AEOLIAN PROCESSES

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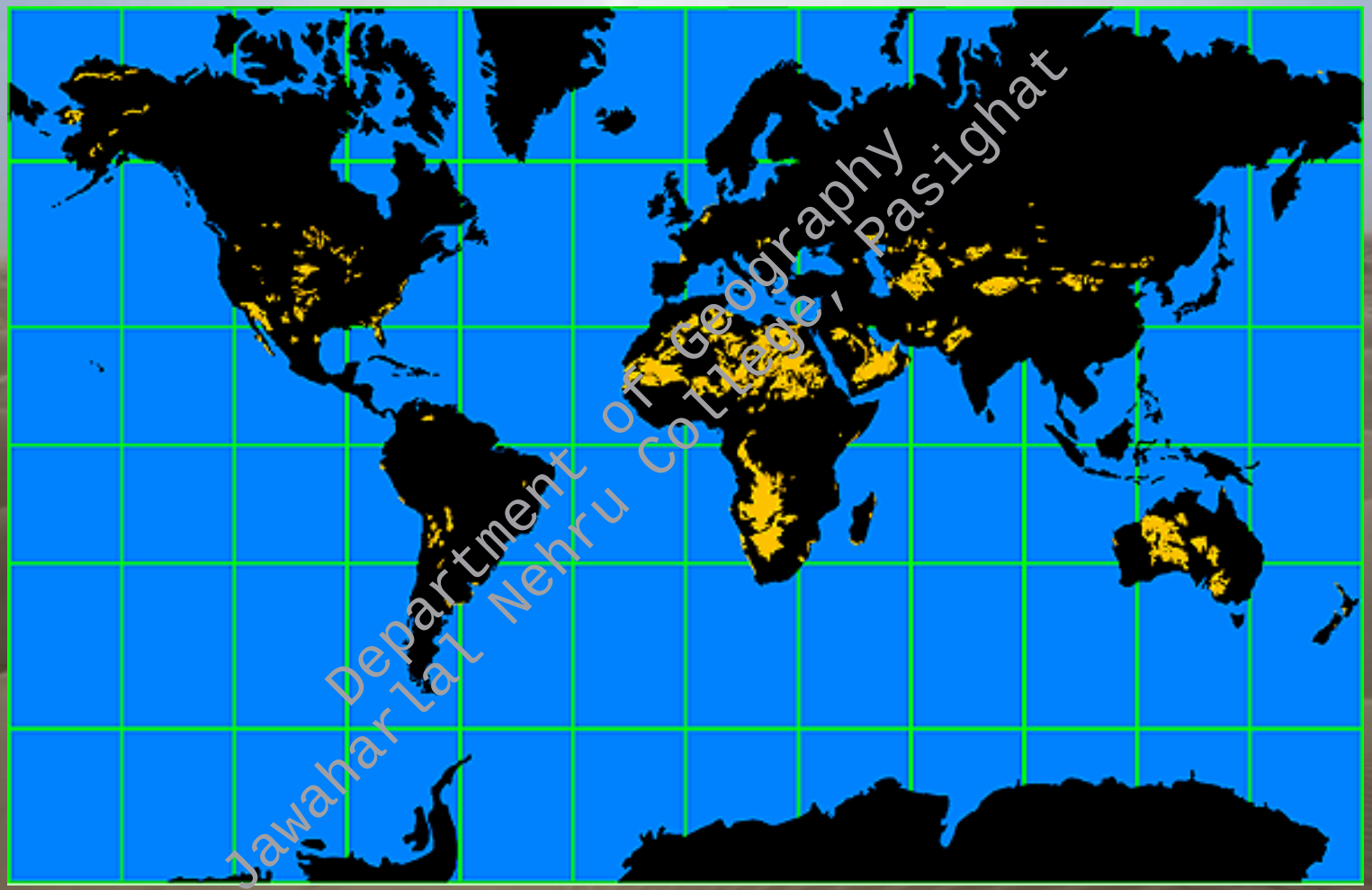
- AEOLUS is the Greek ‘God of wind’
- Eolian processes include erosion, transportation and deposition activities of wind
- Eolian processes are important in arid and semi arid regions of tropical and temperate environments
- Recent investigations have shown that even in the deserts running water is a potent geomorphic agent

Global distribution of major deposits of Eolian derived sediments



Factors affecting wind erosion

- **Wind Velocity**: Massive wind erosion with a significant increase in wind speed
- **Nature and amount of materials/ the size of the grain**: larger grains resist erosion by virtue of their greater size
- **Composition of rocks**
- **Nature of vegetation**

WIND EROSION occurs in three ways:

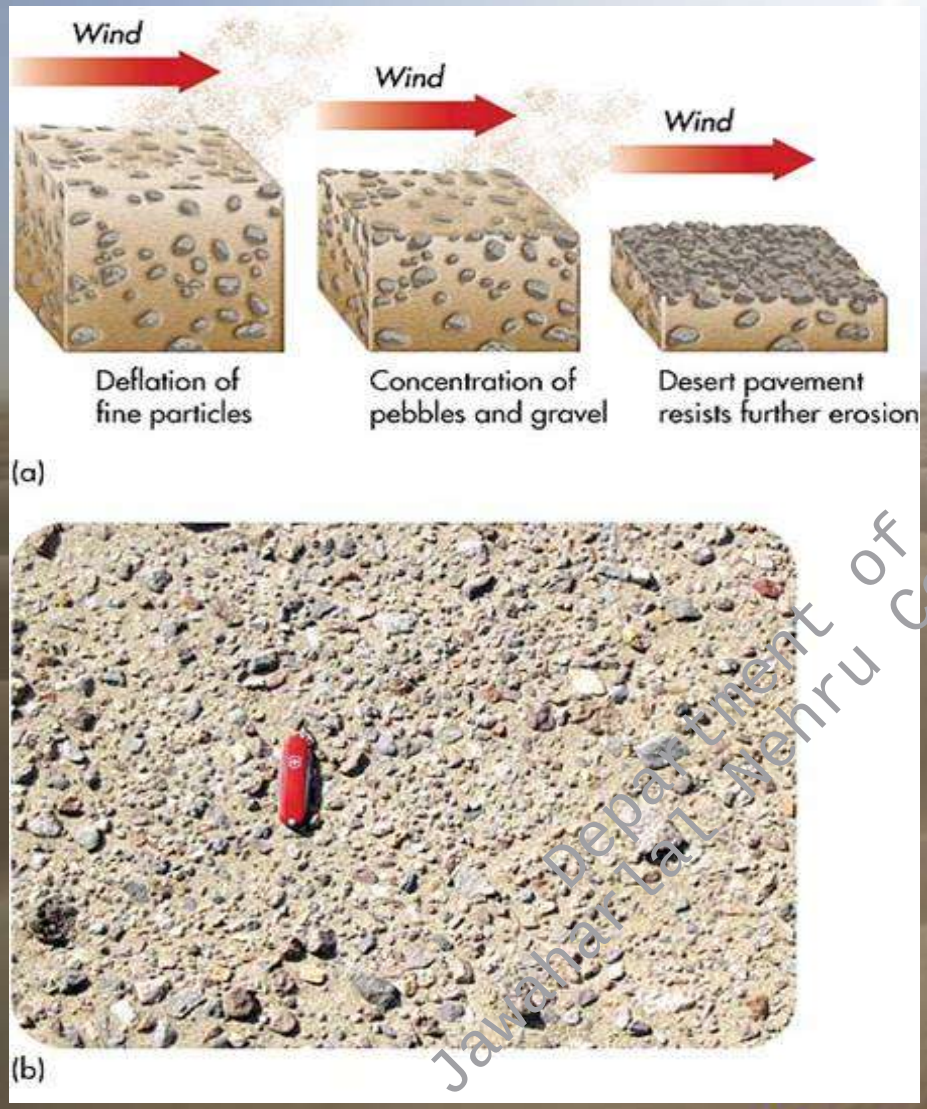
- **DEFLATION**
- **ABRASION OR SANDBLASTING**
- **ATTRITION**

DEFLATION

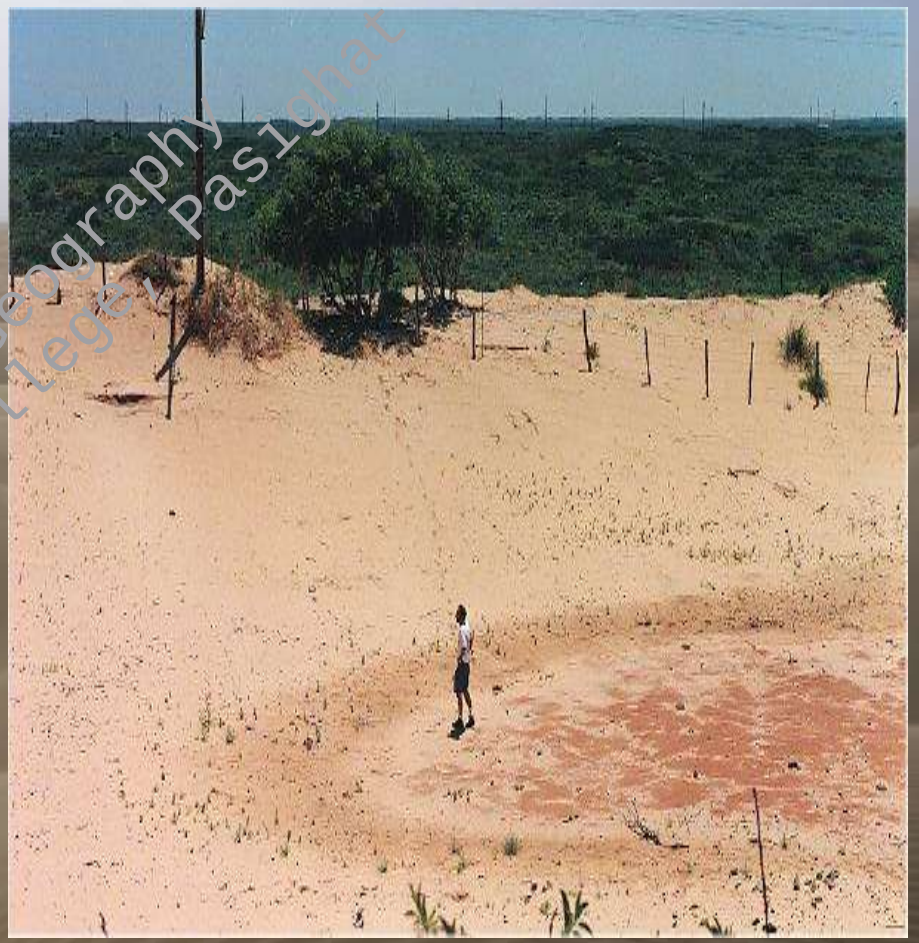
- ✓ Deflatus (Latin word) means blowing away
- ✓ Removing, lifting and Blowing away of surface materials by winds
- ✓ Deflation – wind blows loose soil away:
  - leaves coarser pebbles & cobbles, called Desert Pavement
  - Continued deflation removes most of loose materials and thus depressions or hollows are formed called Deflation Hollow or Blowouts.

Deflation continues...

Desert Pavement

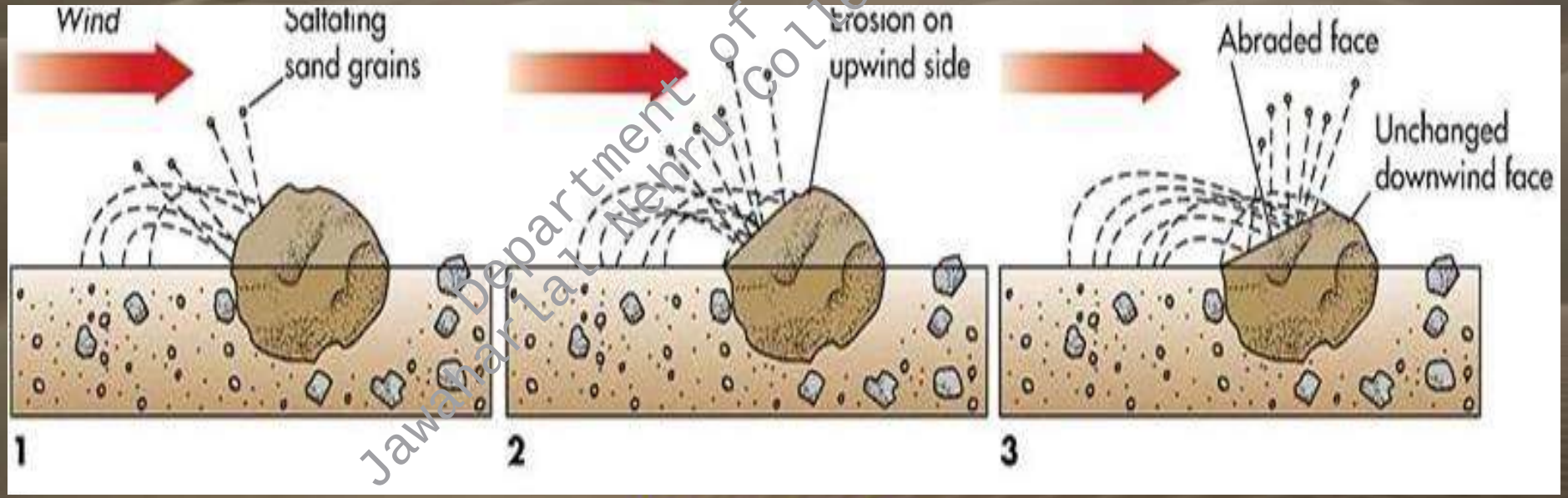


Deflation hollows or blowouts



ABRASION OR SANDBLASTING

- Wearing down of surfaces by the grinding action and sand blasting of windborne particles
- Maximum abrasion occurs at the height between 20-25 cm from the ground surface

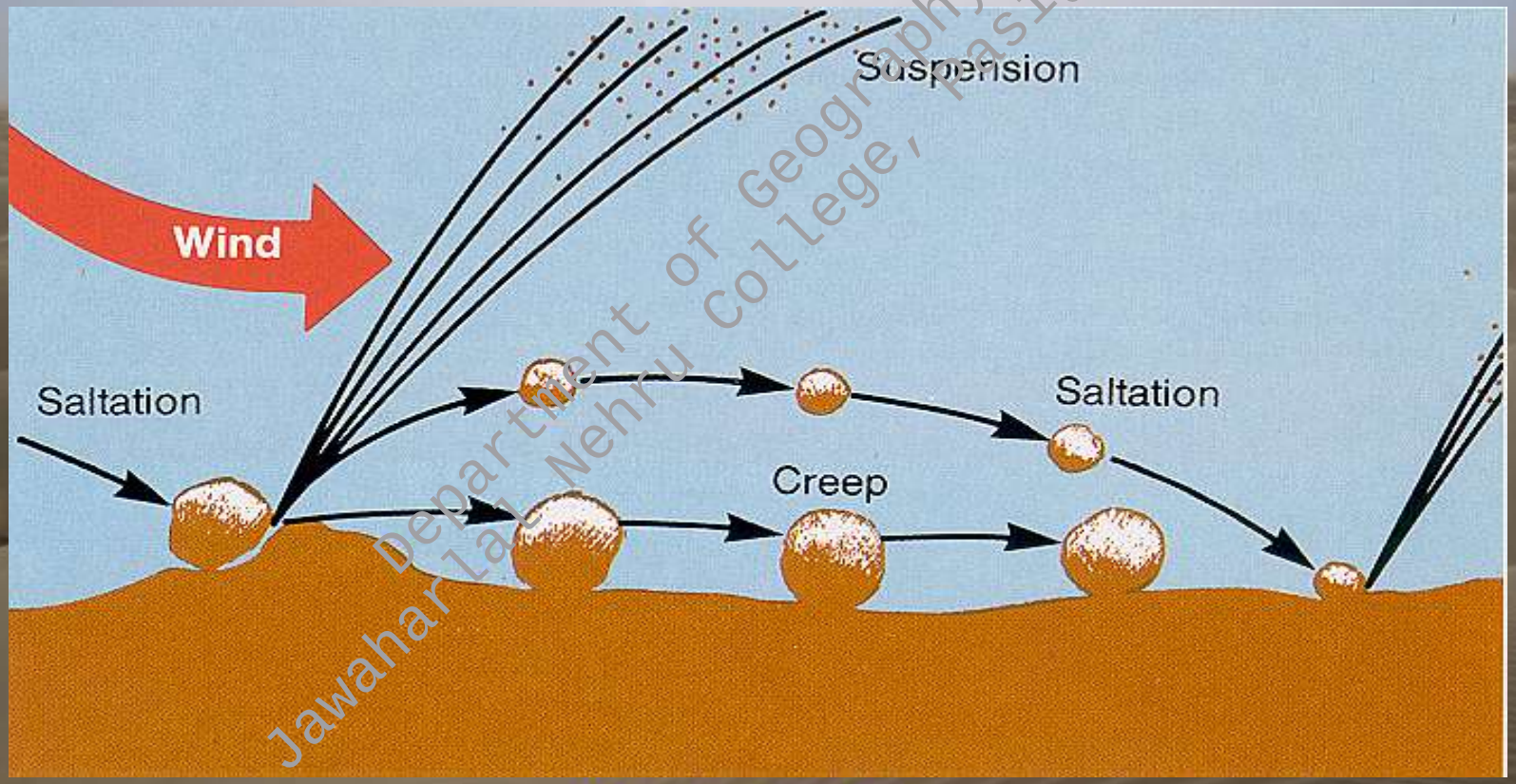


ATTRITION

- Mechanical tear and wear of the particles suffered by themselves while they are being transported by wind
- Results into gradual reduction in the size of rock particles (size of grains)

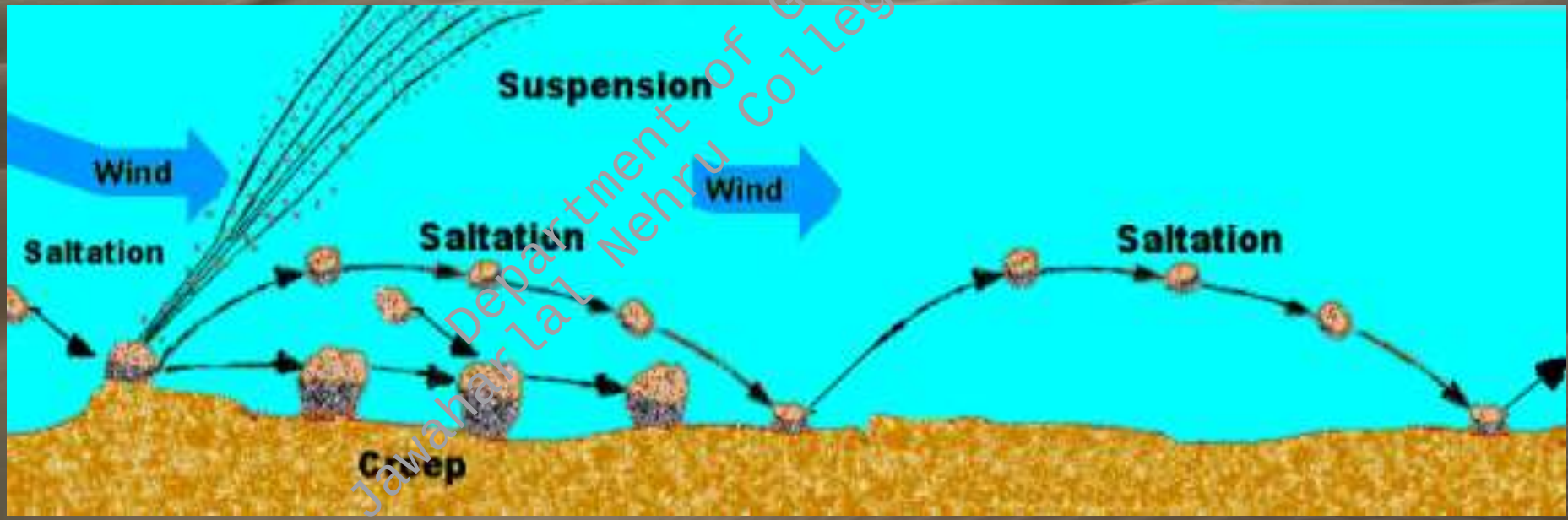
TRANSPORTATIONAL PROCESSES

1. Suspension
2. Saltation
3. Surface creep or Traction



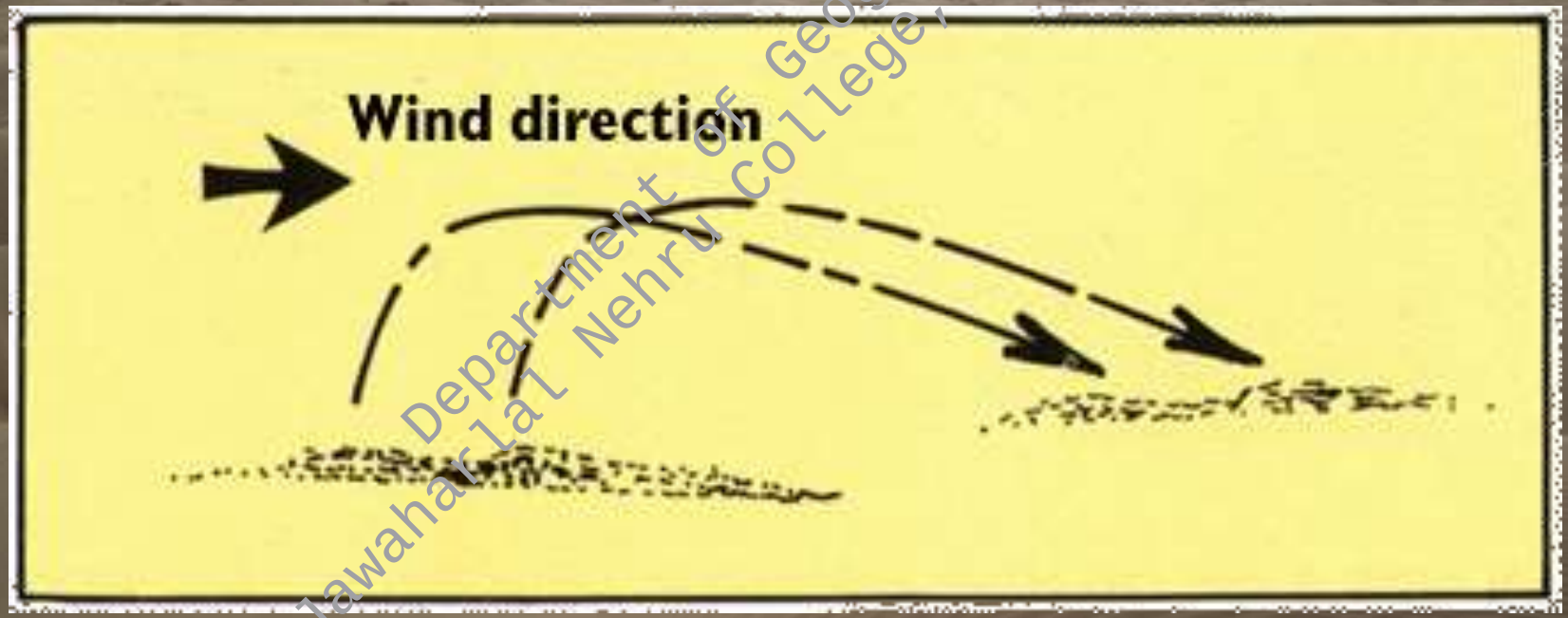
SUSPENSION

- Smallest dust particles are carried
- Air suspends particles less than 0.2 mm in diameter
- Mostly fine silt and clay particles



SALTATION

- Saltare (Latin word) means ‘to leap’
- Movement of sands and gravels through the mechanisms of bouncing, jumping and hopping by turbulent air flow



SURFACE CREEP OR TRACTION

- Movement of relatively bigger particles along the ground surface
- They are hit by smaller particles, which cause them to creep forward, very slowly
- Sliding and rolling

DEPOSITIONAL PROCESSES

- Deposition of sediments occurs due to:
  - -marked reduction in wind speed
  - -obstructions caused by bushes, forests, marshes and swamps, lakes, big river, walls, etc
- Deposition takes place with a sorting action (larger particles drop first due to reduced wind velocity)
- Wind-deposited sand bodies occur as sand sheets, ripples and dunes.

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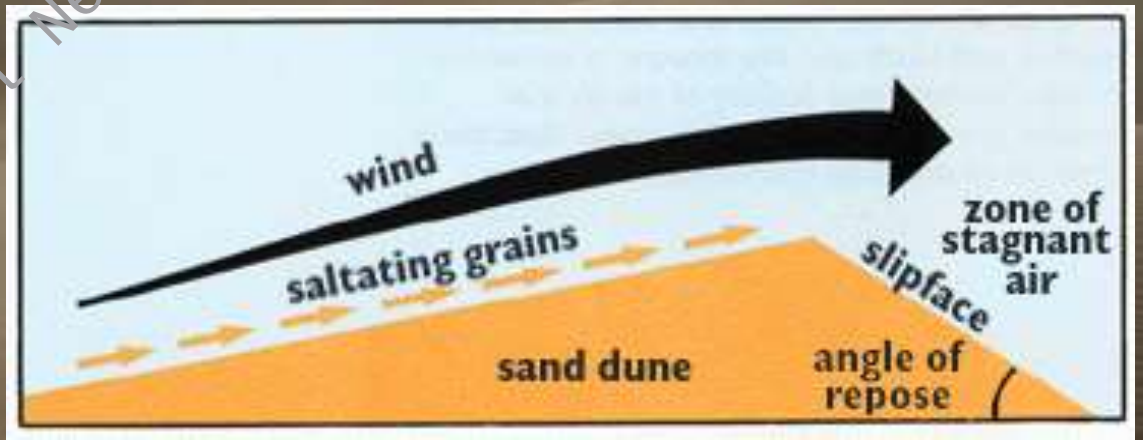
Sand sheets and ripples

- ***Sand sheets*** **are flat, gently undulating sandy plots of sand surfaced by grains that may be too large for saltation.**
- **Wind blowing on a sand surface *ripples* the surface into crests and troughs whose long axes are perpendicular to the wind direction.**
- **Wind-blown sand moves up the gentle upwind side of the dune by Saltation or creep. Sand accumulates at the brink, the top of the slip face. When the buildup of sand at the brink exceeds the angle of repose, a small avalanche of grains slides down the slip face. Grain by grain, the dune moves downwind.**




Thank
You
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