SONAR IDENTIFICATION

Project created by Amy Jacoby, 2020
USS Hornet Sea, Air & Space Museum

OVERVIEW

Sonar (short for Sound Navigation and Ranging) is used for locating and mapping items underwater because sound waves travel farther in the water than radar and light waves. Active sonar bounces off underwater objects and returns an "echo" of the shape. By measuring the strength of the echo, you can determine how far away the object is and if it is moving towards or away from you. Passive sonar lets you listen for marine life or other ships, but cannot directly determine the location, unless triangulated between multiple passive sonar devices.

The U.S. Navy uses sonar to detect the distances to and the location of surrounding ships, incoming aircraft, enemy vessels, or submarines. Sonar is also used for mapping the ocean floor and locating shipwrecks!

GOALS

- Learn about how sonar works
- Try to identify items by their shapes and outlines

SUPPLIES

- 2 people
- A blanket or sheet
- 10 small household items such as: plastic bottles, silverware, books, small toys, TV remote, a shoe – or whatever else you can find!
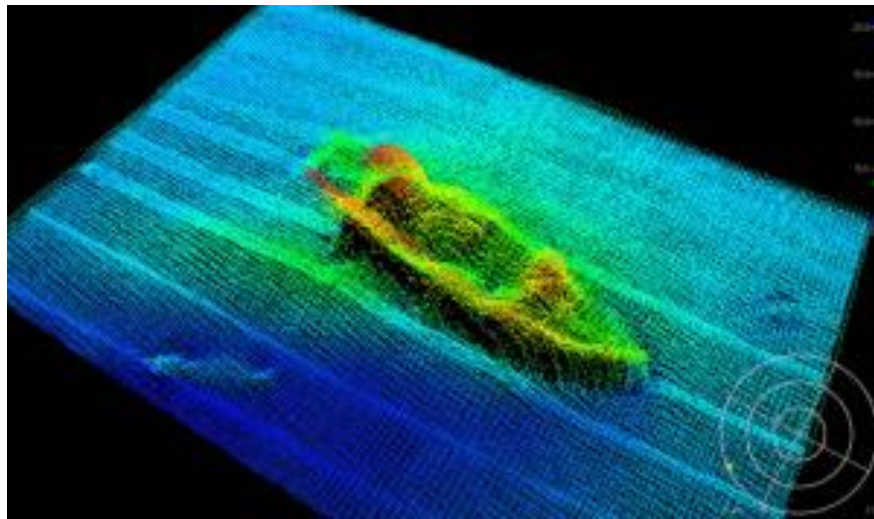
STEPS

1. Have one person cover their eyes or leave the room. You are now the Identifier!
2. The other person is the Hider. Arrange the 10 items on the ground and cover them with the blanket or sheet. Make sure none of the items are visible!
3. Have the Identifier re-enter the room or open their eyes. Try to detect and name all the items that are hidden under the blanket.
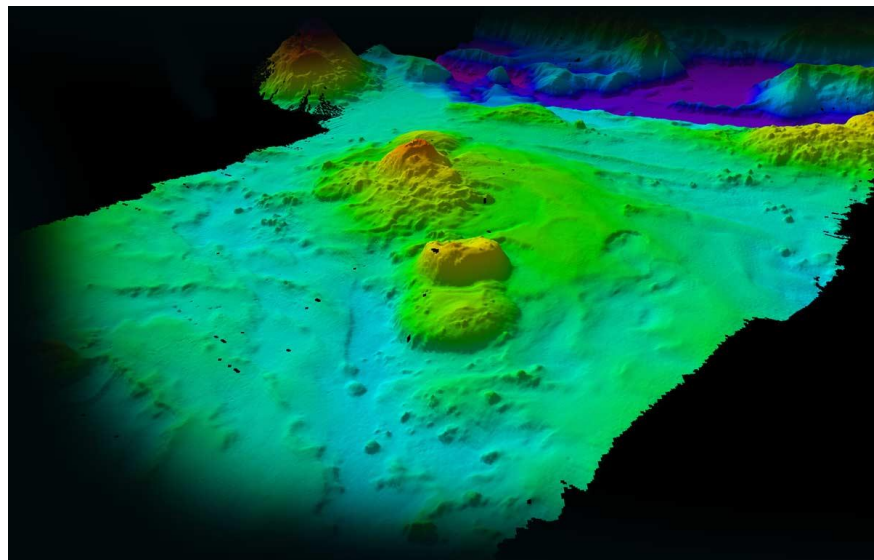4. Switch roles!

WHAT DID YOU NOTICE?

- Did you need to feel the objects with your hands to identify them, or were some obvious on sight even under the blanket?
- Were there any small objects that were harder to locate?

Try these variations for more of a challenge:

- Have Person B pick out the selection of items to hide without letting Person A see them. Is it harder to identify when you don't know the possibilities?
- Have Person B hide an unspecified number of items. See if Person A can locate everything without being told how many to search for.
- Instead of identifying all objects, try to seek out one specific object.

Sonar image of the sunken USS Monitor (Credit: NOAA)

Sonar image of the ocean floor.