

Drainage Pattern

The drainage pattern is formed by the water bodies such as streams and lakes. The drainage patterns indicate the type of topography and gradient of the land. It is influenced by geographical structure, the slope of the land, the velocity of water, the amount of volume of water etc. The drainage patterns are segregated into two main types.

- Concordant Drainage Pattern
- Discordant Drainage Pattern



Types of Drainage Pattern

There are numerous types of drainage patterns that are influenced by various factors, which leads to their segregation into different types. The discordant and concordant types of drainage patterns differ based on whether the topology correlates to the topology of the area.

Discordant Drainage Pattern

The discordant drainage pattern does not correlate and is not influenced by the topology and geology of the area. The water courses that follow the discordant drainage pattern follow the initial path even after the alterations witnessed in the topography. It is further segregated into two parts which are Antecedent drainage and superimposed drainage.

Antecedent Drainage

- The segment of the river slope is elevated but the river follows the initial slope.
- It cuts the elevated portions or parts that cut through the elevated part, called vertical erosion, or vertical down cutting.
- It is renowned as "inconsequent drainage".
- Examples- Indus, Sutlej, Himalayan, Brahmaputra rivers

Superimposed Drainage

- It is renowned to be as "**superinduced drainage**", and "**epigenetic drainage**."

- It is erosive in action, cuts the rocks and follows its initial slope.
- Examples- Damodar, Subarnarekha, Chambal, Banas etc.

Concordant Drainage Patterns

In concordant drainage patterns, the path of the river is highly influenced by the slope of the river and its topography. It is segregated into two types of drainage patterns such as consequent drainage pattern, and subsequent pattern. The consequent system is developed by the general direction of the slope. The subsequent river system is formed after the flow of the river on that path. The complete details of the types of the consequent and subsequent river systems are as listed here:

Trellis Drainage

- The channels look similar to garden trellis
- It develops in areas where the sedimentary rocks have been tilted or folded and then eroded.
- For example, the Appalachian Mountains of North America.

Parallels Drainage

- It develops in areas that have elongated, similar landforms, similar to outcropping-resistant rock bands.
- The pattern is caused due to steep slopes with a certain degree of relief. The steep slopes make the streams straight and swift, with minimal tributaries.

Dendritic Drainage

- It is perhaps the most well-known Drainage Pattern. The pattern resembles the branching of tree roots.
- Only develops in regions underlain by homogenous material, which means the geology beneath the stream has no specific structure and is weathering resistant. There is no control over the direction of erosion.

Rectangular Pattern

- They are found in areas that have undergone faulting. The surface has minimal topography and a combination of bedding planes, faults, or fractures that forms a rectangular pattern.

- Streams follow the least resistant path, making it prominent in locations where the surface rocks are weak.

Deranged Drainage

- They are formed from the disruption of a prior Drainage Pattern. For instance, a dendritic pattern can be disrupted due to any external reasons, leading to the formation of a deranged pattern.
- Example- Canadian shield

Radial Drainage

- It forms around a central elevated location. The pattern appears similar to Volcanoes.
- Laccoliths and domes are geological structures that exhibit perfect radial Drainage Patterns.

Angular Drainage

- They are developed in reassigns where faults and bedrock joints intersect at an extremely acute angle.
- The angles are comparatively more acute than rectangular Drainage Patterns.

Centripetal Drainage

- This pattern is the opposite of the radial Drainage Pattern. It flows towards a central depression.
- It is prominent in southwestern and western areas of the United States as the basins show internal drainage systems.

The drainage patterns are categorized based on texture and form. Geologists, hydrologists, and other professionals take a deep interest in studying these patterns as it gives us vital information about the land.