

# Unit V

## Chapter 16

### *Geology of the Ocean*



#### Performance Standards

Demonstrate an understanding of the origins of the oceans and the continents.

- SC.D.1.4.1 Know how climatic patterns on Earth result from an interplay of many factors (Earth's topography, its rotation on its axis, solar radiation, the transfer of heat energy where the atmosphere interfaces with lands and oceans, and wind and ocean currents).
- SC.D.1.4.2 Know that the solid crust of Earth consists of slow-moving, separate plates that float on a denser, molten layer of Earth and that these plates interact with others, changing the Earth's surface in many ways (e.g., forming mountain ranges and rift valleys, causing earthquake and volcanic activity, and forming undersea mountains that can become ocean islands).
- SC.H.1.4.1 Know that investigations are conducted to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories.
- SC.H.1.4.2 Know that from time-to-time, major shifts occur in the scientific view of how the world works, but that more often, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge.

When you picture the sea, you think about its immensity – the seemingly never-ending expanse of salt water that presents dangers and adventure alike. However, you don't often think of the sea as a watery blanket covering a solid Earth below.

#### STUDENT INSTRUCTIONS

1. Read chapter 16 pages 352-377 in your text and
  - a. write definitions OR...
  - b. draw pictures or...
  - c. make diagrams for each of the 28 vocabulary words found on page 380.
2. After reading each section of the chapter, answer the section review questions on pages 358, 362, 333, 372 and 377.
3. Complete the Extended Response question on the following page.

READ
THINK
EXPLAIN

4. Write an essay following the FCAT writing format explaining how seamounts are related to guyots and islands.
5. Complete the investigation, Crustal Plates.
6. Turn in all completed work and ask your instructor for the Chapter 16 Test.

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## **Investigation: *Crustal Plates***

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Purpose: To determine the relationships between earthquakes, volcanoes and plate boundaries.

Procedure:

Use the map on the next page to plot the location of earthquakes and volcanoes from the data table. Mark the earthquakes with one color and the volcanoes with another color. Be sure to erase your marks after finishing this activity.

Data:

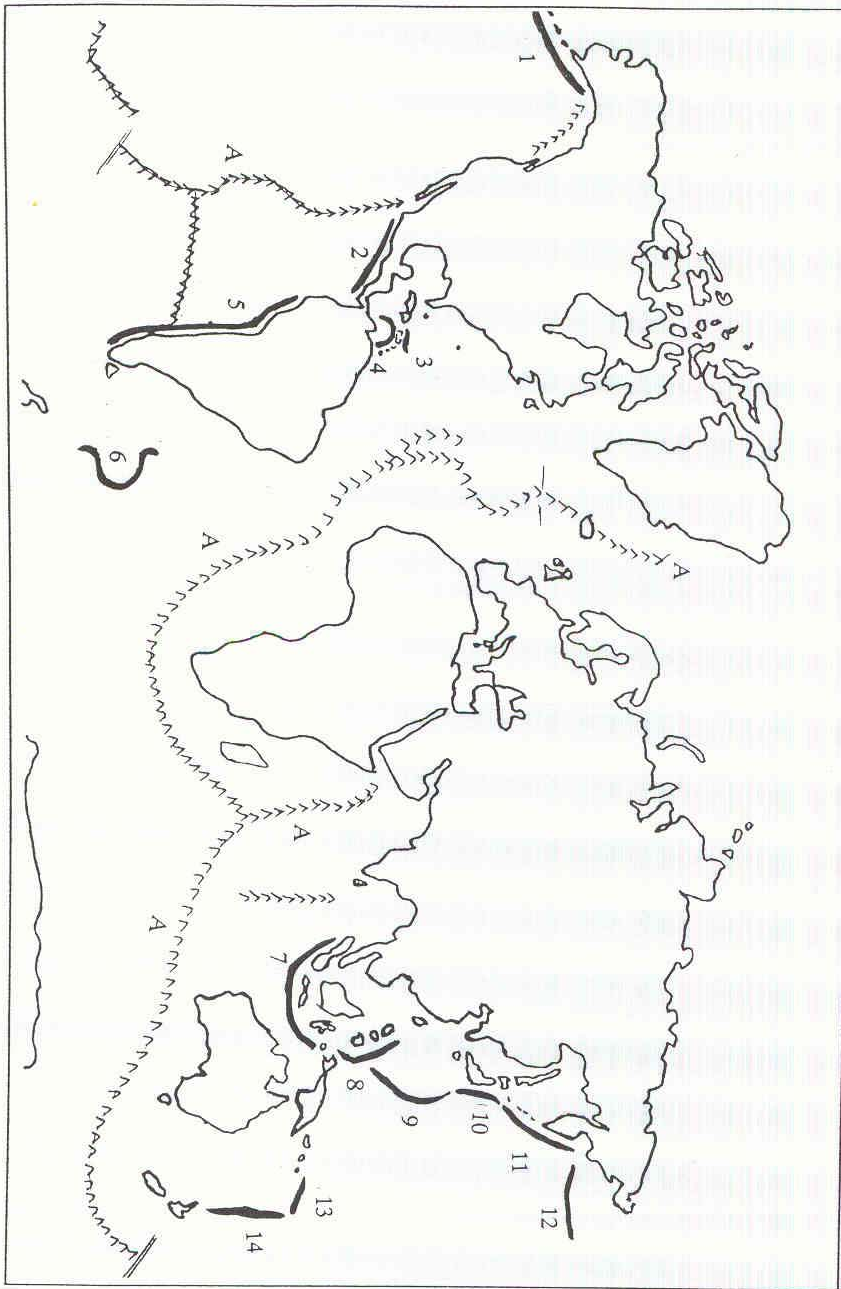
The following is a list of the largest earthquakes and volcanic eruptions in history.

**Earthquakes**

1755 – Lisbon, Portugal  
1811 – New Madrid, Missouri  
1883 – Krakatoa, Netherlands Indies  
1906 – San Francisco, California  
1906 – Valparaiso, Chile  
1920 – Kansu, China  
1923 – Yokkohama, Japan  
1927 – Nan-Shan, China  
1933 – Japan  
1934 – Bihar-Nepal, India  
1939 – Chillan, Chile  
1946 – Honshu, Japan  
1950 – Assam, India  
1960 – Southern Chile  
1964 – Anchorage, Alaska  
1976 – Tangshyan, China  
1977 – Indonesia  
1977 – Northwest Argentina  
1979 – Indonesia  
1985 – Mexico City, Mexico

**Volcanic Eruptions**

79AD – Mt. Vesuvius, Italy  
1169 – Mt. Edna, Sicily  
1631 – Mt. Vesuvius, Italy  
1669 – Mt. Edna, Italy  
1772 – Java  
1792 – Japan  
1815 – Java  
1883 – Krakatoa, Indonesia  
1902 – Guatemala  
1902 – Martinique  
1911 – Phillipines  
1919 – Java  
1951 – New Guinea  
1966 – Java  
1980 – Mt. St. Helen, Washington  
1985 – Columbia  
1986 – Cameroon  
1991 – Phillipines



**Conclusion:**

1. What is the relationship among the locations of the earthquakes , volcanoes and plate boundaries?
2. Do convergent plate boundaries always result in trenches? Explain.
3. Which type of plate boundary typically forms trenches?
4. Which type of plate boundary forms mountains?
5. Which type of boundary forms volcanoes?
6. What land mass overrides 5 plate boundaries?
7. What has its seismic history been?
8. What country or area has had the most earthquakes?
9. What country or area has had the most volcanoes?
10. Describe the location and cause of the “Ring of Fire.”