

Adopt-A-Drifter Program

Lesson 2: Climographs

Ocean Surface Currents and Climate

What is climate?

- The **long-term average** of conditions in the atmosphere, ocean, ice sheets, and sea ice described by statistics, such as means and extremes.



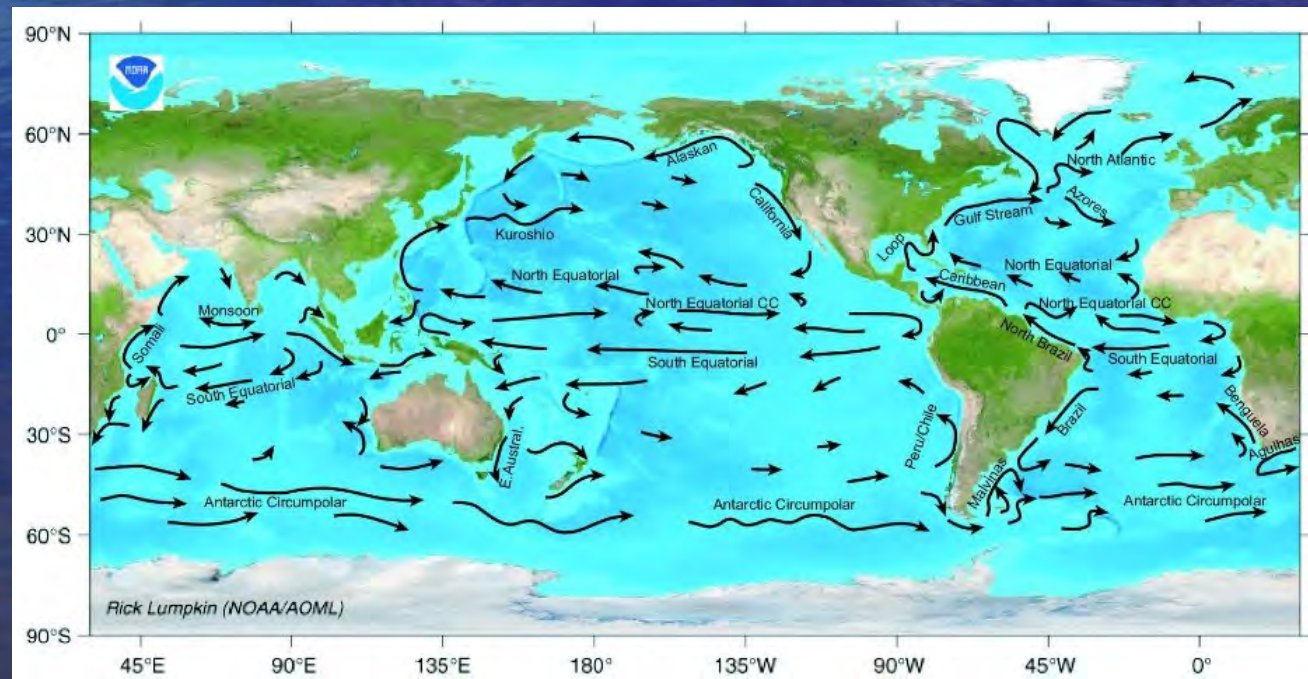
What is weather?

- The **specific** conditions of the atmosphere **at a particular place and time**, measured in terms of variables that include temperature, precipitation, cloudiness, humidity, air pressure, and wind.



What are ocean surface currents?

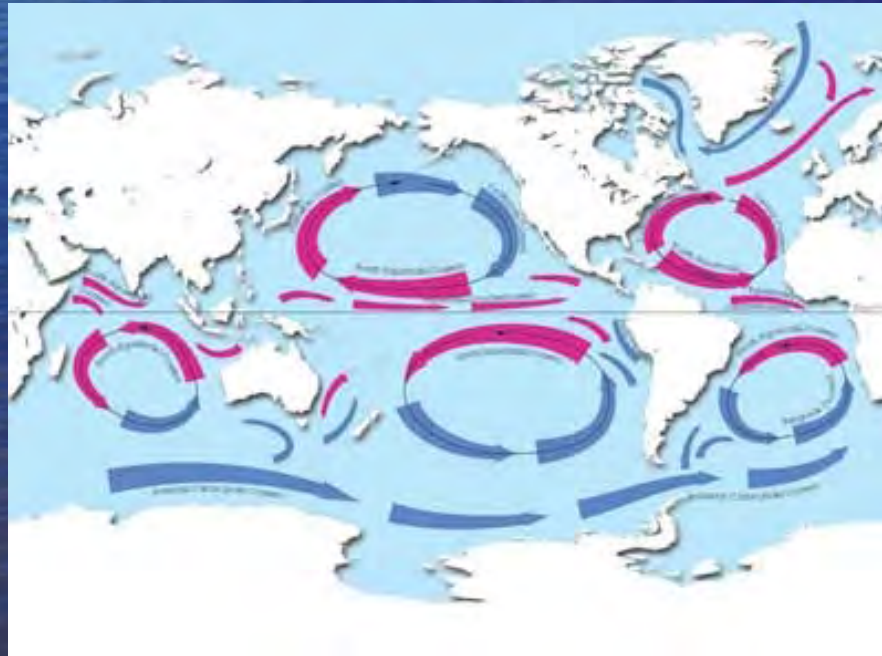
- The surface currents of the world's ocean are driven mainly by wind and move in circular patterns following the major wind belts of the globe.



(photo credit: Rick Lumpkin,
www.adp.noaa.gov)

How do ocean currents circulate water around the earth?

- In general, currents carry warm water from the tropics toward the poles and bring cold water back toward the equator.



How do currents affect the surrounding air?

- A surface current warms or cools the air above it, influencing the climate of the land near the coast.



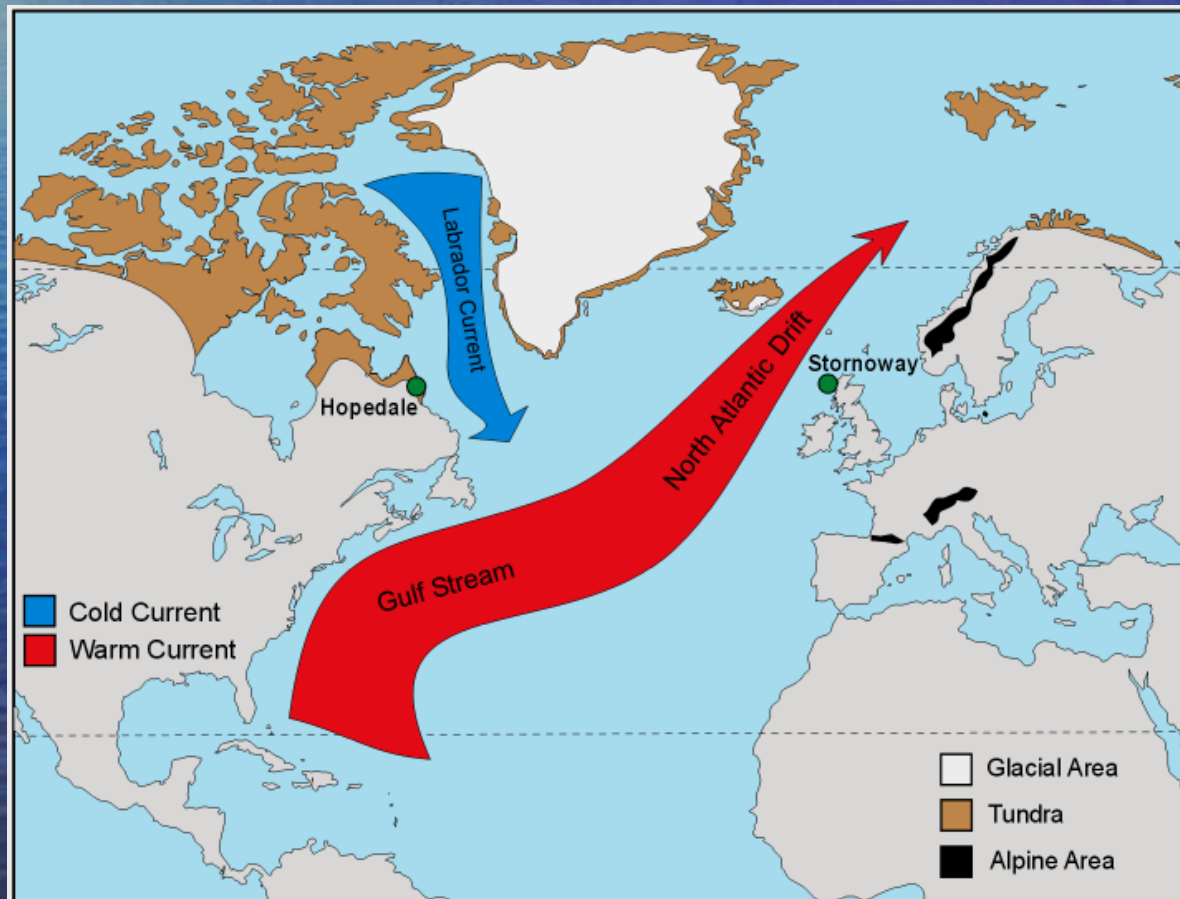
Warm Water Currents

- Winds pick up moisture as they blow across warm water currents. This often brings mild, rainy weather to the coastal regions.



Warm Water Currents

- Example: The Gulf Stream



Warm Water Currents

- The Gulf Stream brings relatively warmer temperatures to western Ireland and Great Britain, resulting in a subtropical climate with mild winters.



Logan Botanic Garden,
Scotland

(photo credit: Archie Miles)

Cold Water Currents

- Cold water currents cool the air above them and since cold air has less of an ability to take up moisture than warm air, these currents tend to bring cool, dry weather to adjacent land areas.
- Fog is often found along the land-sea borders where cold ocean currents exist.

Cold Water Currents

- Example: Atacama Desert, Chile, South America

Cold ocean currents keep clouds and fog just off the coast, making it one of the driest places on earth.



(photo credit: Mary Cook)