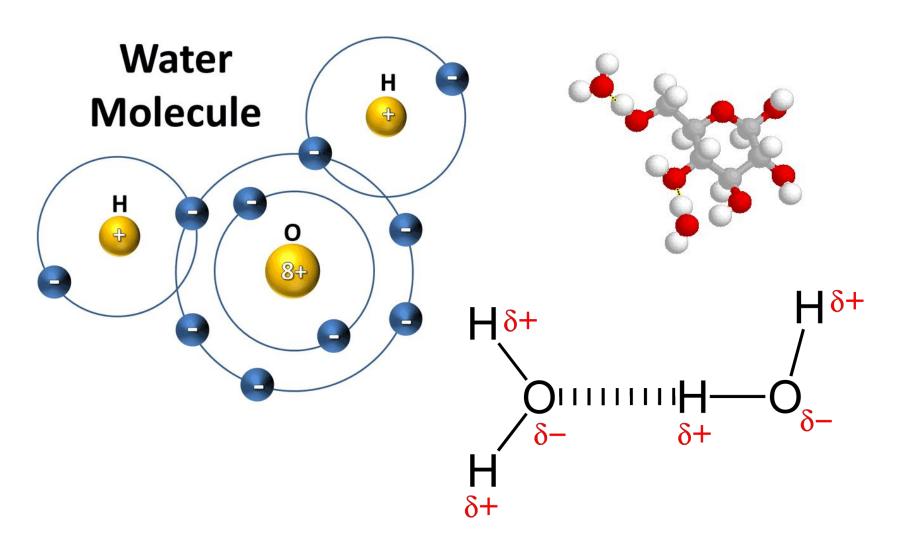
Freshwater Resources

Ms. Larsh

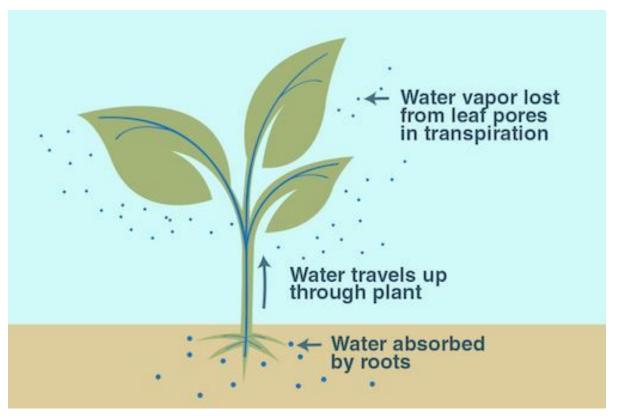
Important Properties of Water

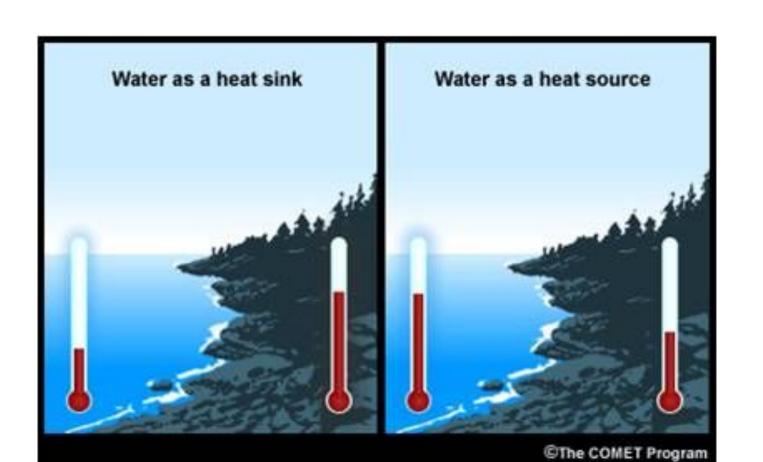
Hydrogen Bonds - allows water to exist as a liquid over a wide range of temperatures

Thermal Energy Storage Capacity - Liquid water can store a large amount of thermal energy without a significant increase in temperature

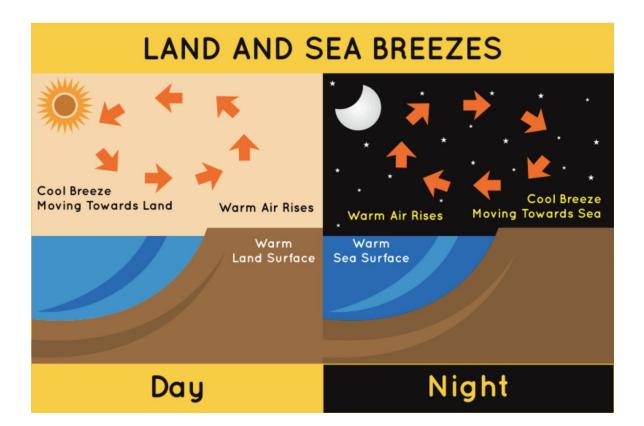


Hydrogen Bonds & Transpiration

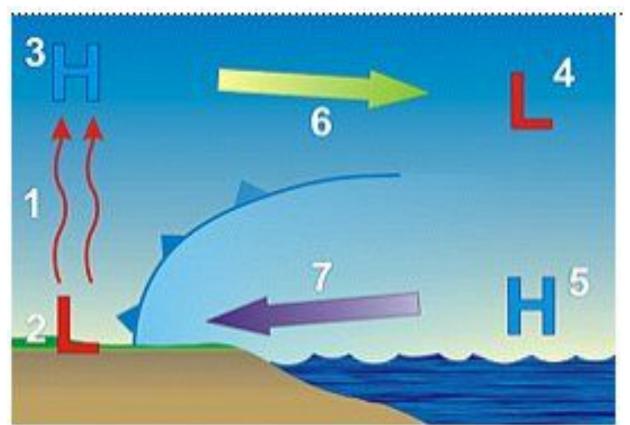




Thermal Energy Storage Capacity



Thermal Energy Storage Capacity



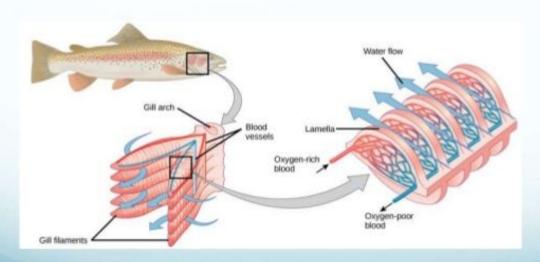
Important Properties of Water

Water as a Solvent - Liquid water dissolves a variety of compounds (transfer of nutrients, etc.)

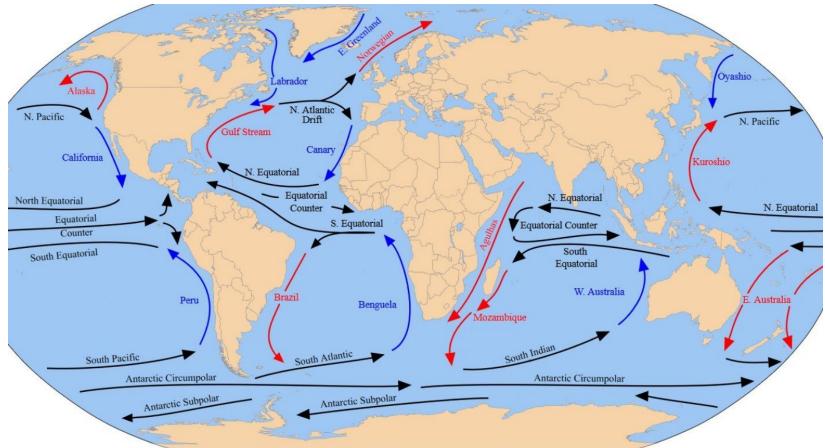
Solid Water - Water expands when it freezes, and ice floats due to its lower density

Water as Solvent in Environment

How do aquatic organisms get oxygen and carbon dioxide?

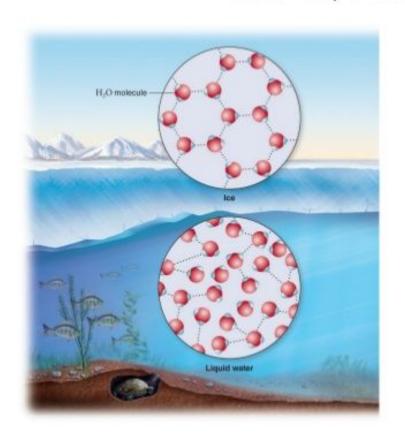


Ocean Currents & Water as a Solvent



Water Is Essential to Life

Water expands as it freezes



Water expands when it freezes.

- -lce is less dense than liquid water.
- -Aquatic life survives the winter.

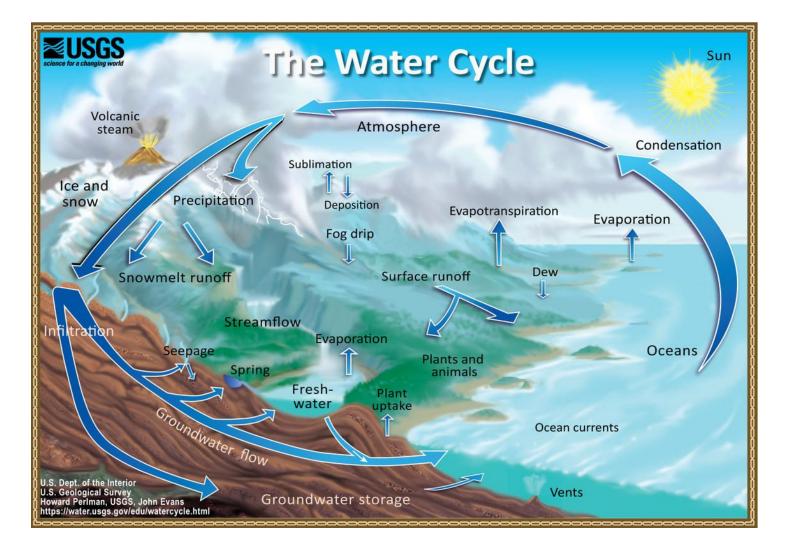
Locations of Freshwater Resources

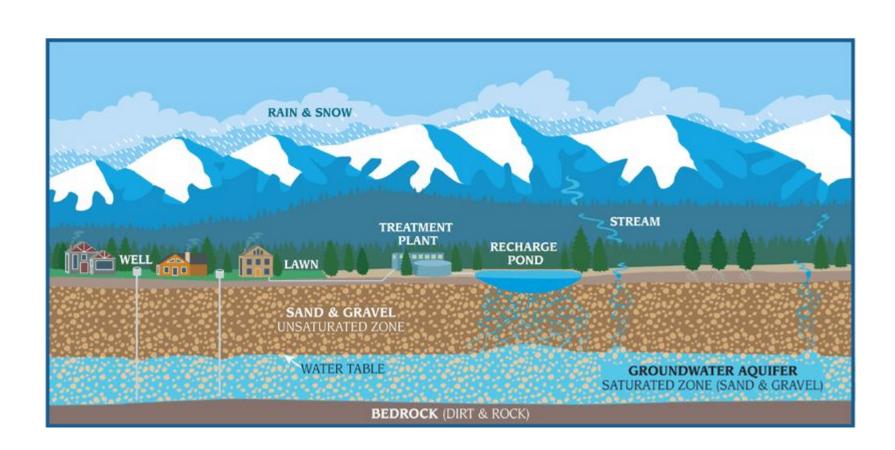
Where do we find Freshwater on Earth?

Locations of Freshwater Resources

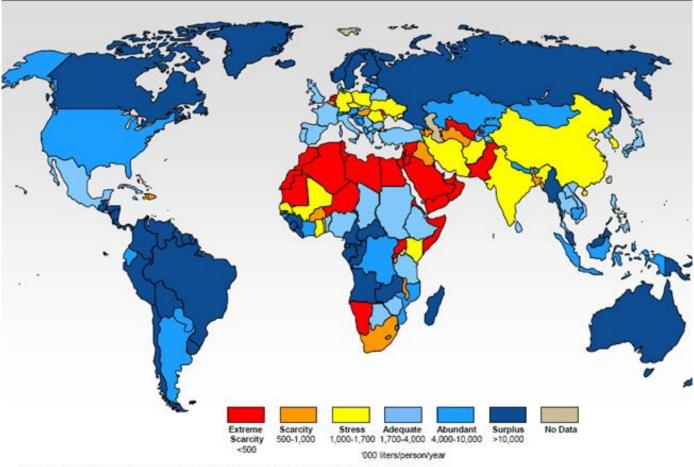
Surface Water - Streams, Rivers, & Lakes

Groundwater - Aquifers supplied by watersheds





Global Per Capita Water Availability (2025)



Source: 'Global Water Initiative' (June 2005), GEF International Waters Conference, The Coca-Cola Company

Management of Freshwater Resources

How do we manage Freshwater Resources?

Management of Freshwater Resources

Dams - Built across rivers

Reservoirs - capture river water, rain, and snow melt behind dams

Aqueducts - series of canals to transport water from one place to another above ground



Colorado River & the Hoover Dam



CENTRAL ARIZONA PROJECT CANAL The CAP Canal has allowed the cities it serves to grow, even in arid country. It begins at the Colorado River and moves water uphill, from Lake Havasu (elevation 447 Agua Hassayampa Lake Fannin-McFarland Aqueduct CALIFORNIA Fria River Havasu Verde Length: 58 miles River Mark Wilmer River Width at bottom: 22-24 feet Parker O 17 Width at top: 78-80 feet Colorado River Bouse Hills Depth: 15.13-15.74 feet Lake New Waddell Bouse O Pleasant -Dam Little Hieroglyphic Waddell-River Harquahala Mountains-Hassayampa-Agua-Salt PHOENIX Tonopah Desert -Fannin/McFarland Hayden-Rhodes Aqueduct 10 Length: 190 miles 60 Width at bottom: 24 feet Superstition Mountains Gila Width at top: 94 feet River Depth: 16.43 feet Santa River River Brady Gila -Picacho Cruz River Red Rock Yuma 10 **Tucson Aqueduct** Legend Length: 87 miles Dam Lower MEXICO Width at bottom: 12-20 feet Santa Cruz -Map area Tunnel Twin Peaks. Width at top: 52-87 feet Sandario-Brawley-Tucson Pumping plant Depth: 14 feet Phoenix San Xavier-Recharge basin Snyder Hill-Black Mountain-10 25 miles Pima Mine Road 19



Saguaro Lake





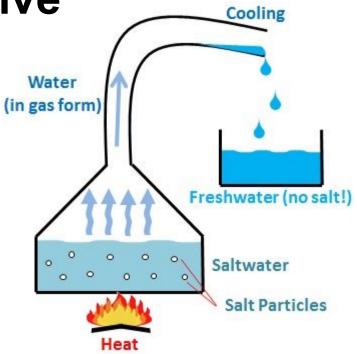


Desalination

The process of removing salt from seawater to provide freshwater

Heating Water is Expensive





Solar Desalination is a Slow Process

