director, U.S. IOOS Program  
March 24, 2014

# IOOS Works!



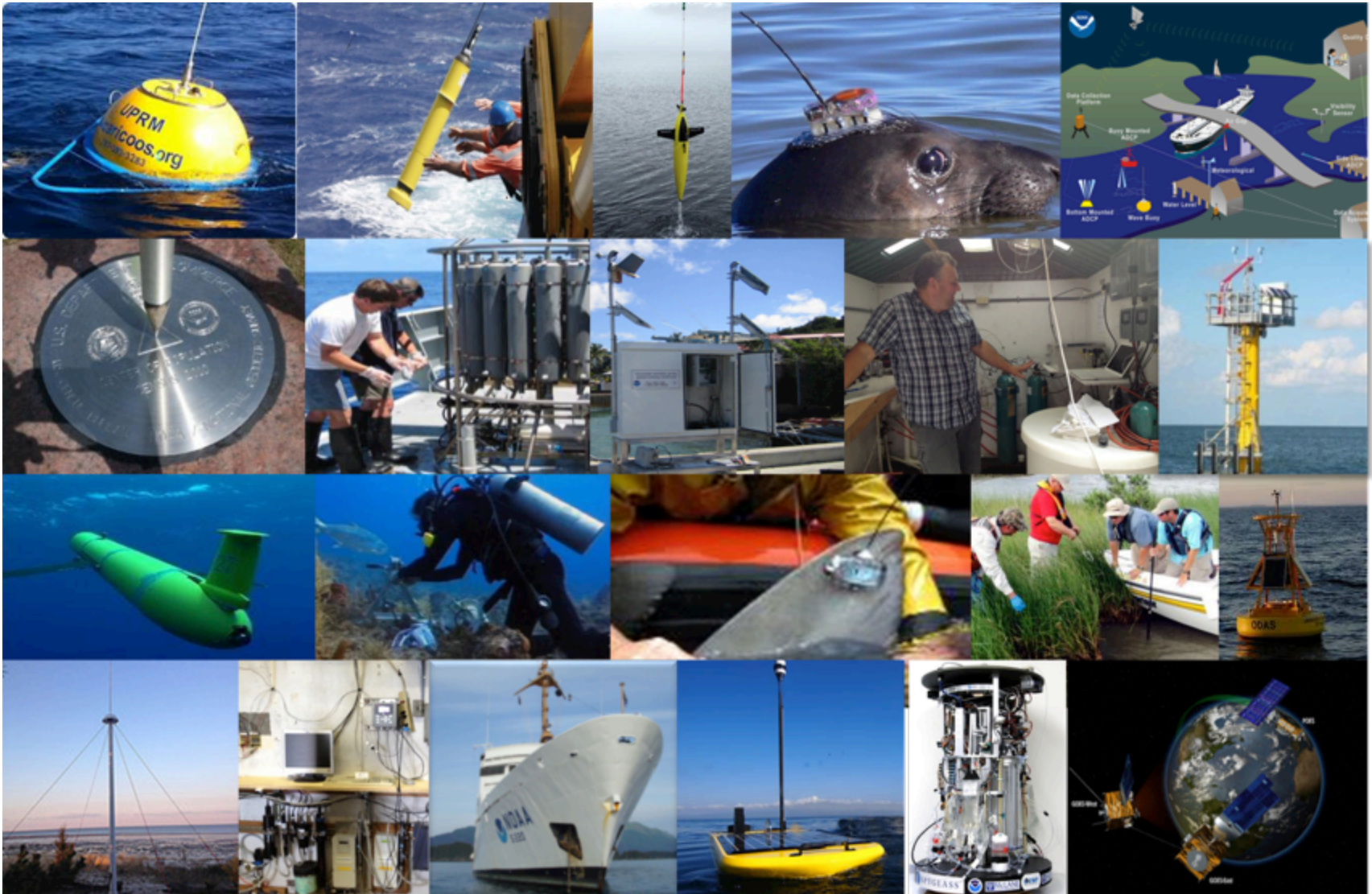
## Operated By: Federal Component:



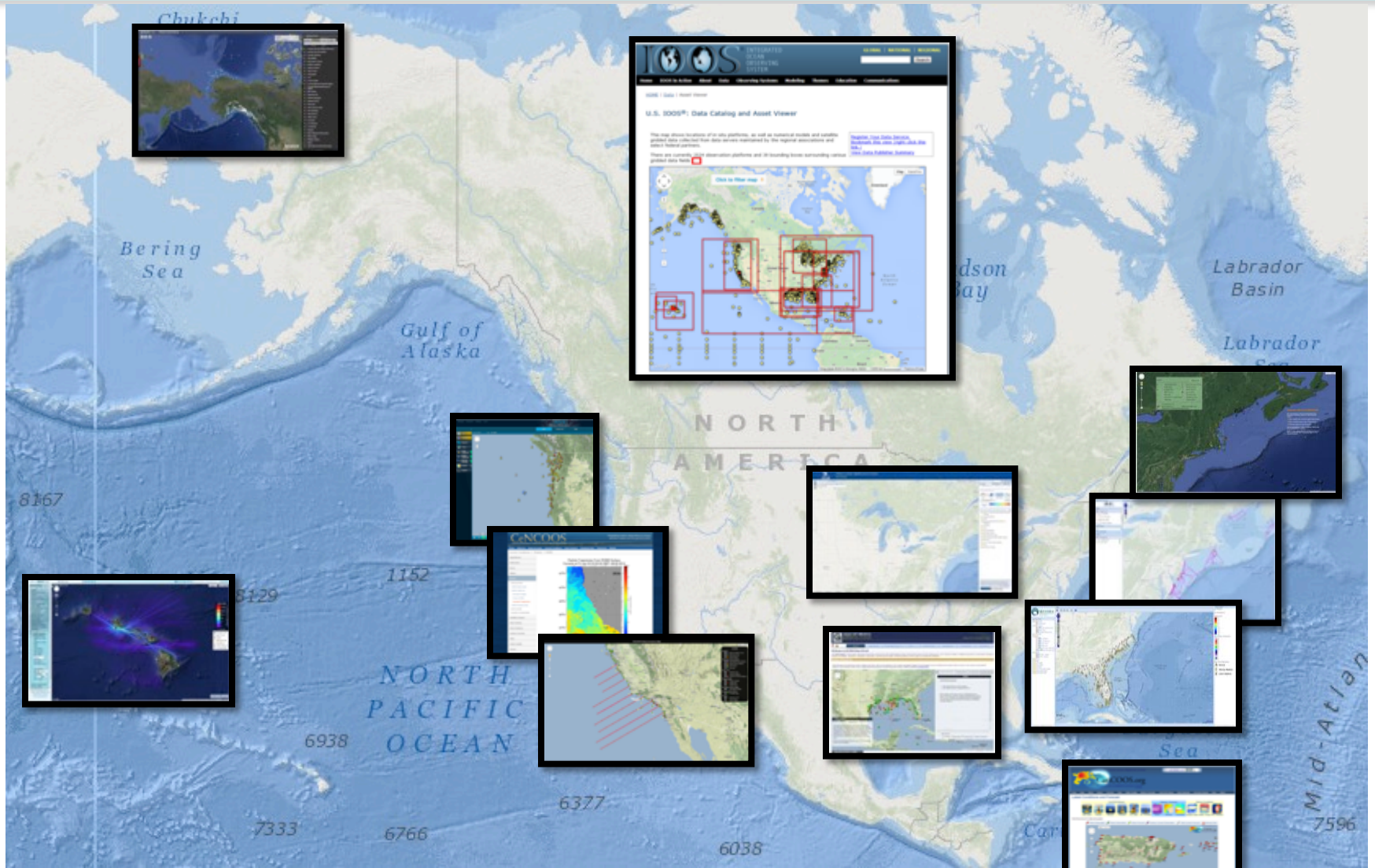
## Regional Component:



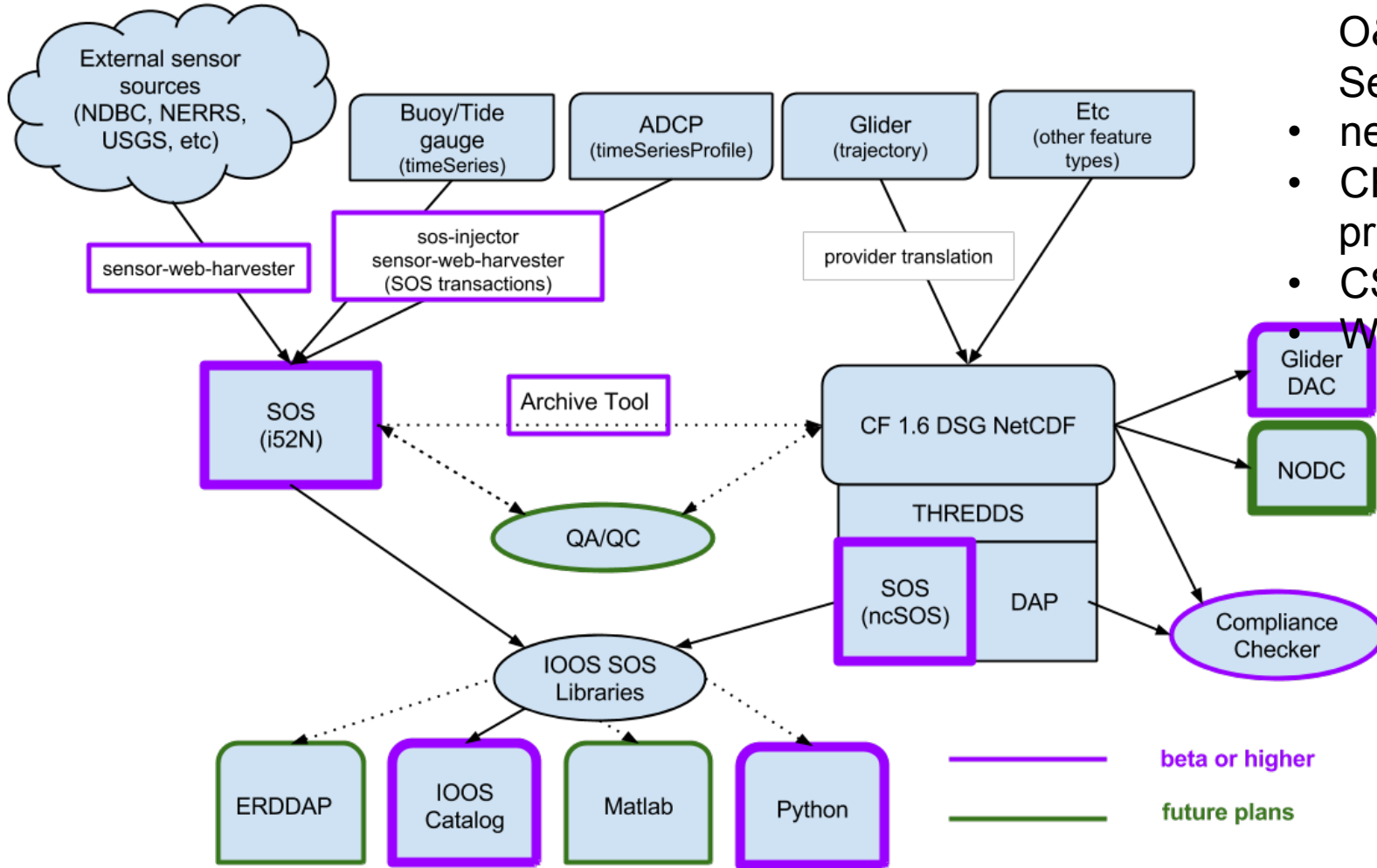
# Eyes on!



# Exposing Data!



# Select OGC technologies in use by IOOS

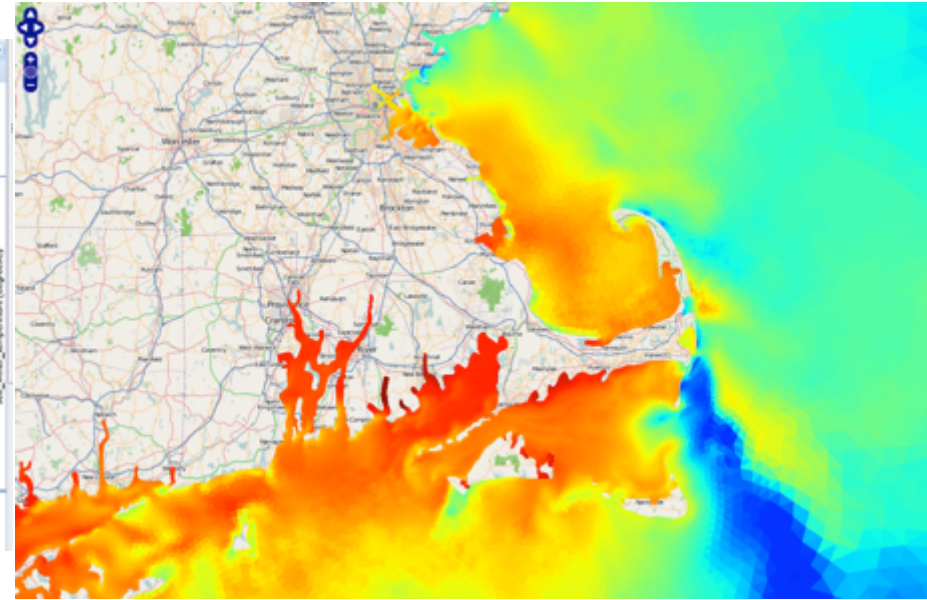
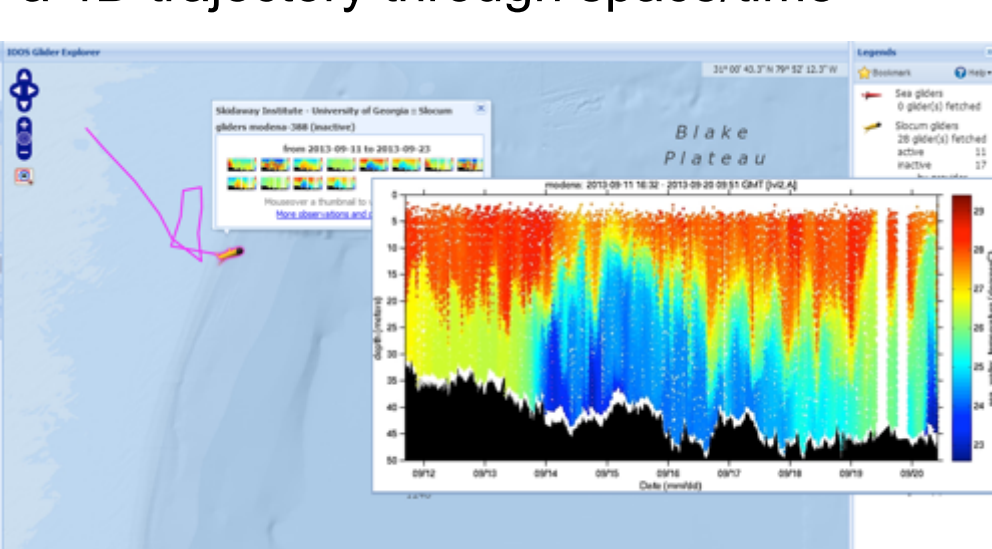


- SOS/SWE/ O&M/ SensorML 1.0
- netCDF
- CF-netCDF primer
- CS/W
- WMS

# Use Case: Model Data comparison as a web service

Ocean profiling glider measuring 5000 individual profiles over 3 months along a 4D trajectory through space/time

33 Tb 4D model output on a triangular mesh grid

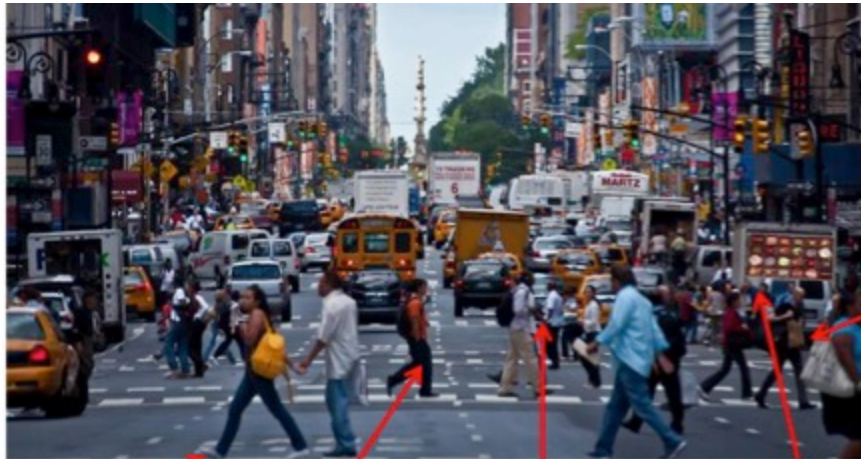


**Plot the time series (or time-depth) glider sampled temperature on the same axis as the model simulation via web services.**

# Without



# We wouldn't have



24% of wine

99% of shoes

97% of clothes

Almost all personal electronics

100% of

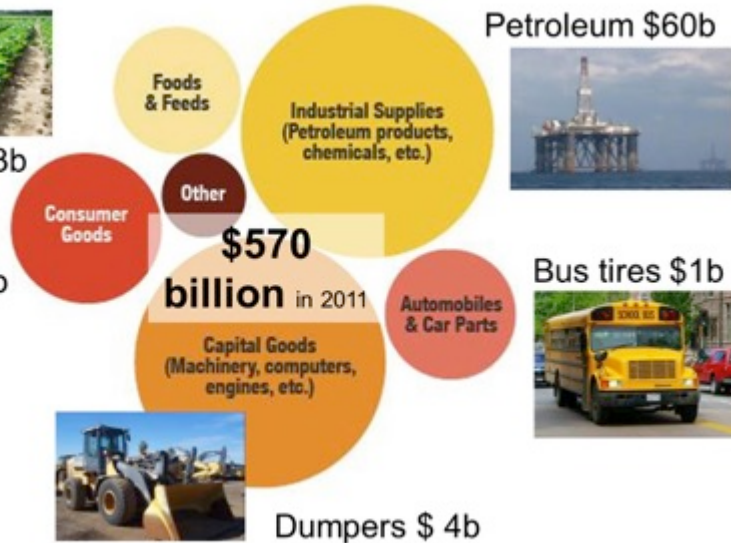


# We wouldn't sell



Soybeans \$23b

Skin care & perfumes \$2b



Petroleum \$60b



Bus tires \$1b



Dumpers \$ 4b



# We couldn't move

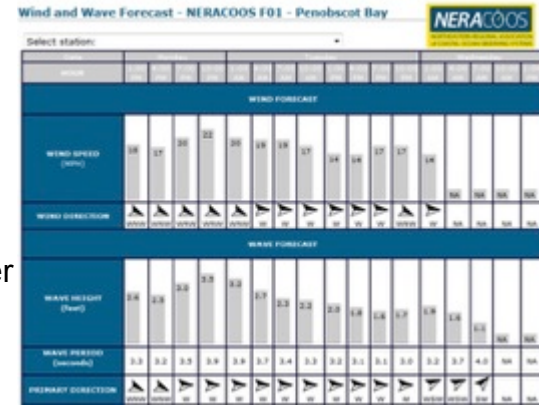


## Without: Ocean Observations and Forecasts

### IOOS – Regional Funded by NOAA

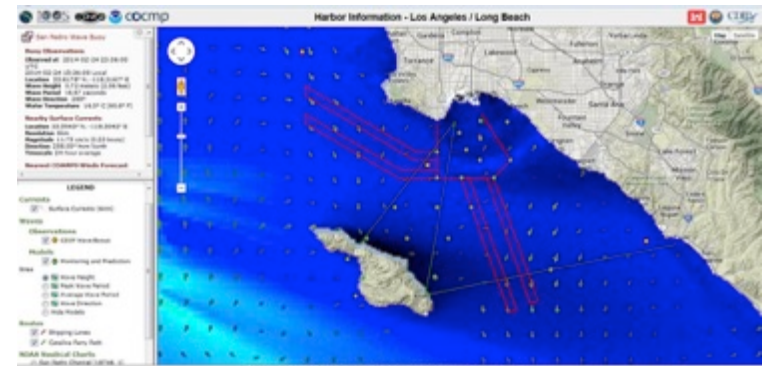
"The coast of Maine supports multi-million dollar fishing and tourism industries so when making decisions about bringing a 700 foot tanker full of fuel into port we need the best ocean and weather information possible, which is why we depend on IOOS buoy observations and forecasts to ensure safety and efficiency of these critical operations."

Captain David Gelinas, Penobscot River and Bay Pilot



### NOAA's PORTS®

- 22 States
- Purchases equipment from 43 manufactures





# Oysters on the Half Shell



+



+



Little wild set of oysters on US northwest  
2008 Whiskey Creek Hatchery lost 100% of oyster larvae  
Ocean Acidification determined the cause

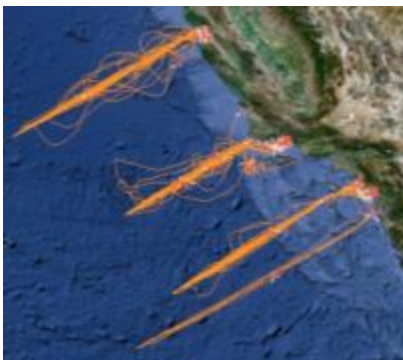
Real-time Observing System established with industry partnership

By 2010 productivity was back to 70%

Industry full participant in observing advancements and uses  
industry assets to help maintain the system

# Glider Missions

Climate/Ecosystem/Fisheries Management/Water Quality



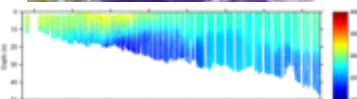
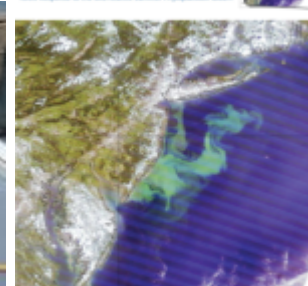
CalCOFI



The SoCal Niño Index



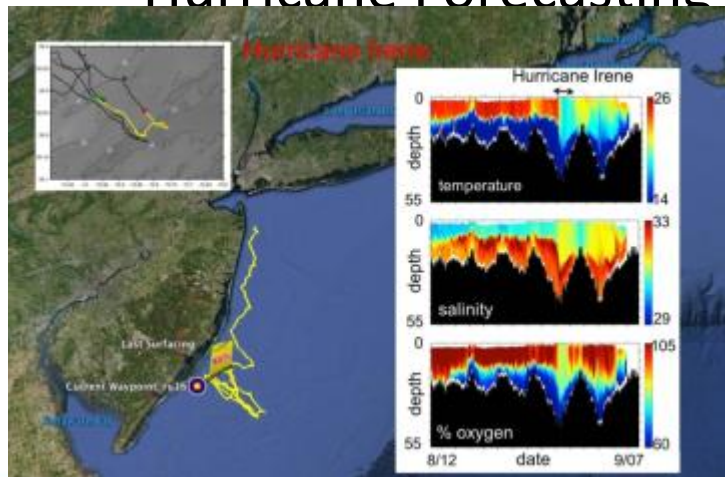
Fish Tracking



HAB



## Hurricane Forecasting



## Response to Oil Spill

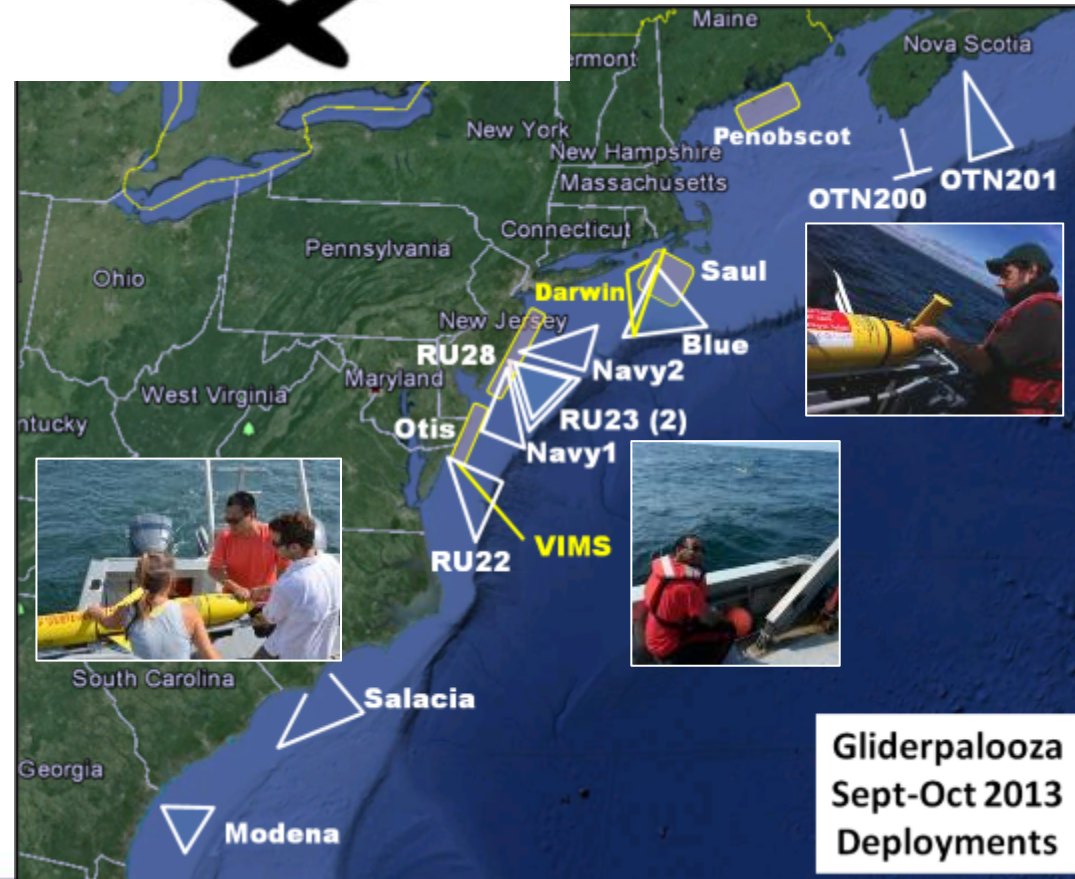


Deep Water Horizon



Alaska

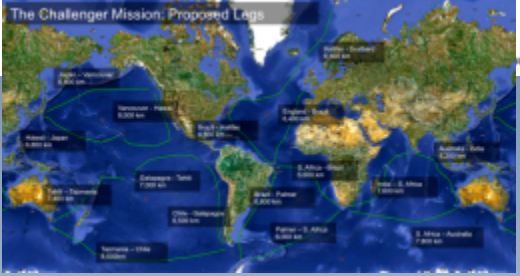
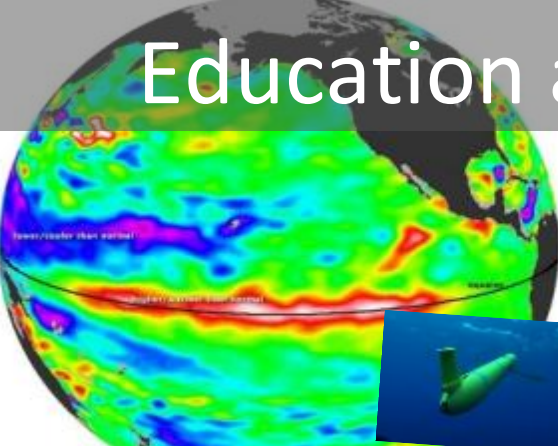
# US IOOS - Gliderpalooza



- 15 gliders
- 15 Partners:
  - Ocean Tracking Network, Canada;
  - 9 U.S. Universities
  - Teledyne Webb Research Corporation
  - State Agency
  - National: IOOS, NOAA, US Navy and NASA
- >25,000 profiles to date
  - NOAA's Buoy Center sent data to the Global Telecommunications Systems (GTS)

# Education and Outreach – Ocean Literacy

Graduate and Undergraduate students are integrated – good for IOOS now and good for industry for future employees



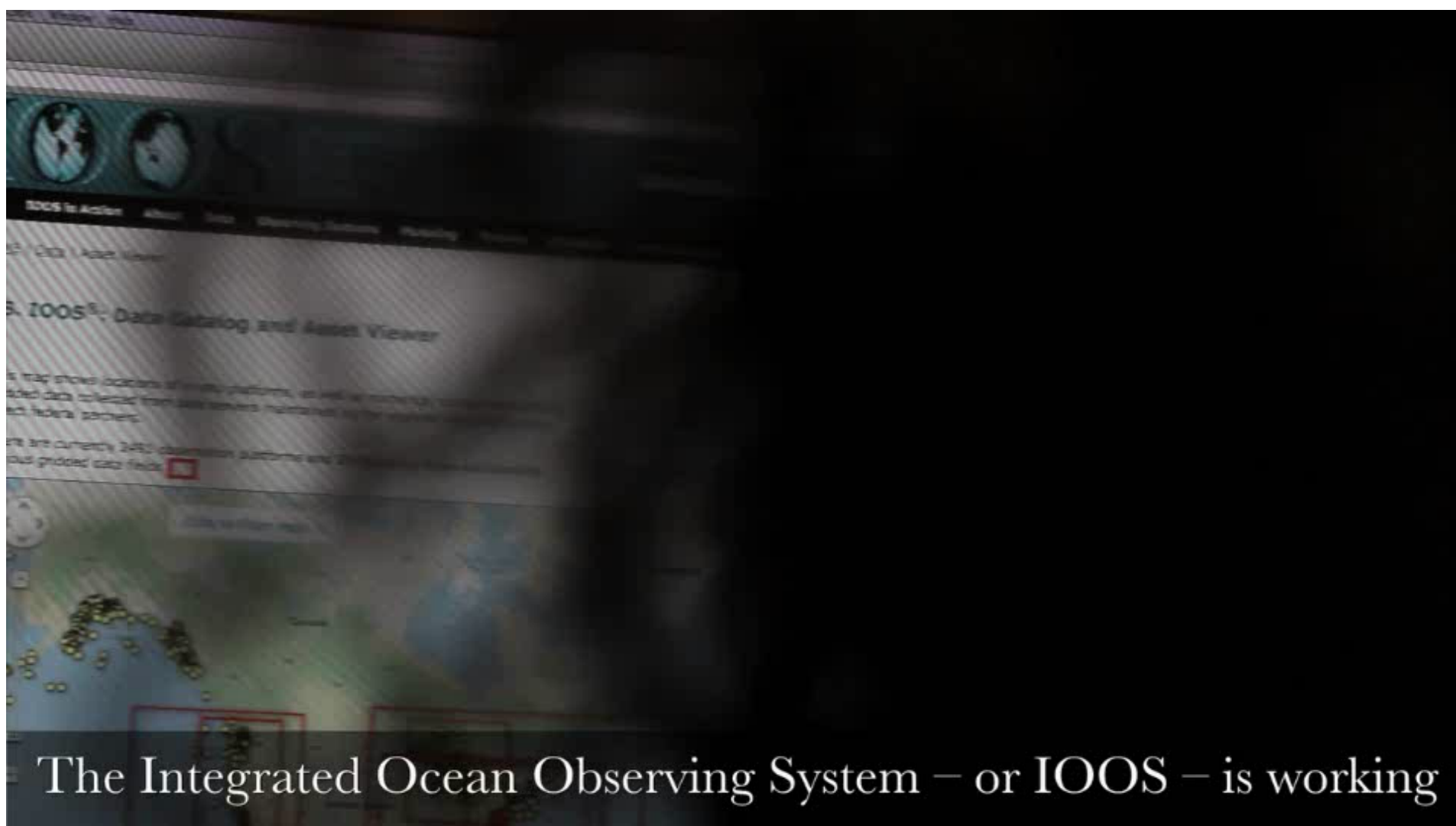
Teaching the next generation – Puerto Rico Weather Camp 2012



**Basic Observational Buoy (BOB)**  
Educational project for universities and high schools to address STEM disciplines

## U.S. Integrated Ocean Observing System (IOOS)

# Enabling Decisions



# Thank You

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**Please Visit the U.S. IOOS Website**

**[ioos.noaa.gov](http://ioos.noaa.gov)**

