

$$I = \frac{I_{high} - I_{low}}{C_{high} - C_{low}} (C - C_{low}) + I_{low}$$

$I$  = the resulting index value.

$C$  = the pollutant concentration.

$C_{low}$  = the concentration breakpoint below  $C$ .

$C_{high}$  = the concentration breakpoint above  $C$ .

$I_{low}$  = the index breakpoint corresponding to  $C_{low}$ .

$I_{high}$  = the index breakpoint corresponding to  $C_{high}$ .

- - ALWAYS round AQI up to the nearest whole number
  - AQI is in PPB
  - Publish higher AQI

## Ocean Influence

- Surface currents: ocean currents affecting top 400m of water – start from air blowing across surface
  - Distribute heat around planet – moderates global climate by transporting warm water from equator to poles + cold water from poles to equator
- Gyres: large circular ocean currents
- Coriolis effect: force driven by Earth's rotation that deflects objects, winds, and currents on surface of Earth + in ocean or atmosphere

## Ocean Currents

- Deep currents: flow of water below surface caused by variations
- in density, temperature, and salinity.
- Salinity: concentration of salt in water (ppt)
- Both contribute to thermohaline conveyor: large-scale ocean circulation driven by ocean currents + changes in water temperature and salinity (density)
  - Halocline - zone of large salinity change
  - Thermocline - zone of large temp change

## Countercurrents + El Nino

- Countercurrents: changes in normal ocean currents + cause weather change
- El Nino (ENSO): Countercurrent that weakens/shifts direction of trade winds + ocean currents → upwelling currents (cold water rises)

## What's Happening With Our Climate Now?

- Indicators of global warming:
  - ↓ snow cover, ↓ arctic sea ice, ↓ glacier mass, ↑ air temp over land, ↑ humidity, ↑ temp of lower atmosphere, ↑ ocean heat, ↑ sea surface temp
- Earth's climate is currently in a period of global warming
  - Warming attributed to ↑ atmospheric GHG

## Concentration of Atmospheric Carbon Dioxide (GHG) Is Increasing:

- Natural processes like photosynthesis and cellular respiration maintain balance by cycling CO<sub>2</sub> between living organisms and the atmosphere
- CO<sub>2</sub> absorbed + released from oceans
- Natural atmospheric life of CO<sub>2</sub> ranges from 50–200 years
- Volcanoes increase CO<sub>2</sub> in atmosphere faster than other processes remove it