

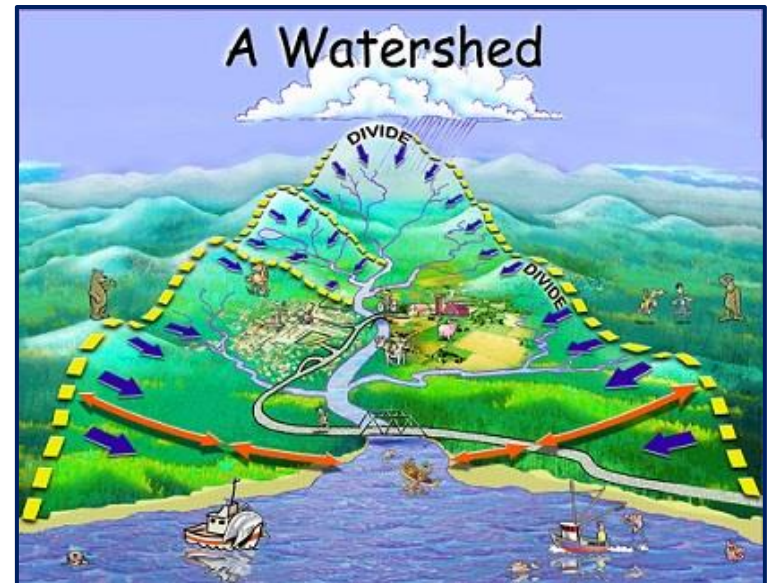
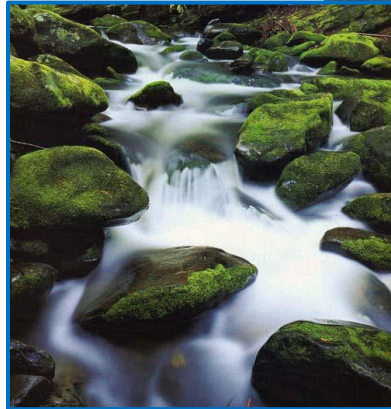
# THE HYDROSPHERE



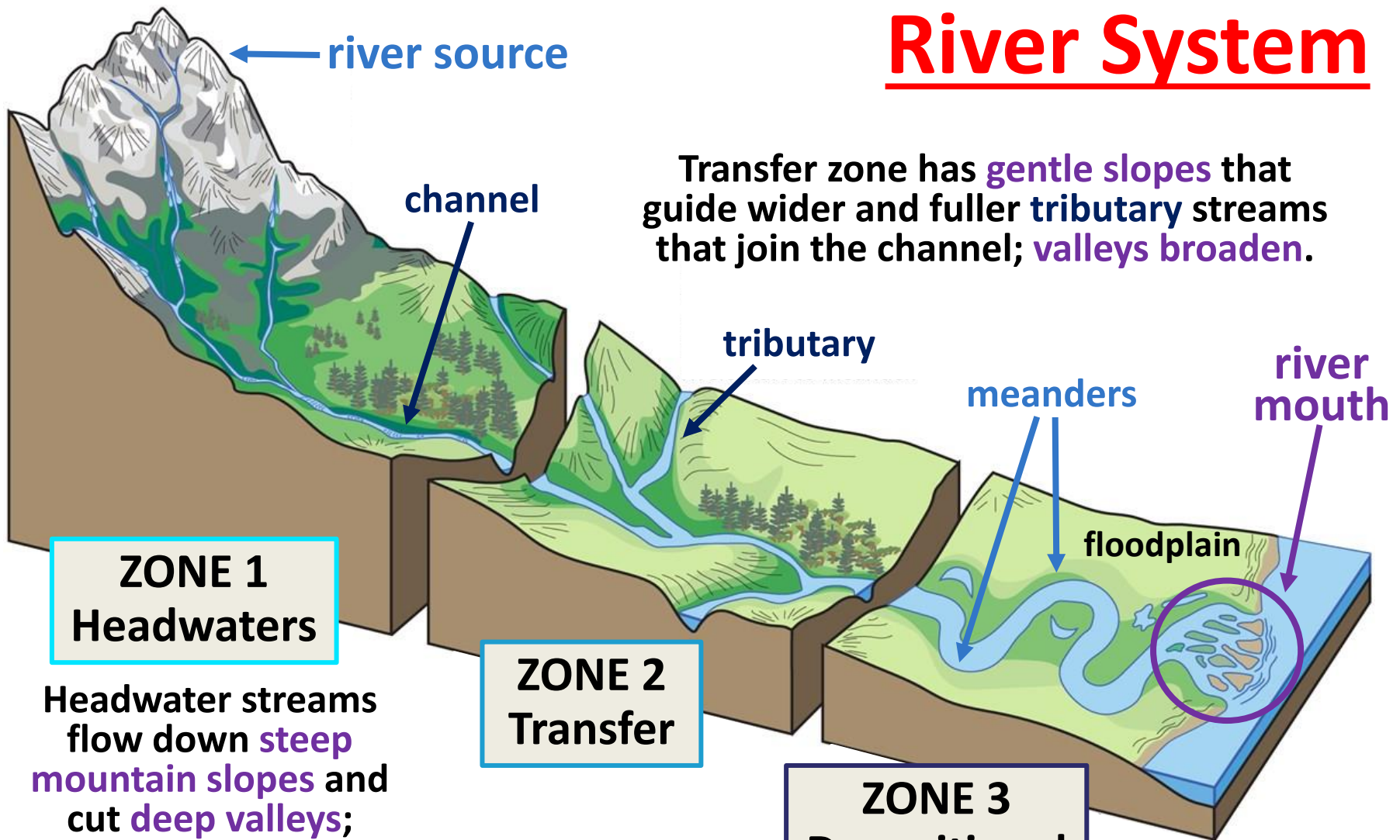
**PART 2**

# Rivers and Streams

- **River** is a large channel along which water is continually flowing down a slope; it is made of many *streams* that come together.
- **Stream** is a small channel along which water is continually flowing down a slope; it is made of small gullies.
- **Watershed** is an area that drains into a smaller river or stream.
- **River Basin** is an area that drains into a *large river*; larger river basins of the world consist of multiple interconnected watersheds.



# River System



Transfer zone has **gentle slopes** that guide wider and fuller **tributary** streams that join the channel; **valleys broaden**.

Headwater streams flow down **steep mountain slopes** and cut **deep valleys**; waterfalls and rapids occur in this zone; streams come together to form main **channel**.

River *meanders* across a **broad, nearly flat valley** and floodplain; at the **mouth**, it may divide into separate channels or form a *delta*.

# Longest River: Nile, Africa

The **Nile River** is ~6,650 km (~4,130 miles) long, generally considered the **longest in the world**; it is located in northeastern Africa and flows into the Mediterranean Sea. The drainage basin of the Nile covers about 10% of the area of Africa.



The **Nile Delta**, where the river spreads out and drains into the Mediterranean Sea, is **one of the world's largest river deltas** covering 240 km (150 mi) of the coastline - and is a rich agricultural region. The Nile has been the lifeline of civilization in Egypt since the Stone Age.

# Largest Rivers in the USA

Mississippi: 2,340 mi (3,770 km)

Missouri: 2,540 mi (4,090 km)

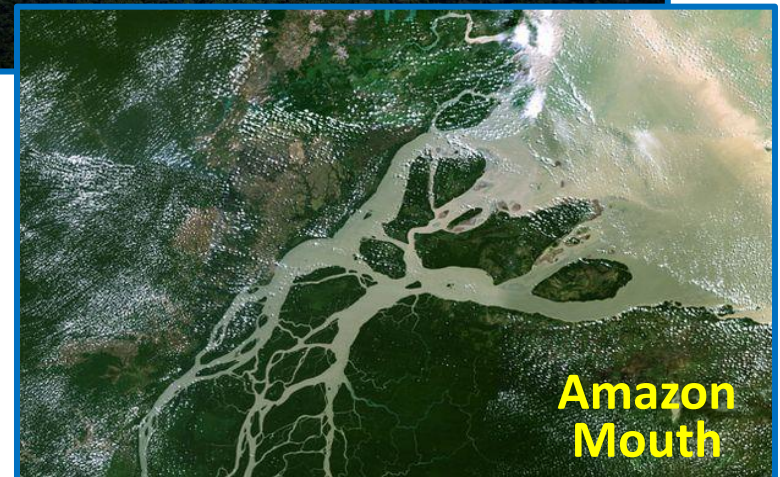


Heart River, North Dakota

Mississippi River "Birdfoot" Delta

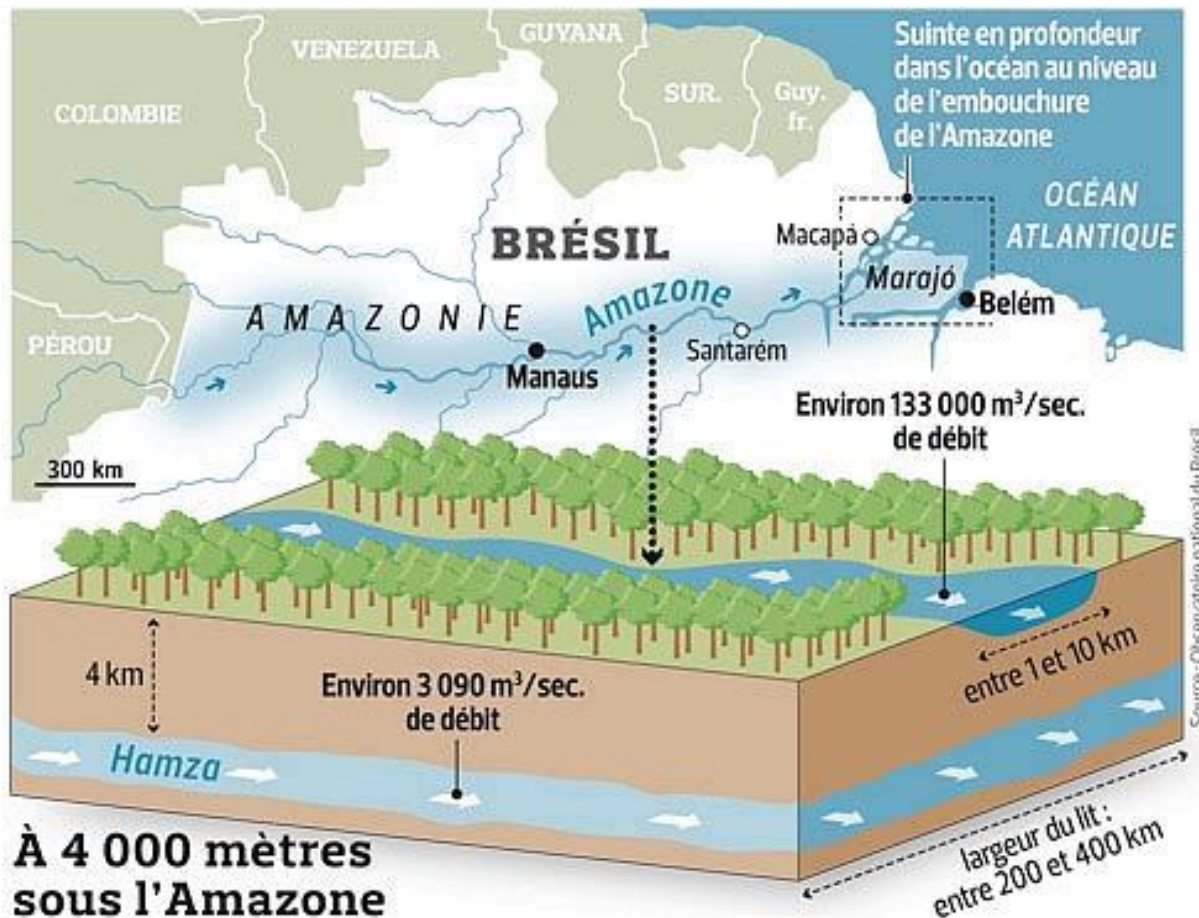
# Amazon River Basin

The **Amazon River** in South America is the **largest river by the discharge of water** and also the **second longest river** in the world (~6400 km). The **Amazon Basin**, the **largest drainage basin** in the world, covers about 40% of South America, an area of approximately 7,050,000 km<sup>2</sup> (2,720,000 sq mi). It drains from west to east, flowing into the Atlantic Ocean.



# Rio (River) Hamza *(slowly flowing aquifer)*

The Amazon River has an **underground “twin sister”** named **Hamza** *(discovered in 2011)*! It runs for a length of 6,000 km (3,700 mi) at a depth of nearly 4,000 m (13,000 feet).

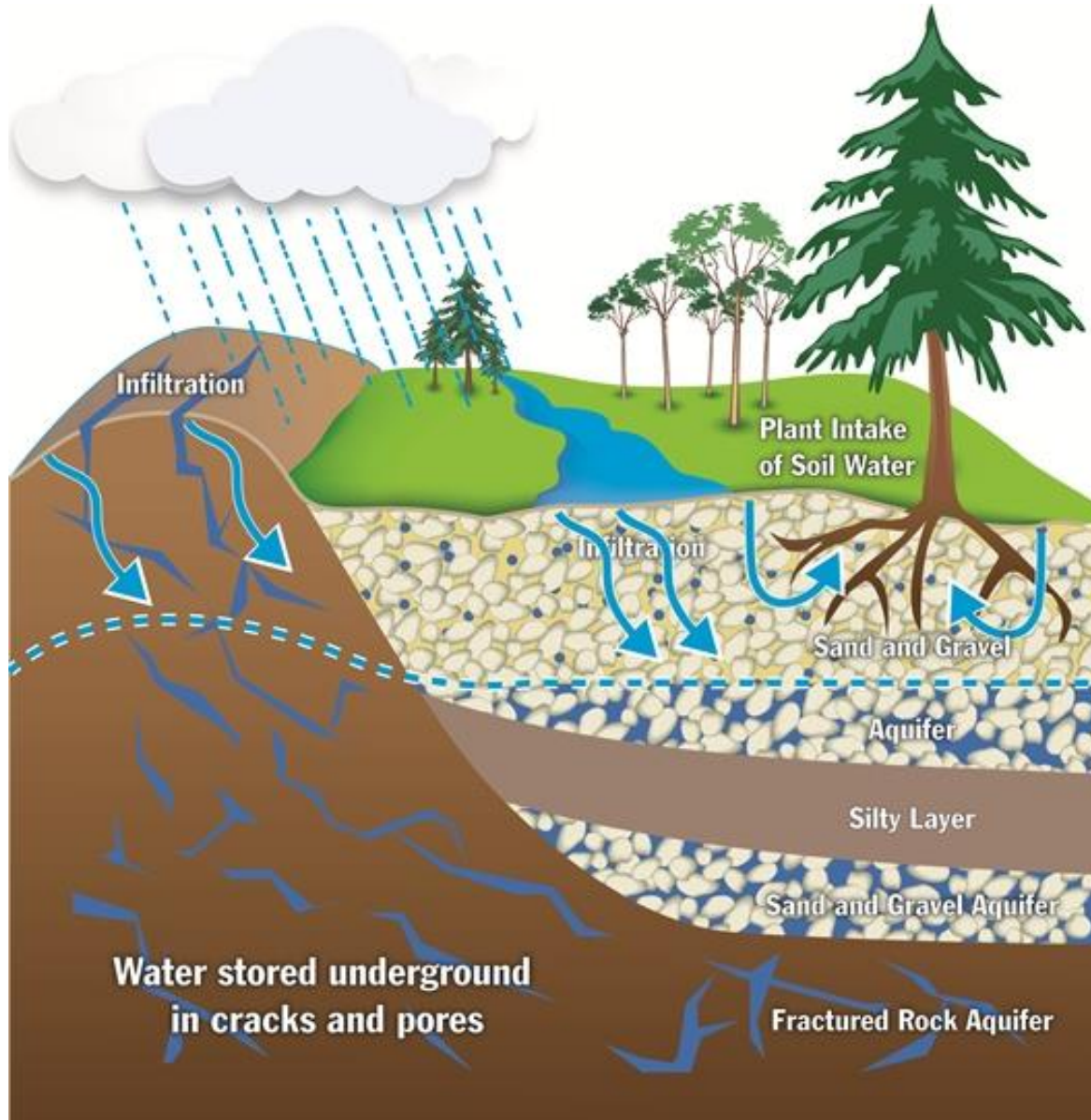


À 4 000 mètres  
sous l'Amazone

Except for the flow direction, the rivers have very different characteristics:

- **flow speed** - it is **5 m/s (16 feet/s)** in the Amazon and **less than 1 mm/s (0.039 in/s)** in the Hamza
- **width** - the Amazon is **1 km (0.62 mi) to 100 km (62 mi)** wide, the Hamza is **200 km (120 mi) to 400 km (250 mi)**, much wider

# Groundwater



About **1/3** of **all freshwater on the planet** is found underground.

Part air part water  
**unsaturated zone**

--- **Water table**

**Saturated zone:** water fills all pores and cracks



# Wetlands

Wetland is an area where the **water table is at, near or above the land surface long enough** during the year to support adapted plant growth.



- Swamp: a wetland dominated by trees
- Bog: a wetland dominated by peat moss
- Marsh: a wetland dominated by grasses