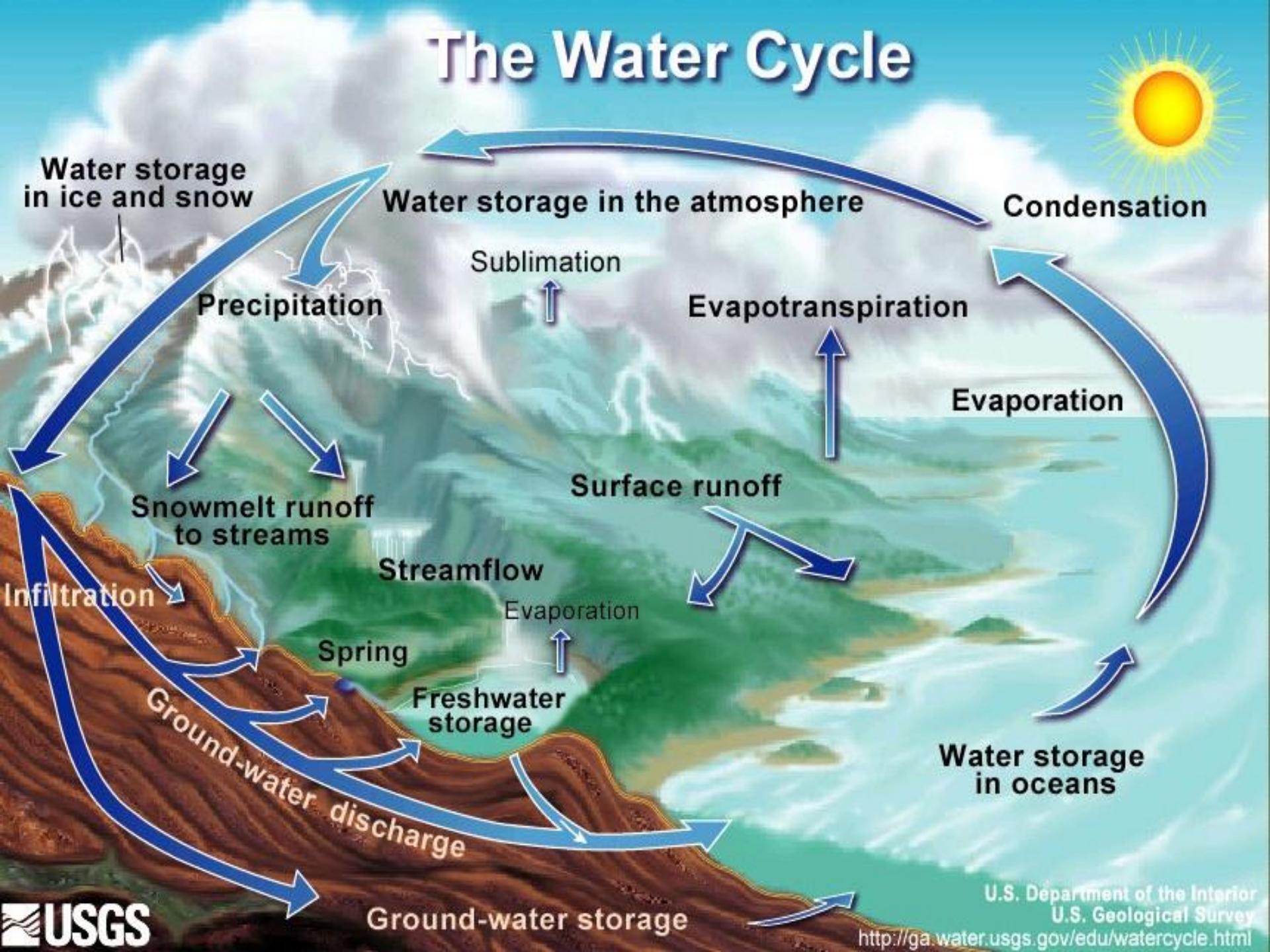


# Water Resource

# The Water Cycle



# Global Overview

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Iceberg and Polar cap store most of the fresh water on Earth

# Scarcity of fresh water

Water consumption for food production

Industrialized / developed countries tend to use more water in their industrial production. Other countries tend to use more water for agricultural uses

# Problems related to Water crisis

- Inadequate access to safe drinking water by over 1.1 billion people
- Groundwater overdrafting leading to diminished agricultural yields
- Overuse and pollution of water resources harming biodiversity
- Regional conflicts over scarce water resources sometimes resulting in warfare.

# Threats to fresh water resources

- Climate change causes change in frequencies of droughts and floods.
- Depletion of aquifers caused by over-consumption as a result of population growth.
- Pollution and contamination by sewage, agricultural and industrial runoff.



# Pressure of freshwater ecosystem

Human activity	Potential impact	Function at risk
Population and consumption growth	Increases water abstraction and acquisition of cultivated land through wetland drainage; increases requirement for all other activities with consequent risks	Virtually all ecosystem functions including habitat, production and regulation functions
Infrastructure development (dams, dikes, levees, diversions etc.)	Loss of integrity alters timing and quantity of river flows, water temperature, nutrient and sediment transport and thus delta replenishment, blocks fish migrations	Water quantity and quality, habitats, floodplain fertility, fisheries, delta economies
Land conversion	Eliminates key components of aquatic environment; loss of functions; integrity; habitat and biodiversity; alters runoff patterns; inhibits natural recharge, fills water bodies with silt	Natural flood control, habitats for fisheries and waterfowl, recreation, water supply, water quantity and quality
Overharvesting and exploitation	Depletes living resources, ecosystem functions and biodiversity (groundwater depletion, collapse of fisheries)	Food production, water supply, water quality and water quantity
Introduction of exotic species	Competition from introduced species; alters production and nutrient cycling; and causes loss of biodiversity among native species	Food production, wildlife habitat, recreation
Release of pollutants to land, air or water	Pollution of water bodies alters chemistry and ecology of rivers, lakes and wetlands; greenhouse gas emissions produce dramatic changes in runoff and rainfall patterns	Water supply, habitat, water quality, food production; climate change may also impact hydropower, dilution capacity, transport, flood control

# Desalination of sea water as fresh water supply

- Desalination of sea water can be done either via distillation or membrane process.
- Both process requires large amount of energy and thus costly, which means desalination remains an expensive option for providing reliable fresh water supply, restricted to only economically well-off countries.