

Miller Chapter 14

Water Resources

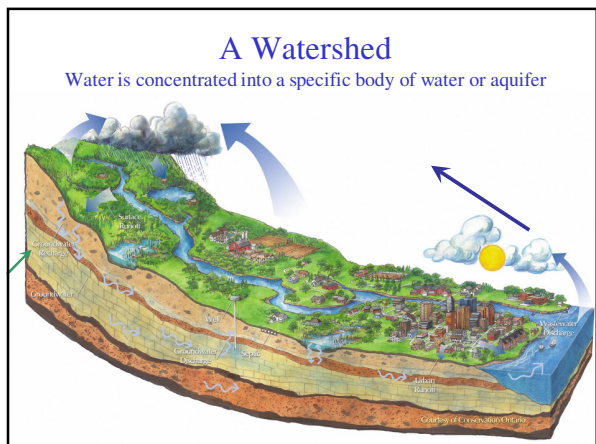
Will it be the new resource we have wars over?

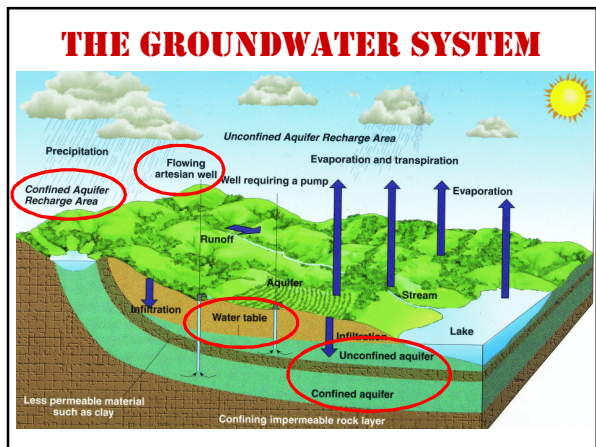
The World's water in a 1 Liter flask

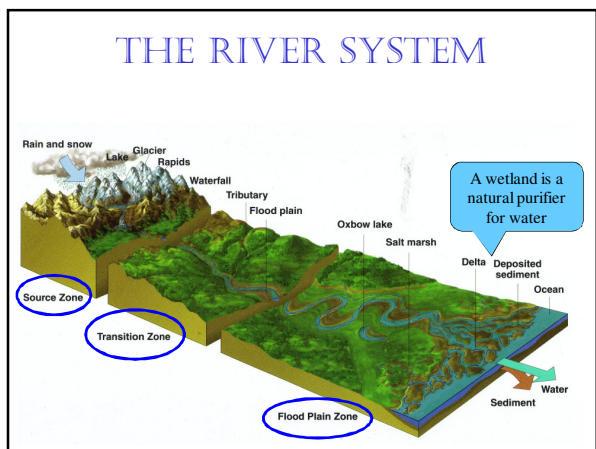
- 97.5% ocean
- How much fresh water?
 - **19 ml**
- How much in aquifers?
 - **5 ml about 50% is available to use**
- How much in lakes, rivers, and streams?
 - **4 drops**
- How much in soil moisture?
 - **2 drops**
- In the atmosphere?
 - **exhale**

Facts about the distribution of Water

🌍 **97.4% is in the ocean, it is too saline to drink or use for irrigation. What about desalination?**







Oligotrophic

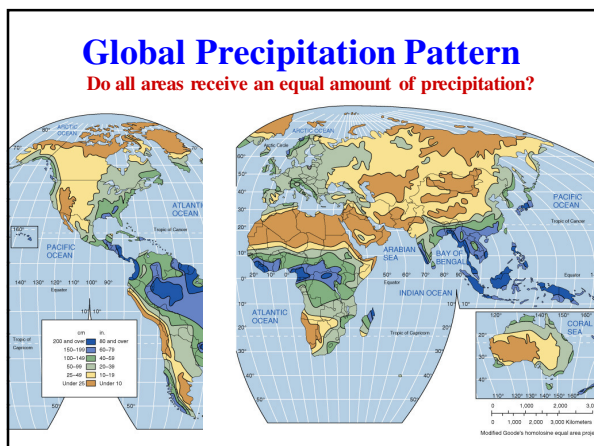
- Clear water, low productivity
- Very desirable fishery of large fish

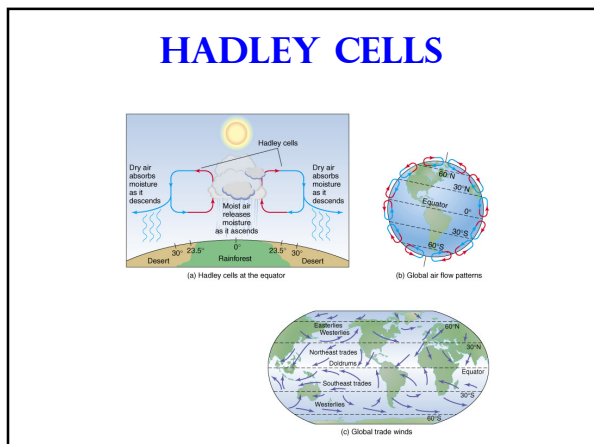
Labels in diagram: Sunlight, Little shore vegetation, Limnetic zone, Profundal zone, Low concentration of nutrients and plankton, Sparse fish population, Narrow littoral zone, Steeply sloping shorelines, Sand gravel rock bottom, Oligotrophic lake.

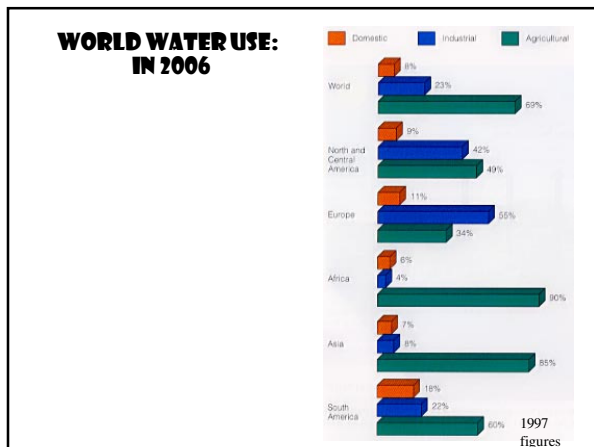
Eutrophic Lake

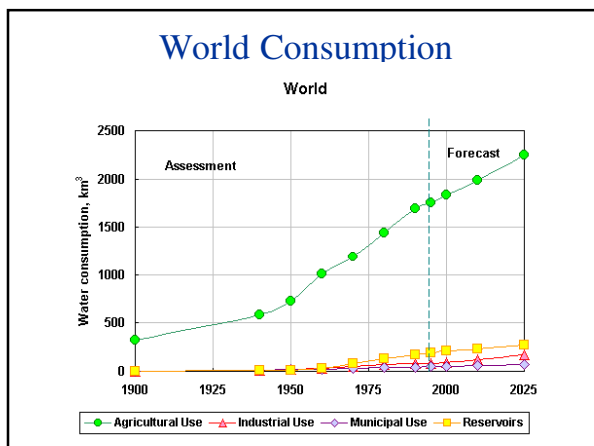
- Very productive
- May experience oxygen depletion
- Rough fish common

Labels in diagram: Sunlight, Much shore vegetation, Limnetic zone, Profundal zone, High concentration of nutrients and plankton, Dense fish population, Gently sloping shorelines, Wide littoral zone, Silt, sand, clay bottom, Eutrophic lake.



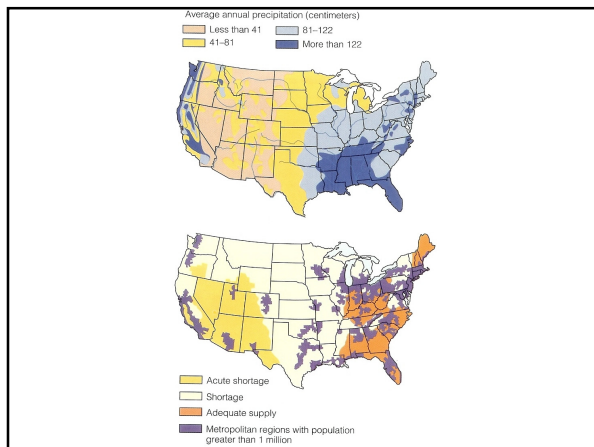


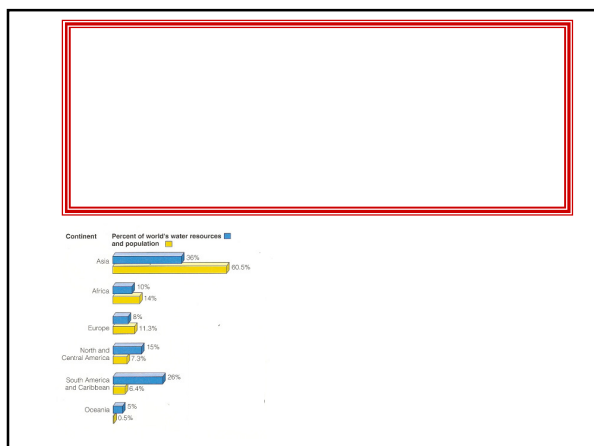


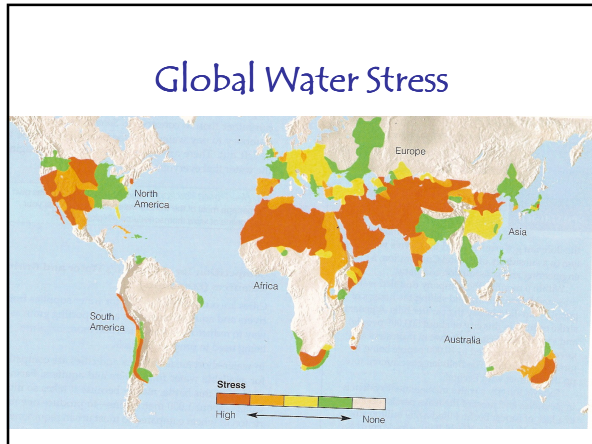


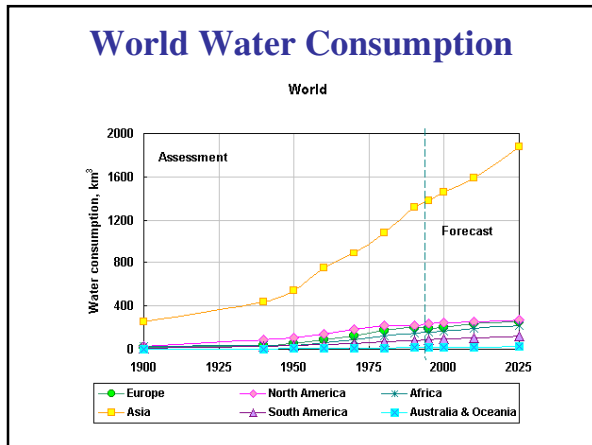
Indoor domestic use in U.S.

- Flushing toilets 38%
- Bathing 31%
- Laundry and dishes 20%
- Drinking and cooking 6%
- Brushing teeth and shaving 5%









HOW HAVE WE AFFECTED THE WATER CYCLE

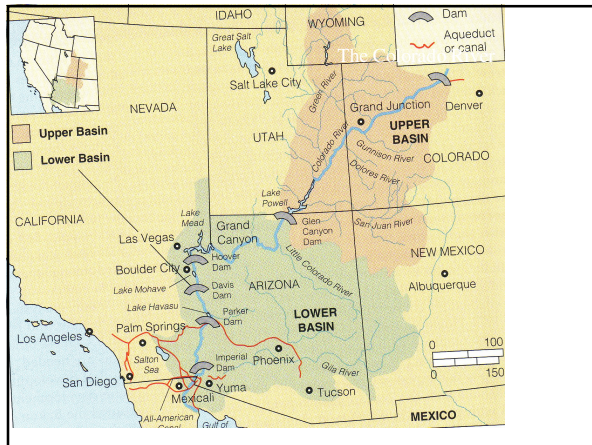
How do we capture, control, and protect the water that we have?

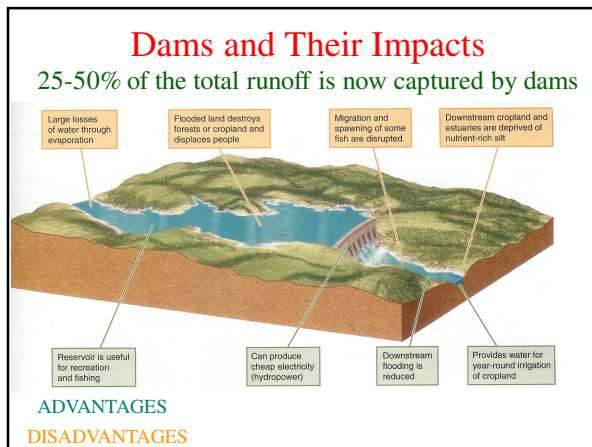
▶ **Channelization-**

control flow, what are the biological impacts of this method?

▶ **Reservoirs & Dams-** capture the rain water- how does it effect the earth's rotation and gravitational water.

▶ Transferring water- **aqueducts**






Wild and Scenic Rivers

Aqueducts

The State Water Project

- Majority of people do not live in areas supplied by local water sources
- Availability of water determines how many homes can be built.
- The State water project opened up southern California for major expansion



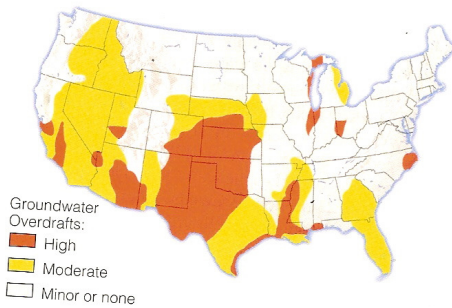
What causes freshwater shortages?

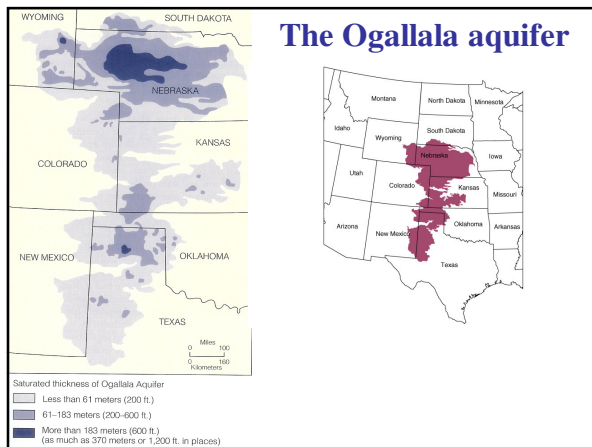
- ◆ Drought
- ◆ Too many people living in a dry climate
- ◆ Largest rivers are far from agricultural and population centers
- ◆ Overdrawing water from aquifers before they can recharge, causes.....

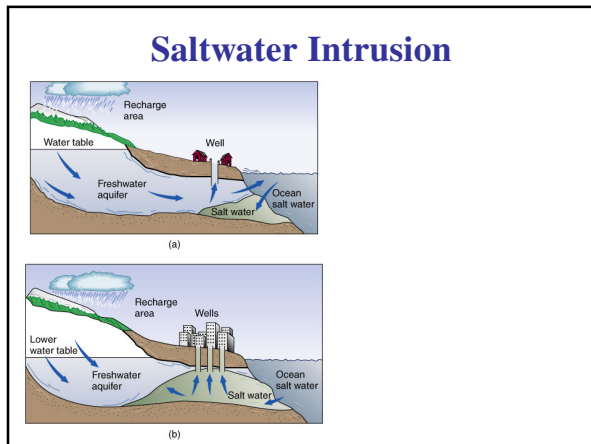
Tapping into the Groundwater

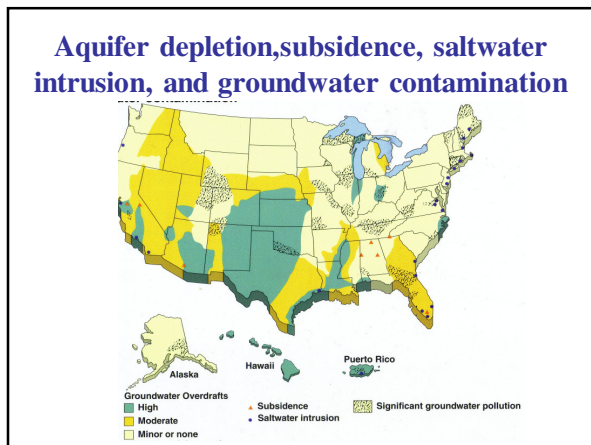
- **Aquifers provide almost one-fourth of the world's water.**
- **How is habitat alteration affecting the recharge areas?**
- **Six states depend upon groundwater for 90% of their supply!**

Groundwater Overdrafts









- ### Ideas to deal with water shortage?
- Conservation
 - Cloud seeding- Silver iodide is dispensed into clouds, creates nuclei carries moisture to surface. Common in Thailand, Philippines, Israel, and Santa Barbara County.
 - Towing icebergs
 - Capturing storm water
 - Water recycling; toilet to tap
