

Atmosphere

Aerosols

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Air Temperature

[Studying The Instrument Shelter \(pdf\)](#)

Students explore how the placement and design of instrument shelters can influence temperature measurements taken from thermometers located inside them.

[Building a Thermometer \(pdf\)](#)

Students construct simple thermometers to understand how and why liquid-in-glass thermometers work.

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Barometric Pressure

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Clouds

[Observing, Describing, and Identifying Clouds \(pdf\)](#)

Students begin to learn cloud types and their names.

Precipitation

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Relative Humidity

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Water Vapor

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Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

Biosphere

Green-Up / Green-Down

[Green-up Cards \(pdf\)](#)

Students participate in a preparatory activity that will help them identify green-up progression in their local plants and this activity also introduces the idea of spatial scale related to plant observations.

[Global Patterns in Green-up and Green-down \(pdf\)](#)

Students will analyze visualizations and graphs that show the annual cycle of plant growth and decline.

Land Cover Classification

[Draw Your Own Visualization \(pdf\)](#)

Students draw a visualization and learn about all the design choices involved and how these choices affect what is communicated by the visualization.

[Discovery Area Post-Protocol \(pdf\)](#)

Students use the satellite image of the GLOBE Study Site and their knowledge of remote sensing to decide where a new hospital should be located.

[Odyssey of the Eyes Beginning Level \(pdf\)](#)

To familiarize students with the importance of perspective and introduce students to various scales of remotely sensed data.

[Manual Mapping- A Tutorial for the Beverly, MA, Image \(pdf\)](#)

Students outline and label different areas of land cover as seen on their Landsat TM image to create a land cover map in this tutorial.

[Getting to Know Your Satellite Imagery and GLOBE Study Site \(pdf\)](#)

Students use the satellite image of their GLOBE Study Site to become familiar with the different types of land cover in their area.

[Manual Land Cover Mapping \(pdf\)](#)

Students outline and label different areas of land cover as seen on their Landsat TM image to create a land cover map.

[Global Patterns in Green-up and Green-down \(pdf\)](#)

Students will analyze visualizations and graphs that show the annual cycle of plant growth and decline.

[Temperature and Precipitation as Limiting Factors in Ecosystems \(pdf\)](#)

Students correlate graphs of vegetation vigor with those of temperature and precipitation data for four diverse ecosystems to determine which climatic factor is limiting growth.

[Do You Know Your MUC \(pdf\)](#)

Students classify land cover by visually examining their site as well as mapping and recording ground cover onto graph paper as they walk across their site. Students will use a GPS to locate the site in addition to photographing their site.

Earth as a System

Earth as a System

[S1- What Can We Learn About Our Seasons \(pdf\)](#)

Students develop a qualitative understanding of the characteristics and patterns of seasons and highlight the relationship of seasons to physical, biological and cultural markers.

[S2-What Are Some Factors That Affect Seasonal Patterns \(pdf\)](#)

Students use GLOBE data and graphing tools to compare the influence of latitude, elevation, and geography on seasonal patterns.

[S3-How Do Seasonal Temperature Patterns Vary Among Different Regions of the World \(pdf\)](#)

Students use GLOBE visualizations to display student data on maps and to learn about seasonal changes in regional and global temperature patterns.

Hydrosphere

Alkalinity

[Hydrosphere Learning Activities \(pdf\)](#)

Introduction document to the Hydrosphere Investigation Area Learning Activities.

[Model a Catchment Basin \(pdf\)](#)

Students will make a 3-dimensional model of a catchment basin to understand how water moves through the basin and explore how water is affected when there are changes in the basin.

Conductivity

[Hydrosphere Learning Activities \(pdf\)](#)

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[Model a Catchment Basin \(pdf\)](#)

Students will make a 3-dimensional model of a catchment basin to understand how water moves through the basin and explore how water is affected when there are changes in the basin.

Dissolved Oxygen

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Freshwater Macroinvertebrates

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Nitrates

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pH

[Hydrosphere Learning Activities \(pdf\)](#)

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[Model a Catchment Basin \(pdf\)](#)

Students will make a 3-dimensional model of a catchment basin to understand how water moves through the basin and explore how water is affected when there are changes in the basin.

[The pH Game \(pdf\)](#)

Students will create mixtures of water samples, soil samples, plants and other natural materials to better understand the importance of pH levels.

[Water Detectives \(pdf\)](#)

Students will investigate how they use their senses for observation and why we use instruments to collect data.

Salinity (including Titration)

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Water Temperature

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Water Transparency

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Pedosphere

Bulk Density

[Soil Makers \(pdf\)](#)

Students will understand the geologic phenomena of weathering and erosion. These processes, along with deposition, shape our landforms and contribute to the development of parent material in the soil formation process.

Soil Characterization

[The Data Game \(pdf\)](#)

Teams of students play a game in which they gather data and distort the values of certain measurements. They then estimate the values of the measurements taken by other teams and try to detect their errors.

[From Mud Pies to Bricks \(pdf\)](#)

Students make mud pies by adding water to the various soil components, letting them dry and observing the pie's characteristics.

[Why Do We Study Soil \(pdf\)](#)

An activity which highlights the importance of learning about the soils on Earth. In this activity students explore some of the many uses of soils, learn the five soil-forming factors, and gain a better understanding of how little of Earth's surface is covered in soil.

[Soil Makers \(pdf\)](#)

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Soil Fertility

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Soil Infiltration

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Soil Moisture - Gravimetric

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Soil Moisture - Sensors

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Soil Moisture - SMAP Block Pattern

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Soil Particle Density

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Soil Particle Size Distribution

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Soil pH

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Soil Temperature

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