Outreach Using IOOS Regional Coastal Ocean Observing System Data

Abbey Wakely[1,2] and Jackie Ball[3]

[1] IOOS Association, [2] Southeast Coastal Ocean Observing Regional Association (SECOORA), [3] Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)

Access the Information You Need: Data from IOOS Regional Systems

Around the U.S. coastal ocean and in the Great Lakes, there are IOOS regional ocean observing systems that deploy and sustain a diverse array of observing platforms and sensors. Each of the regional ocean observing systems maintain a free, unique data portal to visualize and provide access to near real-time and historic data and information. Data portals integrate real-time observations from buoys, ships, and shore stations with satellite data, weather forecasts, and more.

Bringing data into the classroom, using laptops or smartphones, is easy with the IOOS regional data portals. It's a one stop shop for downloading data, visualizing trends, and exploring ocean phenomena. Use IOOS regional data to address topics and real time events.

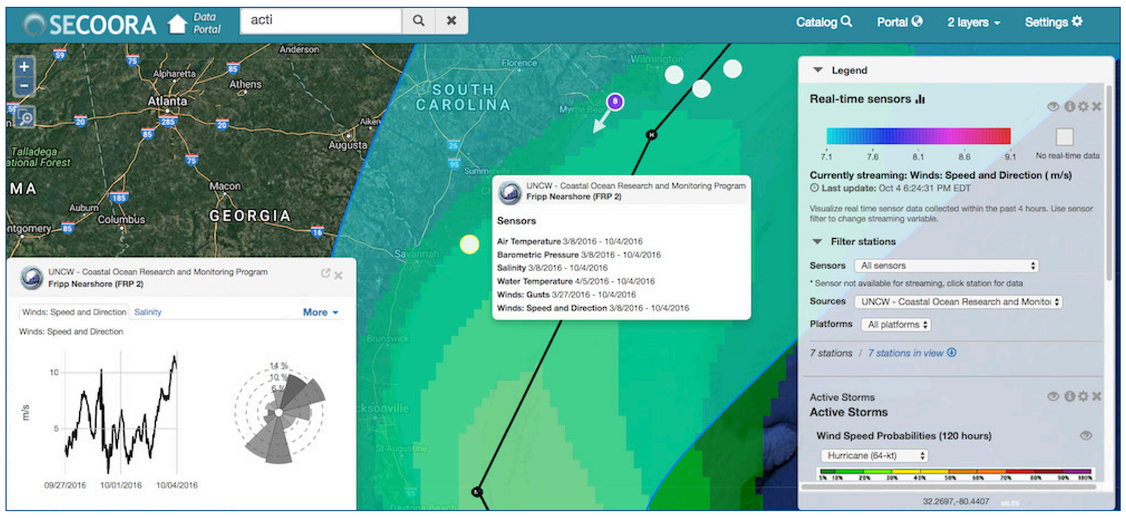
What is U.S. IOOS?

The NOAA-led U.S. Integrated Ocean Observing System (IOOS) is essentially the National Weather Service for the coastal oceans and Great Lakes, providing the ability to "see" what is happening both above and below the ocean surface; and making that information readily available. IOOS includes 11 regional associations, which focus on local stakeholder needs, and 17 Federal agencies.

IOOS Data in Action

Whether a teacher, student, or interested individual we have something for you:

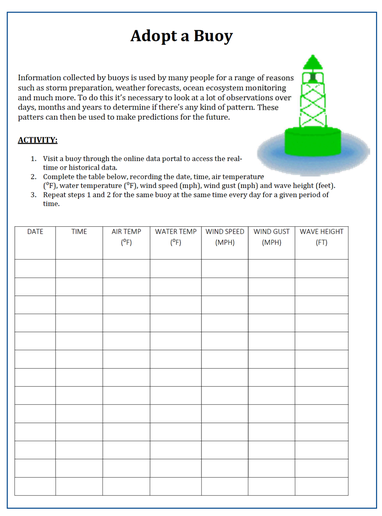
- Integrated data
- Real-time data
- Historical data
- Lesson plans
- Outreach activities



Data portals integrate real-time observations with historical records, revealing climate variability and long-term trends. Using real-time observations teachers can link their curricula and lesson plans to events in the news such as hurricanes and floods. Individuals can also download data to graph changes over time. Pictured is NOAA's National Hurricane Center's predicted track for Hurricane Matthew, which is displayed on the SECOORA Data Portal. Real time wind speed data from the Fripp Nearshore 2 Buoy off South Carolina is displayed.

Many IOOS regions host outreach events and provide presentations to citizens and students. Regional Association staff are happy to work with educators to adapt coastal ocean observations to their needs. Pictured are students at the 2015 Charleston Science Technology Engineering and Math Festival; visitors navigating the SECOORA data portal to view the real-time marine meteorological conditions off South Carolina.

Image Credit: SECOORA



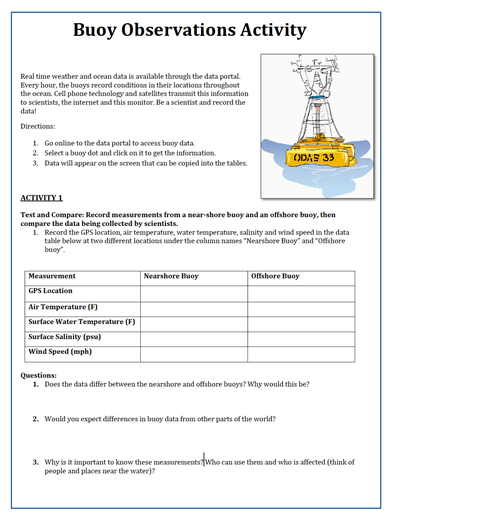
Adopt a Buoy

Information collected by buoys is used by many people for a range of reasons such as storm preparation, weather forecasts, ocean ecosystem monitoring and much more. To do this it's necessary to look at a lot of observations over days, months and years to determine if there's any kind of pattern. These patters can then be used to make predictions for the future.

ACTIVITY:

1. Visit a buoy through the online data portal to access the real-time or historical data.
2. Complete the table below, recording the date, time, air temperature (°F), water temperature (°F), wind speed (mph), wind gust (mph) and wave height (feet).
3. Repeat steps 1 and 2 for the same buoy at the same time every day for a given period of time.

DATE	TIME	AIR TEMP (°F)	WATER TEMP (°F)	WIND SPEED (MPH)	WIND GUST (MPH)	WAVE HEIGHT (FT)



Buoy Observations Activity

Real time weather and ocean data is available through the data portal. Every hour, the buoys record conditions in their locations throughout the ocean. Cell phone technology and satellites transmit this information to scientists, the internet and this monitor. Be a scientist and record the data!

Directions:

1. Go online to the data portal to access buoy data.
2. Select a buoy dot and click on it to get the information.
3. Data will appear on the screen that can be copied into the tables.

ACTIVITY 1

Test and Compare: Record measurements from a near-shore buoy and an offshore buoy, then compare the data being collected by scientists.

1. Record the GPS location, air temperature, water temperature, salinity and wind speed in the data table below at two different locations under the column names "Nearshore Buoy" and "Offshore buoy".

Measurement	Nearshore Buoy	Offshore Buoy
GPS Location		
Air Temperature (F)		
Surface Water Temperature (F)		
Surface Salinity (psu)		
Wind Speed (mph)		

Questions:

1. Does the data differ between the nearshore and offshore buoys? Why would this be?
2. Would you expect differences in buoy data from other parts of the world?
3. Why is it important to know these measurements? Who can use them and who is affected (think of people and places near the water)?

Buoy Observations Activity

Students can navigate the data portal, exploring offshore and nearshore buoy data. Record the information on a worksheet and have them answer questions such as "does the data differ between the nearshore and offshore buoys?" and; "why is it important to know these measurements?" Students can also explore historical data and explore what causes changes in buoy data.

Image Credit: Brett Bolton (UNCW) and NERACOOS

We are standing by to help you incorporate IOOS data in classrooms and outreach events. Please contact Abbey Wakely, SECOORA, at abbey@secoora.org or by phone, 863 838 4699 to learn more.

AOOS Alaska Ocean Observing System · CARICOOS · GCOOS Gulf of Mexico Coastal Ocean Observing System · PacIOOS Pacific Islands Ocean Observing System · NERACOOS · Southern California Coastal Ocean Observing System · IOOS Integrated Ocean Observing System · great lakes observing system · CeNCOOS · MARACOOS Ocean Information for a Changing World · NANOOS · SECOORA Southeast Coastal Ocean Observing Regional Association · IOOS Association