

---

## **My NASA Data - GLOBE Connections**

### **Sea Level Rise: Protocols and Data Sheets**

Students and scientists investigate hydrology through the collection of data using measurement protocols and using instruments which meet certain specifications in order to ensure that data are comparable. Learning activities aid in the understanding of important scientific concepts, the understanding of data and data collection methodologies.

[pH Protocol](#): Students will use either a pH meter or pH paper to measure the pH of water. If using the pH meter, the meter needs to be calibrated with buffer solutions that have pH values of 4, 7, and

# pH Protocol



Welcome

Introduction

Protocols

Learning Activities

Appendix

## **Purpose**

To measure the pH of water

## **Overview**

Students will use either a pH meter or pH paper to measure the pH of water. If using the pH meter, the meter needs to be calibrated with buffer solutions that have pH values of 4, 7, and 10.

## **Student Outcomes**

Students will learn to,

- use either a pH meter or pH paper;
- understand the differences among acid, basic and neutral pH values;
- examine reasons for changes in the pH of a water body;
- communicate project results with other GLOBE schools;
- collaborate with other GLOBE schools (within your country or other countries); and
- share observations by submitting data to the GLOBE science data archive.

## **Science Concepts**

### **Earth and Space Science**

Earth materials are solid rocks, soils, water and the atmosphere.

Water is a solvent.

Each element moves among different reservoirs (biosphere, lithosphere, atmosphere, hydrosphere).

### **Physical Sciences**

Objects have observable properties.

### **Life Sciences**

Organisms can only survive in environments where their needs are met.

Earth has many different environments that support different combinations of organisms.

Organisms change the environment in which they live.

Humans can change natural environments.

All organisms must be able to obtain and use resources while living in a

constantly changing environment.

## **Scientific Inquiry Abilities**

Use a chemical test strip or pH meter to measure pH.

Identify answerable questions.

Design and conduct scientific investigations.

Use appropriate mathematics to analyze data.

Develop descriptions and explanations using evidence.

Recognize and analyze alternative explanations.

Communicate procedures and explanations.

## **Time**

10 minutes

## **Level**

All

## **Frequency**

Weekly

## **Materials and Tools**

### **For measuring pH with pH paper:**

- [Hydrosphere Investigation Data Sheet](#)
- [Using pH Paper \(Electrical Conductivity Greater Than 200mS/cm\) Field Guide](#) OR [Using pH Paper \(Electrical Conductivity Less Than 200mS/cm\) Field Guide](#)
- pH paper
- 50-mL or 100-mL beaker
- Latex gloves

### **For measuring pH with the pH meter:**

- [Hydrosphere Investigation Data Sheet](#)
- [Using a pH Meter \(Electrical Conductivity Greater Than 200mS/cm\) Field Guide](#) OR [Using a pH Meter \(Electrical Conductivity Less Than 200mS/cm\) Field Guide](#)
- pH meter
- Distilled water
- Clean paper towel or soft tissue

10.

[Salinity Protocol](#): Students will use a hydrometer to measure the specific gravity of the water sample, and use a thermometer to measure the temperature. With these two values, students will use tables to determine the salinity.

[Water Temperature Protocol](#): Students use a thermometer or probe to measure the temperature of water.

Data Sheets: [Hydrology Investigation](#)

---

## Sphere(s)

- [Hydrosphere](#)

## Phenomenon

- [Sea Level Rise](#)

## Document Resources

### Document Resources

- [Salinity Protocol](#)
- [Water Temperature Protocol](#)
- [Hydrology Investigation Data Sheet](#)
- [pH Protocol](#)