

## Karst Landforms

### 1. Meaning of Karst Topography

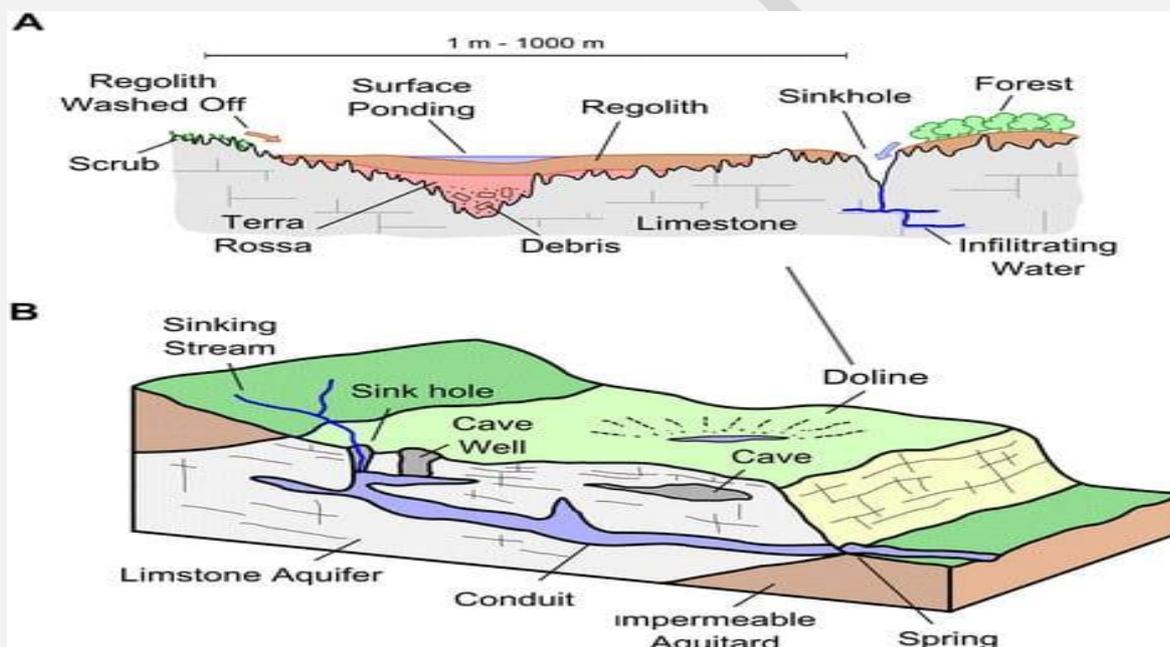
**Karst topography** is a landscape formed by the **dissolution of soluble rocks** such as:

- Limestone
- Dolomite
- Gypsum

It is characterised by:

- Underground drainage systems
- Sinkholes
- Caves and caverns

The dissolution occurs when **rainwater mixed with carbon dioxide forms carbonic acid**, which dissolves limestone.



## Rocks Associated with Karst

### Limestone

- Sedimentary rock is mainly composed of **Calcium Carbonate (CaCO<sub>3</sub>)**.
- Formed from **corals, shells, and marine organisms**.

## Chalk

- Soft and pure form of limestone.
- Highly **porous**, hence karst is **less developed**.

## Conditions for Karst Formation

Karst landscapes develop best when:

- Limestone rocks are **dense and fractured**
- Rainfall is **moderate to heavy**
- **Water table is low**
- Rocks contain **many joints and fissures**

These conditions allow **groundwater circulation and chemical dissolution**.

## Distribution of Karst

### World Examples

- **Causses (France)**
- **Kwangsi (China)**
- **Yucatán Peninsula (Mexico)**
- **Kentucky and Florida (USA)**

### Karst Regions in India

- **Vindhya region**
- **Dehradun and Eastern Himalayas**
- **Pachmarhi (Madhya Pradesh)**
- **Borra Caves (Andhra Pradesh)**
- **Bastar (Chhattisgarh)**
- **Gupt Godavari caves (Uttar Pradesh)**

## Characteristics of Karst Topography

1. **Absence of surface drainage**
2. Development of **underground drainage systems**
3. Presence of **sinkholes and caves**
4. Formation of **limestone pavements**
5. Presence of **dry valleys**

## Erosional Landforms of Karst

### 1. Limestone Pavement

- Flat limestone surface with cracks.
- Consists of:

**Clints** → Limestone blocks

**Grikes** → Deep cracks between blocks.

### 2. Sinkholes / Swallow Holes / Dolines

- Circular depressions formed by the **dissolution or collapse** of limestone.

Local names:

- **Cenotes** – Mexico
- **Blue holes** – Underwater sinkholes
- **Sotanos** – Mexico

### 3. Blind Valley

- A valley that **ends abruptly** where a stream disappears underground.

### 4. Lapias / Karren

- Small **grooves, ridges, and pits** formed by the solution of limestone.

### 5. Pinnacles

- Sharp **vertical limestone projections** formed due to dissolution.

### 6. Karst Window (Fenster)

- Occurs when the **roof of an underground cave collapses**, exposing the underground stream.

### 7. Uvala

- A large depression formed by the **merging of several sinkholes (dolines)**.

### 8. Polje

- **Large flat-floored depression** in karst areas.
- Size: **5–400 km<sup>2</sup>**.

### 9. Caves and Caverns

- Underground cavities formed by the **dissolution of limestone by groundwater**.

Example:

- **Borra Caves (Andhra Pradesh)**

### *Depositional Landforms of Karst*

Deposits inside caves are collectively called **Speleothems**.

#### *1. Stalactites*

- **Icicle-shaped deposits hanging from cave roofs.**
- Formed by the precipitation of **calcium carbonate**.

#### *2. Stalagmites*

- **Upward-growing deposits on cave floors.**
- Formed from dripping water containing minerals.

#### *3. Pillars (Columns)*

- Formed when **stalactites and stalagmites join together**.

#### *4. Drapes / Curtains*

- **Thin sheet-like calcite deposits** hanging from cave ceilings.

#### *5. Tufa*

- A porous limestone deposit formed by **precipitation of calcium carbonate from water**.

#### *6. Travertine*

- **A harder and more compact form of tufa** formed near springs and rivers.

### *Karst Lakes*

- Formed due to the **collapse of underground caves**.
- Often, **temporary lakes** appear after heavy rainfall.

### *Soil in Karst Regions*

#### *Terra Rossa*

- **Reddish clayey soil** formed over limestone.
- Well-drained and rich in iron oxide.

### *Economic Importance of Karst*

1. Limestone mining
2. Cement industry
3. Building material
4. Tourism (caves)

However:

- Agriculture is limited due to **thin soil cover and poor drainage**.

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