Л.Н. Гумилев атындағы Евразия Ұлттық Университеті
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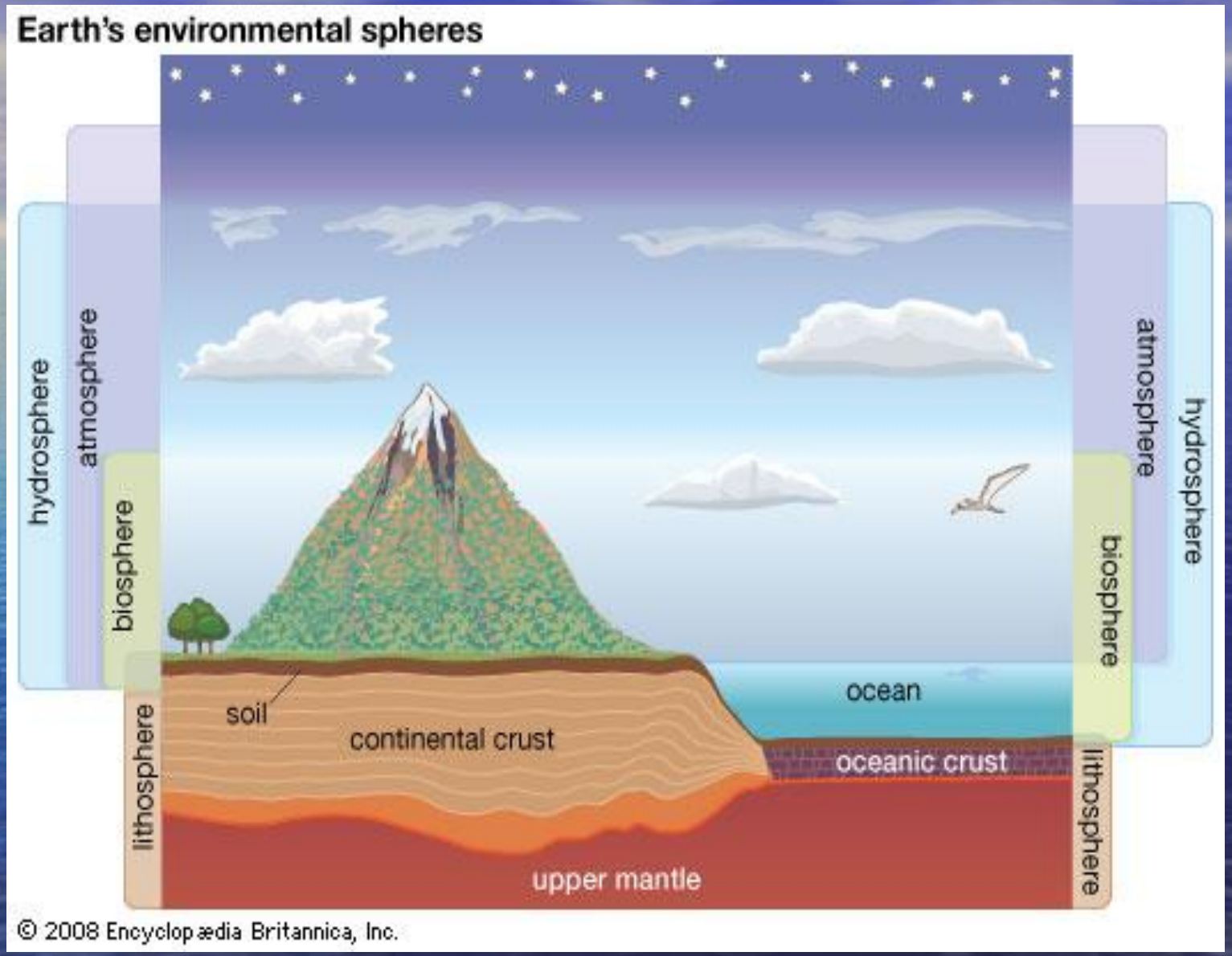
Hydrosphere. The main role of the hydrosphere in our life

География пәнінің 2 курс магистранты
Құттымұратов Мирамбек Оспанұлы.

1. *Water is the most important element in our life*

2. *The cryosphere*
3. *Hydrologic cycle.*
4. **Impact of human activities on the hydrosphere**

The hydrosphere (from Greek ὕδωρ - *hudōr*, "water" and σφαῖρα - *sphaira*, "sphere") in physical geography describes the combined mass of water found on, under, and over the surface of a planet


Earth's environmental spheres
hydrosphere
atmosphere
biosphere
lithosphere
soil
continental crust
upper mantle
ocean
oceanic crust
lithosphere
biosphere
atmosphere
hydrosphere
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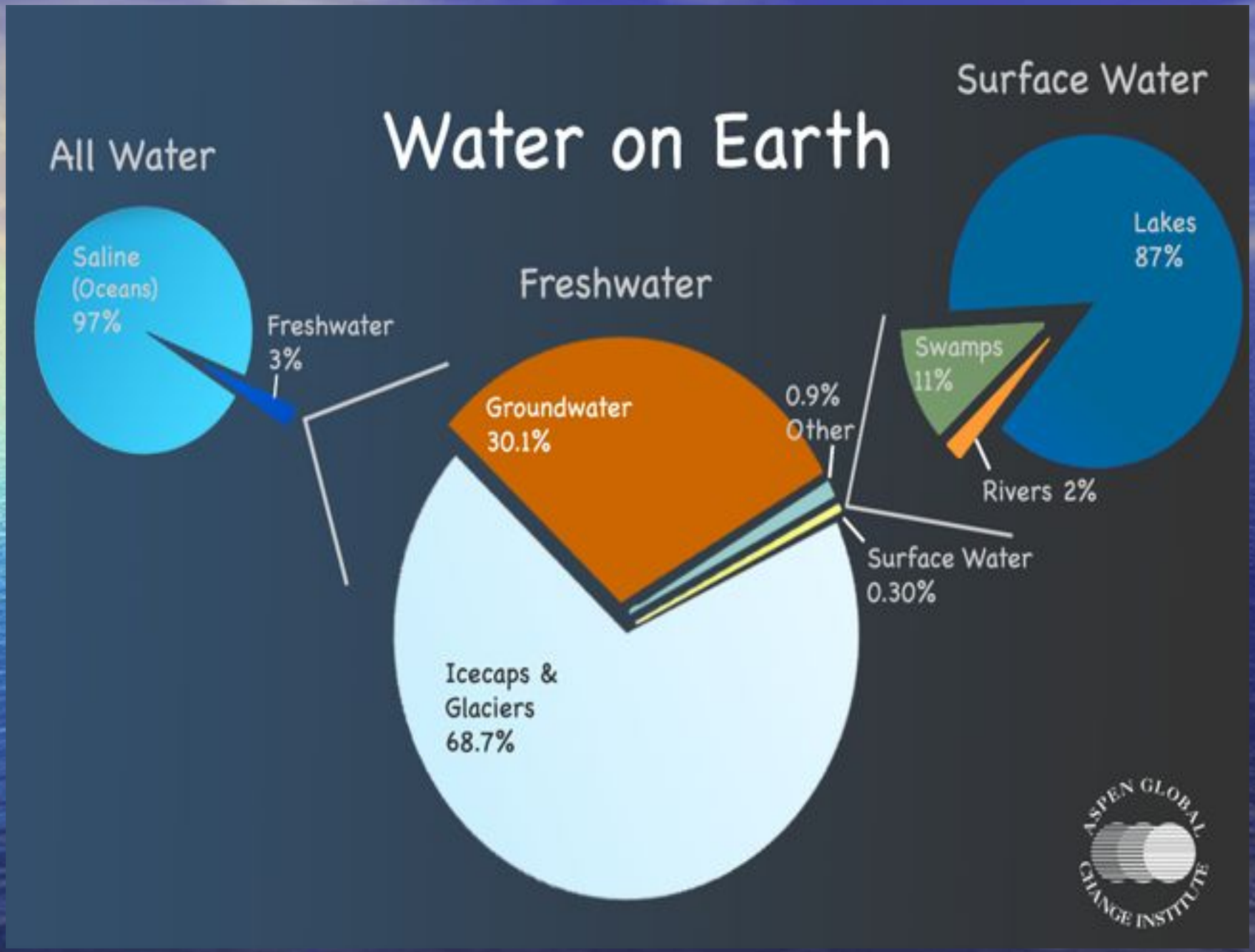
Approximately 75% of the Earth's surfaceApproximately 75% of the Earth's surface an area of some 361 million square kilometers (139.5 million square miles), is covered by oceanApproximately 75% of the Earth's surface, an area of some 361 million square kilometers (139.5 million square miles), is covered by ocean. The average salinityApproximately 75% of the Earth's surface, an area of some 361 million square kilometers (139.5 million square miles), is covered by ocean. The average salinity of the Earth's oceans


Water on Earth
All Water
Saline (Oceans) 97%
Freshwater 3%
Freshwater
Groundwater 30.1%
0.9% Other
Icecaps & Glaciers 68.7%
Surface Water
Surface Water 0.30%
Lakes 87%
Swamps 11%
Rivers 2%
ASPEN GLOBAL CHANGE INSTITUTE


ARCTIC
Europe
Asia
North America
ATLANTIC
PACIFIC
Africa
EQUATOR
South America
Oceania
PACIFIC
INDIAN
Australia
SOUTHERN
Antarctica

Being situated in South America, Amazon RiverBeing situated in South America, Amazon River is the largest river in the world with the combination of ten largest rivers. The world's famous river is a giant system of rivers and forests, extending to half of Brazil and neighboring countries. Amazon River featuring the largest drainage basin in the world, about 7,050,000 square kilometres (2,720,000 sq mi), accounts for about one-fifth of the world's total river flow.

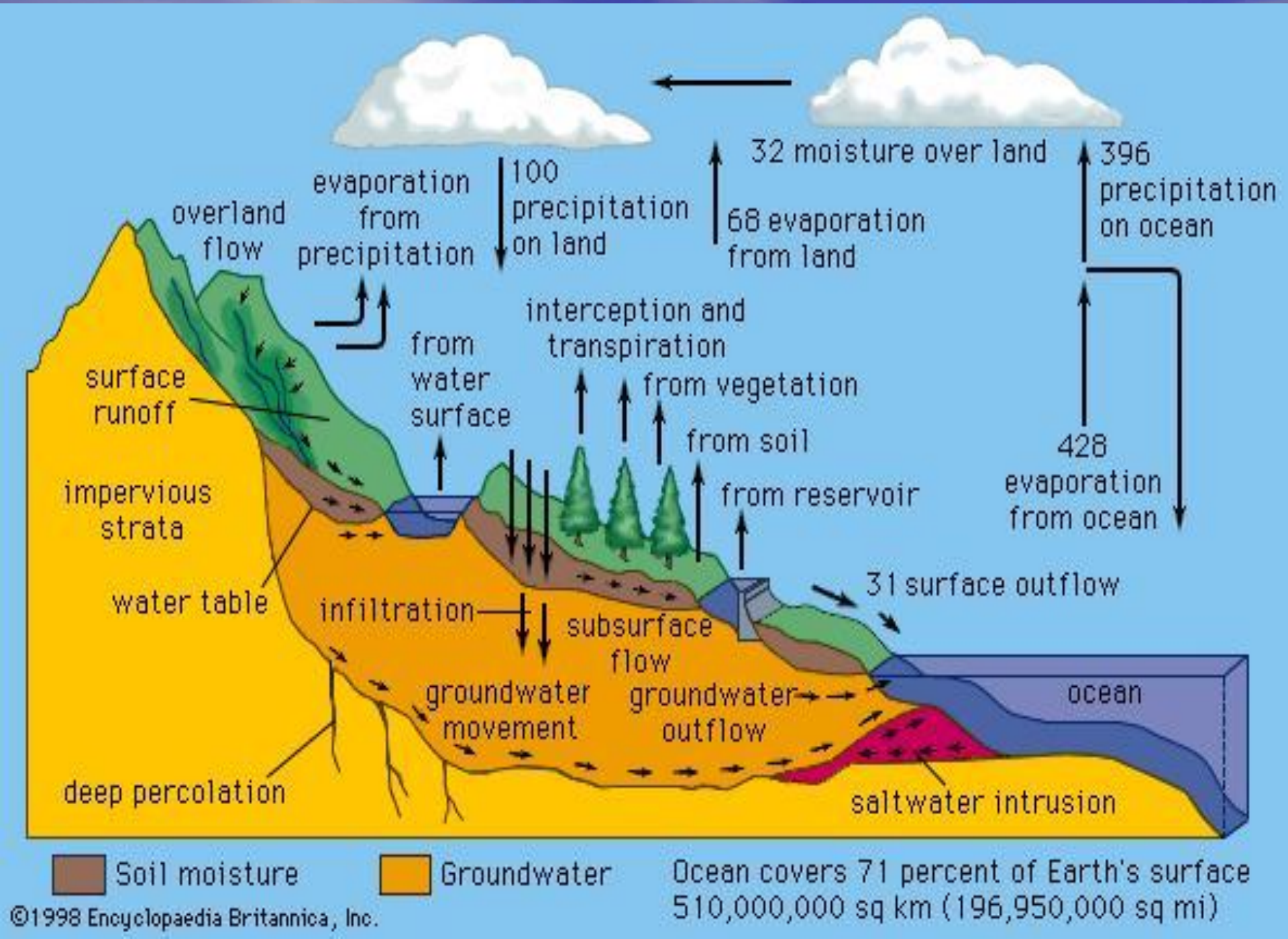
The vallery of San Guang River, Fusing, Taoyuan, Taiwan

Lake Marian

На территории Орегона и Северной Калифорнии раскинулось крупное вулканическое плато, уникальные природные особенности которого позволили создать здесь два национальных парка и один монумент - Crater Lake National Park, Lava Beds National Monument и Lassen Volcanic National Park. Каждый по своему необычен

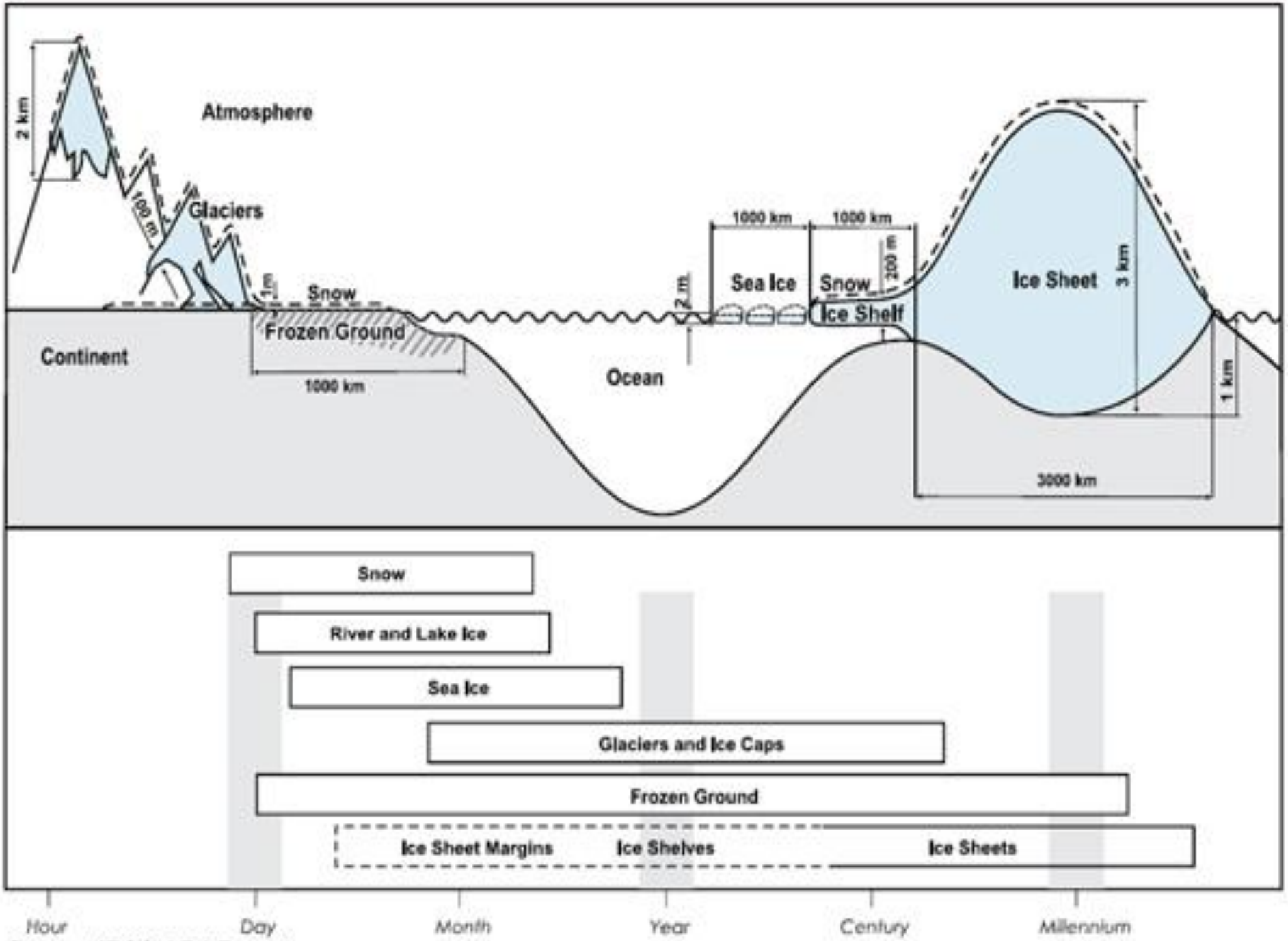
A small swamp is hidden behind the impassible thickets of the tropic jungles. By sight it is an ordinary water basin overgrown with water lilies. But look at it more attentively... This small world is just humming with life! Frogs, dragonflies and even a furious viper closely coexist near each other.

Honey Island Swamp, Louisiana, USA

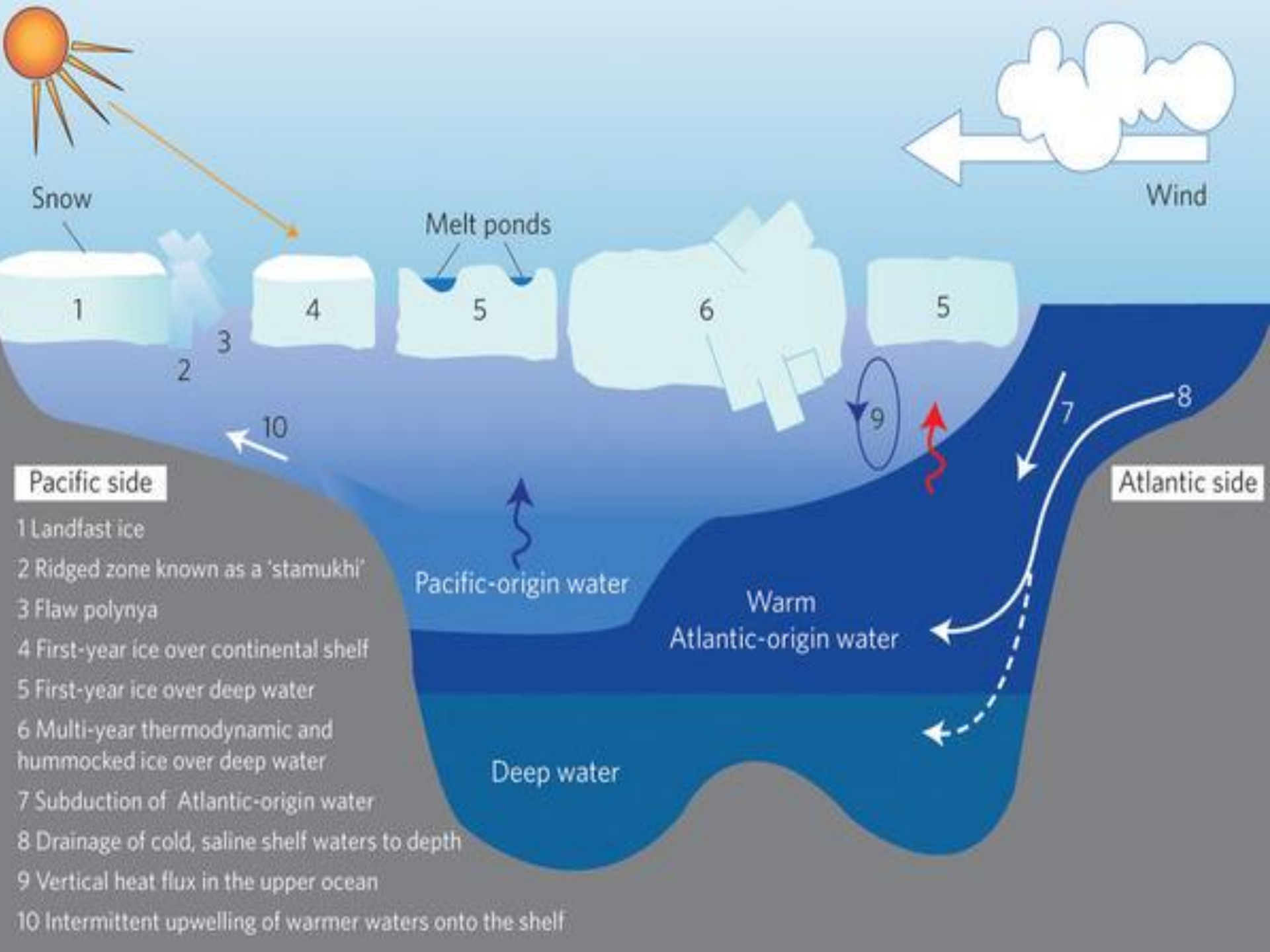


The Cryosphere:

Portions of the Earth's surface where water is in a solid form, usually as snow or ice. This includes sea ice, freshwater ice, snow, glaciers, and frozen ground (or permafrost).



Source: IPCC AR4 Report

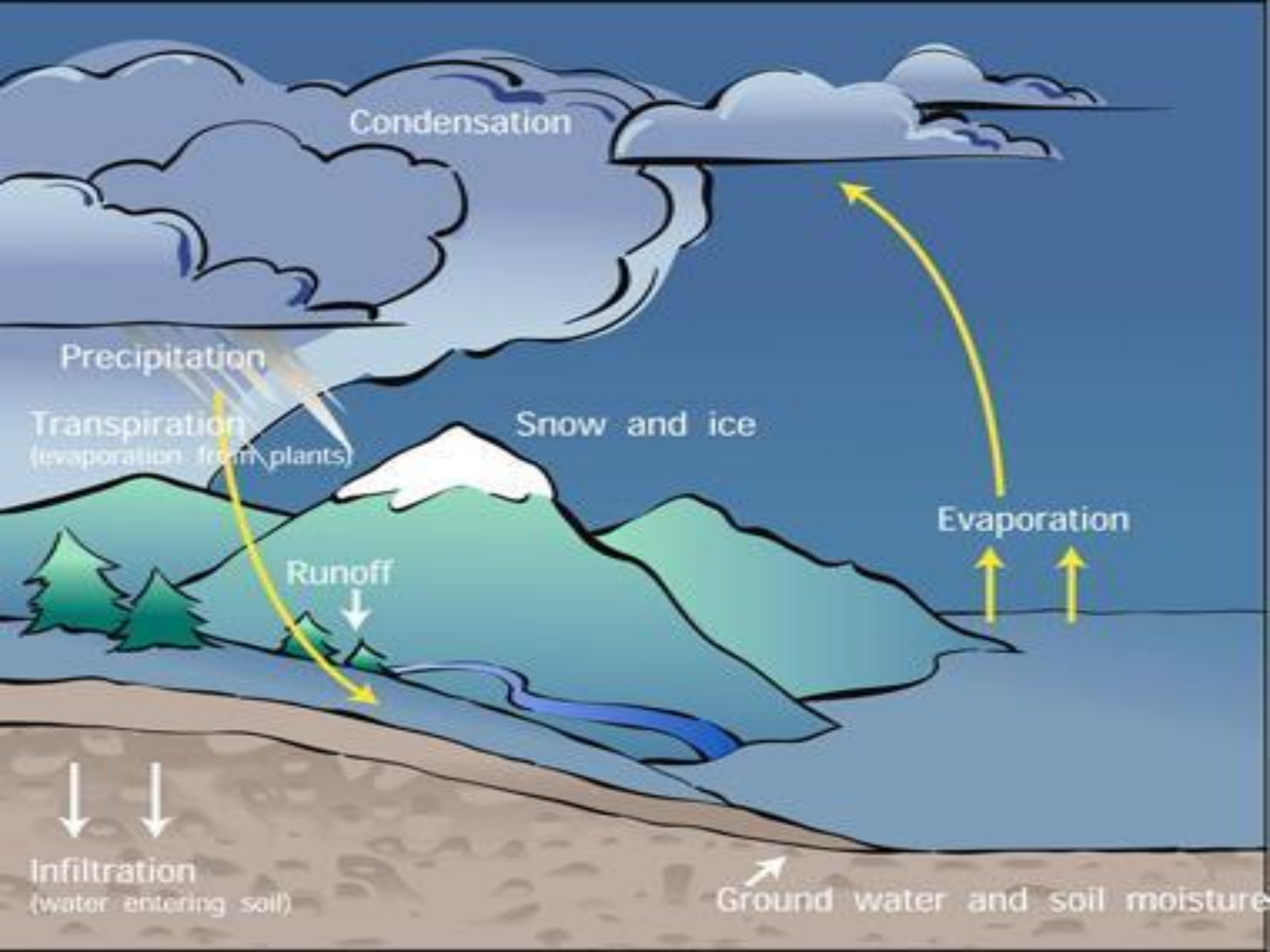

Snow
Melt ponds
Wind
1
2
3
4
5
6
5
7
8
9
10
Pacific side
Atlantic side
1 Landfast ice
2 Ridged zone known as a 'stamukhi'
3 Flaw polynya
4 First-year ice over continental shelf
5 First-year ice over deep water
6 Multi-year thermodynamic and hummocked ice over deep water
7 Subduction of Atlantic-origin water
8 Drainage of cold, saline shelf waters to depth
9 Vertical heat flux in the upper ocean
10 Intermittent upwelling of warmer waters onto the shelf
Pacific-origin water
Warm Atlantic-origin water
Deep water


Snow
Atmosphere
Sea Ice
The Cryosphere
Glaciers
Ocean
Rivers
Frozen Ground

Earth's Water Cycle

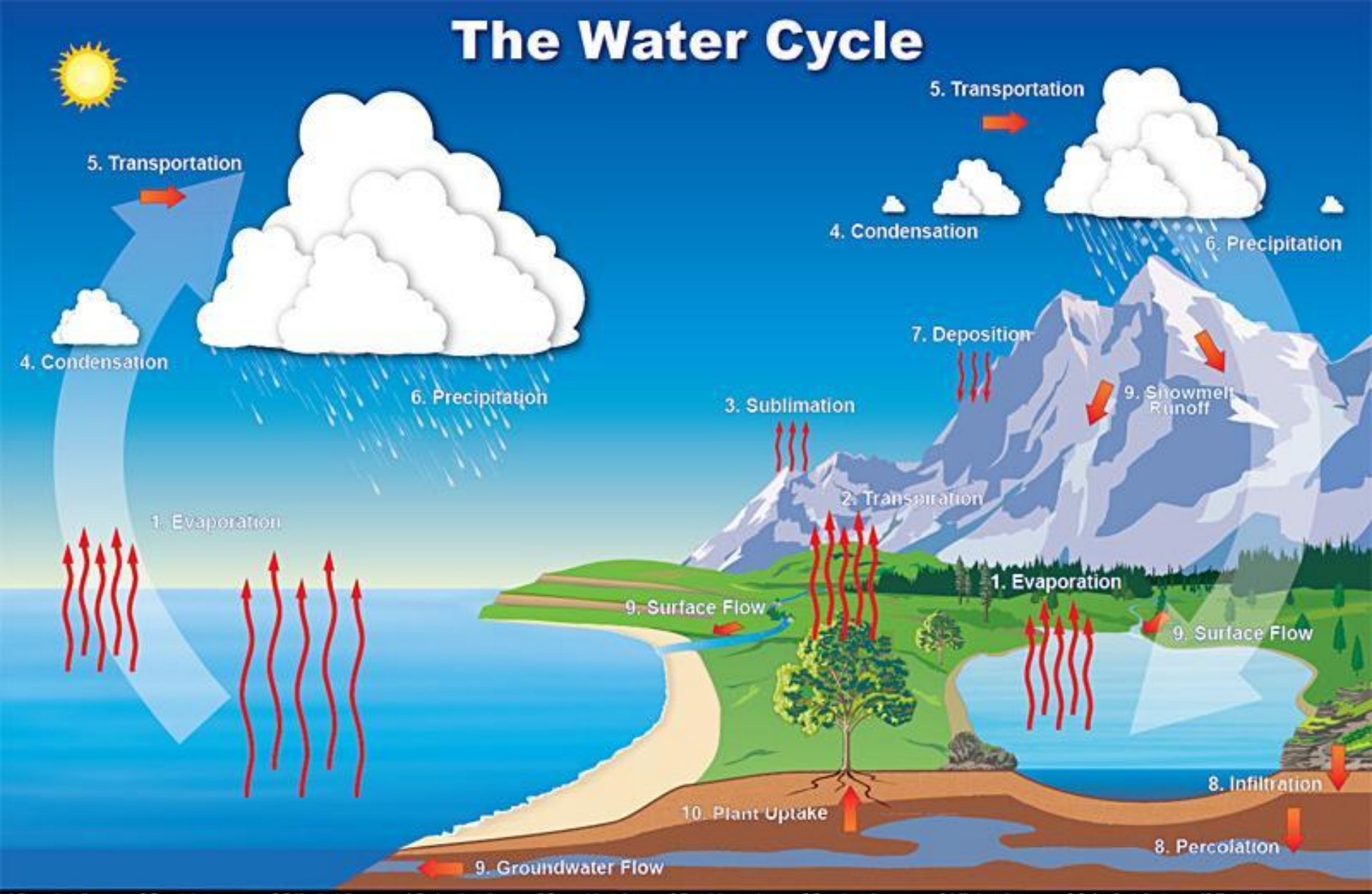
WaterWater is always on the move. RainWater is always on the move. Rain falling where you live may have been water in the ocean just days before. And the water you see in a river or stream may have been snow on a high mountaintop.

Water can be in the atmosphere, on the land, in the ocean, and even underground. It is recycled over and over through the water cycle. In the cycle, water changes state between liquid, solid (ice), and gas (water vapor).


Condensation
Precipitation
Transpiration
(evaporation from plants)
Snow and ice
Evaporation
Runoff
Infiltration
(water entering soil)
Ground water and soil moisture


Evaporation
CLOUD
The Water Cycle
OCEAN
RAIN
RIVER

The Water Cycle



1. Evaporation is the change of state of water (a liquid) to water vapor (a gas). On average, about 47 inches (120 cm) is evaporated into the atmosphere from the ocean each year.

2. Transpiration is evaporation of liquid water from plants and trees into the atmosphere. Nearly all (99%) of all water that enters the roots transpires into the atmosphere.

3. Sublimation is the process where ice and snow (a solid) changes into water vapor (a gas) without moving through the liquid phase.

4. Condensation is the process where water vapor (a gas) changes back into a water droplets (a liquid). This is where we begin to see clouds.

5. Transportation is the movement of solid, liquid and gaseous water through the atmosphere. Without this movement, the water evaporated over the ocean would not precipitate over land.

6. Precipitation is water that falls to the earth. Most precipitation falls as rain but includes snow, sleet, drizzle, and hail. On average, about 39 inches (980 mm) of rain, snow and sleet fall each year around the world.

7. Deposition is the reverse of sublimation. Water vapor (a gas) changes into ice (a solid) without going through the liquid phase. This is most often seen on clear, cold nights when frost forms on the ground.

8. Infiltration is the movement of water into the ground from the surface. Percolation is movement of water punt the soil going deep into the groundwater.

9. Surface flow is the river, lake, and stream transport of water to the oceans. Groundwater the flow of water underground in aquifers. The water may return to the surface in springs or eventually seep into the oceans.

10. Plant uptake is water taken from the groundwater flow and soil moisture. Only 1% of water the plant draws up is used by the plant. The remaining 99% is passed back into the atmosphere.

www.srh.noaa.gov/jetstream

Impact of human activities on the hydrosphere

The activities of modern society are having a severe impact on the hydrologic cycle. The dynamic steady state is being disturbed by the discharge of toxic chemicals, radioactive substances, and other industrial wastes and by the seepage of mineral fertilizers, herbicides, and pesticides into surface and subsurface aquatic systems. Inadvertent and deliberate discharge of petroleum, improper sewage disposal, and thermal pollution also are seriously affecting the quality of the hydrosphere.

The present discussion focuses on three major problems—eutrophication, acid rain, and the buildup of the so-called greenhouse gases. Each exemplifies human interference in the hydrologic cycle and its far-reaching effects.

Satellite observations of lake temperatures at many lakes around the world show that lakes are warming worldwide. Because lakes play such an important role in society, as a source of food, water, and recreation, these changes can have a significant impact on many aspects of our lives. Watch the NBC Learn video - Changing Planet: Warming Lakes to find out more. This is an image of the eastern shore of Lake Tanganyika, Tanzania.

As temperatures rise and soil moisture decreases, plants are stressed, which can lead to crop witheringAs temperatures rise and soil moisture decreases, plants are stressed, which can lead to crop withering. DroughtsAs temperatures rise and soil moisture decreases, plants are stressed, which can lead to crop withering. Droughts accompanied by increased temperatures can lead to

Coral animals build reefs in warm, tropical seawater. However, seawater can be too warm for their liking. If waters get too warm, coral animals lose the algae that live within their little bodies, a process called coral bleaching. Without the algae, corals have less nutrition. Unless cooler temperatures return, allowing algae to return, the coral dies.

The Importance of Water

"Water can be without the company of humans

but

we as humans can only be without water for a few days."

The human body consists of about 75% water and the brain about 85%. Each cell in the body depends upon water in order to function. Numerous disorders are caused by insufficient and unhealthy water. In order to maintain the various bodily functions, we need to drink up to 2-3 litres of water each day. We need our daily supply of water since we cannot maintain reserves of it in our body as we can with food. We would die within three to seven days without water.

Unknown waterfall along the west coast of Vancouver Island, flowing water running down through beautiful green lush..

Aerial photo of the large underwater base of an iceberg in the Strait of Belle Isle (Atlantic Ocean), Labrador.

Photo of the Multnomah Falls and benson Bridge in fall season, Columbia River Gorge, Oregon, USA

Photo of the beautiful Rainbow Falls waterfall in Monashee Provincial Park

Photo of a waterfall, a beautiful scenic stop along the Catlin's Highway in New Zealand.

Photo of the snow covered Sierra Nevada mountains and a series of rock formations on Mono Lake.

Photo of two large brown bears fishing at Brooks Falls in Katmai National Park, Alaska, USA.

Photo of red fall leaves, green moss and a cascading flowing water stream on the Olympic Peninsula.

Aerial photo of the village of Vernazza, one of five in the Cinque Terre in Liguria, Italy in Europe.

Photo of sun beams hitting Virgin falls waterfall in the wilderness of Vancouver Island, BC, Canada.

Thank you for attention!