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## Glossary

This glossary contains simple explanations for a selection of the more important technical terms used particularly in the introduction chapter, and the 'Highlights' and 'Conclusion' sections. The explanations are not written as scientific definitions but rather in a simple, concise way. More detailed explanations for many terms quoted can be found in: Goudie, A., Atkinson, B.W., Gregory, K.J., Simmons, I.G., Stoddart, D.R. and Sugden, D. (1985) *The Encyclopaedic Dictionary of Physical Geography*, Blackwell, Oxford (2nd edn 1994).

**Aggradation:** building upwards of the river valley or floodplain by accumulation of fluvial deposits; can also be applied to material deposited by other agencies such as wind or sea.

**Alluvial channel:** a river channel that is cut in alluvium or other materials deposited by running water.

**Alluvial fan:** a cone-shaped deposit made up of water-laid deposits, but also some material transported by mud flows.

**Alluviation:** accumulation of material deposited by river water, usually located along the river valley and tending to be predominantly fine silt or sand.

**Alluvium:** detrital material transported and deposited by a river on the floodplain.

**Anthropogenic erosion:** erosion induced by human activity. 'Anthropogene' is a Russian term for the period during which man has been an inhabitant of the Earth, the past two or three million years.

**Atlantic Period:** a specified period of time in the postglacial from about 4500 to 5000 years BP.

**Avulsion:** the process when aggradation on a floodplain diverts a river channel to a new course, at a lower elevation on the floodplain. Switching to the new channel may be quite sudden.

**Bankfull discharge:** The river flow that exactly fills the river channel to the bankfull level, i.e. without spilling on to the floodplain.

**Bars:** see Channel bars.

**Base level:** the level at which a river flows into the sea.

**Bed form:** features developed on the bed of a river, but also by wind or waves, of a range of sizes from small ripples to larger bars or dunes, and mainly formed in sand.

**Bedload:** sedimentary material that is moved along or in close proximity to the bed of a river channel.

**Bench:** see Valley bench.

**Berm:** a ridge of sand or a bench parallel to the line of the river.

**BP:** abbreviation indicating the number of years 'before present'

**Braided channel:** a river channel made up of a series of interlaced branches that divide and rejoin, with river bars between.

**Cainozoic:** The youngest era of geological time spanning from approximately 65 millions of years ago to the present, consisting of the Tertiary and Quaternary periods.

**Cantilever bank failure:** a specific type of mass movement of river banks, in which a block is undercut and falls off.

**Catchment:** a term often synonymous with drainage basin, as the area which collects water flowing to a particular river. See watershed.

**Channel bars:** a ridge-like accumulation of sediment in the river channel; there are several types, some of which are lateral (across the river) and some longitudinal (along the river).

**Channel capacity:** the size of the river channel cross-section to the bankfull level, usually measured as the cross-sectional area in square metres.

**Channelization:** the modification of river channels for the purposes of flood control, land drainage, navigation, and the reduction or prevention of erosion.

**Chemostratigraphic studies:** the use of chemical techniques to distinguish different characteristics within a sequence of sediments.

**Clast:** a coarse sediment particle, usually larger than four millimetres in diameter.

**Confined channel:** a river channel that is unable to migrate naturally because of an obstruction, which may be the result of human activity (such as a railway embankment) or may be natural (such as a river terrace).

**Cretaceous:** the last period of the Mesozoic Era, ranging from 140 to 65 million years ago.

**Cutoff:** an abandoned section of a river channel, usually produced where a meander loop has become separated from the active river channel because the river has cut across the neck of the meander.

**Debris cone:** similar to an alluvial fan but usually made up of coarser deposits, perhaps smaller and on steeper slopes, and accumulated on valley sides.

**Debris dam:** an accumulation of coarse woody debris across a river channel.

**Debris flows:** a type of mass movement that can be instigated if the water content of deposits is suddenly increased.

**Deglaciation:** the processes whereby glaciers thin and withdraw from an area.

**Delayed flow:** that part of river flow which derives from flow paths that occur below the ground surface.

**Devensian:** the term for the last glacial period in Britain (maximum c. 18 000 years BP)

**Dry valley:** a valley that seldom, if ever, has concentrated flowing water along it in the form of a stream channel.

**Elbow of capture:** a particular location that marks where one river system captures the headwaters of an adjacent river system.

**Entrenched reach:** a section of river channel that is incised into the local deposits.

**Fan delta:** where streams and rivers, and sometimes debris flows, deposit sands and gravels, usually when the flow emerges from confined channels to an area with a lower slope.

**Fault:** a fracture in the Earth's crust along which rock units were displaced relative to one another.

**Flash flood:** a river flood that occurs very rapidly, often as a result of intense precipitation and, although particularly characteristic of semi-arid areas, can occur as a result of intense storms elsewhere.

**Floodplain:** the area of low relief of the valley floor adjacent to the river. It is inundated by water during floods and is usually built up by sediment deposited in various ways by the river itself.

**Fluvial processes:** the range of processes associated with river activity.

**Fluvioglacial:** see Glaciofluvial.

**Glaciofluvial sediments:** sands and gravels deposited from meltwater streams associated with ice sheets and glaciers.

**Glaciolacustrine sediments:** sediments deposited in lakes marginal to a glacier.

**Holocene:** the period of time, often called the postglacial, that extends from c. 11 000 years ago until the present.

**Ice cap:** an area of ice, smaller than an ice sheet, occurring in the polar regions and high mountains.

**Ice sheet:** very large areas of ice, such as those covering much of Greenland and Antarctica today. During the Quaternary, ice sheets covered much of the Northern Hemisphere.

**Incised meander:** a meander that has cut into the local bedrock.

**Interfluvium:** the area of high ground separating two river valleys.

**Interglacial:** a period of relatively warm climate between two episodes of glaciation where ice is in retreat.

**Interstadial:** a relatively short period within a major phase of glaciation, where ice is not advancing, but when conditions are comparatively warm.

**Joint:** a fracture in a rock that exhibits no displacement across it (unlike a fault). Joints may be caused by shrinkage of igneous rocks as they cool in the solid state, or, in sediments, by regional extension or compression of sediment caused by earth movements.

**Jurassic:** the middle of the three periods of the Mesozoic Era, ranging from 195 to 140 million years ago.

**Landform:** a natural feature of the surface of the land.

**Karstic development:** the development of distinctive features on areas underlain by limestone which are affected by dissolution of the rock by percolating ground waters and underground streams. Named after the Karst region of the former Yugoslavia.

**Knickpoint:** a break in the long profile of a river.

**Left bank:** the bank on the left-hand side of a channel, as viewed when facing downstream.

**Levee:** a broad ridge alongside a river or stream, deposited by floodwaters when they overtop the channel banks. It can also offer flood protection when enlarged or reinforced.

**Lichenometric analysis:** a technique using the size of lichen thalli and lichen growth rates to give information on dating of features.

**Loch Lomond Stadial:** a relatively cold period during the late glacial between 11 000 and 10 000 years BP.

**Meander migration:** the downstream migration of sinuous river channels that occurs because of erosion on one bank and deposition on the other.

**Meander scroll:** a particular pattern of deposits or low curved ridges on a floodplain reflecting the former position of meanders.

**Meandering channels:** river channels that are sinuous, single-thread and of different degrees of sinuosity.

**Mesozoic:** the middle of the three Eras that constitute the Phanerozoic Eon. Literal meaning is 'middle life', it spans the Triassic to the Tertiary, from 230 to 65 million years ago.

**Misfit stream:** also called an underfit stream; one which is much smaller than expected from the size of its valley.

**Moraine:** a landform that is the result of the direct action of glaciers, and can be of different types according to the position in which it is deposited relative to the glacier.

**Osage type underfit:** a stream channel that has a much smaller pool–riffle spacing than would be expected from the size of the valley meanders.

**Outwash plain:** the plain beyond the terminal moraine of a glacier, predominantly consisting of sands and gravels deposited by meltwater streams.

**P-forms:** small-scale features produced by a combination of meltwater and glacial erosion.

**Palaeochannel:** a river or stream channel which no longer conveys river discharge as part of the contemporary river system.

**Palaeohydrology:** the science of the waters of the Earth; their composition, distribution and movement on ancient landscapes from the occurrence of the first rainfall to the beginning of continuous hydrological records.

**Palaeosandur:** a former outwash plain produced adjacent to a glacier, and usually with fine material.

**Palaeozoic:** the first of the three eras of the Phanerozoic. Literal meaning 'old life', it spans the Cambrian to the Permian periods, from 570 to 230 million years ago.

**Paraglacial conditions:** this usually refers to a particular phase between glacial and interglacial conditions.

**Periglacial activity:** in a region adjacent to a glacier, processes that occur as a result of either intense frost action, or the presence of permanently frozen ground, or both.

**Piping:** the existence of subsurface channels of different sizes, often in soils with significant amounts of swelling clays, often found on steep slopes, and possibly carrying water that contributes to stream flow.

**Planation surface:** a term used in Britain to describe a flattish plain that has resulted from prolonged erosion by rivers, slope processes, marine erosion or other types of erosional activity.

**Planform:** the way in which a river course, and particularly the meanders, are seen from above, and how they would appear on a map.

**Pleistocene:** the first epoch of the Quaternary, composed of alternations of great cold with stages of relative warmth and sometimes referred to generally as the 'Ice Age'.

**Point bar:** sediments laid down on the inside of a meander bend.

**pool–riffle sequence:** the sequence along many river channels whereby closed hollows alternate downstream with accumulations of coarser pebbles and cobbles. The spacing of the pools and riffles is related to the mean width of the river channel.

**Postglacial:** see Holocene.

**Quaternary:** the second period of the Cainozoic [Cenozoic] era, about 1.6 million years in duration, and including the Pleistocene and the Holocene.

**Quick flow:** this includes those types of waterflow in a catchment or drainage basin which take place either over the surface or close to the surface, and contribute to flow in rivers and streams.

**Recurrence interval:** the expected frequency of occurrence, in years, of river flow of a particular magnitude. Also called the return period.

**Rejuvenation:** the return of a landscape to processes described as youthful, as a result of a change such as land uplift or a change in climate.

**Riffle—pool sequence:** see Pool—riffle sequence.

**Right bank:** the bank on the right-hand side of a channel, as viewed when facing downstream.

**River capture:** where one river system captures the headwaters of an adjacent one.

**River channel patterns:** the different types of river channel planforms as seen from above. Usually thought of as of two major types: single thread or meandering, and multi-thread or braided.

**River discharge:** the volume of flow of river water per unit time, usually expressed in cubic metres per second.

**River metamorphosis:** the change of channel morphology that can occur when changes of river discharge and sediment exceed a particular threshold condition.

**River terrace:** the remnant form of a valley floor that has been abandoned when the river cut deeper into the original valley.

**Rockfall:** a type of mass movement where coarse material moves rapidly from one part of the slope to another.

**Sandur:** Widely-used Icelandic term generally synonymous with outwash plain.

**Sapropel:** amorphous organic compounds which collect in various types of water basin including lakes and estuaries.

**Secondary flow:** a current in river flow which has a velocity component at right angles to the main flow direction.

**Seepage step:** an irregularity of the hill slope that occurs where lines of seepage of water emerge.

**Sinuosity:** the degree of wandering or winding of a river channel, which can be measured as the ratio of the actual channel distance between two points compared with the straight or down valley distance.

**Slackwater deposits:** deposits that occur in the particular depressions or hollows on a flood plain, usually fine clays.

**Soil pipe:** a tunnel created naturally in soils, which can make up an interconnecting network that contributes to water flow in rivers.

**Solifluction:** the slow movement from higher to lower ground of debris saturated with water; can occur under cold climate conditions but, as a form of mass wasting, can occur in other climates as well.

**Solutes:** organic and inorganic materials in solution.

**Stratigraphy:** the study of rock strata and their arrangement in space and time.

**Stream capture:** see River capture

**Stream power:** a way of expressing the energy available for a particular river at a specific location — this can be related to sediment transported because work (force X distance) is performed in moving sediment and power is the rate of doing work. It is equal to the product of river discharge and slope.

**Suspended sediment:** sediment transported by a river in suspension.

**Swallow holes:** a feature whereby surface water goes underground in a limestone area.

**Terrace:** this may be a river terrace, but it is generally a landform composed of water-deposited materials but now located at an elevation different from the contemporary floodplain or lake level.

**Tertiary:** the penultimate geological period, ranging from 65 to 1.6 million years ago.

**Triassic:** the first period of the Mesozoic Era, ranging from 230 to 195 million years ago.

**Underfit stream:** see Misfit stream

**Valley bench:** a flatter bench-like area on a valley side, which may reflect the former position of the valley floor, or may be a consequence of variations in rock resistance.

**Wandering gravel-bed river:** a very active river channel, where the channel flows over coarse gravels — located in an active area of gravel bars, but does not have a definite meandering pattern.

**Water balance equation:** an equation which, in effect, represents the hydrological cycle; it can be computed for a drainage basin and relates precipitation ( $P$ ), runoff, ( $Q$ ), evapotranspiration ( $ET$ ) and changes in storage ( $S$ ) in the form  $Q = P - ET \pm S$ .

**Watershed:** the boundary delimiting a drainage basin as the basic hydrological unit.

**Width: depth ratio:** a simple measure of the shape of a river channel cross-section, usually obtained as the top width of the cross-section divided by the average depth of the river channel.

**Windermere Interstadial:** a specific relatively warm period of time in the late glacial, originally defined from deposits in northern Britain, and between 13 000 and 11 000 years BP.

## [References](#)