



CLASSROOM ACTIVITY

Find a Plume, Find a Vent

How do researchers find hydrothermal vents that are very tiny when compared with the vast ocean? Afterwards, you'll use the interactive to find a vent yourself! Focus on the questions below in your investigation.

- ▶ Why is it so hard to find a hydrothermal vent in the deepest depths of the sea? What techniques have deep sea researchers developed in order to find the vents?
- ▶ How do the composition and physical properties of hydrothermal vents help scientists to find them?

Gather with your team and choose a captain and a notetaker for today. Before you begin your investigation, consider what you already know about the sea floor along mid-ocean ridges. Use the questions below to structure your discussion and jot down a few notes in your journal.

- ▶ How far below the surface are mid-ocean ridges?
- ▶ What are deep sea vents? Why are deep sea vents found along mid-ocean ridges?
- ▶ How do researchers study the bottom of the ocean from on board a ship? How else can they study the bottom of the ocean? How expensive might it be to conduct such a study?
- ▶ How could marine researchers, explorers or even treasure hunters find structures or living things at the bottom of the sea? How would they know where to look?

The captain should appoint group members to collect the required materials while the rest of the group reviews today's procedure. Before beginning, the captain should make sure that the group has all required materials, and that everyone knows the day's procedure.

The note taker will take notes on the group's findings for your team, but remember to record your observations and explanations in your journal for your own research notes. Include drawings in your notes to illustrate your findings.

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MATERIALS

- ▶ activity sheet
- ▶ journals

PROCEDURE

1. Before beginning your investigation, make some predictions about how researchers could find a hydrothermal vent at the bottom of the sea, keeping in mind that a vent site would be about 100 meters wide and 10 meters high, and that the area known to contain vents might be about 160 square kilometers. Use the questions on the handout; record your ideas on the handout and in your journal.
2. Now you're ready for your virtual journey. Take your journals and activity sheet to the computer and go to "Searching the Ocean for Deep Sea Vents," at:

<http://www.amnh.org/education/resources/rfl/web/dsv/searching/>

Here you'll see a slide show about deep sea vents and the expeditions researchers undertake to find and study them. Use the questions on your activity sheet to structure your visit.

3. Once you've familiarized yourself with the basics of how researchers find deep sea vents, you're ready to try finding one yourself! Go to the interactive "Find the Deep Sea Vent," at:

<http://www.amnh.org/education/resources/rfl/web/dsv/findavent>

Follow the instructions on the interactive to see if you can figure out the location of a vent using the information you get from the Tow-yo. Record your process and your observations on your activity sheet.



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**GROUP WORKSHEET 1
DSV TEAM**

GROUP MEMBERS _____

CAPTAIN _____ **NOTE TAKER** _____

1. Before you start your virtual journey, make some predictions. How could researchers find a hydrothermal vent at the bottom of the sea, 2,300 meters below sea level, when a vent site is only about 100 meters wide and the structures are typically 10 meters high, and the area they are searching (which is thought to contain vents) might be about 160 square kilometers?

2. Now begin your virtual journey by going to **Searching the Ocean for Deep Sea Vents** at:
<http://www.amnh.org/education/resources/rfl/web/dsv/searching/>

Find out a little more about deep sea vents and about the methods researchers use to find them; use your discoveries to respond to the questions below.

► Why is it so hard for marine researchers to find a hydrothermal vent? Why can't they just send a submersible like the *ALVIN* down to the bottom of the sea to look for one?



3. Now you're ready to try finding a vent! Go to the interactive **Find the Deep Sea Vent** at:

<http://www.amnh.org/education/resources/rfl/web/dsv/findavent>

Follow the directions on the interactive. Record your process in the space below by describing what happened each time you tried to find a vent. If you find a vent on the first or second try, take another turn; that way, you can see if you really understand how to find it, or if it was just luck!

- ▶. What happened on your first try? What helped you find the vent? What further information do you need to find it?

- ▶. What happened on your second try? What helped you find the vent? What further information do you need to find it?

- ▶. What happened on your third try? What helped you find the vent? What further information do you need to find it?

