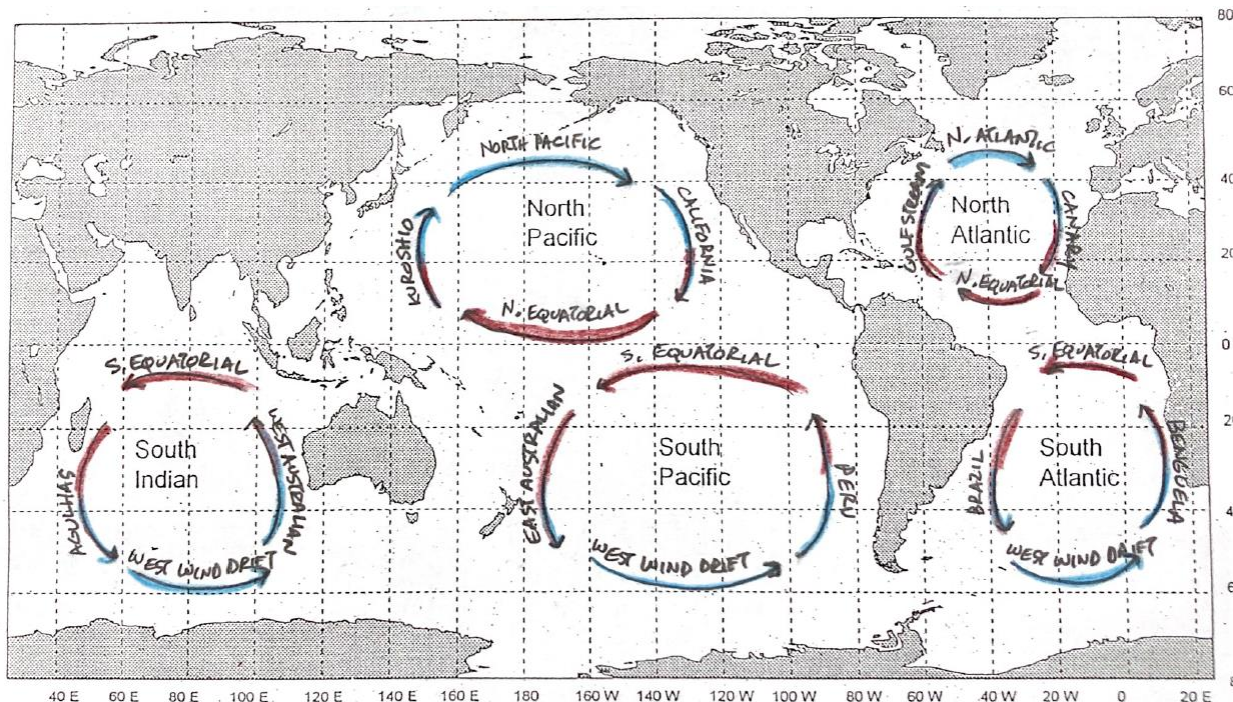


Predicting Ocean Currents

(MAKEUP VERSION)

Introduction: When viewed from space, the surface currents of the major ocean basins can be seen to follow the prevailing wind systems that drive them. Contained by continental boundaries and deflected by the Earth's rotation, these surface currents flow in large, roughly circular patterns called gyres. The gyres play an important role in redistributing heat from the low to the high latitudes, thus influencing ocean temperature, weather, and climate. The following activity investigates gyres by first looking at single surface currents and then building to a global perspective of ocean gyre circulation.

What We Did in Class: Students identified major ocean currents and placed them on a map to analyze patterns. You will use the picture below to answer the questions.



Multiple Choice Map Questions: Choose the correct answer based on the map above.

1. The trade winds that prevail between the equator and a latitude of 30 degrees have strong east to west components. Ocean currents under the trade winds flow generally in the *(same)**(opposite)* direction.
2. The prevailing westerlies found between a latitude of 30 and 60 degrees are winds that have a strong west to east component. Ocean currents under the prevailing westerlies flow generally in the *(same)**(opposite)* direction.
3. The ocean currents driven by these prevailing wind systems are deflected by continental boundaries to help form the gyres. The one latitude where blocking continental boundaries are lacking is *(0)**(30 N)**(30 S)**(60 N)**(60 S)*.

4. The ocean gyres in the major ocean basins form large, roughly circular closed currents which are centered at a latitude of approximately *(0)(30)(60)* degrees.
5. As seen from space, the gyre circulation patterns in the northern hemisphere show a *(clockwise)(counterclockwise)* flow. In the southern hemisphere, these gyre circulations are *(clockwise)(counterclockwise)*.
6. Near Perth, located on the west coast of Australia, the ocean current flows from the direction of the *(equator)(south pole)*.
7. In ocean gyres, regardless of hemisphere, warm water is transported poleward in the *(eastern)(western)* region of each ocean basin. The cold currents from the higher latitudes are found in the *(eastern)(western)* region of each ocean basin.
8. Near Peru, located on the west coast of South America, the ocean gyre current is *(warm)(cold)*.
9. In ocean gyres, regardless of hemisphere, the faster currents are found in the *(eastern)(western)* region of each ocean basin. The slower currents are found in the *(eastern)(western)* region of each ocean basin.
10. Near Tokyo, Japan, the ocean gyre surface current is *(fast)(slow)*.

Watch the video <https://youtu.be/p4pWafuvdrY> and answer the following questions

11. What toys were spilled into the Pacific in 1992?
12. How did the toys help scientists?
13. What causes currents?
14. Wind at the surface can impact water as deep as _____ m.
15. What is a gyre?
16. How does the Coriolis Effect affect currents?
17. What is thermohaline circulation?
18. Name the longest current in the world.
19. How is climate change affecting currents?
20. What did you learn from this makeup lab?