

### ***Earthquake depth patterns***

Next, you will look for patterns in the depth of earthquakes around the world.

- ▶ Examine the **Earthquake Depth** legend in the Table of Contents.

22. What color are the *shallowest* earthquakes?

23. What color are the *deepest* earthquakes?

Using the **Topography** theme as your guide, look closely at the ridges and trenches — the depth patterns at these two types of features are different.

24. Describe the range of earthquake depths near

a. ridges



b. trenches

25. Are the locations of earthquakes symmetric or are they asymmetric around

a. ridges

b. trenches



Next, you will look at differences in earthquake depth around the world.

- ▶ Use the Zoom In tool  and the Pan tool  to look closely for regions with deep earthquakes.

26. Identify three major areas with earthquakes deeper than 150 km. (For example, “The west coast of Central America near Mexico, El Salvador, and Nicaragua.”)

- ▶ Zoom in closely on the areas you identified in previous question to examine the pattern of earthquakes.



27. In general, how do earthquake depths change as you move away from the trench toward the cluster of earthquakes?

- ▶ Turn on the **Volcanoes** and **Trenches** themes.
  - ▶ Click the Zoom to Full Extent button  to view the whole map.
  - ▶ Turn on and activate the **Block Diagrams** theme.
  - ▶ Using the Hot Link tool , click on each of the profile lines that crosses a trench to view a block diagram at that location.
28. What do you think is happening to cause the deep earthquakes to occur at trenches but nowhere else?

- ▶ Turn off the **Block Diagrams**, **Trenches**, and **Volcanoes** themes.



### ***Earthquake magnitude patterns***

Next, you will look for patterns in earthquake magnitudes around the world.

- ▶ Turn on and activate the **Earthquake Magnitude** theme.
  - ▶ Examine the **Earthquake Magnitude** legend in the Table of Contents.
  - ▶ Use the Zoom In tool  and the Pan tool  to look more closely for regions with large earthquakes.
29. Are there more large earthquakes (Magnitude 7 or higher) near the spreading ridges or are there more near the deep trenches?

### ***Comparing depth and magnitude***

Is there a relationship between the magnitude and depth of earthquakes? To find out, you will turn off all earthquakes except the largest and deepest, and look for a connection between them.

- ▶ To show only the earthquakes of magnitude 7 or higher, you will use a theme property query operation. (See the next page for an illustration of the query builder window.)
  - Activate the **Earthquake Magnitude** theme.
  - Choose **Theme ▶ Properties** and click the query builder  button.
  - Enter the query ([Magnitude] >= 7.0) as shown below and click **OK** twice to display only the selected earthquakes.
- ▶ To display only the earthquakes that occurred at depths of 150 km or more, use another theme property query:
  - Make sure **Earthquake Depth** is the active theme.
  - Choose **Theme ▶ Properties** and click the query builder  button.
  - Enter the query ([Depth (km)] >= 150) and click **OK** (twice) to display only the selected earthquakes.