

Goals and Objectives for Ocean Observing Systems Workshop August 2011

The goals of this workshop are:

- For teachers to understand how ocean observing data is collected, how it is used in scientific research, and how ocean and coastal data can be used as part of classroom lessons
- For teachers to use information, activities, and data resources related to ocean observing systems with their students
- For teachers to understand how marine science topics and research can be incorporated to teach concepts and skills in many disciplines of science
- For teachers to learn how research questions are posed and pursued using the scientific method, and to be able to guide students to make observations, form hypotheses and collect data to answer scientific questions

The learning objectives of this workshop are:

1. Participants will be able to access and navigate the following web sites to find coastal and ocean data, and will be familiar with the types and formats of data on each site.

Southern California Coastal Ocean Observing System <http://sccoos.org/>

NOAA National Data Buoy Center <http://www.ndbc.noaa.gov/>

NASA Jet Propulsion Laboratory Eyes on the Earth <http://climate.nasa.gov/Eyes/>

NOAA Data in the Classroom <http://apps.dataintheclassroom.org/water-quality/FormGenerator.aspx>

(Participants will also be introduced to many additional sites and resources)

2. Participants will be able to download, format, and graph data from at least two web sites.

3. Participants will be able to describe 5 research projects that use ocean or coastal data, and describe the instruments used to collect the data.

4. Participants will be familiar with the Principles of Ocean Literacy

5. Participants will outline at least one lesson idea per day for teaching their own students, based on course material.

6. Participants will outline at least one plan for engaging students in a research project that includes students collecting or using marine or coastal data.

Daily learning objectives:

Monday August 1:

Be able to describe 3 ways data can be displayed

Be able to describe a research question and two instruments used by Dr. Burt Jones

Be able to identify and explain the Principles of Ocean Literacy

Be able to use the OOS module from COSEE CT to introduce students to ocean observing systems

Be able to explain why oceans and coastal systems should be studied

Be familiar with the resources on the flash drive distributed to workshop participants

Tuesday August 2:

Be able to describe the work done at Ocean Institute and 3 instruments deployed on the R/V Sea Explorer

Be able to identify and explain four factors that could influence the measurements being made on the R/V Sea Explorer (for example, how precipitation could affect salinity)

Be able to access and use the SCCOOS web site to find and retrieve data

Be familiar with the SCCOOS lesson plans and teacher resources

Be able to explain why ROVs are useful and describe their personal experience using an ROV

Wednesday August 3:

Be able to describe how regional aquariums can provide opportunities to better understand organisms' ranges and how they change.

Be able to describe the work of Cabrillo Marine Aquarium and one research project there

Be able to explain two projects of the Southern California Marine Institute.

Be able to explain the purpose behind remote sensors from NOAA Buoys and local water quality monitoring

Be able to describe where to access NOAA buoy data

Be able to describe factors that influence general and coastal ocean circulation

Be familiar with activities to measure alongshore currents and water quality

Know how to deploy and download a Hobo data logger and be able to interpret a graph of Hobo data

Be able to use the Heal the Bay web site to access Southern California beach water quality data

Thursday August 4

Be able to describe Aquarius and two other NASA JPL satellites that collect data relevant to oceans or coastal systems

Be able to use the “Eyes on the Earth” web site to access and view data and images

Be able to explain the work of NASA’s Jet Propulsion Lab

Be able to import ocean or coastal data into Excel and make a graph

Friday August 5

Be able to describe how specific physical water quality parameters might relate to phytoplankton abundance or bloom events

Be able to describe how data buoys are used to collect data and why long term data sets are valuable

Be able to describe how phytoplankton are monitored and why some phytoplankton species can be dangerous

Present a one minute description of a data web site and how it would be useful for your students