

ROCK MY WORLD

1. **DESCRIPTION**: Teams will demonstrate their knowledge of the findings of deep-sea drilling that have advanced scientific understanding of the ocean-climate system by completing selected tasks at a series of stations. Emphasis will be on the use of proxies to determine climate during the Paleocene Eocene Thermal Maximum (PETM).

A TEAM OF UP TO: 2

APPROXIMATE TIME: 50 minutes

2. **EVENT PARAMETERS**: Each team must bring writing instruments and a nonprogrammable calculator. One single page (8.5 inches x 11 inches), front and back, containing reference materials is allowed.

3. **THE COMPETITION**: Students will be presented with questions and hands-on tasks at stations that may require them to: demonstrate content knowledge regarding ocean drilling; analyze data from graphs and tables; create and analyze a graph; perform calculations; record observations; and make and support conclusions. Questions or activities from the following areas may be included:

- a. General Knowledge history of ocean drilling; bathymetry; geologic time scale; water cycle; climate change
- b. Proxies chemical analysis, down-hole logging, microfossils
- c. Cores acquisition; storage; description; analysis; lithology; sedimentation rates
- d. Gas Hydrates formation; BSR; location; methods of release

4. **SAMPLE PERFORMANCE TASKS AND QUESTIONS**: Possible questions, tasks, stations and/or examples:

- a. Definitions. For example, what is the BSR?
- b. Given depths and ages, graph and calculate sedimentation rates.
- c. Describe the lithology of a core.
- d. Interpret down-hole logging data.

5. **SCORING**: Questions will be assigned point values and points will be awarded for the quality and accuracy of responses. Students will be ranked from highest to lowest score. Ties will be broken by pre-determined tiebreaker questions.

SUGGESTED REFERENCES:

Integrated Ocean Drilling Program (<http://www.iodp-usio.org/default.html>)
Consortium for Ocean Leadership (<http://www.oceanleadership.org/>)

OCEAN LITERACY PRINCIPLES: 1 – Earth has one big ocean with many features. 2 – The ocean and life in the ocean shape the features of Earth. 3 – The ocean is a major influence on weather and climate. 7 – The ocean is largely unexplored.