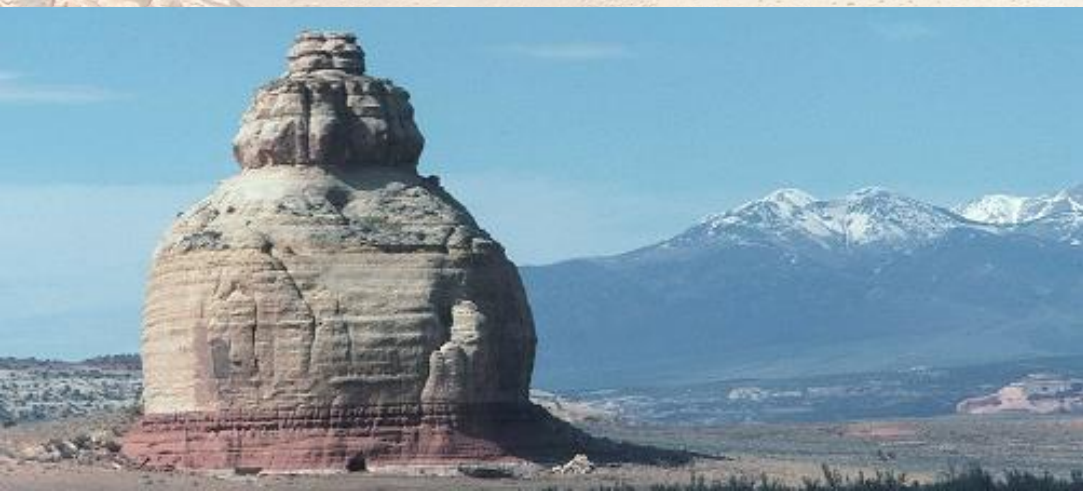
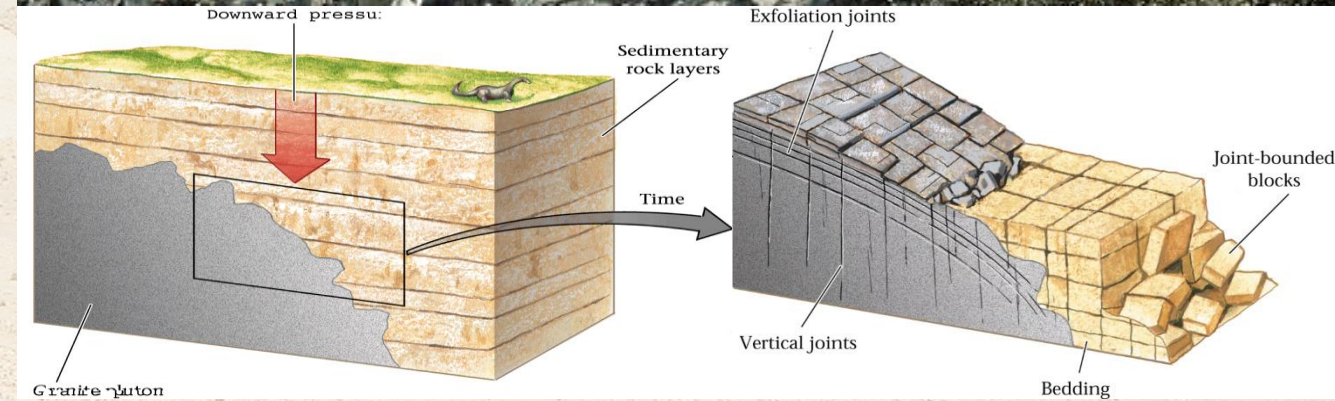
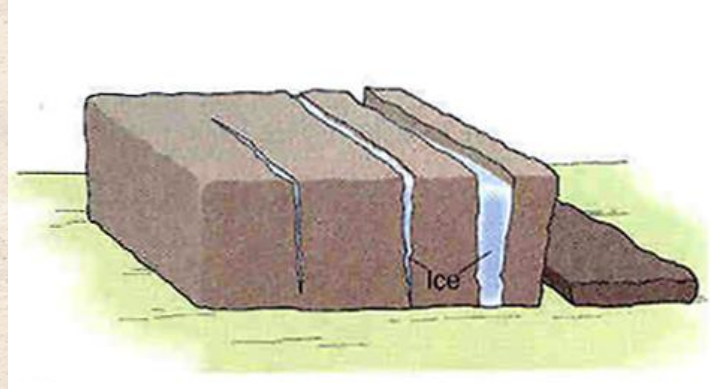
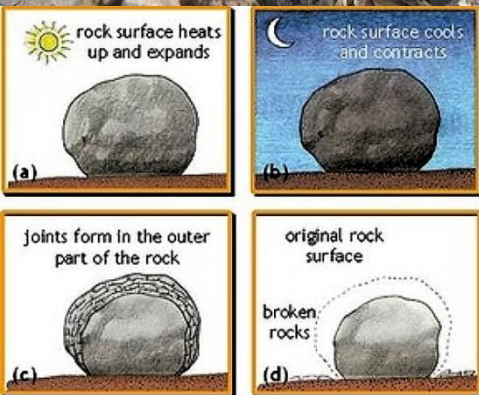




Landscape Evolution

Extraterrestrial Landscapes







Mars | *Physical Geography*

- **Gravity:** 3.73m/s² (38% *Earth*)
- **Surface atmospheric pressure:** 6.1mbar (0.6% *Earth*)
- **Liquid water:** None (now) (0% *Earth*)
- **Ice:** CO₂ polar icecaps
- **Atmospheric oxygen:** None (now) (0% *Earth*)

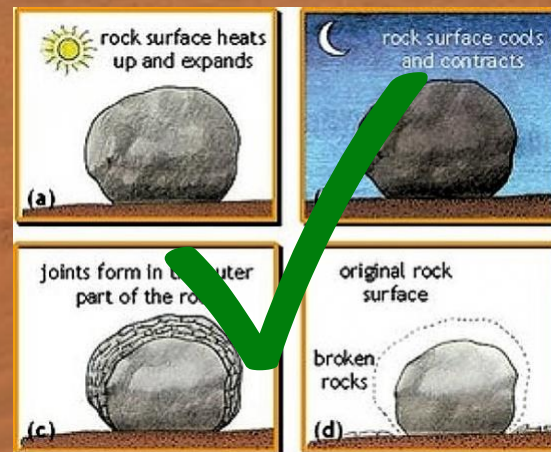
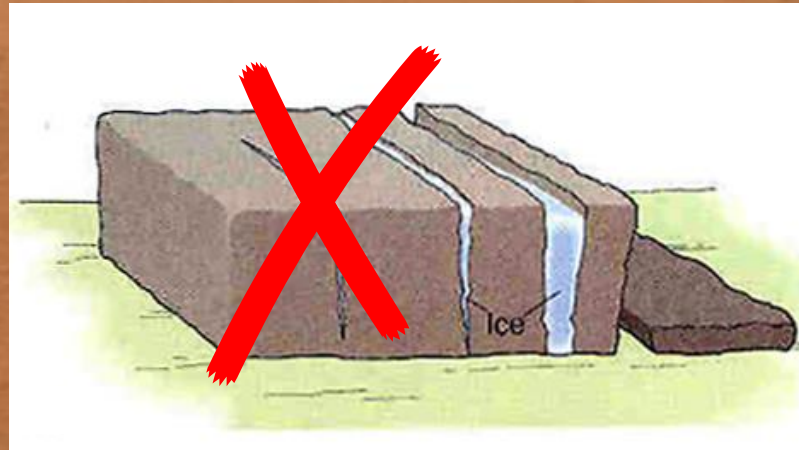
Mars | Chemical Weathering

- No oxygen for oxidation
- No water for hydrolysis
- No water for dissolution
- No water to facilitate other chemical weathering



Mars | Mechanical Weathering

- No water ice for freeze-thaw
- No water for abrasion
- Large temperature variations for thermal expansion/contraction
- Wind for aeolian abrasion



Mars | *Biological Weathering*

- No biology



Mars | *Transport agents*

- No liquid water
- No water ice
- 38% Earth gravity
- 0.6% Earth atmosphere

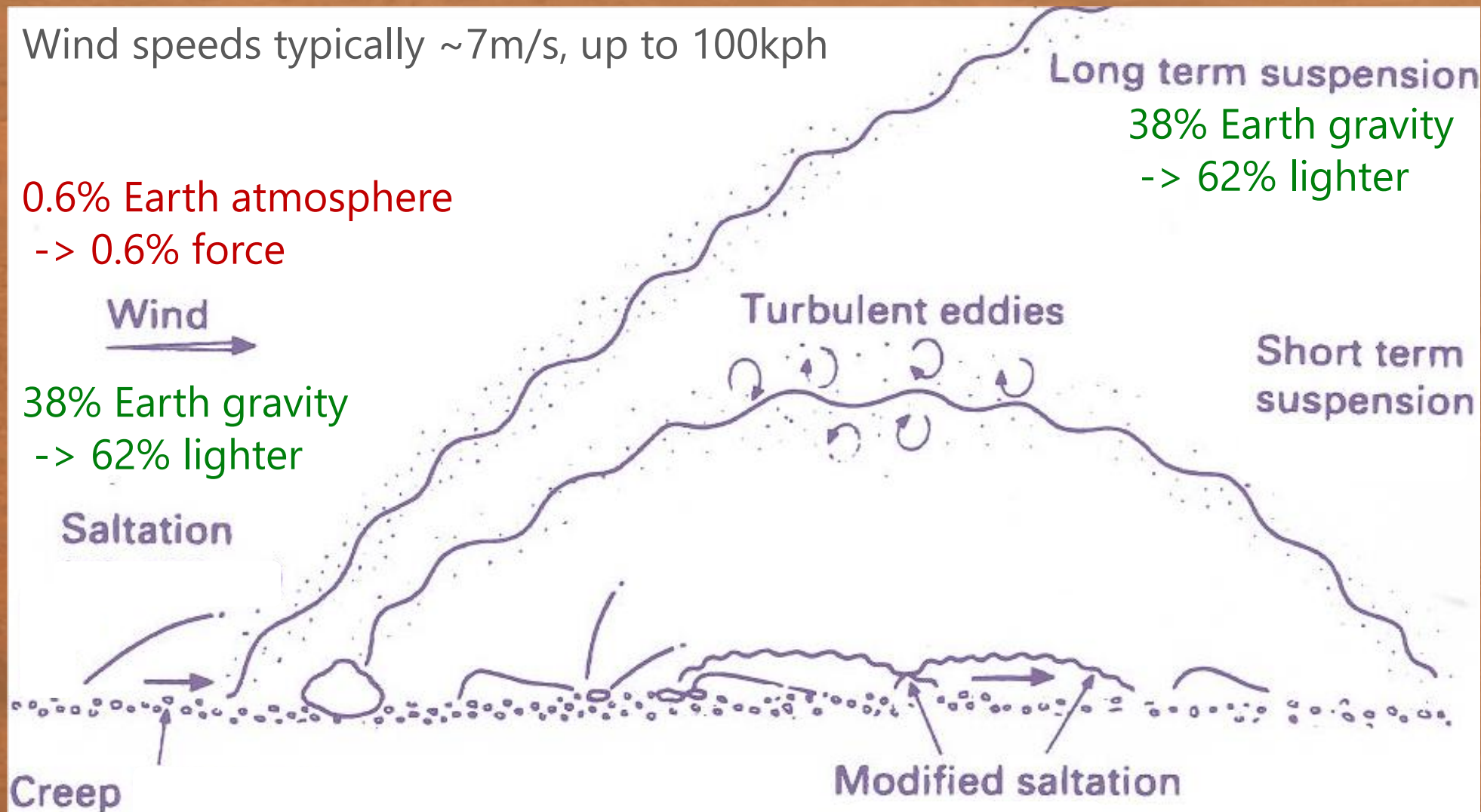


Mars | Sediment Transport

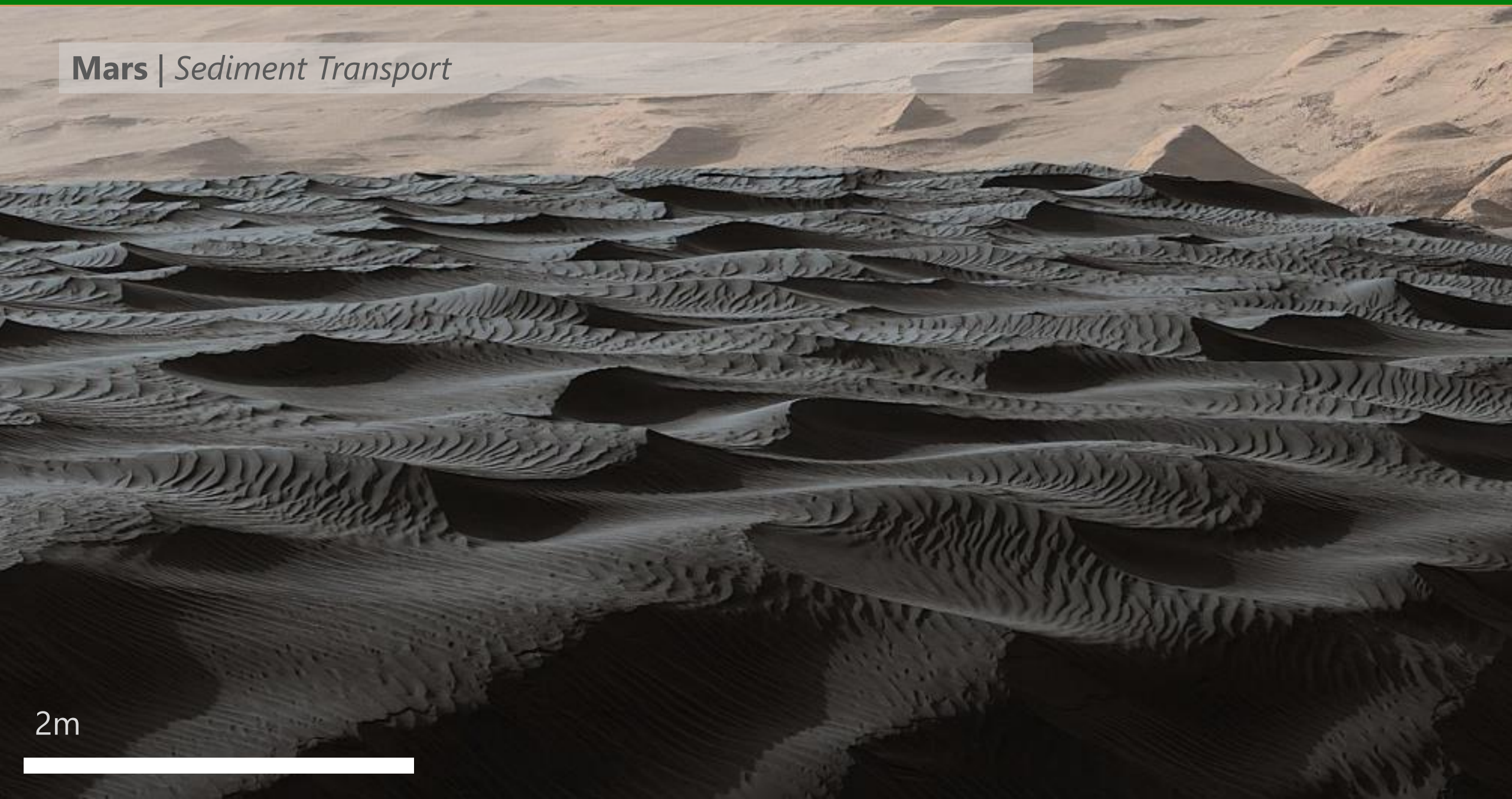
Wind speeds typically $\sim 7\text{m/s}$, up to 100kph

0.6% Earth atmosphere
-> 0.6% force

38% Earth gravity
-> 62% lighter

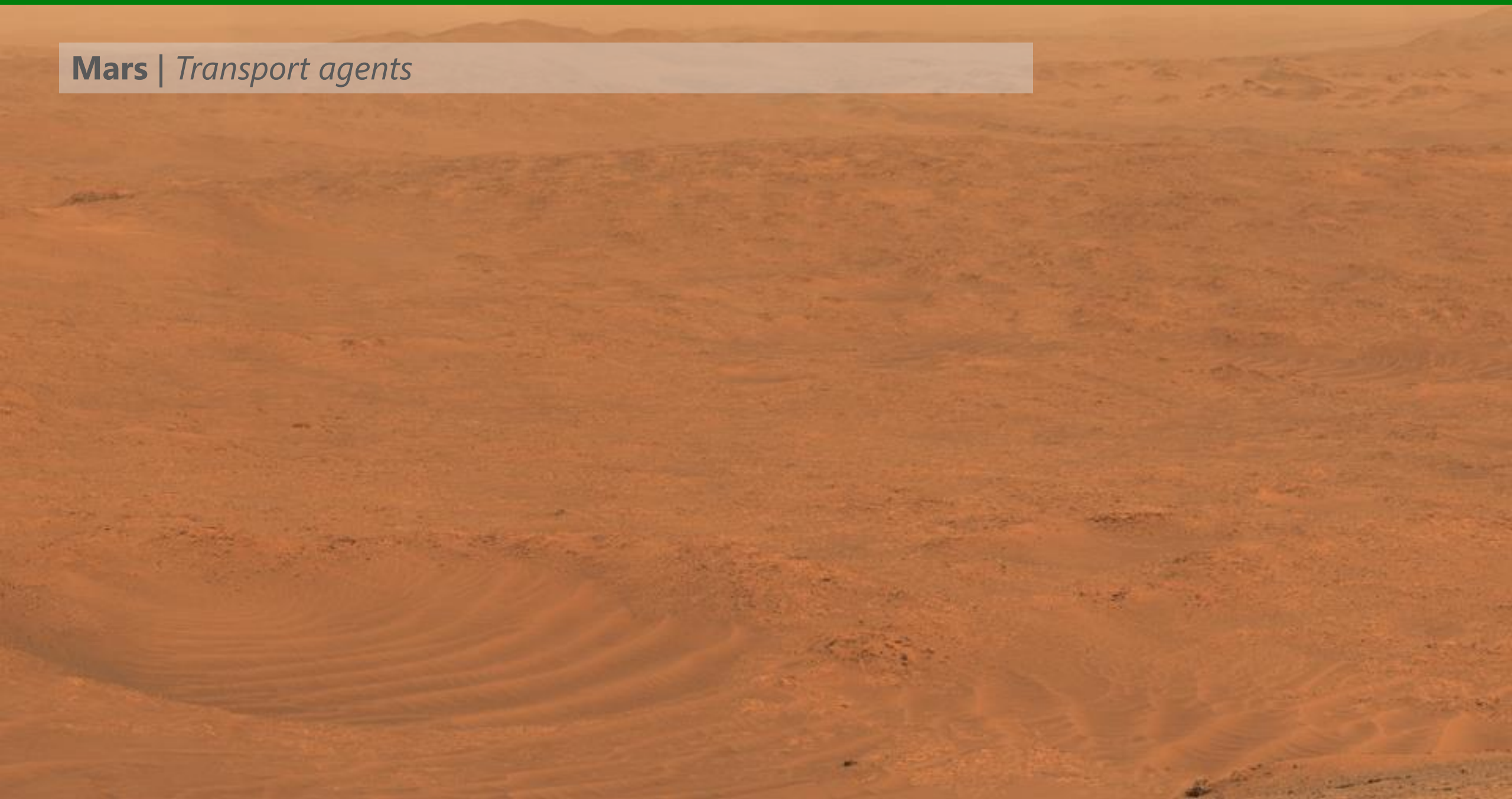


Mars | *Sediment Transport*

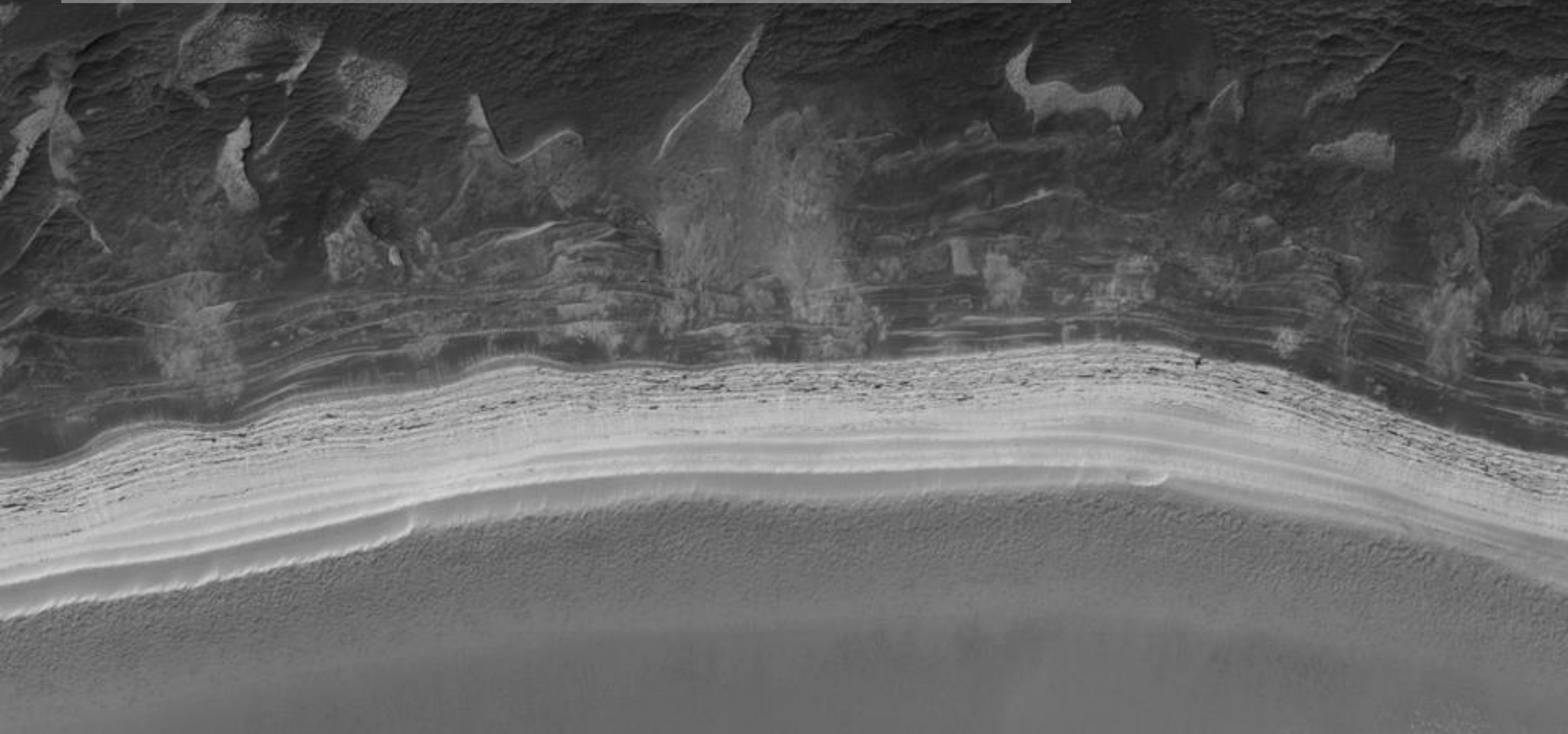


2m

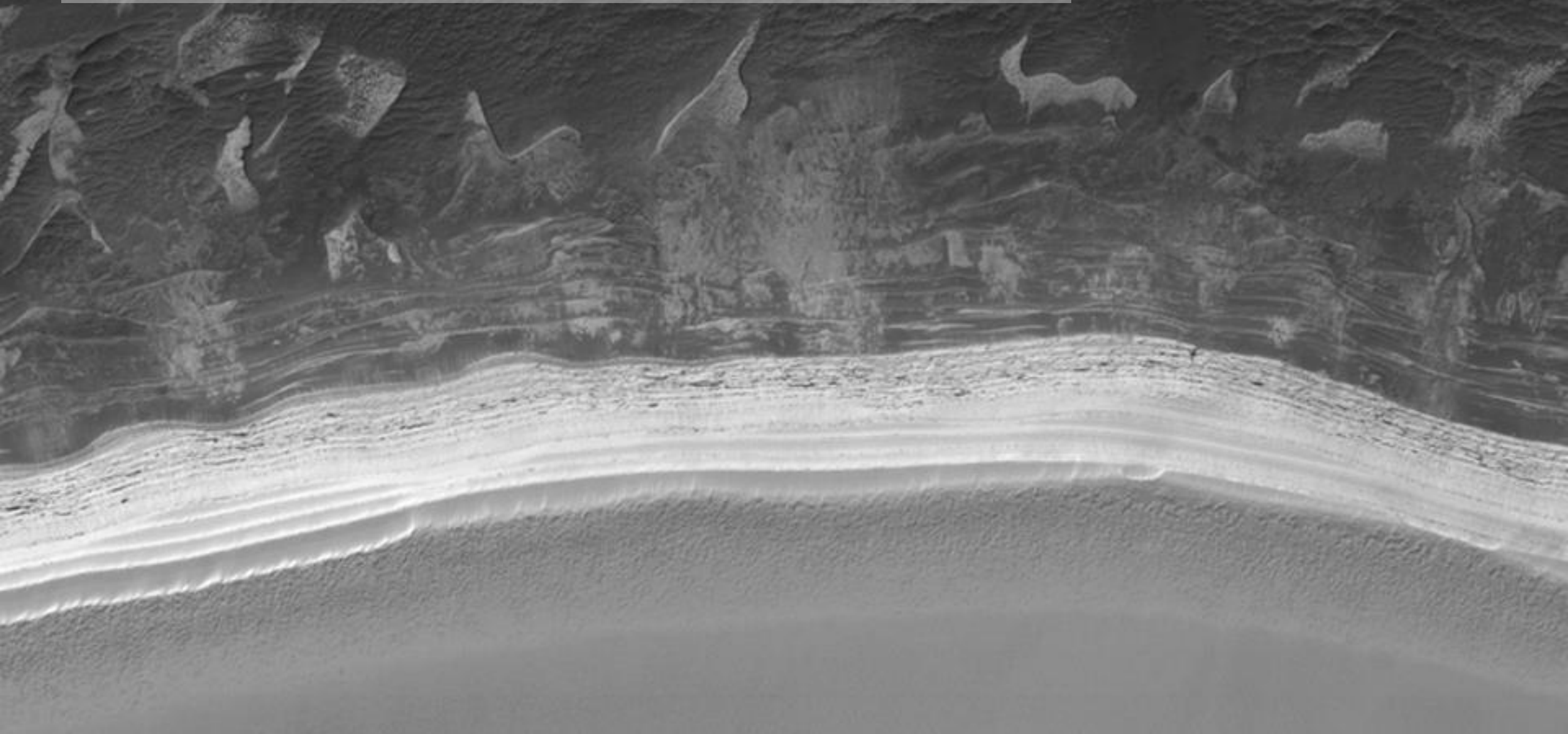
Mars | *Transport agents*



Mars | *Transport agents*

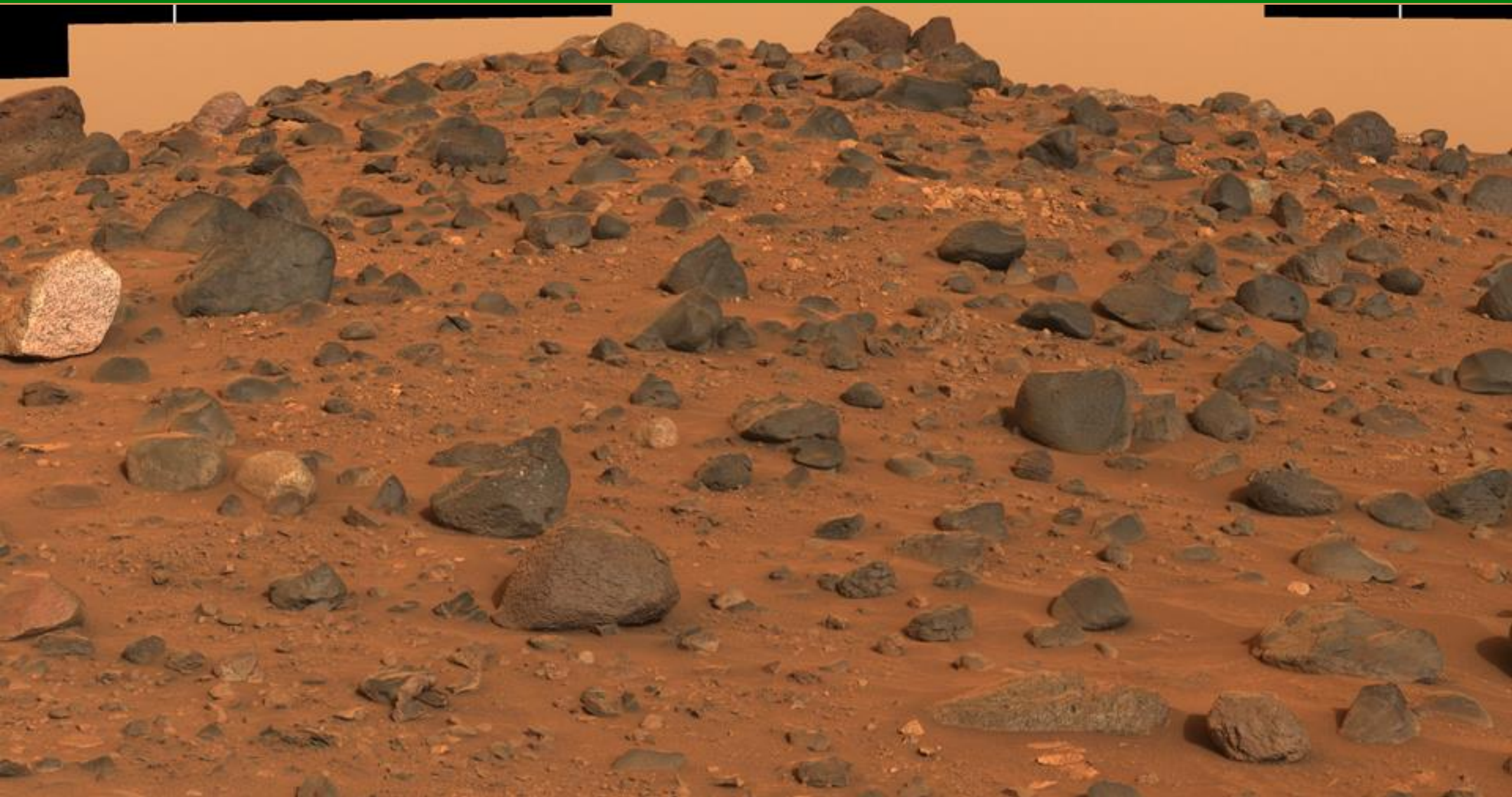


Mars | *Transport agents*











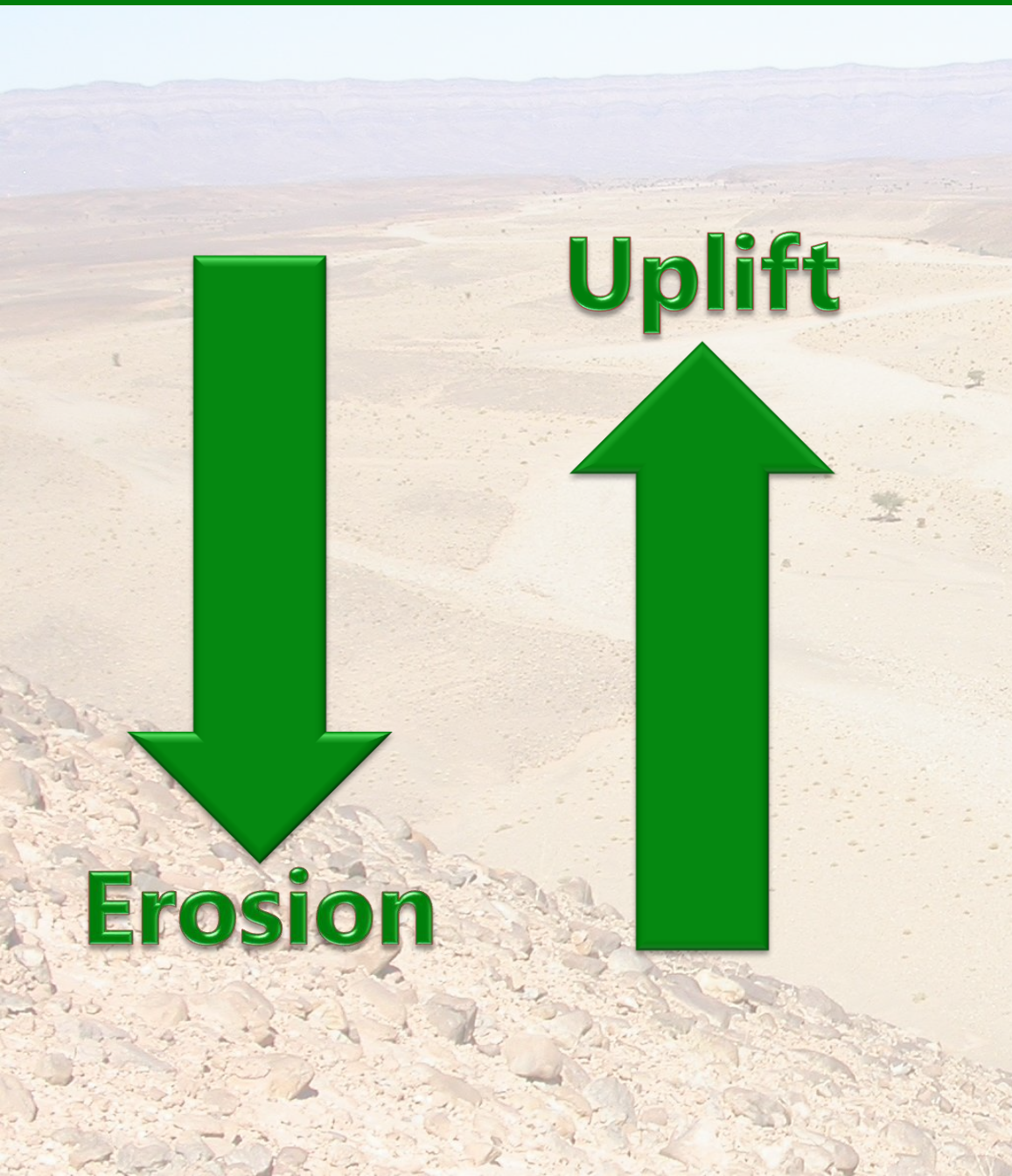




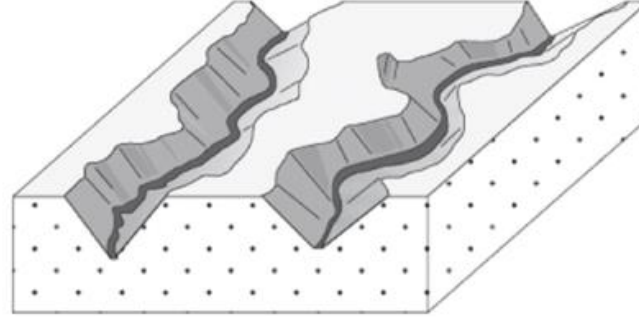




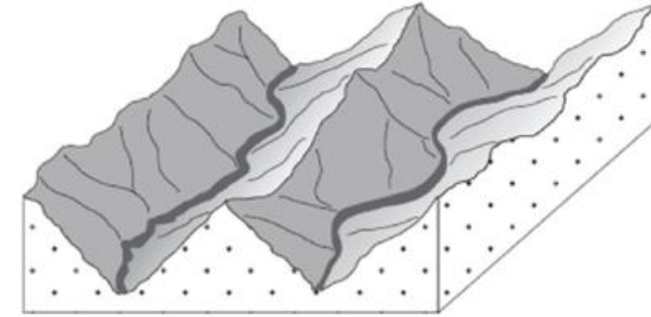




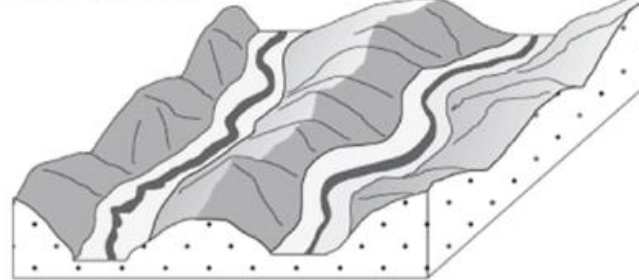
Youth



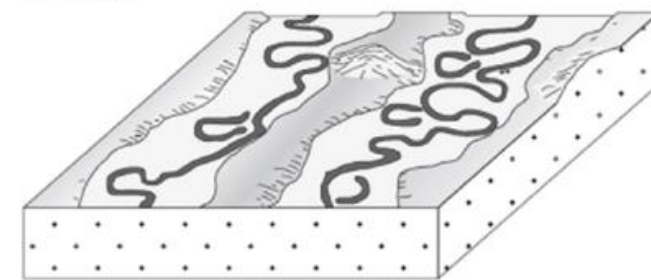
Early Maturity



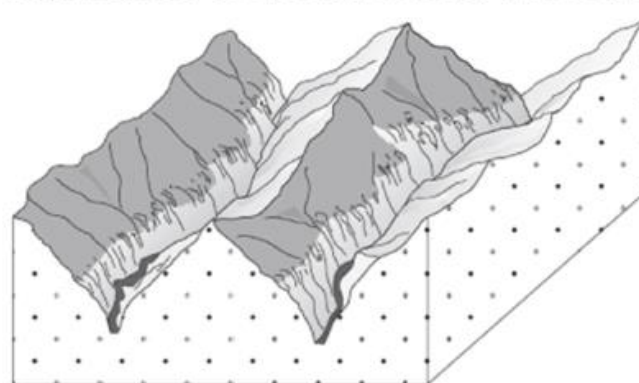
Late Maturity



Old Age



Rejuvenation of an Early Maturity landscape



Rejuvenation of an Old Age landscape

