

Temperature Range Investigation

A. Scientist: _____
Date: _____
Time: _____ (include AM or PM)

B. INQUIRY QUESTION

How does the ocean affect the air temperature on land?



C. TESTABLE QUESTION

Which will have the largest temperature range, the water at the ocean's surface, the air at an ocean buoy, or the air at an inland location?

D. PREDICTION

I predict that...

E. MATERIALS

- Computer with Internet access
- Pencil
- (3) Colored pencils

F. PROCEDURE

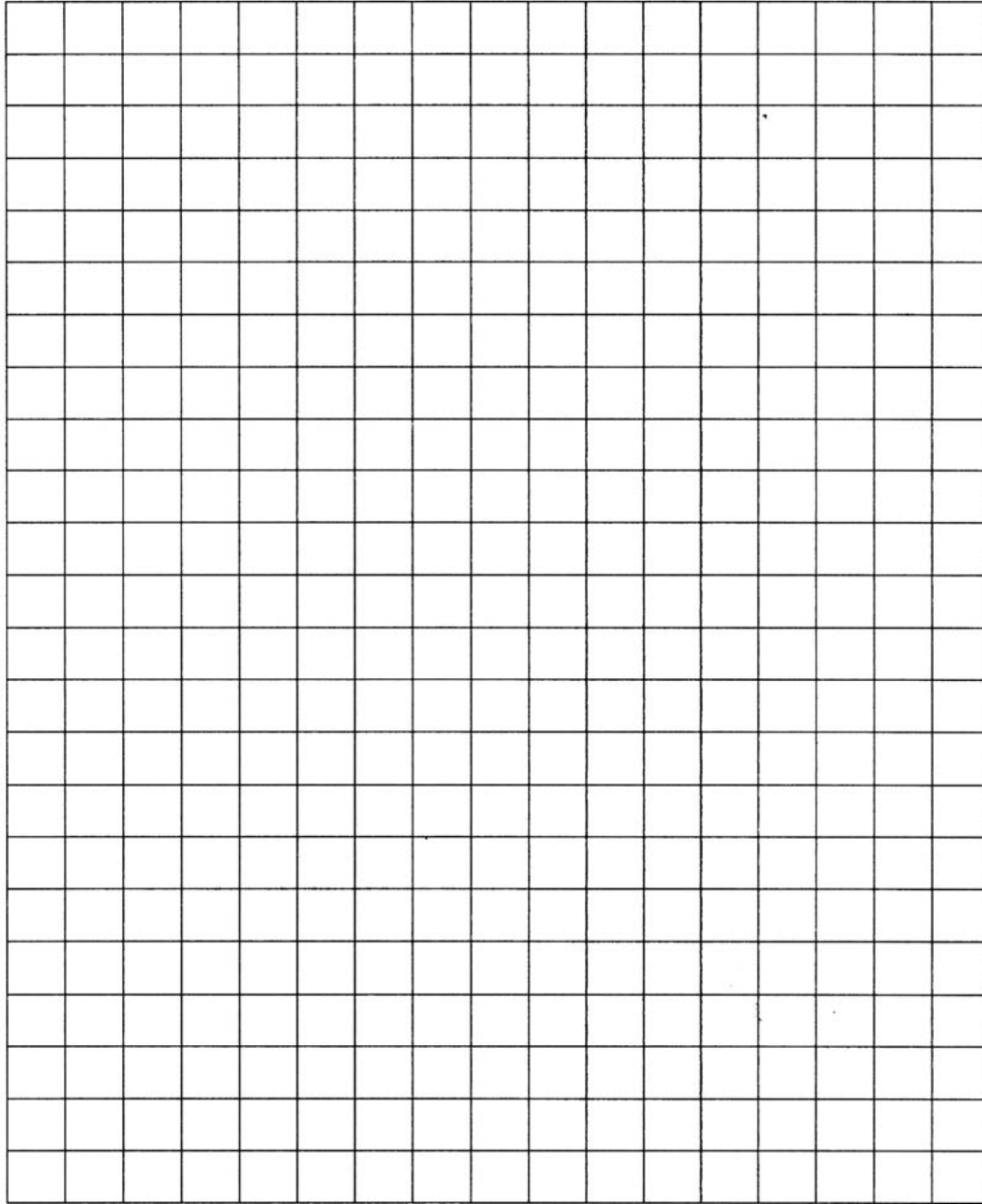
1. Go to <http://www.sccoos.org/outreach/dana/mets>
2. Scroll down the page and look below the map at the "Now Showing" section. Click on the arrow next to the channel to view the menu of options. Select "Air & Sea Temperature" from the menu.
3. Select a land station (circle) by clicking on it.
4. Click on "Download Recent Temperature Data" to view the last 24 hours of air temperature data from this inland station.
5. Click on the "Printer Friendly" icon that appears above the data table to print the data. After you have picked up the page from the printer, label the page as a land station. Close the data window by clicking on the "close" icon in the upper corner of the window.

6. Close the window for the land station by clicking on the “x” in the upper right hand corner of the white box.
7. Select a buoy station (triangle) by clicking on it.
8. Click on “Download Recent Temperature Data” to view the last 24 hours of data from this station. This data will include air temperature at the buoy and sea surface temperature (SST). Sea surface temperature is the temperature of the water at the surface of the sea.
9. Click on the “Printer Friendly” icon that appears above the data table to print the data. After you have picked up the page from the printer, label the page as a buoy station. Close the data window by clicking on the “close” icon in the upper corner of the window.
10. Close the window for the buoy station by clicking on the “x” in the upper right hand corner of the white box.
11. Convert the **Pacific local time** from military time to standard time, and write the converted time next to the military time on both of the data tables that you printed. Use the *Military Time Converted to Standard Time* table on the following page to help you make the conversion.
12. Create line graphs that show the temperature in **Celsius** for the water temperature (SST), the buoy air temperature, and the inland air temperature for each hour over the last 24 hours. Make sure that you start with the earliest date and time from the data table. Use a different colored pencil for each location, and complete the key beneath the graph.
13. Complete the data table by entering the highest and lowest temperature for each location. Calculate and record the temperature range for each location in the data chart. Calculate the temperature range by using this equation.

Highest Temperature ____°C – Lowest Temperature ____°C = Temperature Range ____°C

G. DATA AND OBSERVATIONS

Graph: Temperature vs. Time



Temperature
°C

Graph Key
* Water Temperature
* Buoy Air Temperature
* Inland Air Temperature

Time

Location	Highest Temperature	Lowest Temperature	Temperature Range
Water Temperature (SST)			
Buoy Air Temperature			
Inland Air Temperature			

Calculate the temperature range by using this equation.

Highest Temperature ____°C – Lowest Temperature ____°C = Temperature Range ____°C

Military Time Converted to Standard Time			
Military Time	Standard Time	Military Time	Standard Time
01:00	1 AM	13:00	1 PM
02:00	2 AM	14:00	2 PM
03:00	3 AM	15:00	3 PM
04:00	4 AM	16:00	4 PM
05:00	5 AM	17:00	5 PM
06:00	6 AM	18:00	6 PM
07:00	7 AM	19:00	7 PM
08:00	8 AM	20:00	8 PM
09:00	9 AM	21:00	9 PM
10:00	10 AM	22:00	10 PM
11:00	11 AM	23:00	11 PM
12:00	12 PM (Noon)	00:00	12 AM (Midnight)

H. CONCLUSION

Today I learned that...

Be sure to include the answers to the following questions.

1. Which location had the smallest temperature range?

2. Which location had the largest temperature range?

3. How did the air temperature range at the buoy compare with the air temperature range at the inland location?

4. Think about where you live. Is the location in a land-locked area or is there a large body of water nearby? Would you expect greater or smaller differences between the high and low temperatures of the day? Why?

I. LINE OF LEARNING

J. NEW VOCABULARY

List any new vocabulary words you learned from doing this investigation. Use the glossary to write the definitions of each word.