

# Physical processes, stores and flows in river drainage basins

A river's **drainage basin** is the area of land which surrounds it. Much of the **precipitation** (rain and snow) which falls from the sky onto a drainage basin eventually find its way into the river or its tributaries (the small streams and rivers which feed into the main river).

Precipitation reaches the river via a series of different **drainage basin flows** (routes) and **drainage basin stores** (places where the water may be held temporarily).

Important physical processes operate in a drainage basin. They allow the different flows to operate and help to transfer water between the different stores. Everything is linked as part of a **system**.

## Drainage basin flows

Water is constantly recycled, moving from place to place via key processes called water flows.

**Evaporation** Water returns to the atmosphere in vapour form when it is warmed by sunlight.

**Transpiration** Water loss from leaves and stems of vegetation as a result of plant growth processes.

**Infiltration** When water soaks down into the soil.

**Throughflow** Once in the soil, water flows slowly below the ground until it reaches a river or lake.

**Overland flow / surface run-off** Water flowing quickly downslope over the ground towards rivers.

Make sure you can **evaluate** this information. Which flow do you think makes *the most important* contribution to the risk of flooding, and why?

## Drainage basin stores

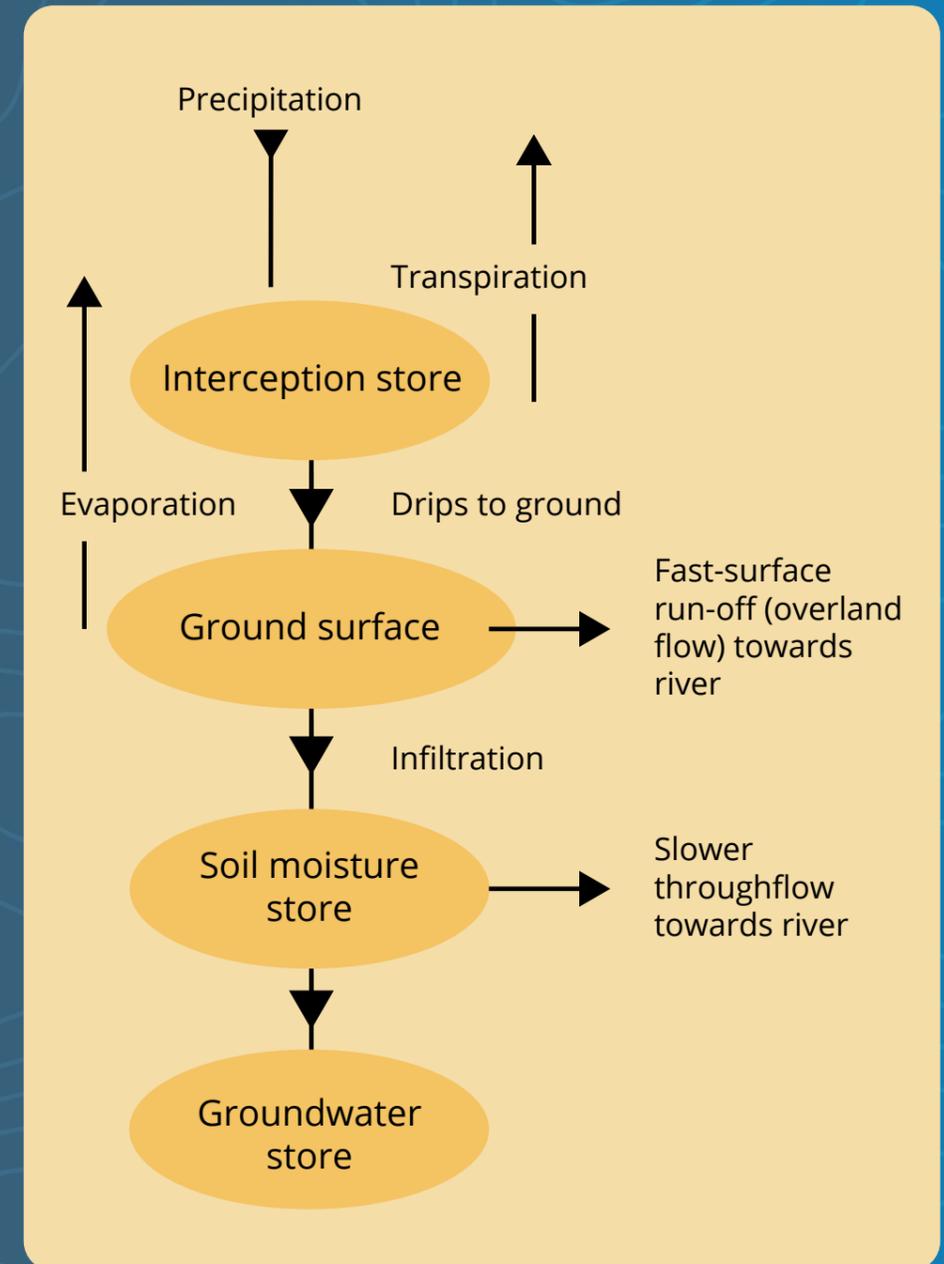
Water sometimes stops flowing through a drainage basin and instead is temporarily stored somewhere.

**Interception storage** Plant leaves are a temporary storage space where water sits for a time, until it evaporates or drips to the ground.

**Soil storage** Water can be held in the soil for a while – like in a plant pot – mostly thanks to sticky organic matter (called humus) that soaks up the water.

**Groundwater storage** Water is held in solid rock or gravels beneath the soil. It collects in tiny air pockets called pores (in porous materials like chalk).

Make sure you can **evaluate** this information. To what extent has human activity brought changes in the size of different UK drainage basin stores?



## Geography in the news

In January and February 2020, flooding occurred in drainage basins and river landscapes throughout England and Wales. Heavy and prolonged rainfall from Storm Ciara and Storm Dennis meant that drainage basin stores were unable to hold any more rainwater. As a result, many rivers burst their banks.

## Thinking like a Geographer

Water flows and stores are part of a system called the water cycle. People who are responsible for managing drainage basins need to understand that important **interrelationships** (connections) exist between different system flows and processes. For example, removal of the vegetation store (deforestation) means rainwater reaches the ground faster. So, overland flow (surface run-off) and **flood risk** increase.

## Keywords

**Physical process** \* **Flow** \* **Store**  
\* **Drainage basin** \* **Interception**  
\* **Infiltration** \* **Overland flow /**  
**Surface run-off** \* **Transpiration**  
\* **Interrelationship**