

Chapter 4. Karstic relief

4.1. Definition

Karst is a topography formed from the dissolution of soluble carbonate rocks such as limestone, dolomite, and gypsum. It is characterized by features like poljes above and drainage systems with sinkholes and caves underground.

The word karst was borrowed from German Karst in the late 19th century, which entered German much earlier. According to one interpretation, the term is derived from the German name for a number of geological, geomorphological, and hydrological features found within the range of the Dinaric Alps.

The karstification of a landscape may result in a variety of large- or small-scale features both on the surface and beneath.

4.2. The karstification process

Karstification occurs through the dissolution of carbonate or sulfate rocks in contact with water containing carbonic acid (H_2CO_3), derived from carbon dioxide in the air. The dissolution of limestone by water combined with carbon dioxide:

DISSOLUTION OF CARBONATE ROCKS

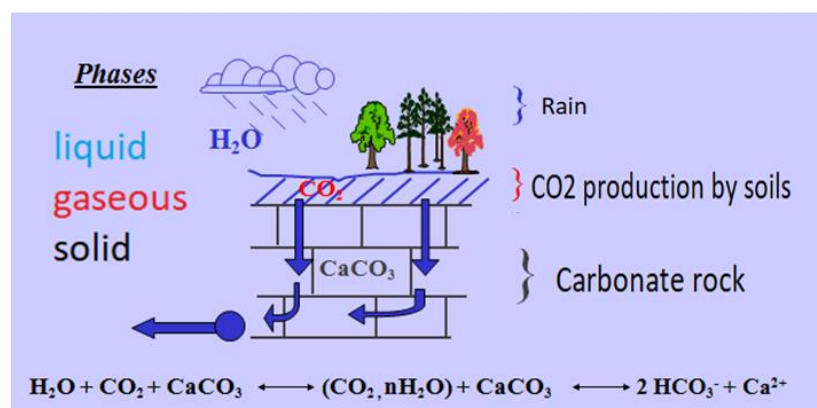
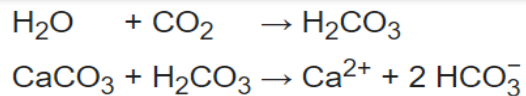


Figure 4.1. Creation of cavities in the rock= karstification

4.3. Karst morphology

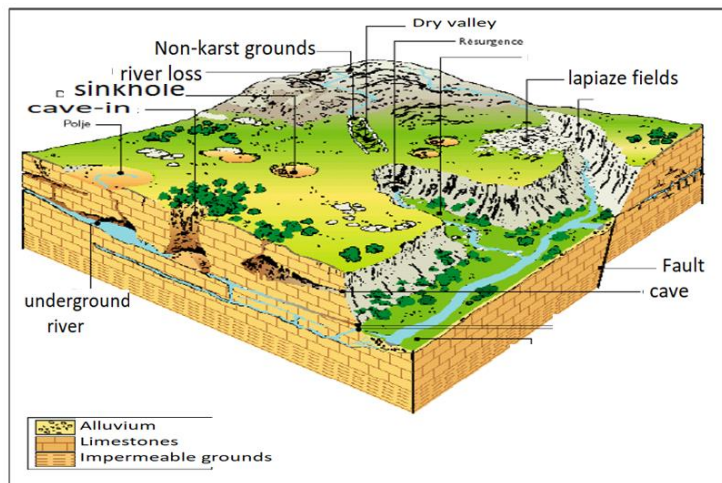


Figure 4.2. Landscape and karst morphology



Figure 4.3. Fractured limestone slab



Figure 4.4. Sol on Epikarst

The **epikarst** is the key site for carbonate rock solution.

The **epikarst** comprises highly weathered carbonate bedrock immediately beneath the surface or beneath the soil (when present) or exposed at the surface, characterized by a network of fissures and cavities that collect and transport the water below.

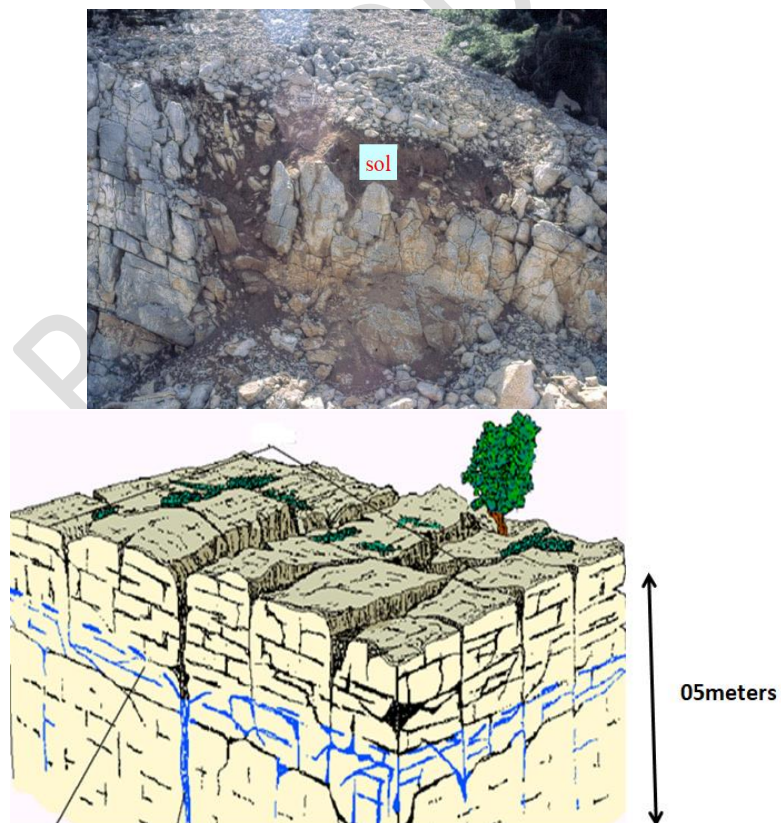


Figure 4.5. Epikarst

Lapiaz: Limestone (on the surface) dissected by numerous channels and fissures of varying size, some of which can reach several metres in length.



Figure 4.6. Lapiaz

Doline/ sinkhole is a natural enclosed depression found in karst landscapes. Dolines are the most common landform in karst areas. They are described as small to medium sized closed depressions, ranging from metres to tens of metres in both diameter and depth.

Figure 4.7. Small doline



Figure 4.8. Large doline Syria

Uvala: Several sinkholes come into contact to form a depression resembling an irregular rosette.



Figure 4. 9. A single uvala typically contains numerous sinkholes within it.

Polje: is a flat-bottomed karst depression that may or may not be completely enclosed by rocky slopes.

Water is often evacuated through a hole at the bottom of the polje.



Figure 4.10. Polje

Chasm : an underground cavity, often of karstic origin, whose generally imposing entrance is markedly vertical.



Figure 4.11. Bottom of the chasm



Figure 4.12. Chasm in the middle of a Lapiaz

A cave: is a natural underground cavity with at least one accessible horizontal section.

Cave is a natural underground cavity with at least one accessible horizontal section.



Figure 4.13. Cave

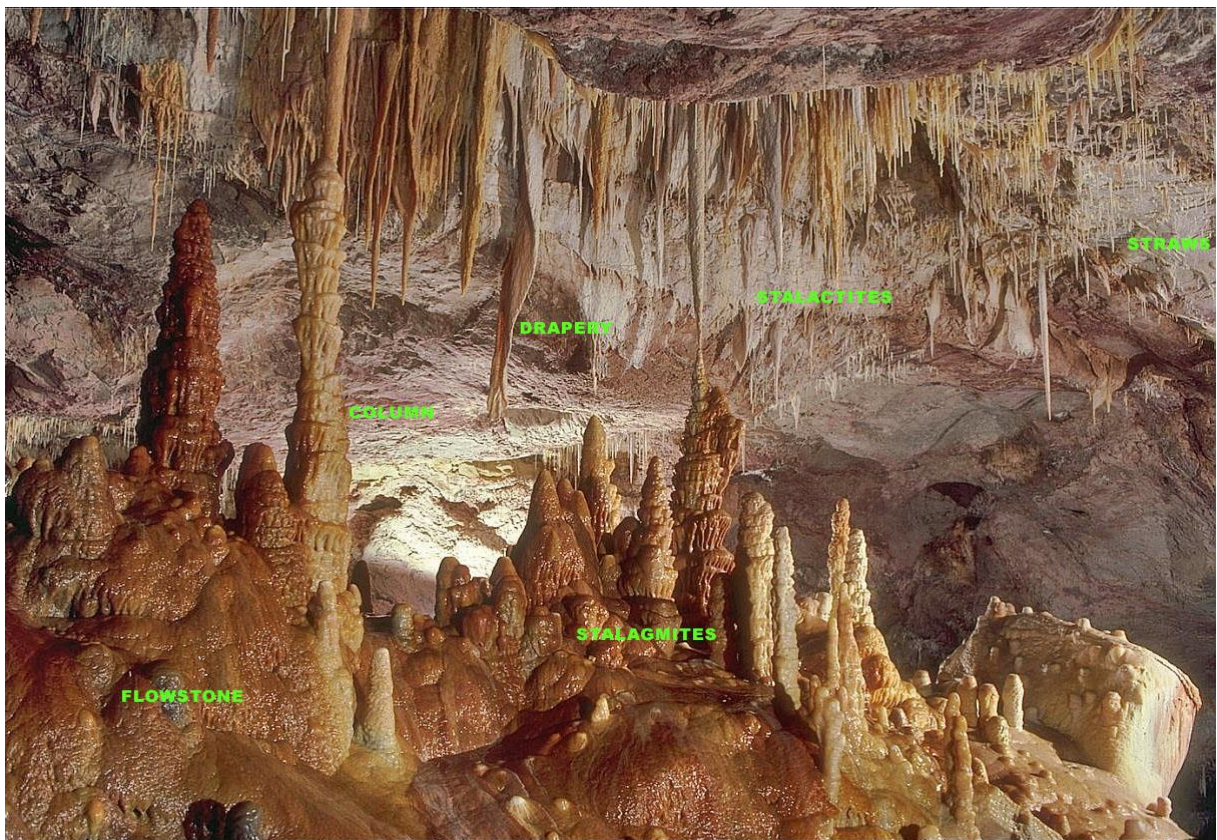


Figure 4.14. Stalactite, Stalagmite, Column, Drapery