



RESEARCH QUESTION

Is the ocean water chemistry changing over time within South La Jolla State Marine Reserve?



DATA

Temperature
pH
Salinity
at different depths



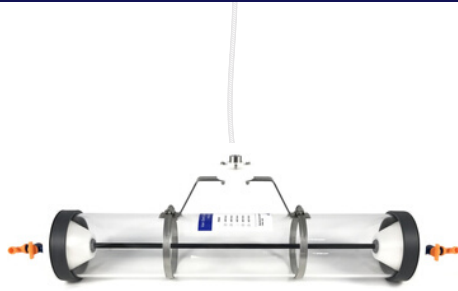
INSTRUCTIONS

- 1) Read about the tools we will use on the next page.
- 2) Collect data for the different depths on pages 3-10 and record on your water quality datasheet.





↑ DEPTH IN METERS (M)



VAN DORN BOTTLE

Purpose: The Van Dorn bottle consists of an open ended clear plastic cylinder that can be attached to a rope and lowered to a desired depth. A weighted messenger is then dropped, closing a plunger on each end of the bottle, allowing for a water sample to be collected and pulled aboard for analysis.

THERMOMETER

Data: Temperature

Units: °C (degrees Celsius)

How to Use: Remove the cap and place the end with the probe in the water. Wait until the number stabilizes and record the number on the digital display.

Background: Testing the water temperature can help track changes in the ocean's thermocline. The thermocline is the layer in the ocean in which the temperature changes more rapidly. The ocean's temperature can change due to seasons, air temperature, ocean mixing and climate change.



pH METER

Data: pH

Units: pH

How to Use: Remove the cap and place the end with the probe in the water. Wait until the number stabilizes and record the number on the digital display.

Background: Due to climate change, the ocean's pH (the measure of how acidic or basic a substance is) is slowly declining making the ocean more acidic. Since the beginning of the Industrial Revolution the pH of surface ocean waters has fallen by 0.1 pH units due to the increased amount of CO₂ sinking into the ocean.



HYDROMETER

Data: Salinity

Units: ppt (parts per thousand)

How to Use: Fill the hydrometer with water from the Van Dorn bottle and tap hydrometer to remove bubbles. The buoyancy of the salt makes the arrow float to the appropriate measurement. Record the number to which the arrow points.

Background: Salinity measures the amount of dissolved salt in the ocean. Salinity can be affected by depth, precipitation rates, and coastal runoff.

