**What is hydrology ?**

Hydrology is the study of the distribution and movement of water both on and below the Earth's surface, as w

ell as the impact of human activity on water availability and conditions.

Water is one of our most precious natural resources. Without it, there would be no life on earth. Hydrology has evolved as a science in response to the need to understand the complex water system of the earth and help solve water problems. This hydrology primer gives you information about water on Earth and humans' involvement and use of water.

**The three main sources of water are:**

* Rainwater.
* Groundwater – This includes water bodies like Wells and Springs.
* Surface water – This includes different water bodies like Reservoirs, Rivers, Streams, Ponds, Lakes and Tanks.

**Sources of river flow**

A river source is the start of a river. They are also known as headwaters. River sources are usually found somewhere elevated, such as a spring on a hillside, but they can also begin from lakes, bogs, marshes, and more.

The **headwater** of a [river](https://en.wikipedia.org/wiki/River) or [stream](https://en.wikipedia.org/wiki/Stream) is the farthest point on each of its [tributaries](https://en.wikipedia.org/wiki/Tributaries) upstream from its [mouth](https://en.wikipedia.org/wiki/River_mouth)/[estuary](https://en.wikipedia.org/wiki/Estuary) into a [lake](https://en.wikipedia.org/wiki/Lake)/[sea](https://en.wikipedia.org/wiki/Sea) or its [confluence](https://en.wikipedia.org/wiki/Confluence) with another river. Each headwater is considered one of the river's **source**, as it is the place where [surface runoffs](https://en.wikipedia.org/wiki/Surface_runoff) from [rainwater](https://en.wikipedia.org/wiki/Rainwater), [meltwater](https://en.wikipedia.org/wiki/Meltwater) and/or [spring water](https://en.wikipedia.org/wiki/Spring_water) begin accumulating into a more substantial and consistent flow that becomes a [first-order tributary](https://en.wikipedia.org/wiki/Strahler_number) of that river. The tributary with the longest [course](https://en.wikipedia.org/wiki/Channel_(geography)) downstream of the headwaters is regarded as the [main stem](https://en.wikipedia.org/wiki/Main_stem).

**Define flow.**

Fluid flow seems to be the movement of fluid under the influence of several unbalanced forces. It's indeed primarily a fluid motion, whereas fluid flow is particularly concerned well with fluid mechanics.

The fluid's movement persists until other imbalanced forces are introduced to it.

**Types of flow.**

There are mainly two kinds of flow, such as:

1. **Laminar flow**- Laminar flow would be the continuous movement of flowing fluid that follows or respects streamlines. Nevertheless, whenever the flow rate of fluid particles is extremely high, the particle flows accompany the chaotic motion.
2. **Turbulent flow** - Turbulent flow is characterized by erratic property modifications in the flow. This involves rapid changes throughout pressure as well as flow velocity throughout spatial and temporal scales.

Laminar Flow

Laminar flow is defined as the movement of liquids without turbulences. The fluid flows in parallel layers with no disruption between them. Laminar flow can be subdivided into the following:

* [Unidirectional laminar flow](https://ibidi.com/content/286-the-different-types-of-flow#unidirectional)
* [Pulsatile laminar flow](https://ibidi.com/content/286-the-different-types-of-flow#pulsatile)
* [Oscillatory laminar flow](https://ibidi.com/content/286-the-different-types-of-flow#oscillatory)

## Turbulent Flow

Turbulent flow is characterized by unpredictable changes in both flow rate and direction over time. In vivo, turbulences are rare and can only be found during pathophysiological processes.