



## Hydrographic surveying: Mapping the sea floor

Hydrographic surveying is a scientific career that many people may not know about. In this activity, a sealed shoe box with a varied topography made out of clay will be measured by taking depth “soundings” with a skewer.

### Background

- Hydrography is the science that deals with the measurement and description of the physical features of bodies of water. Hydrographic surveying is a scientific field and career path that many people may not know about.
- NOAA measures the depth of the seafloor using multibeam sonar from ships. Computers analyze the time it takes for sound waves to travel from the ship to the seafloor and back. This provides amazing detail of the seafloor.
- Knowing exactly what lies beneath the water is important for mariners so that they can make their way safely through the waterways.

### Materials

- Clay
- Shoebox with lid
- Graph paper
- Tape
- Permanent marker
- Wooden skewers
- Colored pencils or markers

### Instructions

- Use clay to create a varied seafloor in the bottom of a shoebox. Include hazards for ship travel, such as shallow reefs. Allow it to dry and harden.
- Tape a piece of graph paper to the top of the shoebox lid and tape the lid in place so that the shoebox cannot be opened easily.
- Label the grid on the graph paper, latitude and longitude.
- With a permanent marker, mark the wooden skewers every half or whole centimeter.
- Associate each depth with a different color. This will allow the various depths to be distinct when the measurements are transferred to the “chart” or graph paper.
- Poke the skewer into the box through the graph paper and until it touches the bottom.
- Record the depth on the “chart” or a separate graph paper. Continue taking “soundings”
- Shade in the graph paper to make a color-coded bathymetry map.

### Extensions

- Have students plan a course for a ship to travel on their chart. Have them make sure to avoid all dangers to navigation and that the depths will allow them to navigate safely.
- Have students research a NOAA hydrographic survey technician career.
- Include a “shipwreck” taped to the “seafloor” and have students try to locate it and determine its size and shape.



# NOAA Education: Hands-on activities

## Related resources

- NOAA Education ocean floor features resources:  
<https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-floor-features>
- NOAA Hydrographic Survey Vessels: <https://nauticalcharts.noaa.gov/about/survey-vessels.html>
- What is hydrography?: <https://oceanservice.noaa.gov/facts/hydrography.html>
- Shipwreck database: <https://nauticalcharts.noaa.gov/data/wrecks-and-obstructions.html>
- NOAA Teacher at Sea: Hydrographic survey teacher blogs:  
<https://noateacheratsea.blog/tag/hydrographic-survey/>