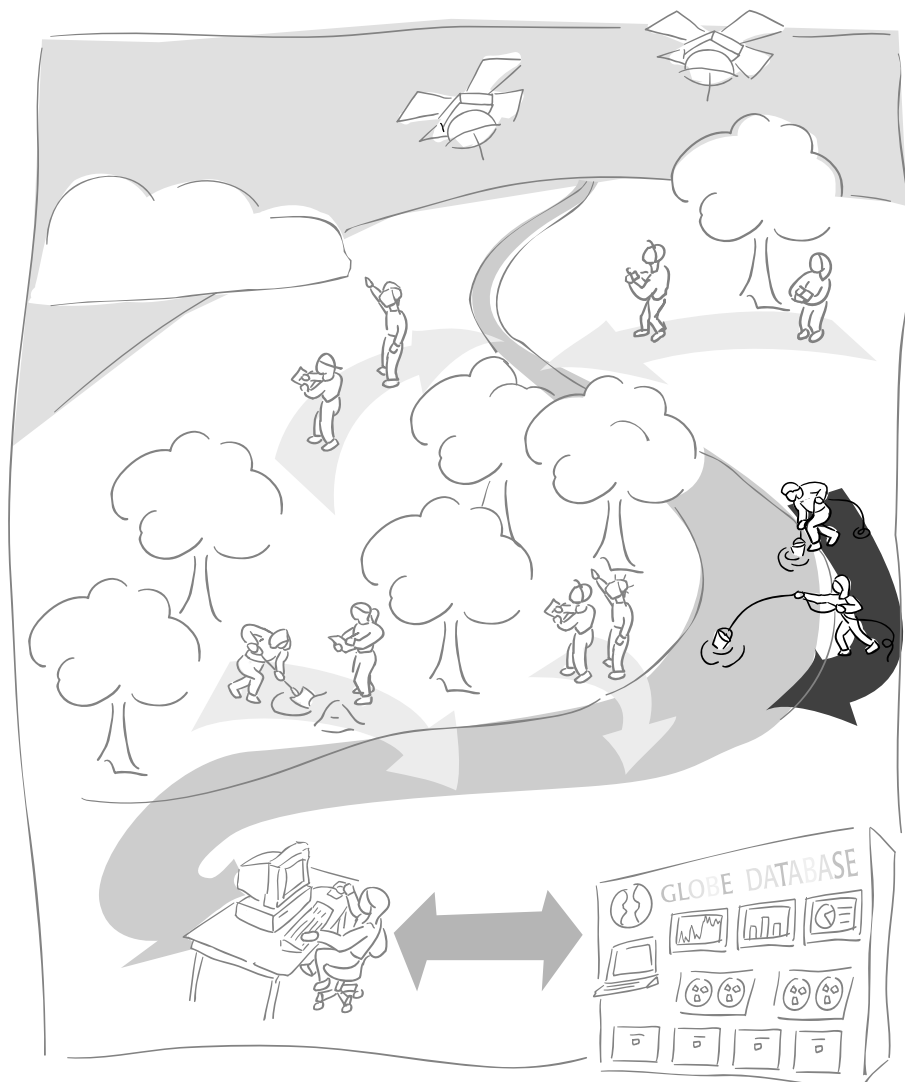


# Hydrosphere Investigation



A GLOBE<sup>®</sup> Learning Investigation



# Hydrosphere Investigation at a Glance



## Protocols

### **Weekly Measurements**

#### *Basic*

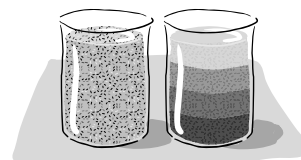
Transparency  
Water Temperature  
Dissolved Oxygen  
Electrical Conductivity  
Salinity  
Salinity Titration (optional)  
pH  
Alkalinity  
Nitrate

### **Additional Measurements**

Freshwater macroinvertebrates  
(twice a year)  
Mosquito Larvae

## Suggested Sequence of Activities

- Read the Introduction, especially the sections *What Measurements Are Taken* and *Getting Started*.
- The [Water Walk Learning Activity](#) sets the stage for developing a baseline knowledge and interest in your Hydrosphere Study Site.
- The [Model a Catchment Basin Learning Activity](#) provides the big picture view of the students' watershed and the water and study site in relation to this watershed.
- Map Your Hydrosphere Study Site. At the beginning of your study as part of defining your site, and once each year thereafter, create a map of the Hydrosphere Site and take photographs.
- The [Practicing Your Protocols Learning Activity](#) guides students through learning how to use the instruments and following the protocols so they collect reliable data.
- Begin Field Sampling. Go to the site and begin the weekly measurements for water.
- Use the *Looking at Data* section at the end of each protocol as a guide to examine your data, ask questions and interpret what you find. Start linking water data to other GLOBE measurements.
- Focus on Key Science Ideas by performing the following Learning Activities:
  - [Water Detectives](#) and [The pH Game](#) introduce students to key water chemistry variables and to the need using instruments to take certain measurements.
  - [Modeling Your Water Balance](#) lets students explore how to use their data for modeling.





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The Big Picture .....	Introduction 2
GLOBE Measurements.....	Introduction 3
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## Protocols

<a href="#">Instrument Construction, Site Selection, Site Documentation and Mapping, and Sampling Procedures</a>	
<a href="#">Water Transparency Protocol</a>	
<a href="#">Water Temperature Protocol</a>	
<a href="#">Dissolved Oxygen Protocol</a>	
<a href="#">Electrical Conductivity Protocol</a>	
<a href="#">Salinity Protocol</a>	
<a href="#">pH Protocol</a>	
<a href="#">Alkalinity Protocol</a>	
<a href="#">Nitrate Protocol</a>	
<a href="#">Freshwater Macroinvertebrates Protocol</a>	
Rocky Substrates in Running Water	
Multi-habitat (sampling a lake, pond, or stream with sandy or muddy bottom)	
<a href="#">Salinity Titration Protocol</a>	
<a href="#">Mosquito Larvae Protocol</a>	



## Learning Activities

<a href="#">Water Walk</a>	
<a href="#">Model a Catchment Basin</a>	
<a href="#">Practicing Your Protocols</a>	
<a href="#">Water Detectives</a>	
<a href="#">The pH Game</a>	
<a href="#">Modeling Your Water Balance</a>	



## Appendix

<a href="#">Site Definition Sheet</a> .....	Appendix 2
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