30 minutes – **Student Learning Outcomes**

- WHAT IS A STUDENT LEARNING OUTCOME? http://serc.carleton.edu/NAGTWorkshops/oceanography/slo.html
- How many of us DON'T know what these are?
- How many of us already have these defined in a course outline?
- What outcomes do we want for our students? (Review online resources + example below.)
- How can we use them during this and future educational/teaching workshops? USE THEM to assess the activities, data sets, and web resources we find to determine whether we should use them or not in our courses. Are their outcomes aligned with ours? It does matter.
  - Examples of good activities that we'd LOVE to use with our students AND that meet our desired outcomes…
  - Examples of good activities that we'd LOVE to use with our students BUT DON'T meet our desired outcomes…
- What outcomes do we personnaly want from this workshop?
- Desired outcomes the presenters hope for you from this workshop: After completing this workshop, participants will be able to:
  - Easily access real-time data – know where to look and how to find it -- multiple sources
  - Gather examples of student-led inquiry activities related to real-time data that we can use right now with our students.
  - Feel like we are part of a growing 2YC oceanography faculty community with colleagues, collaboration opportunities, and support
  - Synergistically go beyond the norm –try something new and work with others

Examples of Student Learning Outcomes for a lecture, lab, and field class
(*Note: inclusion as an example doesn't imply that these are good models, just a model.)

Oceanography (Lecture) SLOs	**Oceanography (Lab) SLOs**	**San Francisco Coastal Geology (Field Class) SLOs**
A. Apply the plate tectonics theory to the origin, evolution, and features of ocean margins and basins and ocean crust. B. Analyze and interpret the origin, distribution, and evolution of ocean sediment. C. Interpret the origin of, impacts on, and consequences of the seawater's chemistry and physical properties on biological and physical systems. D. Describe and interpret the causes, effects, and interrelationship of atmospheric processes and the oceans, including ocean circulation, terrestrial weather patterns and climate change. E. Evaluate the relative contributions of coastal processes, such as swell, tides, and currents, to explain origins and consequences of coastal landforms and processes. F. Evaluate society's impacts on the ocean and the impacts of marine hazards and resources on society. G. Examine and evaluate the origin and foundations of life in the oceans, including photosynthesis, nutrient cycling, and traits adapted specifically to marine organisms. H. Classify and evaluate the dynamics of marine planktonic, pelagic and benthic ecosystems, including the physical, chemical, and geological interrelationships.	A. Use basic field and lab equipment to gather data on the geological, chemical, biological, and physical characteristics of San Francisco Bay and its surrounding coastlines and analyze and interpret results. B. Use nautical charts, seafloor bathymetry, satellite imagery, Google Earth, and other mapping software and images to identify and interpret origins of ocean floor features and predict their effects on surrounding ocean dynamics. C. Analyze and interpret the long-term and short-term geologic history and evolution of local coastal environments including human impacts. D. Evaluate biological, chemical, geological, and physical interactions and consequences of coastal processes such as currents, tides, swell, river input, and human development. E. Classify and interpret biological dynamics and interactions within a variety of marine ecosystems. F. Access and use existing data sets on local and global ocean phenomena and apply these to answer questions about ocean dynamics and impacts from and to society.	A. Observe and describe the major topographical features found along the San Francisco Pacific coastline. B. Analyze the physical forces and processes that have shaped these topographical features. C. Collect and analyze sand samples and use them to develop working hypotheses about local sand formation and migration. D. Evaluate geologic hazards associated with the coastline, and identify and evaluate what has been done to minimize their damage. E. Predict on a map places where common geologic hazards are likely to occur. F. Review and evaluate the supporting data for the geological history of the San Francisco Pacific coastline. G. Find, collect, identify,and classify fossils and rocks and use them to synthesize the geologic history of the area.