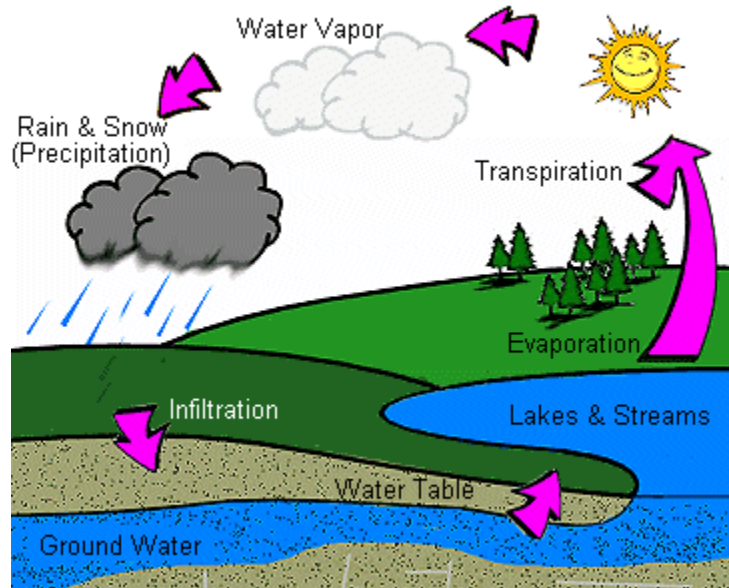


An Introduction to Rivers

Rivers are flowing bodies of waters. There are rivers on every continent (except Antarctica). Rivers are an important part of the Earth's water cycle and the sculpting of the Earth's topography as they carry huge quantities of water from the land to the sea.

The Course of a River

Rivers generally start at a source, like a snow melt (such as a glacier) or a natural spring. Most rivers flow into a larger body of water, like an ocean, sea, or large lake.

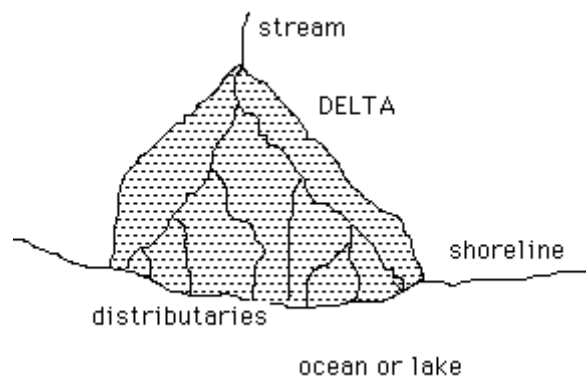


The water cycle



A meandering river

The early course of a river is often in steep, mountain areas, with rapidly-flowing cold water. As a river continues along its course (which is always changing), the surrounding terrain flattens out and the river widens. Rivers often meander (follow a winding path) in their middle course. Tributaries (smaller rivers or streams) and runoff flow into the river, increasing the river's volume (the amount of water it has). Rivers often have increased volume and water speed in the spring, as snow at the river's source melts.



Most rivers end when they flow into a large body of water. The end of the river is called the mouth. At the mouth, there is usually a river delta, a large, silty area where the river splits into many different slow-flowing channels that have muddy banks.

As eroded soil is carried downstream, it is deposited at areas where the river slows, especially where the river meets the body of water it flows into (often the ocean or a lake),

forming a fertile river delta that has muddy swamps and/or sandbars. New land is created at deltas.

The Water in a River

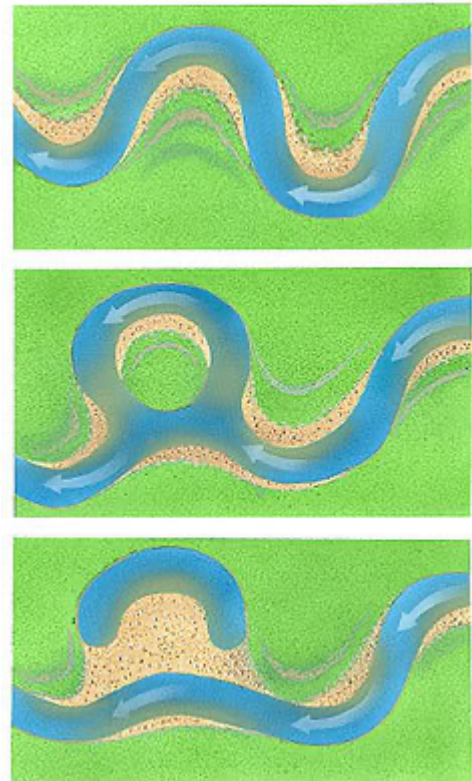
At the source of a river, the water is relatively pure. As the water flows downstream, it picks up silt and minerals (including mineral salts) from the soil and rock in the river bed. Many other chemicals enter river water as it flows downstream, including animal waste, human sewage, agricultural (farm) runoff, urban runoff, and mining/factory runoff.

Erosion

The course of a river changes over time, as erosion caused by the flowing water and sediment sculpts the landscape around the river. Rivers erode land and carry it downstream towards the sea or lake it flows into. This kind of erosion can even form canyons, like the Grand Canyon (eroded by the Colorado River), waterfalls, like Victoria Falls (formed by the Zambezi River), oxbow lakes, and other formations.

Estuaries

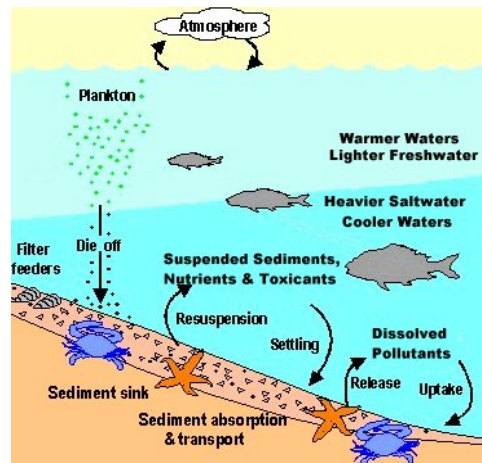
An estuary is the area where a river meets the sea or ocean, where fresh water from the river meets salt water from the sea. Estuaries are often called bays, sounds, or harbors (like Tampa Bay, Puget Sound, or Boston Harbor). Salt marshes are low, grassy, coastal areas surrounding an estuary; the tides often overflow the marsh.



An **oxbow lake** is a stagnant lake that is formed alongside a winding river when the river changes path because of soil erosion, leaving an abandoned stream channel, cut off from the rest of the river.

Since salt water is heavier (denser) than fresh water, when the two meet, the heavier salt water sinks and the lighter fresh

water rises. The rate of change in salinity (the amount of salt in the water) with depth is called the salinity gradient.



Estuaries are transitional areas between rivers and seas, and are home to many organisms that have adapted to life in brackish water (water that is saltier than river water, but less salty than sea water).