

## Coastal Landforms Lab

For today's lab we'll be looking at the Point Reyes 15 minute quadrangle. The area is visible in [Google Maps](#).

1. How does the San Andreas Fault express itself topographically on the Point Reyes quadrangle?
2. What is the history of this area on million-year time scales?
3. Some areas on the map have high local relief and others do not. For example, the lighthouse and Chimney Rock (SW corner) have high, steep topography while the landscape just to the north is lower rolling hills. Why is that? [Hint](#).
4. How might the climate vary across Point Reyes, from the west to the east side of the park? Is there any indication of vegetation differences from one side to the other?
5. In what direction is Limantour Spit growing and what does this tell you about the direction of the longshore current in Drake's Bay?
6. Why doesn't the spit connect all the way across Drakes Estero, like it does for Abbot's Lagoon?
7. The northwest coast of Point Reyes (e.g. Point Reyes Beach) is very straight. Why might this be?
8. Do you think people have to worry about rip currents on this straight section of beach? After answering based on the map, look at the Google imagery too and revise your answer if necessary.
9. What is the source of sand to this stretch of beach?
10. What landforms do you find just inland of the Point Reyes Beach? Are those landforms stable under the present geomorphic controls or are they dynamically changing? How tall are they? Is there a preferred orientation to them? If yes, what is the orientation? What does the orientation tell you about the climate?
11. On the northern shore of Drake's Bay are a number of embayments (Drake's Estero and Estero de Limantour, for example). How might these embayments have formed?
12. How would these embayments have looked 20,000 years ago? How would the river valleys draining into the embayments have been different? Are there any other examples of geomorphic response to long-term sea level change that you can see on the map?
13. Can you find any evidence of even higher sea levels than we have in the present day? (Relative sea level can change with tectonic uplift).
14. Are the cliffs that ring Drake's Bay actively eroding? How can you tell? At what time of the year would you expect the erosion rate to be the highest?
15. What would these cliffs have looked like 20,000 years ago?
16. What is the tidal range here? [tidesandcurrents.noaa.gov](https://tidesandcurrents.noaa.gov) or [freetidetables.com](https://freetidetables.com) for (slightly) better graphics.
17. How have humans affected this landscape? Think about the hillslopes, river sediments (that get into the bay), aeolian sediments, dairy farming, shellfishing, and tourism.

