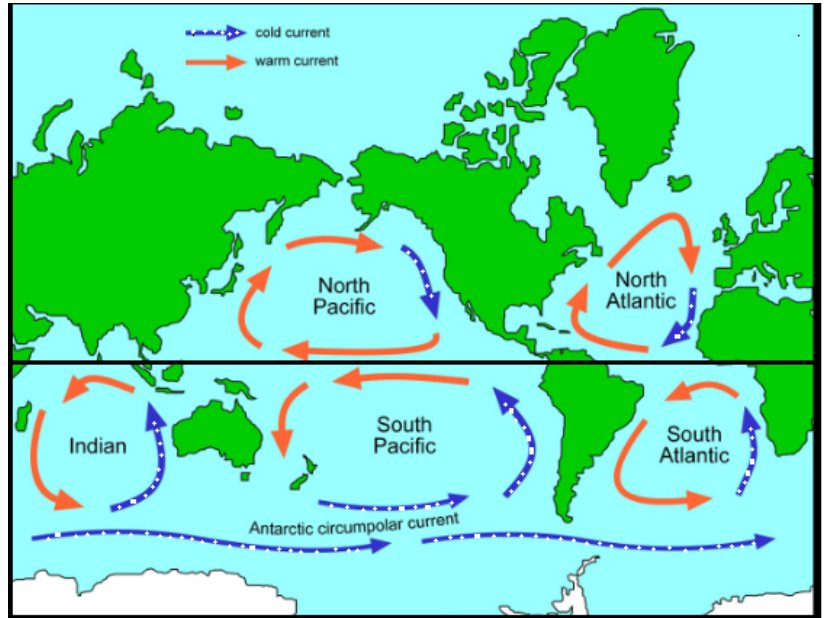


# Ocean Currents of Pangea Name: \_\_\_\_\_ hr \_\_\_/20

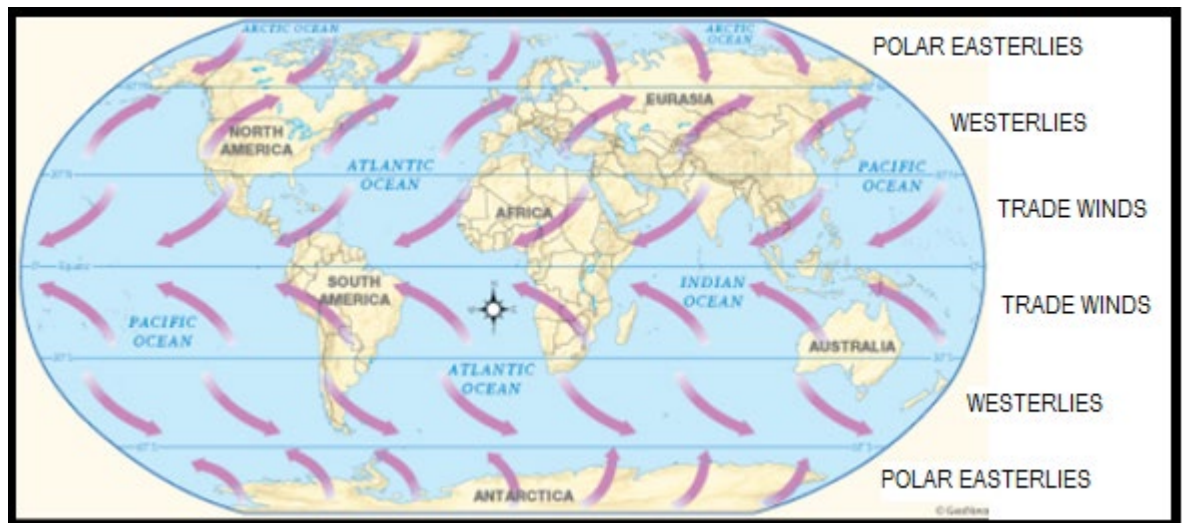
Ocean currents are affected by 1] moving air (wind), 2] the Coriolis effect (spinning Earth), 3] land (blocks water movement), and 4] water density (dense water sinks to create deep currents). Your task today is to draw out the possible ocean currents that would have existed during the Triassic Period, when the only land mass was the super continent Pangea.

## GUIDING PRINCIPLES FOR DRAWING YOUR CURRENTS:

1. In the Northern Hemisphere, The **Coriolis effect** causes gyres to spin clockwise in the subtropic region (from the equator to about ½ way up the globe) and counterclockwise in the subpolar region (from about ½ way up the globe to the north pole). In the Southern Hemisphere everything is just the opposite. See the picture to the right →



2. **Wind patterns** on planet Earth follow this typical pattern. As much as possible, ocean currents would do the same. See the picture to the right →



3. **Land Barriers** also change the direction of ocean currents because water cannot continue its normal path. If your current hits land, it must turn and go a different way.
4. **Water Density** changes with temperature and salinity. As warm waters near the equator travel north (Northern Hemisphere) or south (Southern Hemisphere) they begin to cool and start sinking towards the ocean floor, eventually returning to the equator. The water's salinity (amount of salt) can affect its density too. When salt water freezes and becomes ice, the salt does not freeze with it, but is instead left behind making the ocean's water more saline (salty). So in general, deep currents would start by sinking at the poles and rising up at the warm equator.

# Ocean Currents of Pangea Name: \_\_\_\_\_ hr \_\_\_/20

**Directions:** Draw the ocean currents that might have existed on the Triassic world map. It is recommended that you start with equatorial currents. (2pts) Be sure to include at least 3 gyres (3pts) Make a Legend Box explaining that red arrows represent warm water currents, and blue arrows represent cold water currents. (2pts) When you finish, answer the questions below.

1. How does your map compare to the expert's map? Are your currents traveling in the same direction? How do you differ?

---

---

2. When salt water freezes where does the salt go? How does this affect the water's density? (2PTS)

---

3. In general, should water be flowing to the poles or away from the poles? Would this water make a surface current or a deep current? (2PTS)

---

4. What would happen to the sea water's density if a massive ice sheet melted into the ocean?

---

5. What would happen to the sea water's density if the water flowed to the equator? Why would it do this? (2PTS)

---

6. What makes the wind spin counterclockwise in the Southern Hemisphere and clockwise in the Northern Hemisphere?

---

7. What happens to an ocean current when it encounters a land barrier?

---

8. Why don't the ocean currents perfectly follow the air currents in the atmosphere?

---

9. Where were your gyres located? Which direction did the Southern Hemisphere gyre spin? (2PTS)

---