Group 4 Physics Project- How does night breeze take place?

Objective : *How does night breeze take place?*

Hypothesis: The night breeze occurs because of the pressure difference between the shore(land) and the sea.

Materials: - 2 Barometers

Variables: Pressure here is the only variable since it's the atmospheric pressure that we are trying to measure.. Time will be a controlled variable

Procedure:

1) At 7:30 PM one Barometer should be placed at a distance from the shore and another should be placed at shore.

2) Record the results. And collect data

Now assuming that there is a pressure difference, we must investigate what caused this pressure difference. The thing that caused the pressure difference is the temperature difference between land and sea. Because hot temperature lightens the density of the air and cold temperature makes it heavier. We have to measure the temperatures of sand and water at night, Which moves us to the next step.

Objective(a): *How does the specific heat affect the temperature difference at night? Which has less specific heat water or sand.*

Hypothesis: The specific heat will affect the temperature difference because it is the thing that determines which substance would lose more heat and in this case it is the sand.

Materials:

- Thermometer
- Sample of sand
- watch
- Two containers
- sample of sea water

Variables: Using the equation $Q = mc\Delta T$, the controlled variables will be the mass, the amount of radiant heat reaching both the sand and the sea water. By rearranging the equation and setting it equal to *c*. It will be $c = \frac{Q}{m\Delta T}$. After considering the

controlled variables we find out a relationship of $c\alpha \frac{1}{\Delta T}$. This will make us determine which object (sea water or sand) has less specific heat.

Procedure:
1) Take two equal containers.
2) Fill the first with sand and the other with sea water.
3) Place a thermometer or something to record temperature.
4) Measure the temperature of each container every hour from 3:00 up to 7:00
5) Record results for each.

Objective(b): *How does the humidity affect the temperature difference? And is there more humidity on land, sea, or the same for both?*

Hypothesis: The more the humidity, the more the temperature and more humidity will take place at sea.

Procedure: During different times (every 2 hours maybe)…we measure the temperature at both sea and shore and at the same time measure the humidity.

Summary: (What is to be done)

1) *Measure the pressure at sea and the pressure at land*
2) *Take a sample of water and a sample of sand and measure the temperature difference every hour*
3) *Measure the humidity at sea and then at land.*
4) *Take a sample of Sea water*