



Ocean features

from the Esri GeoInquiries™ collection for Earth Science

Target audience – Earth Science learners

Time required – 15 minutes

Activity

Categorize sections of the oceans and understand their importance.

NAME:

Learning Outcomes

- Students will use the maps and pop-ups to characterize world oceans.
- Students will use remote sensing to identify high-productivity zones and their relationships to ocean regions.

Map URL: <http://esriurl.com/earthgeoinquiry11>



Engage

How much of the earth's surface is covered by oceans?

- Click the URL above to launch the map.
 - In the upper-right corner, click the link, Modify Map.
 - With the Details button underlined, click the button, Show Contents of Map (Content).
 - Click the large green plus sign in the center of South America. Click the image in the pop-up.
 - Count the number of squares in the grid that are covered with land. If a grid square is only partially covered, estimate how many other squares it takes to make one full square.
- ? About how many grid squares are covered with land?
- ? Using the grid square estimate, what percentage of the earth's surface is covered by water?



Explore

Is there variation of depth within the oceans?

- Starting in the Atlantic, click the green line distributed over the oceans for depth cross-sections.
- ? What is the approximate depth of the ocean just offshore from most continents?
- ? What is the average depth of the ocean?
- ? Are there any deep spots?
- ? How are the deep spots in the ocean shaped?
- ? What happens to the depth in the middle of most oceans?



Explain

Can oceans be classified by landforms like continents?

- Continents have landforms (mountains, plains, plateaus), and oceans have general regions of similar depth and ruggedness.
- Click the layer name, Ocean Features. View the legend for that layer.
- ? What are the most common ocean features or landforms?



Elaborate

How do plate tectonics shape ocean bottoms?

- Click the button, About the Map (About). Click the link, Open Presentation.
- View the presentation to see a tour of ocean features and how they were formed.
- Click any image in the pop-up to view it in a larger size.
- ? Do plate motions help explain oceanic features as well as they did for mountains?



Evaluate

How did the oceanic landforms come to be?

- ? Describe where one of the ocean features discussed generally forms.

PLAY PRESENTATION

- At the top right of the map, click Open Presentation.
- At the bottom center of the presentation, click the right arrow.

VIEW LEGEND WHILE IN CONTENTS

- Hover on a layer name; the layer becomes a link.
- Click the layer name link.

Next Steps

DID YOU KNOW? ArcGIS Online is a mapping platform freely available to public, private, and home schools. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at <http://www.esri.com/schools>.

THEN TRY THIS...

- Log in to your ArcGIS organization account, save a copy of this map, and click Edit Presentation.
- Highlight some ocean features (for example, the formation of the Hawaiian island chain and seamounts).



TEXT REFERENCES

This GIS map has been cross-referenced to material in the mountain building section of chapters from middle-school texts.

- *Earth Science by Glencoe McGraw Hill – Chapter 19*
- *Earth Science by McDougal Littell – Chapter 3*
- *Earth Science by Holt – Chapter 13*
- *Earth Science by Prentice Hall – Chapter 14*