# Hydrothermal Vents
## *Instructor Guide*

**Introduction:**

**Course:** This activity is designed for introduction to marine science
**Time:** ~2 hours
**Materials**: activity documents, computers with internet connection
**Student preparation:** computer literacy
**Summary:** This activity introduces students to hydrothermal vents including its organisms, environment, uses and challenges through analyzing online resources.
**Purpose:**

1. Understand the environment of hydrothermal vents.
2. Research online sources to understand hydrothermal vents communities and issues.

**Resources:**

Hydrothermal Vents: Instructor Version
Hydrothermal Vents: Student Version
Website links: C-DEBI introduction video:
https://www.youtube.com/watch?v=wiYzGL4iTY8&feature=youtu.be

**Activity Outline**

1. Instructor prepares for the activity (optional)
    a. If possible, visit a museum with a chimney /black smoker on display. Take pictures of the display and use them in your lesson.
    b. If time permits, show students video such as "Volcanoes of the Deep " and "The Deep " from the Blue Planet Series
2. Instructor introduces the activity (~30 min)
    a. Use Hydrothermal Vents: Instructor Version to introduce activity and cover necessary key concepts for each specific activity
3. Instructor divides students into 6 groups. Students complete activity (~1 hour)
    a. Give handout and assign each group one specific activity
    b. Students use computers and possible resources to answer questions.
    c. Students submit answers to instructor.
4. Instructor reviews activity with the students in discussion format (~30 min)
    a. Each group shares their activity and summarizes research findings with the rest of the class.
    b. Each student should be taking notes on the other groups (ie. one thing they learned from each activity)
    c. Instructor can cover any remaining key concepts.

Note: Depending on time, each group can do more than 1 or all specific activities. Alternatively, activity can be given as a take-home assignment and discussed in class.

**TOOLKIT CREDITS:**
Developed by Dale Stanley (Nassau Community College, NY) with support by the rest of the C-DEBI Collaborative Toolkit Team.

**WEBSITE:**
http://www.coexploration.org/C-DEBI/toolkits_biology.html