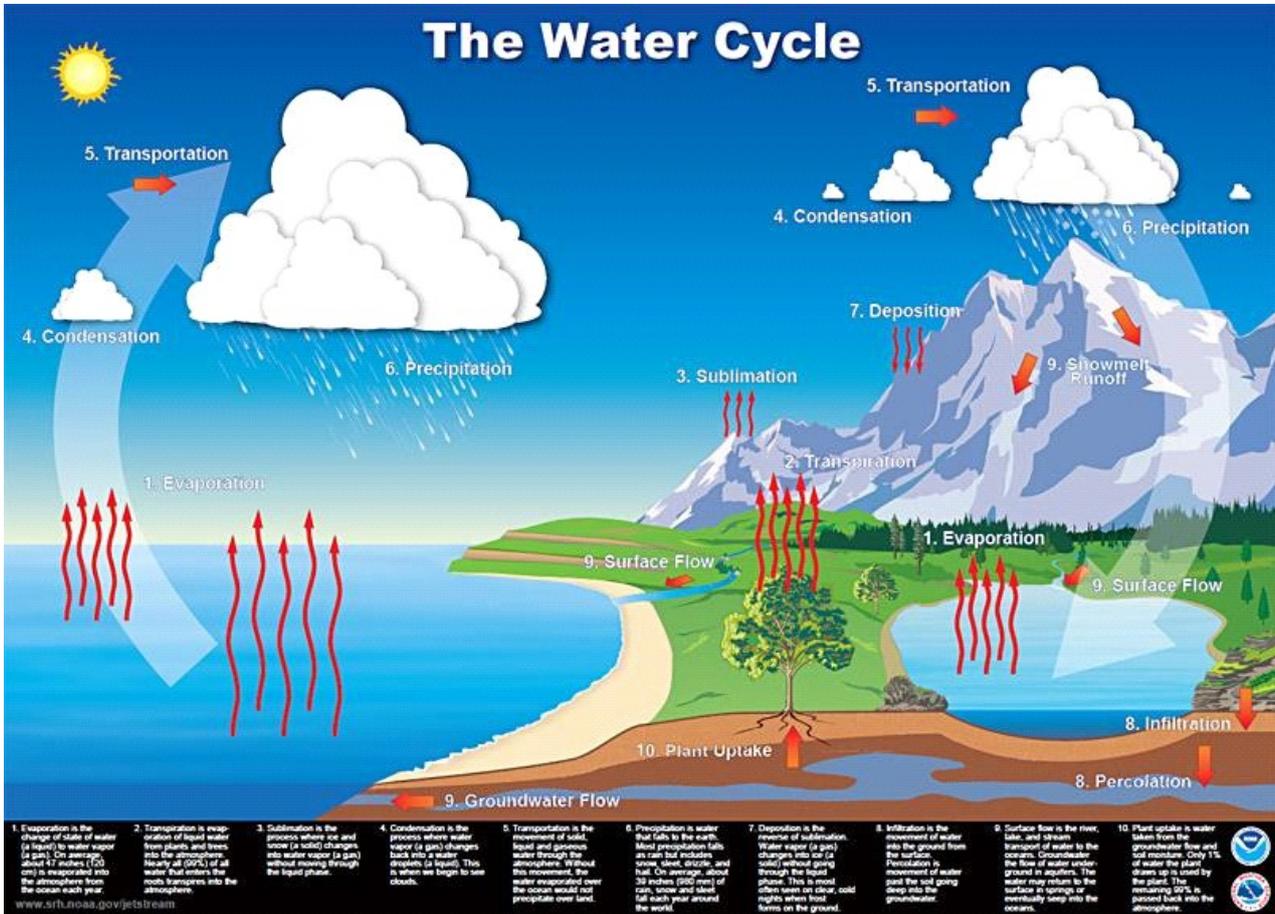


PRESENTAZIONE MULTIMEDIALE

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Water

Water is one of the most common compound on Earth. All living things contain water and cannot survive without it. Water is a very good solvent as other substances dissolve easily in it.

Water is a compound. Each molecule of water contains two atoms of hydrogen bonded to an atom of oxygen. The chemical formula for water is H₂O. The chemical name for water is hydrogen oxide. Pure water, that is water that does not contain any dissolved substances, boils at 100° C and freezes at 0° C. If water contains any dissolved substances, the boiling point is raised and the freezing point is lowered.

When water evaporates it forms a gas called water vapour. When it freezes, it forms a solid called ice. Ice is the solid form of water. Water expands when it freezes, so ice is less dense than water and it floats on water.

Water is a very good solvent and so many substances can easily dissolve in water to form a solution. A solvent, such as water, will only accept a certain amount of substances dissolved in it. When no more will dissolve, the solution is saturated. Water can be: fresh water or salty water.

We can find salty water in the ocean and the sea. We can find freshwater in lakes, glaciers, snow caps, rivers, and below the ground in ground water storage.

Answer the following questions:

1. *What is water?*
2. *Can other substances dissolve in water?*
3. *What is the chemical formula for water?*
4. *What is pure water?*
5. *Where can we find fresh water and salty water?*

Water cycle

Water on the Earth is constantly moving. It is recycled over and over again. This recycling process is called the water cycle.

What is called the recycling process of water on the Earth?

- a. Water evaporates into the air.
The sun heats up water on land, and in rivers, lakes and seas and turns it into water vapor. The water vapor rises into the air.
- b. Water vapor condenses into clouds.
Water vapor in the air cools down and changes back into tiny drops of liquid water, forming clouds.

How does water fall as rain?

- c. Water falls as rain.
The clouds get heavy and water falls back to the Earth in the form of rain or snow.
- d. Water returns to the sea.
Rain water runs over the land and collects in lakes or rivers, which take it back to the sea. The cycle starts all over again.

How does the water return to the sea?

The water cycle is a way that water moves all around the Earth. It never stops and doesn't really have a beginning or an end. It's like a big circle. We'll describe it by starting with water that's on land. For example, water in the ocean or a lake. Some water on the surface of the ocean will evaporate due to heat from the sun. When it evaporates it turns into vapor water and goes up into the atmosphere. This vapor water gets together with a lot of other vapor water and turns into clouds. Clouds move about the Earth with the weather and once they are so full of water they drop the water to Earth in some form of precipitation. It could be rain, snow, sleet, or hail. When the water hits the earth it may fall right back into the ocean or feed a flower or be snow on the top of a mountain. Eventually this water will evaporate and start the whole cycle again.

How water goes from land to vapour in the atmosphere

There are three main ways that water on land turns into vapor:

Evaporation - This is the main process by which water goes from the ground to vapor in the atmosphere. Around 90 percent of the water vapor in the atmosphere got there through evaporation. Evaporation takes place only on the water's surface. It takes energy in the form of heat. Hot water will evaporate more easily than cold water. The sun provides a lot of the energy for evaporation in the water cycle, primarily causing evaporation from the surface of the ocean.

Sublimation - This is when water moves directly to vapor from ice or snow without ever melting into water. Good conditions for sublimation to occur is when ice or snow is in very cold conditions, but it is windy and the sun is shining.

Transpiration - Transpiration is when plants release water to their leaves that then evaporates into vapour. Plants will release a lot of water as they grow. Around 10 percent of the water vapour in the atmosphere is estimated to come from transpiration.

How does water go from land to vapor in the atmosphere?

Water in the atmosphere

We see water in the atmosphere in the form of clouds. Clouds form when moist air is cooled, often because the air rises and gets colder. When air containing water vapor rises into the sky, it cools. Since cold air cannot carry as much water vapour as warm air, its water content condenses into a mass of tiny water droplets, which we see as a cloud. There is a small amount of water even in clear skies, but clouds are where water has started to condense. Condensation is the process of water vapor becoming liquid water. Condensation is a major step in the water cycle. The atmosphere helps to move water around the world. It takes water that evaporated from the ocean and moves it over land where clouds and storms form, to water plants with rain.

There are ten basic types of cloud. Their names reflect how they look or behave. The cloud types are usually grouped as low, medium and high level clouds.

The high-level clouds are when water vapor rises to altitude of 6,000 m or more and it condenses into tiny ice crystals. According to their shapes these can be: cirrus, cirrostratus, cirrocumulus.

The medium-level clouds form at altitude between 2,000/ 6,000. they are mostly made of liquid cloud droplets. These are: the altostratus and the altocumulus.

The low-level clouds are all clouds that grow from below 2,000 m. they are the: cumulus, cumulonimbus and stratocumulus.

If the air at ground level is already saturated with water vapor, the vapor may condense to form low-level clouds known as fog.

Choose the correct word in *italics*.

1. Clouds are where water starts to*evaporate/ condense*.
2. Condensation is the process of water vapour becoming*liquid water/ ice*.

How are low-level clouds known as?

Precipitation is when water falls from the atmosphere back to land. Once enough water gathers in a cloud, droplets of water will form and fall to the Earth. Depending on the temperature and weather this could be drizzle, rain, snow, sleet, or even hail.

1. *What is precipitation?*
2. *What are the main forms of precipitation?*

Water storage

A lot of the Earth's water does not take part in the water cycle very often. Much of it is stored. The Earth stores water in a number of places. The ocean is the largest storage of water. Around 96 percent of the Earth's water is stored in the ocean. We can't drink the salty ocean water, so fortunately for us, fresh water is also stored in lakes, glaciers, snow caps, rivers, and below the ground in ground water storage.

Answer the following questions:

- Where does the Earth store water?*
- What is the largest storage of water?*
- Where is fresh water stored?*
- Is salty ocean water drinkable?*

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Immagine: <http://earthobservatory.nasa.gov/Features/Water/page2.php>

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