

## Exploration 10: Shorelines

Sandy Point, Kiawah Island, South Carolina  
Coastal California, south of Montana De Oro State Park

Log on to the *Encounter Earth* site – <http://www.mygeoscience.com/kluge> – and click the link for the “Exploration 10: Shorelines” KMZ file to begin this activity.

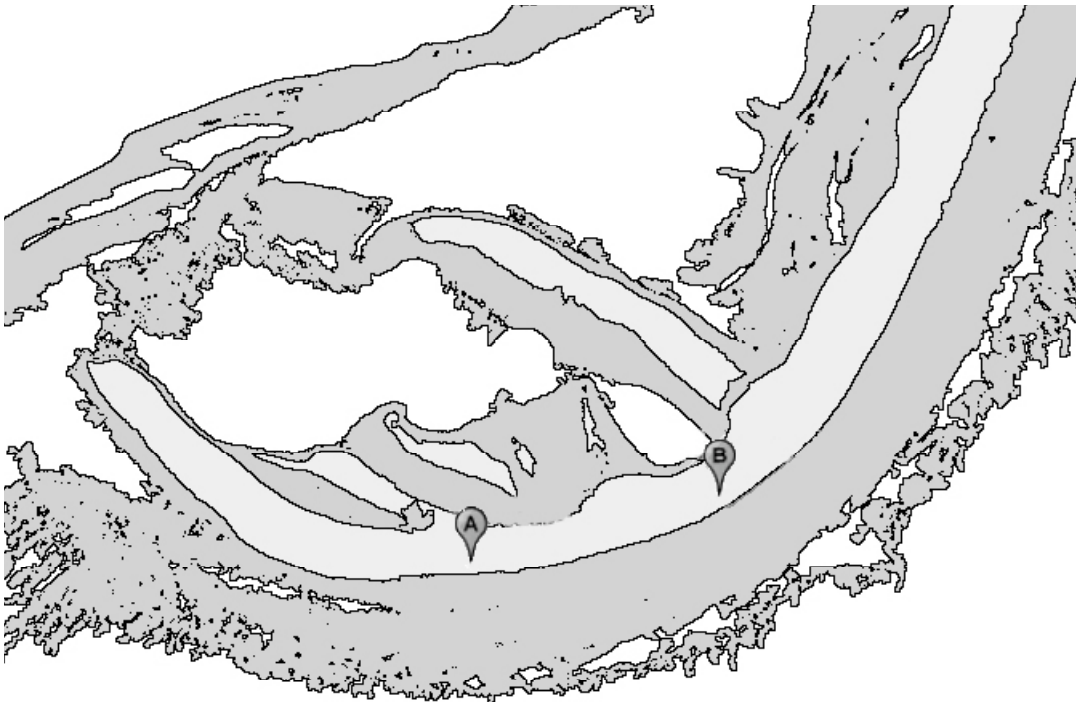
### Location 1: Sandy Point, Kiawah Island, South Carolina

Open the “Shorelines” folder and double click the “?” icon for the Location 1—Sandy Point placemark to fly to it. Carefully study the appearance of the coastal feature that dominates this view. Note the direction of the offshore waves, and the pattern that the breaking waves make on the shoreline. You may want to zoom in and around the area for a closer look, and back out to view the feature in the context of the larger area. You can return to the original view for this question by double clicking the “?” placemark in the Places panel, or directly on the icon on the display. After you have observed and familiarized yourself with this particular landform and the general area, do/answer the following:

1. Is the landform *erosional*, or *depositional*? (circle one). What evidence can you provide to support your answer?

2. What term best describes this landform? \_\_\_\_\_

Draw your answers to questions 3 and 4 on Figure 10.1, below:



**Figure 10.1** Sketch of Sandy Point, Kiawah Island, South Carolina

3. Draw one long arrow to indicate the general direction of the longshore current and beach drift in this area.
4. With an “x”, label the most recently deposited sediments visible in the image area.
5. On Figure 10.2, draw several short arrows to indicate the specific path an individual grain of beach sand might travel in the area between placemarks A and B.



**Figure 10.2** Close-up sketch of Sandy Point.

6. Zoom out to an eye altitude of 20 or so miles. What is the most likely source of the sand that this landform is composed of?

## Location 2: Coastal California, south of Montana De Oro State Park

Double click the “?” icon for the Location 2—Coastal California placemark to fly to it. Fly around the area, zooming in and out to get a sense of both the details and the big picture of the setting. Double click the “?” placemark again to return to the original view, and answer the following questions. As you work through the questions, take the time to explore the locations in question from various angles and elevations. You can always return to the original view by double clicking either the Location 2—Coastal California placemark icon in the Places panel or its icon on the display.

1. Is the area here a coastline of *emergence*, or *submergence*? (circle one). What evidence can you provide to support your answer?

2. Study the appearance of the sea within 100–200 meters of the shore (around locations A and B). Does the depth of the water appear to be *relatively deep*, or *shallow*? (circle one) around those locations? Does the water depth appear to be *relatively constant*, or does it seem to get deeper with *increasing distance from shore*? (circle one).

3. What term best describes the seafloor at placemarks A and B?

4. What term best describes the landforms at the placemarks labeled D?

5. Describe the topography of the land surface in the areas around placemarks labeled C.

What is the average elevation of those areas? \_\_\_\_\_

a. What is the average width of that flat area? (report your answer in a unit that makes sense for an area of that extent)

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6. a. What is the origin of the spires of rock on either side of placemark E?

b. How are those spires of rock related to the landforms at placemarks D?

7. Double click placemark F. What is the average elevation of the land surface around that placemark?

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8. What evidence can you site to support the statement that the relatively flat surface at F is older than the surface at C?

9. What term best describes the relatively flat surfaces at A and B, C, and F?

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10. Describe the tectonic events that combined with the action of waves to produce the landscape in this area. Quantify the extent of the uplift between episodes.

