North American landforms

from the Esri GeoInquiries™ collection for Earth Science

Target audience – Earth Science learners **Time required – 15 minutes**

Activity	Introduce and explore various types of landforms.
Science Standards	**NGSS:MS-ESS2-3** – Analyze and interpret data on the distribution of fossils, rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
Learning Outcomes	• Students will work to recognize landforms from small to large scale. • Students will associate clues from the landscape, describing how they were formed.

Map URL: http://esriurl.com/earthgeoinquiry5

Engage

Rough, rugged, or smooth, what landforms cover North America's surface?

- Click the link above to launch the map.
- Click the link in the upper-right corner, Modify Map.
- With the Details button underlined, click the button, Show Contents of Map (Content).
- Turn on the layer, Landform Marker. You will now see an Edit button at the top.
- Click the Edit button and then click Landuse Marker.
- Click and drag the cursor around the North American map to "sketch" similar continuous regions, based solely on their appearance. (If necessary, zoom in to see detail.)
- Annotate and close each pop-up window.
- ? How many unique regions did you choose? *[Students should be able to differentiate two mountain regions, and one or two regions of plains along the coast in the south and another in the Midwest/north. Students may also notice differences in flat areas next to mountains in the plateau regions that have deeper river valleys.]*
- To stop drawing, click the Edit button.
- Click the Details button..

Explore

Is there more to landforms than texture?

- Turn off the layer, World Shaded Relief.
- Turn on the layer, North American Landforms.
- Click the Basemap button. Select Topographic.
- ? Which areas did you miss? *[Many miss the plateaus, as they are harder to differentiate unless you have a colored elevation layer. They occur along mountains but are smoother and uplifted instead of broken or folded. They are different from plains in that rivers across them generally create much deeper valleys.]*
- ? Which color is used to show the plains? *[They are a light green color.]*
- Click several places across the plains.
- ? Are all plains considered the same? *[No. There are coastal, great, and interior lowland plains.]*
- ? How do you think the plains along the Gulf Coast are different from the mid-continent plains? *[Coastal plains get more precipitation and are more moderate in temperatures.]*

more ▶

Explain

What's elevation got to do with it?

- Click the button, About the map (Details pane). Click the Open Presentation link and view the presentation in a new tab.
- On a whiteboard, group the landforms that are featured in the presentation in a system that makes sense to students (for example, coastal features, river landforms, or hill-type features).
- Close the tab that has the presentation and return to the online map.

Elaborate

Would a bay by any other name, sound the same?

- Turn off all layers.
- Change the basemap to Imagery.
- Click on each bookmark.
- Ask students to identify and differentiate among various types of landforms as listed below.
  - ? Coastal features *[Cape, Isthmus, Peninsula, Island, Archipelago, Barrier Island.]*
  - ? Freshwater regions *[River, Lake, Flood Plain, Delta.]*
  - ? Ocean bodies *[Strait, Bay, Sound, Harbor.]*
  - ? River-formed landforms *[Valley, Canyon, Divide, Basin, Alluvial Fan.]*
  - ? High elevation terrains *[Volcano, Mountain, Butte, Mesa, Plateau.]*
  - ? Large ice features *[Montane Glacier, Continental Glacier.]*

Evaluate

What landforms do you have around your school?

- Search for any of the landform types found in your local area. Use the Find Address Or Place search tool.
- Explain what the selected landform is and how it differs from similar features (e.g. those in Elaborate).
- ? If you have chosen a local cape, for instance, how is this different from a barrier island? *[Answers will vary depending on which landforms you choose.]*

EDIT (ADD FEATURES)

- At the top of the map, click the Edit button.
- Click Landuse Marker.
- Click and hold the mouse button to start drawing.
- Move the mouse to draw, then let go of the button to finish.

BOOKMARK

- At the top of the map, click the Bookmarks button.
- Choose a bookmark.
- The map scale and extent will change.

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...

- In the current the map, in the Find Address Or Place box, search for local landform names.
- Explore America's natural landscape with this storymap from Esri. http://esriurl.com/Geo18612

TEXT REFERENCES

This GIS map has been cross-referenced to material in the landforms sections of chapters from middle-school texts.

- *Earth Science by Glencoe McGraw Hill – Chapter 6*
- *Earth Science by Holt, Rinehart, Winston – Chapter 11*
- *Earth Science by McDougal Littell – Chapter 1*
- *Earth Science by Prentice Hall – Chapter 1*

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