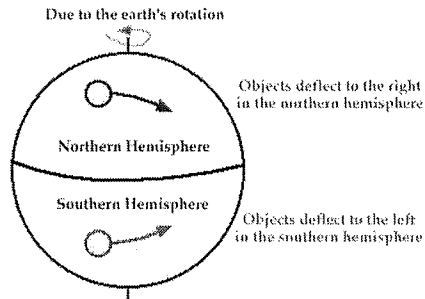


Color Your World

Ocean Current Worksheet

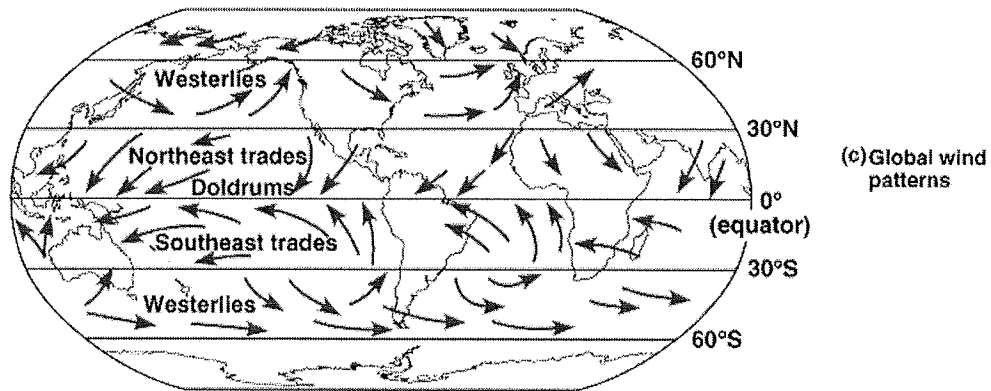
Temperature Affects and Surface Currents: Surface waters of the Earth's oceans are forced to move, primarily by winds. Where winds blow in the same direction for a long period of time, currents will develop that transport large masses of water over considerable distances across ocean surfaces. Why do ocean currents and global winds move in a circular pattern? The circular pattern is caused by the **Coriolis Effect**. The Earth's rotation on its axis causes ocean currents and winds to curve to the right (clockwise direction) in the Northern Hemisphere and to the left (counter clockwise direction) in the Southern Hemisphere. As the winds and currents move, the Earth rotates underneath them. The currents appear to curve in relation to the Earth's surface. If the Earth did not spin on its axis then the currents and winds would appear to move in a straight direction.



Part I:

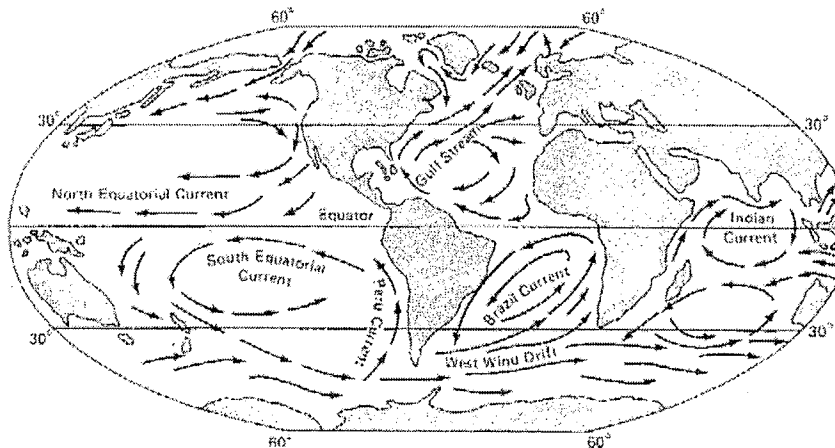
Compare the two pictures below (surface ocean currents and global wind patterns).

Global Wind Patterns



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Ocean Surface Current Patterns



Questions:

1. Take a look at the two pictures above. What do you notice about the global wind and surface current patterns?

2. In general, the direction of the wind flows in the _____ direction as the ocean surface currents.
(same/different)

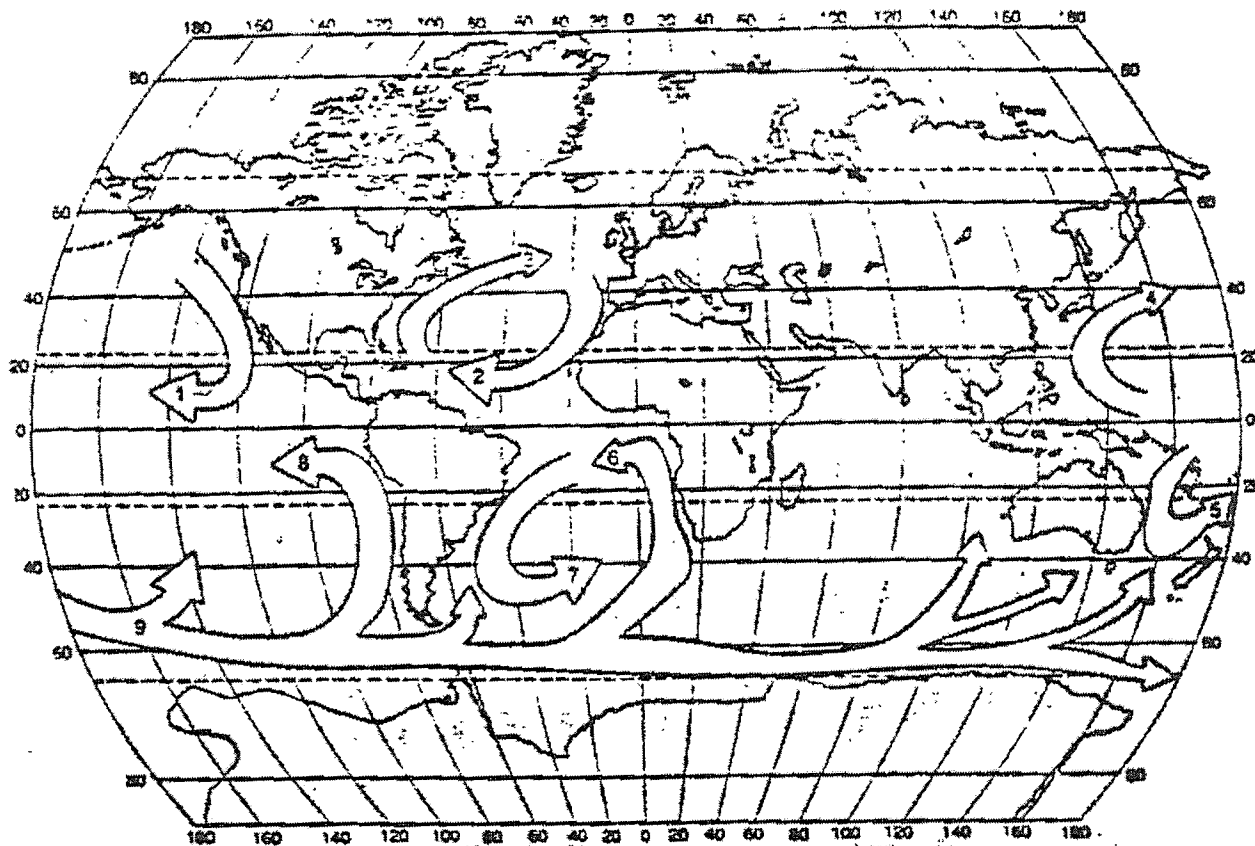
3. The global winds in the first map generally travel in either a **clockwise or counterclockwise** direction. Look at the global winds and compare the general direction of flow in the Northern Hemisphere with the general direction in the Southern Hemisphere.
 - a. In the Northern Hemisphere the general direction is _____.
 - b. In the Southern Hemisphere the general direction is _____.

4. The difference in direction is caused by the _____.

Part II: Using the table below *label and color* the currents in the picture on the following page (red = warm, blue = cold).

Number	Name of Surface Current	Characteristic Temperature of Water Transported by Current
1	California Current	Cold
2	Canary Current	Cold
3	Gulf Stream	Warm
4	Kuroshio Current	Warm
5	East Australian Current	Warm
6	Benguela Current	Cold
7	Brazil Current	Warm
8	Peru Current	Cold
9	Antarctic Circumpolar Current	Cold

Using the table on the previous page, label and color the currents in the picture below (red = warm, blue = cold).



Questions:

1. The ocean currents on your map generally travel in either a **clockwise or counterclockwise** direction. Look at the ocean currents and compare the general direction followed by currents in the Northern Hemisphere with the direction of those in the Southern Hemisphere.
 - a. In the Northern Hemisphere the general direction is _____.
 - b. In the Southern Hemisphere the general direction is _____.

2. What happens to the direction of an ocean current when it approaches the coast of a large landmass?

3. Cold water currents tend to have a cooling affect on the continental coastlines that they border, while warm water currents tend to have a warming effect. Look at the pattern of currents in the Northern and Southern hemispheres.
 - a. The East coasts of continents generally have _____ (warm or cold) water currents.
 - b. The West coasts of continents generally have _____ (warm or cold) water currents.
 - c. The East coast climates will generally be _____ (warmer or cooler) than it's supposed to be.
 - d. The West coast climates will generally be _____ (warmer or cooler) than it's supposed to be.
4. Look at the pattern of cold and warm water currents. What seems to determine whether a current carries warm or cold water? Explain why this is so.