Aeolian Landforms

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What is aeolian landform ?

- Aeolian is a term pertaining to the wind; hence wind-borne, wind-blown or wind-deposited materials are often referred to as aeolian landforms.

- Aeolian landforms are mostly formed in deserts and those places where precipitation is scanty.

  - Deserts are arid lands where more water is lost through evaporation than is gained from precipitation. In other words, any area where the rate of evaporation is higher than the rate of precipitation is called desert.

Wind Erosion

- Wind performs erosion in three different ways
  - Attrition
  - Deflation
  - Abrasion or Corrosion

- Attrition: The mechanism by which the particle size of any material is reduced during transportation by the agent of erosion is known attrition.
- Deflation: It means the complete blowing away of fine dust, leaving coarse and heavier material.
- Abrasion: The mechanical wearing away of a rock by friction, scraping or grinding.

Work of Wind

- Erosion
- Transportation
- Deposition

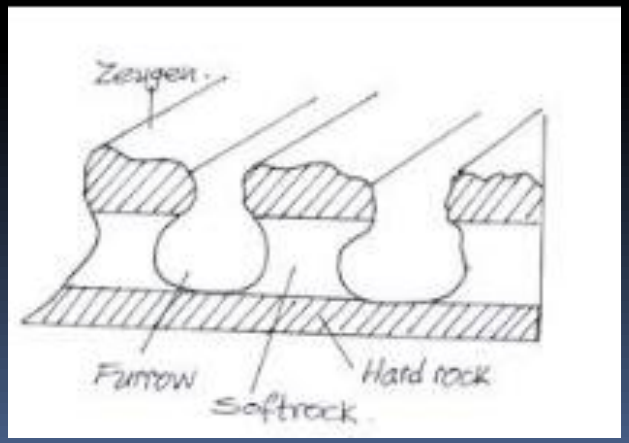
Erosional Landforms

- *Zeugens*
- *Yardangs*
- *Wind Bridges*
- *Inselbergs*
- *Demoiselles*
- *Desert Pavement*

Zeugens

- The tabular masses of more resistant rock resting on undercut pillars of softer materials are known as Zeugens or Rock mushrooms.

- Zeugens vary in height from less than a metre to about 30 metres

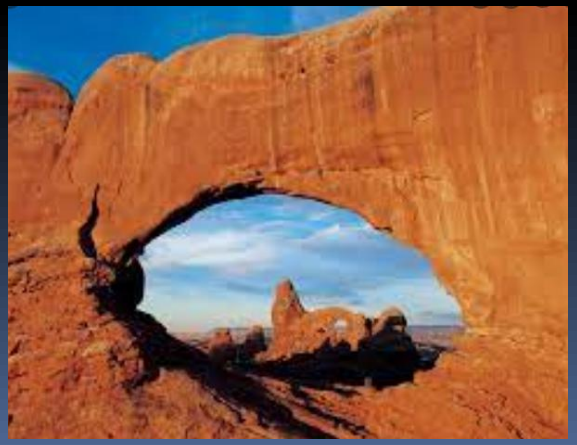


Yardangs

- Yardangs are steep sided deeply undercut overhanging rock ridges separated from one another by long grooves or corridors as passageways cut in desert floors of relatively softer rocks
- Yardangs were first discovered in China's Taklamakan desert. The name is derived from the Turkish word "Yar" meaning ridge.

Wind Bridges

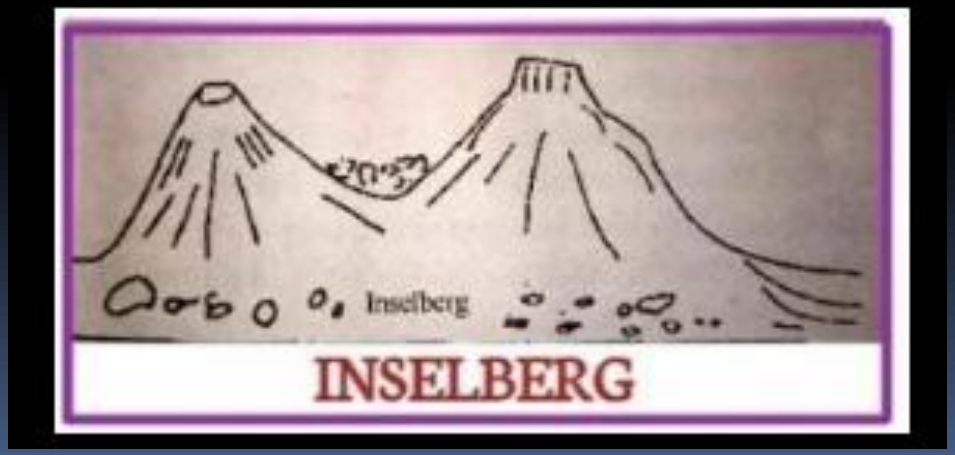
- The continuous abrasion of a rock by powerful wind results into the formation of holes in the rock which are gradually widened. Such holes are called as wind windows.
- The holes are further widened and enlarged through the process of abrasion and deflation in such a way that an arch like feature, having intact root is formed. Such formation is called window bridges or wind bridges.



Inselbergs

- "Inserberg" is a German word meaning island mountain.

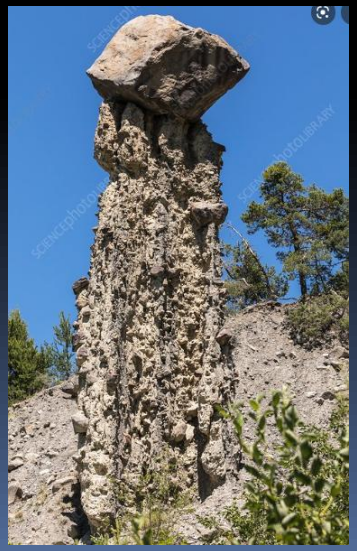
- It is a characteristics of tropical landscape, particularly in the Savanna zone and generally composed of a resistant rock such as granite.

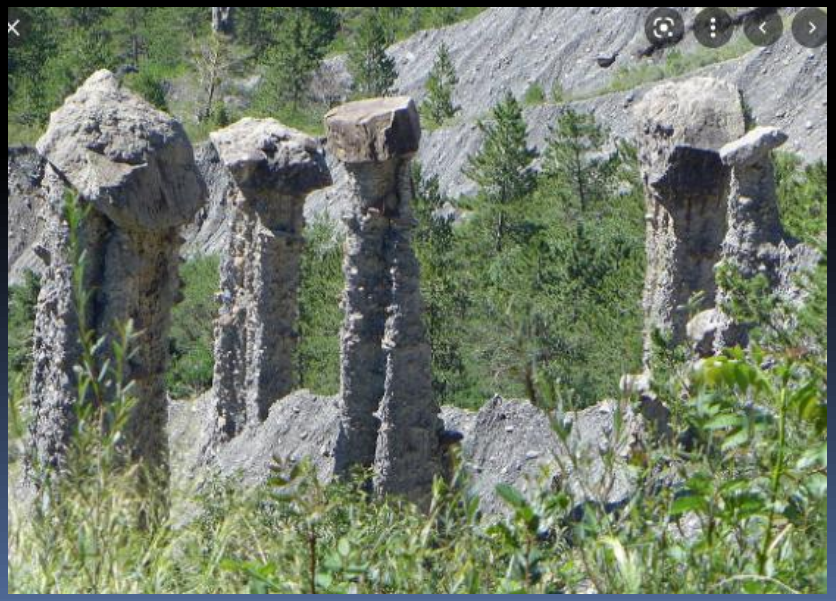


Demoiselles

- Demoiselles is a term of French derivation, which means Earth's Pillar.

- In which a boulder has protected the underlying material from weathering and now survives as a cap stone and dangerously perched on the pinnacle of the slender pillar.





Desert Pavements

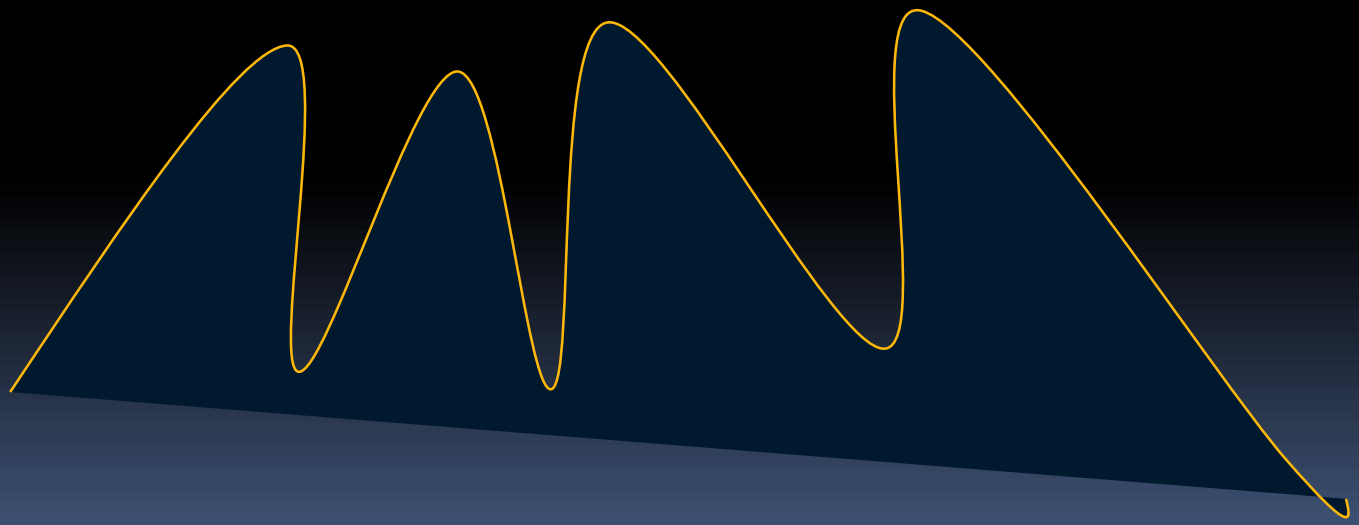
- When mountain-wash containing pebbles, gravels and sand is exposed to wind, the fine material is soon removed, leaving a mosaic of pebbles which is called desert pavements.

Hammada

- Sometimes , the sand blown by winds is deserts exposes the floor of hard rocks. When such floors developed a lot, they are known as Hammada

Needles

- Abrasion by winds bearing sand goes on at the mountain tops which are converted into needle like forms.



Depositional Landforms

- Ripple Marks
- Sand Dunes
  - Transverse (Barchans)
  - Longitudinal Dunes
  - Star Dunes
  - Sand Levees
  - Sand Sheet
  - Parabolic Dunes
- Loess

Ripple Marks

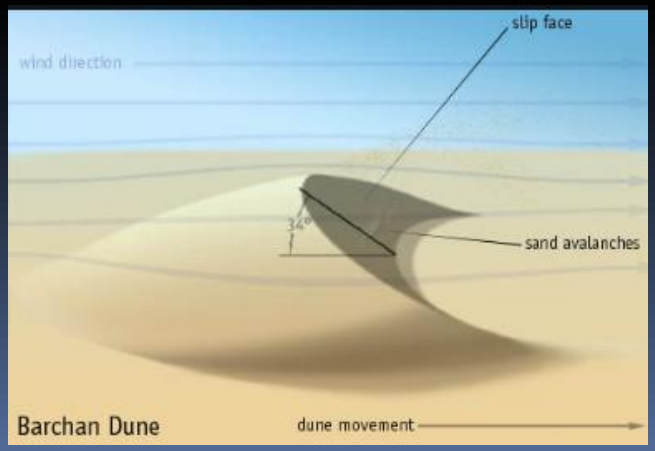
- Ripple marks are small scale depositional feature of sand
- This pattern is produced in unconsolidated sediments by the agents of erosion like wind, sea waves and running water.

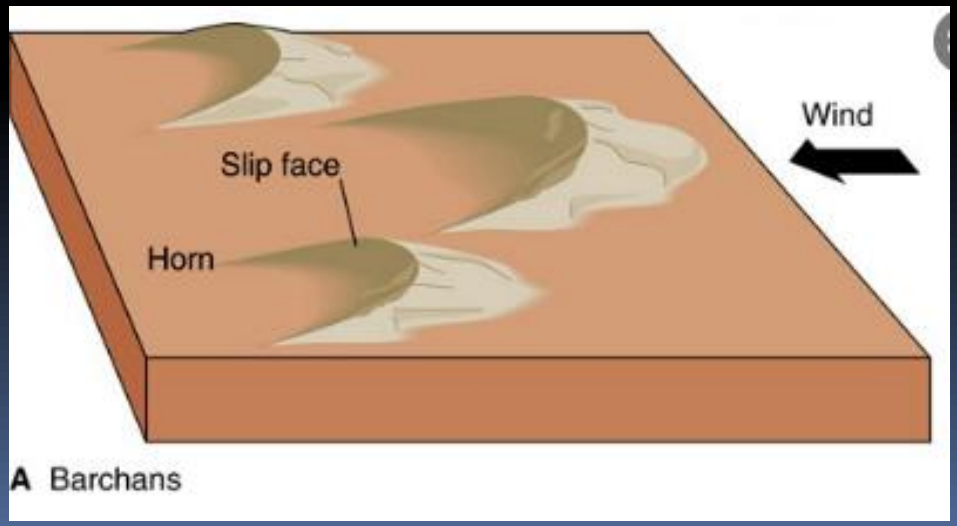
Sand Dunes

- A mound of ridge of wind blown sand is known as dune or sand dune.
- The dunes are generally mobile and there is a wide range of variation in their shape, size and structure.
- The wind ward slope of a sand dune is generally gentle (5° to 15 °) where as leeward slope is always steep (20 ° to 30 °)

Sand Dunes

- Transverse or Barchans:
  - The barchans are formed where the supply of sand is limited and winds of moderate velocity blow in a constant direction. Typically, they are small, isolated dunes from 1 to 50 m high.
  - The tipes (horne) of barchan point downward and sand grains are swept around them as well as up and over the crest.





Seif

- "Seif" is an Arabic word, meaning sword dunes and is adopted to describe a knife edged ridge of sand or longitudinal dunes
- Seif, a long, narrow sand dune or chain of dunes, generally oriented in a direction parallel to the prevailing wind or in a direction resulting from two or more winds blowing at acute angles to each other.

Longitudinal Dunes

- **A large, elongated dune lying parallel to the prevailing wind direction**. Longitudinal dunes usually have symmetrical cross sections. They generally form in areas that are located behind an obstacle where sand is abundant and the wind is constant and strong.

Star Dunes

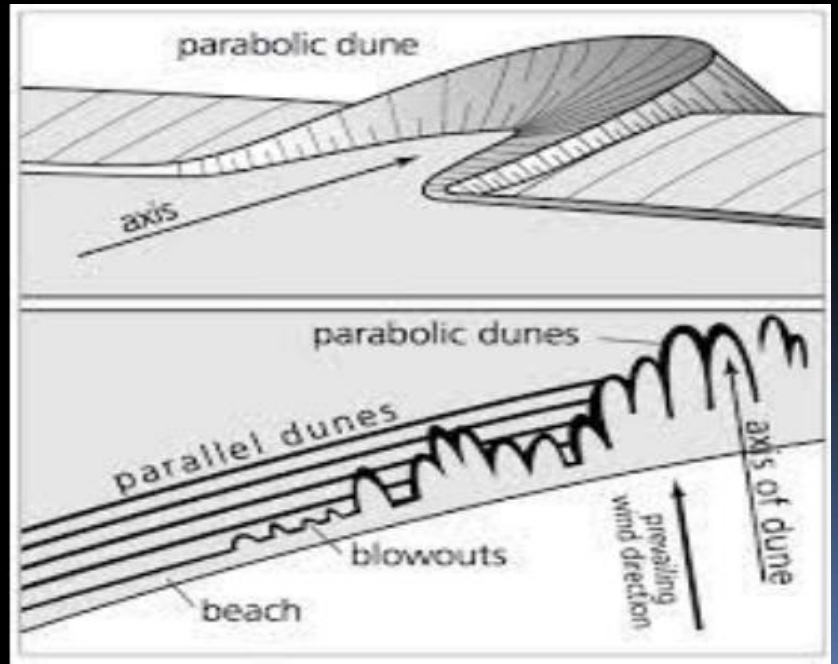
- A star dune is a mound of sand having a high centre point from which three or four arms or ridges radiate.
- This type of dunes is typical of parts of North Africa and Saudi Arabia.

Sand Levees

- Sand levees are flat topped sand ridges which extend parallel to the prevailing winds but lack the collapsing fronts which mark seifs.

Parabolic Dunes

- These sand dunes are found in areas where the wind speed is high but the vegetation is scanty. They developed at the leeward sides of deflation hollows. The dunes appear like parabolas.



Sand Sheet

- The term sand sheet is applied to a sand area marked by an extremely flat surface and absence of any topographic relief other than small ripples.

- The Selima sand sheet of Libya is an excellent example of sand sheet.

Loess

- Fine particles of sand are suspended in wind. They are deposited at places much away from their sources. A deposition of these suspended particles in an area is called loess.