

River and Stream Dynamics



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AP Environmental Science

Types of River

Youthful river- Steep gradient, with few tributaries and a fast flow which increases the depth of the river through erosion. (Examples: [Brazos River](#), [Trinity River](#), [Ebro River](#))

Mature river- Lower gradient, slower flow, more tributaries and an increasing width. (Examples: [Mississippi River](#), [St. Lawrence River](#), [Danube River](#), [Ohio River](#), [River Thames](#))

Old river- Low gradient, low erosion, and flood plains. (Examples: [Huang He River](#), [Ganges River](#), [Tigris](#), [Euphrates River](#), [Indus River](#), [Nile River](#))

Subterranean River- Underground river (Examples: [River Fleet](#), [Mojave River](#))

Intermittent River- Flows occasionally due to rain or snow melt.

River Terminology

Baer's law – Law stating that due to earth's rotation, rivers in the northern hemisphere tend to erode on the right bank, and rivers in the southern hemisphere tend to erode more on the left bank.

Base level- The lowest point of a river,

Braided river- River that separates, and then rejoins itself farther downstream.

Cascade- a waterfall, or series of waterfalls.

Delta- large deposits of silt found at a river's mouth.

Downriver- Towards the mouth of a river.

Estuary- delta in a saline tidal body of water, such as an ocean or sea.

Flood plain – low, flat area that is inundated by a river's floods.

Gradient- measure of the slope of the banks of a river.

Meander- A long curve in a river. Also known as an oxbow.

Mouth- Place where a river enters a larger body of water, such as a lake or ocean.

Oxbow lake- Meander that becomes cut off from the main river, creating a horseshoe shaped lake.

Rapid – Turbulent area of river, due to its high gradient, fast flow, and resistance of bed material to erosion.

River banks- area above normal waterline that contains the river.

Run- Slow, calm area of river.

Stream bed – area of river that contains the normal water flow.

Upriver- Towards the source of a river.

River Ecology

The most defining characteristic of lotic systems (flowing water ecosystems) is their almost constant variation. Many of the most important factors that define the attributes of marine life, temperature, light, chemistry, and bottom substrate, can change quickly in this fast-moving environment. Also, factors such as flow may be vastly different within short distances of river. For this reason, it is difficult to characterize freshwater river life with any degree of accuracy; there are simply too many variations and exceptions to make any generalizations.

Human Impacts

River engineering is the manifestation of humankind's love of improving things, applied to streams and waterways. Rivers are often constricted, both to prevent flooding and re-route them to more convenient areas. Engineers deepen rivers and build locks to aid boat traffic. Additionally, dams are constructed to provide electricity and water resources to human population centers.

Recently, there have been movements in the environmentalist community to protect rivers and wetlands from any human influence, due to alleged negative effects on natural wildlife habitats.

http://en.wikipedia.org/wiki/Lotic_System_Ecology#Flow_modification

http://en.wikipedia.org/wiki/River_engineering

Questions:

Describe how the rotation of the earth relates to river erosion.

Describe two ways in which meanders are formed.

What are two of the important factors in a lotic system?

What are the positive and negative aspects of river engineering?