**Unit 6 -The Hydrosphere (\*\*=tested items)**

**\*\*How is Water Used?**

* 70% in Irrigation
* 20% in Industries
* 10% in Cities and Residences

**Ocean Currents** --- Is the mass of ocean water that flows from one place to another

**\*\*How do Currents Influence Climate?**

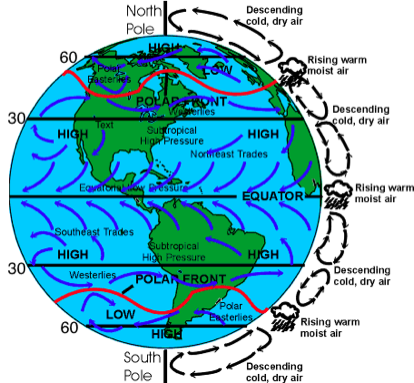
* Exchanges heat in the water with the atmosphere
* Type of current nearby influences weather for an areas
  + Warm currents bring warm temperatures
  + Cold currents bring cooler temperatures

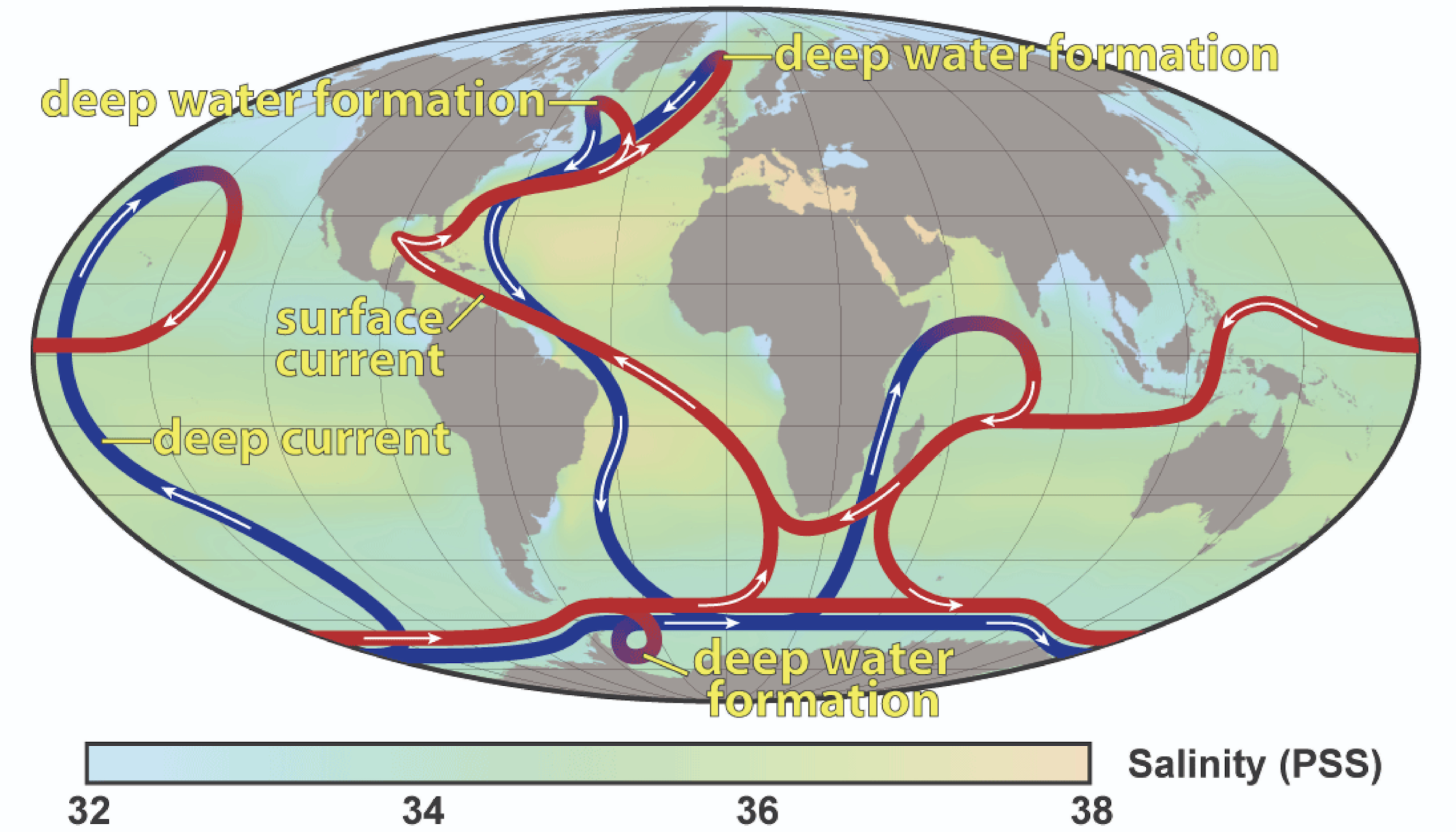
**\*\*Current Movement**

|  |  |
| --- | --- |
| **Warm Currents**   * + Move from the tropics to the poles   + Ex: Gulf Stream (east coast of the US) | **Cold Currents**   * + Move from the poles to the equators   + Ex: Canary Current |

**\*\*Why do Current Moves?**

|  |  |
| --- | --- |
| **Primary Forces**   * + Solar heating, winds, gravity, Coriolis | **Secondary Forces**   * + Influences where the current flows |





**Freshwater Facts**

* Primary use for freshwater in U.S. is for agriculture
* In our homes, we use the most freshwater to wash, clean and flush.
* The typical person in an industrialized nation uses 700-1000 gallons of freshwater per week

**Distribution of Water On Earth**

* 71% of Earth is water
  + 97% in the oceans
  + 3% is freshwater
    - 2% in ice and glaciers
    - 0.6% in underground water
    - 0.4% in rivers, streams, lake and atmosphere

**\*\*What is Groundwater?**

* Water that is below the surface
* 50% of water used by the public is groundwater

**\*\*How does water become Groundwater?**

* **Permeability**
  + How easily water can pass through connected pore spaces
* **Porosity**
  + Percentage of pore spaces in soil and rock
  + Clay has the smallest percentage (not permeable)

**\*\*Aquifers**----Underground layer of water bearing permeable rock (gravel, sand or silt) from which ground water can be extracted using a well

**\*\*Wells**

* A hole bored into the zone of saturation
* Pumping can cause the water table to be lowered
* **Artesian Well**----Groundwater rises on its own under pressure
* **Cone of depression** --- Occurs in an aquifer when a lot of groundwater is pumped from the well

**\*\*Problems with Groundwater**

* Withdrawing water for agriculture
* Toxic metals contaminating the water (arsenic, cadmium, lead)
* Salt water intrusion
  + Salt water from the ocean enters the groundwater near coastal areas

**\*\*What is a Flood?**

* When the stream or river overloads the capacity of its channel and overflows it banks
* Most floods are caused by rapid spring snow melting or storms that bring heavy rains over a large region

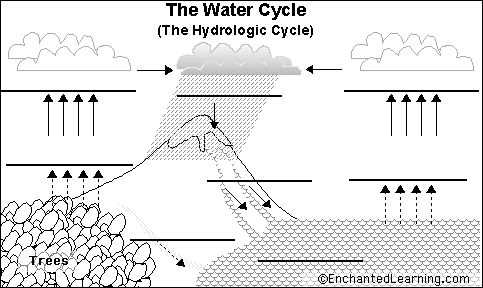
**\*\*How to control Floods?**

* **Artificial Levees**
  + Concrete or Earthen mounds built on the banks of a river
  + Increases the amount of water it can hold
* **Natural Levees**
  + Parallels a stream and helps to contain its water, except during flood stage
* **Flood-Control Dams**
  + Stores floodwater and lets it out slowly
* **Limit Development**
  + Preserve floodplains instead of building on them

**Human Activities Causing Flooding**

* Removing vegetation
* Overgrazing
* Mining
* Building on floodplains
* Logging
* Forest fire
* Destruction of wetlands
* Urbanization

**\*\*The Water Cycle**-----Water is constantly moving among the oceans, the atmosphere, the solid earth and biosphere

**\*\*Parts of the Water Cycle**

1. **Evaporation**: liquid water changes into water vapor
2. **Precipitation**: liquid or solid water from the clouds
3. **Condensation**: water vapor that turns into liquid making clouds
4. **Infiltration**: liquid water moving through the ground
5. **Transpiration**: water vapor released to the air by plants
6. **Runoff**: when liquid hit the ground but not absorbed

**\*\*What does Water Balance Mean?** ---- Precipitation equals evaporation