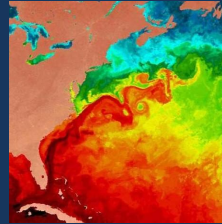


Moderation of Coastal Climates

Via Energy Transport
Via Heat Sink

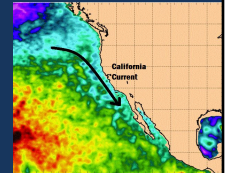
Oceans as Energy Transporters: Warm Currents

- Oceans move energy via currents.
- **Warm Currents:**
 - An ocean current beginning near the equator moves warm water.
 - When warm water moves into an area, the local air temperature increases.



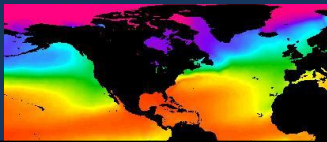
Oceans as Energy Transporters: Cold Currents

- Oceans move energy via currents.
- **Cold Currents:**
 - An ocean current beginning near the Earth's poles moves cold water.
 - When cold water moves into an area, the local air temperature decreases.



Oceans as Energy Transporters: Example

- The NC coast is warmer than the California coast at the same latitude because . . .
 - NC is next to the warm Gulf Stream moving up from the equator.
 - CA is next to the cold California current moving down from Alaska.

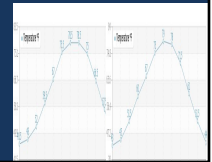


Oceans as Heat Sinks

- Heat sinks . . .
 - are objects/substances that store large amounts of energy.
 - have a high specific heat capacity.
 - Specific heat capacity = amount of energy needed to raise the temperature of the substance.
 - High specific heat capacity = heats up slowly & cools down slowly.
 - Low specific heat capacity = heats up quickly & cools down quickly.

Heat Sinks and Climate: Temperature Change

- Water = very high specific heat capacity
- Oceans slow the rate at which coastal areas experience temperature changes.
 - Winter: temperature at NC Outer Banks drops slower than in Raleigh.
 - Summer: temperature at NC Outer Banks rises slower than in Raleigh.



Heat Sinks and Climate: Temperature Moderation

- Since oceans provide a constant source and sink for energy, coastal temperatures tend to stay steadier than inland temperatures.

