Teacher Information
Ocean Currents

I. Objectives

A. Forming Concepts (Introductory) Objectives

1. Rotate direction given in degrees to compass direction.
2. Describe floats used in ocean current research.
3. Estimate current speed from scaled geographical representations.

B. Interpreting Data Objectives

1. Interpret graphs of current speed
2. Interpret graphs of current direction.
3. Estimate average current speed and direction from line graphs.
4. Deduce compass directions from degree directions.
5. Deduce the relationship between current speed and depth.
6. Deduce the relationship between current direction and depth.

C. Applying Principles Objectives

1. Describe currents' effects on coastal weather.
2. Describe currents' effects on sailing vessels.
3. Describe currents' effects on microscopic and macroscopic marine life.

II. Interdisciplinary Uses

A. Social Studies

1. Write a short essay on how current-measuring buoys can help people who have maritime occupations.

B. Math

1. Interpret graphical data.

III. Science Standards Coordination

The Ocean Currents activity has been designed to incorporate science standards as specified by the National Science Education Standards (NSES) and the National Science Teachers Association (NSTA) Scope, Sequence, and Coordination (SS&C) of Secondary School Science. Only the major topics are listed. For further explanation of each standard see the complete documents:

NSES - National Academy Press, 2101 Constitution Ave, NW, Washington, DC 20481
NSTA – 1840 Wilson Blvd, Arlington, VA 22201-3000

NSES	SS&C
Structure of the earth system	Energy transfer by heat radiation
Transfer of energy	Sun as an energy source
Earth in the solar system	Water cycle

IV. Advanced Preparation

A. Materials

1. One computer per two or three students is a recommended minimum.
2. One copy of the Student Activity Book for each student or group of students.

B. Time Required for Completing the Activity

1. The Get Info section takes about 10 minutes.
2. The Gather Data section takes about 45 minutes.
3. The Application section takes about 10 minutes.

C. Teacher Familiarity

Preview these materials thoroughly. As with all these activities, before using this activity in class, review the sites and work through the activity yourself to learn about Ocean Currents so you can answer questions or direct students to the answers.

The activity is set up so students are taken to sites containing information that will be used to answer questions regarding Ocean Currents. The sites contain either the answers or the information from which the students can infer the answers. At the end of the activity, there is a list of enrichment activities and related web sites.

D. Select Questions for Students to Answer

It would be prudent for you to read the questions students will be expected to answer. These questions are in order of ascending difficulty. Depending on grade level and ability level, you might want to assign specific questions for your students.

E. Student Grouping

These activities can be done individually or in small groups of two or three students. Students who have Internet access can also do them at home for extra credit.

F. Software Requirements and Duplication Preparation

1. Adobe Acrobat Reader is required to download the pages. Click the "Tech Info" link on the Science with NOAA Research homepage to download Acrobat Reader.
2. Download the Teacher Information, Teacher Key, and Student Activity Book PDF files from the "Teacher Info" web page.
3. Duplicate and distribute student pages. Ideally, each student should have a copy of the Student Activity Book that should be distributed and discussed the day before the exercise.