

Ocean Currents



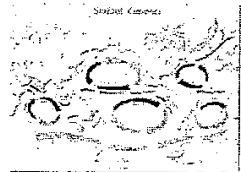
Currents

- A current is a large stream of moving water that flows through a body of water
 - It moves large amount of water far distances



Surface Currents

- Surface currents are caused by WIND
 - Effect the upper portion of the ocean at a depth of several hundred feet
 - Surface currents move in a circular motion



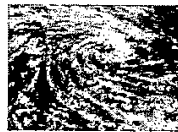
Factors that Effect Currents

- Sun's Heat
- Wind
- Rotation



The Coriolis Effect

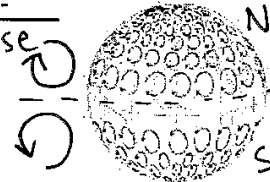
- The Coriolis Effect is the effect of the Earth's rotation on the direction of winds and currents



- Partner Activity!!!
 - Paper Holder
 - Paper Spinner
 - While your partner spins the paper try to draw a straight line
 - What happened?? WHY???

Coriolis Effect

- As a result of the Coriolis Effect, currents in the North hemisphere are Clockwise while currents in the South hemisphere are counter-clockwise



The Gulf Stream

- The Gulf Stream is the strongest current in the North Atlantic Ocean
 - The Gulf Stream can reach up to 30 km wide and 300 m deep!
 - The Gulf Stream carries water up along the East coast of the USA
 - The Gulf Stream is caused by strong winds from the West



Deep Ocean Currents

- Deep currents are caused by differences in Density, not by wind currents
 - Density of ocean water is effected by:
 - Temp – cold water (*more dense*) sinks, warm water (*less dense*) rises
 - Salinity – amount of salt in water; water with more salt (*more dense*) sinks, water with less salt (*less dense*) rises
- Deep currents move more slowly than surface currents...let's find out why!

Deep Currents

- Warm water surface currents move from the equator to the poles where water gets cold
- When ice forms at the poles, ice crystals push the salt into the water below, increasing the salinity of the water
- As the temperature decreases and the salinity increases, the density of the water increases
 - As a result, the dense water sinks to the bottom of the ocean floor

BrainPop

Ocean Currents

Upwellings

- Upwellings are caused by the upward movement of cold water from the deep ocean
 - Caused by wind; wind blows the warm surface water away allowing colder water to rise up to the surface



Upwellings

- Upwellings bring tiny organisms, minerals, nutrients to the surface waters, which typically have little nutrients
 - Upwelling zones are home to enormous schools of fish
- The Pacific Ocean off of the western coast of South America in the major area of upwellings
 - Strong winds from the Andes mountains sweep across the ocean causing these upwellings
 - Millions of people rely on these upwellings for jobs and for food