

Predicting Surface Temperature Change ^{Stirtz}

Introduction: There are a variety of Ocean Sensors that are currently monitoring our oceans. This lab activity is designed to allow you to become more familiar with some of the tools you have as an oceanographer to predict sea temperature changes. This lab will allow you to make your own hypothesis and test it using some of these tools for monitoring our ocean with an Ocean Observing System (OOS).

Define (summarize) the following vocabulary:

(hint: <http://www.sccoos.org/cc-what-is.html>)

Surface Current Mapping

Meteorological Stations

Automated Shore Stations

Manual Shore Stations

Moorings

Boat Based Sampling

Gliders

Models

Go beyond the link given above for the following [hint: try a Google search]:

Diurnal

Pacific Standard Time (PST)

Converting Fahrenheit to Celsius

COSEE

SST

Objective:

- 1) What OOS tools do you think will help you predict the change in the sea temperature best?
- 2) Predict the change in the sea surface temperature at the beaches of Salt Creek in the next 24 hrs. Using the Internet do whatever background research needed to make your hypothesis.

Hypothesis: Make your testable quantitative hypothesis for “objective 2”

(24hr period: Date _____ Start time: _____ PST - Finish time _____ PST)

Warmest Temp. _____°C Time _____ PST (note: °F = ((°C – 32) × 5/9)

Coolest Temp. _____°C Time _____ PST

Change in Temp. _____°C

Materials:   Computer with Internet access, 2) Pencil, 3) Color Printer, 4) USB Flash Drive

Procedure: (NOTE: right click and “save picture as” for any chart you use to help you with your hypothesis. Save to your USB flash drive and later print in your Data section of this Lab Activity with a short summary of what the data shows below each picture of the graph)

1. Go to <http://www.sccoos.org/interactive-map/>
2. Select Orange County
3. Visit the different links and note/record any information that will help you with your hypothesis
4. Keep in mind how any OOS data may effect ocean temperature change at the surface in 24hrs and note/record any related information
(one of many possible factors: <http://www.sccoos.org/data/hfrnet/?r=4>)
5. at <http://www.sccoos.org/data/hfrnet/?r=4> change the hours and observe changes in surface currents
6. Try finding Satellite Imagery (note:SST means Sea Surface Temperature)
http://www.sccoos.org/data/modis/modis_regions.php?region=orangeCo&date=20080824213000
7. Find the closest Automated Shore Stations and Manual Shore Stations to Salt Creek that monitor SST
8. Find historical data to back up your findings from last year at this time and compare the difference in SST
9. Check to see if any other OOS tools will help you test your hypothesis and record any data that applies in your Data section

Data: (be sure to print the graphs and data you found with a summary explaining what each graph shows and the quantitative data that applies to your hypothesis.

Analysis:

- 1) Which of the OOS tools was the best and why?
- 2) What does the data you collected show you about your hypothesis?
- 3) What is your level of accuracy based upon the data you found? (be quantitative: +/- how much in °C)

Conclusion: Refer back to your hypothesis and describe quantitatively if the data supports your hypothesis or not. What are the actual measured highest and lowest temperatures in the 24 hr period you were working in? What are the possible explanations for the changes in this 24hr SST. What is the level of accuracy for each type of sensor you used? What are the possible sources of error? What questions remain? What would a good oceanographer do next in this area of investigation given the information available online (be specific in describing a following OOS study)?

