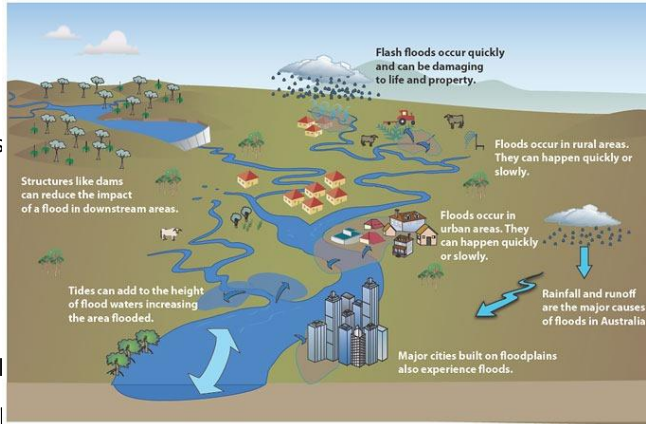


The water cycle

1. Evaporation When the sun heats up water from the sea and it goes into the air.
2. Transpiration When the sun heats up water from the leaves of trees.
3. Condensation When water vapour cools and turns into clouds
4. Precipitation Rain, hail, sleet and snow that falls from the clouds
5. Surface run-off When the water runs off the surface of the ground.
6. Groundwater flow When water goes into the ground (infiltration) and flows through the rocks/soil underground.

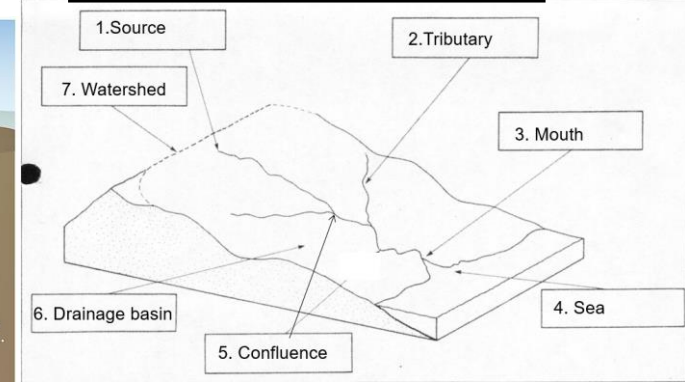
Key Words

1	Source	The starting point of a river.
2	Mouth	The area where the river flows into the sea.
3	Long profile	A line showing the gradient of a river from source to mouth.
4	Cross profile	A cross-section drawn across the river valley.
5	Weathering	The breaking up of rocks that occurs in situ (the same place) with no major movement taking place
6	Erosion	The breaking up of rocks that is the result of movement.
7	Sediment	Material moved and deposited in a different location.
8	Flood plain	Area of flat land which is prone to flooding
9	Discharge	The volume of water at a given point in a river (measured in cumecs)
10	Flash floods	Rapidly rising river levels leading to a rapidly developing flood situation.

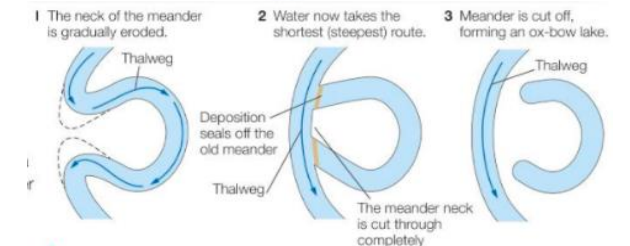
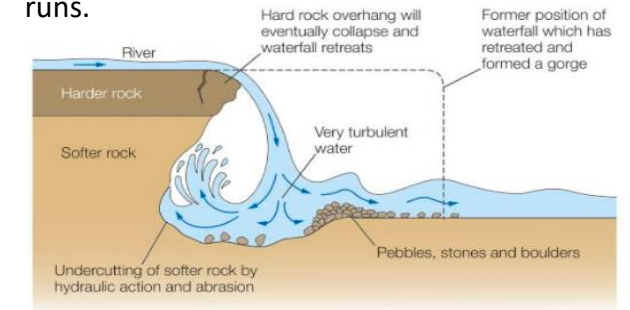


Factors increasing flood risk	
<p><b>Physical factors</b></p> <ol style="list-style-type: none"> <li>1. <b>Precipitation</b> – torrential rainstorms can lead to sudden flash floods as river channels cannot contain the sheer volume of water.</li> <li>2. <b>Geology</b> – impermeable rocks such as shales and clays encourage water to flow overland and into river channels.</li> <li>3. <b>Steep slopes</b> – in mountain environments steep slopes encourage rapid transfer of water towards river channels.</li> </ol>	<p><b>Human factors</b></p> <ol style="list-style-type: none"> <li>1. <b>Urbanisation</b> – building on a floodplain creates impermeable surfaces. Water is transferred quickly which makes flooding more likely</li> <li>2. <b>Deforestation</b> – much of the water that falls on trees is evaporated or stored on leaves. When trees are removed much more water reaches the river channel leading to flooding.</li> <li>3. <b>Agriculture</b> – soil left exposed to the elements allows surface runoff. When land is ploughed the water flows along the furrows rapidly into channels.</li> </ol>

Features of a river basin



- Source** – The beginning of a river
- Mouth** the end of a river at a lake or the sea
- Tributary** a small stream that joins the main river
- Confluence** – appoint where two rivers meet.
- Drainage or river basin** the area of land drained by a river and its tributaries
- Watershed** – the edge of a river basin.
- Channel** – The wetted area where the river runs.



Flood prevention methods using hard engineering include:

1. **Afforestation** to increase interception, reduce soil erosion and use up some of the water.
2. Construction of **reservoirs** to regulate water flow
3. **Land use zoning** – ensuring new developments are constructed away from flood risk areas.
4. **Controlled flooding** to reduce serious floods downstream.
5. **Channel straightening** to speed up flow of water.
6. Creation of **wetland areas** for water storage.
7. **Channel widening** to increase capacity.
8. **Embankments** to enlarge the channel and reduce the likelihood of flooding
9. **Concrete lined channel** – semi-circular in shape to increase speed of flow.
10. **Flood relief channels** to bypass urban areas to reduce the threat from flooding.

Flood reduction methods using soft engineering include:

1. **Wetlands and flood storage areas** – areas that are deliberately allowed to flood to form flood storage areas.
2. **Floodplain zoning** – restricts certain land uses in locations on flood plain. Land next to river channels is used as farmland for pasturing instead of housing and industry.
3. **River restoration** – when the course of a river has been changed artificially, river restoration changes it back to its original course.
4. **Flood preparation** This includes: flood watch, flood warning and severe flood warning.
5. **The Environment Agency** makes maps identifying areas at risk. They encourage people to make flood plans including: flood gates / Using sandbags.