

Frost wedging

- Freeze wedging is caused by the repeated freeze-thaw cycle.
- Cracks filled with water are forced further apart with subsequent freezing and thawing.



Shattering

- Severe frost can disintegrate rocks along weak zones to produce **highly angular pieces** with sharp corners and edges through the process of shattering.
- Shattering piles up rock fragments called **scree** at the foot of mountain areas or along slopes.



Block Separation (freeze-thaw weathering)

- Repeated freeze-thaw cycles weaken the rocks which, over time, break up along the joints into angular pieces. The splitting of rocks along the joints into blocks is called block disintegration.



Salt Weathering

- Salt weathering occurs when saline solutions seep into cracks and joints in the rocks and evaporate, leaving salt crystals behind.
- Salt crystals expand during the crystallization process and also when they are subjected to above normal temperatures.
- The expansion in near-surface pores causes splitting of individual grains within rocks, which eventually fall off (granular disintegration or granular foliation).
- Salt weathering is normally associated with **arid climates** where strong heating causes strong evaporation and crystallisation.

Mass Wasting

- Mass wasting is the mass movement of unconsolidated soil, sand, rocks, regolith (the layer of unconsolidated solid material covering the bedrock of a planet), etc. along a slope under the influence of gravity.
- Mass wasting occurs when the gravitational force acting on a slope exceeds its resisting force leading to **slope failure** (mass wasting).
- Timescales of the mass wasting process may be a few seconds (debris flows and mudflows) or hundreds of years (mass wasting along the slopes of stable mountains leaving behind alluvial fan like structures).



Chemical Weathering

- Chemical weathering involves **chemical decomposition** of rocks and soil.
- Chemical weathering processes include **dissolution, solution, carbonation, hydration, oxidation and reduction** that act on the rocks to decompose, dissolve or reduce them to a fine state.
- These weathering processes are interrelated and go hand in hand and hasten the weathering process.