

# Course Contents

1. Fluvial System
2. Flow mechanics
3. Longitudinal Profile
4. Erosion processes
- 5. Sediment transportation**
6. Channel morphology
7. Floodplains
8. Terraces

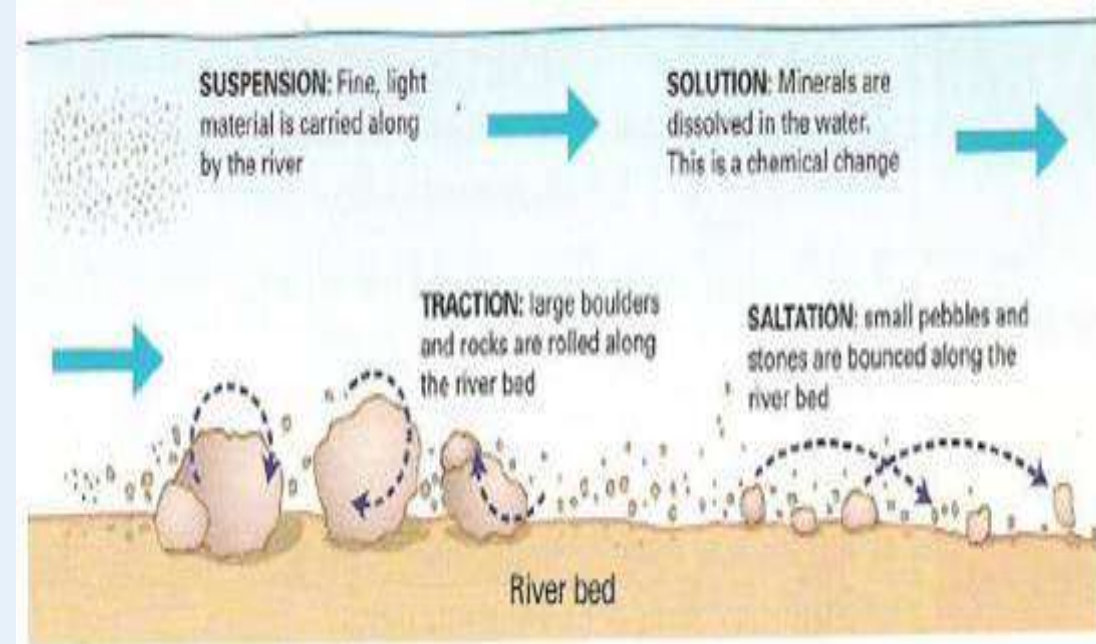
# River Transportation

## Sediment Transportation in Streams

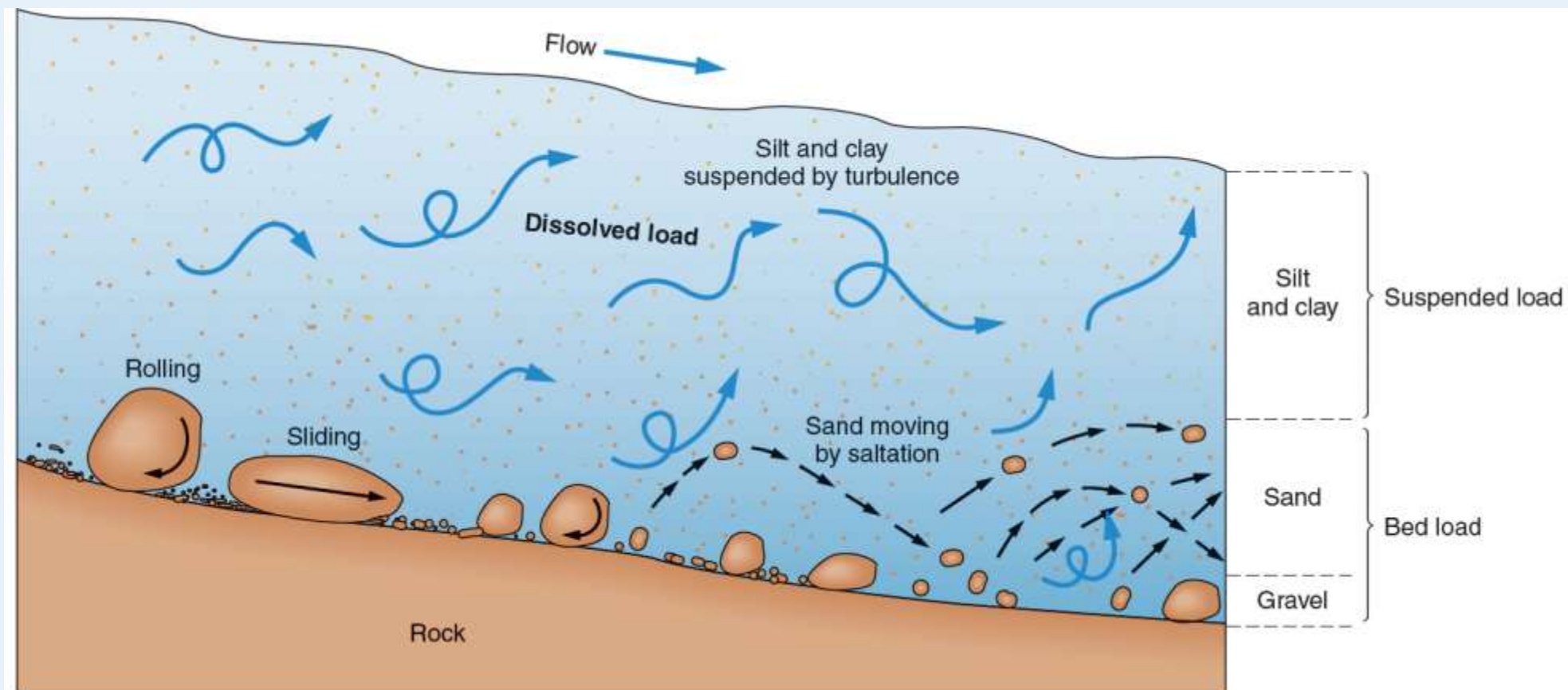
1. Traction (Bed load)
2. Saltation (Bed load)
3. Suspension (Suspended load)
4. Solution (Dissolved load)

Bed load is the sediment transported on the river bed. Depending on its weight, sediments are transported by rolling, sliding or saltation.

Clay, silt, and partially fine sand, are small enough to be lifted as a turbulently suspended load in water.



<https://golearngeo.wordpress.com/2010/04/23/river-transport/>



<https://worldrivers.net/2020/03/31/sediment-transport/>

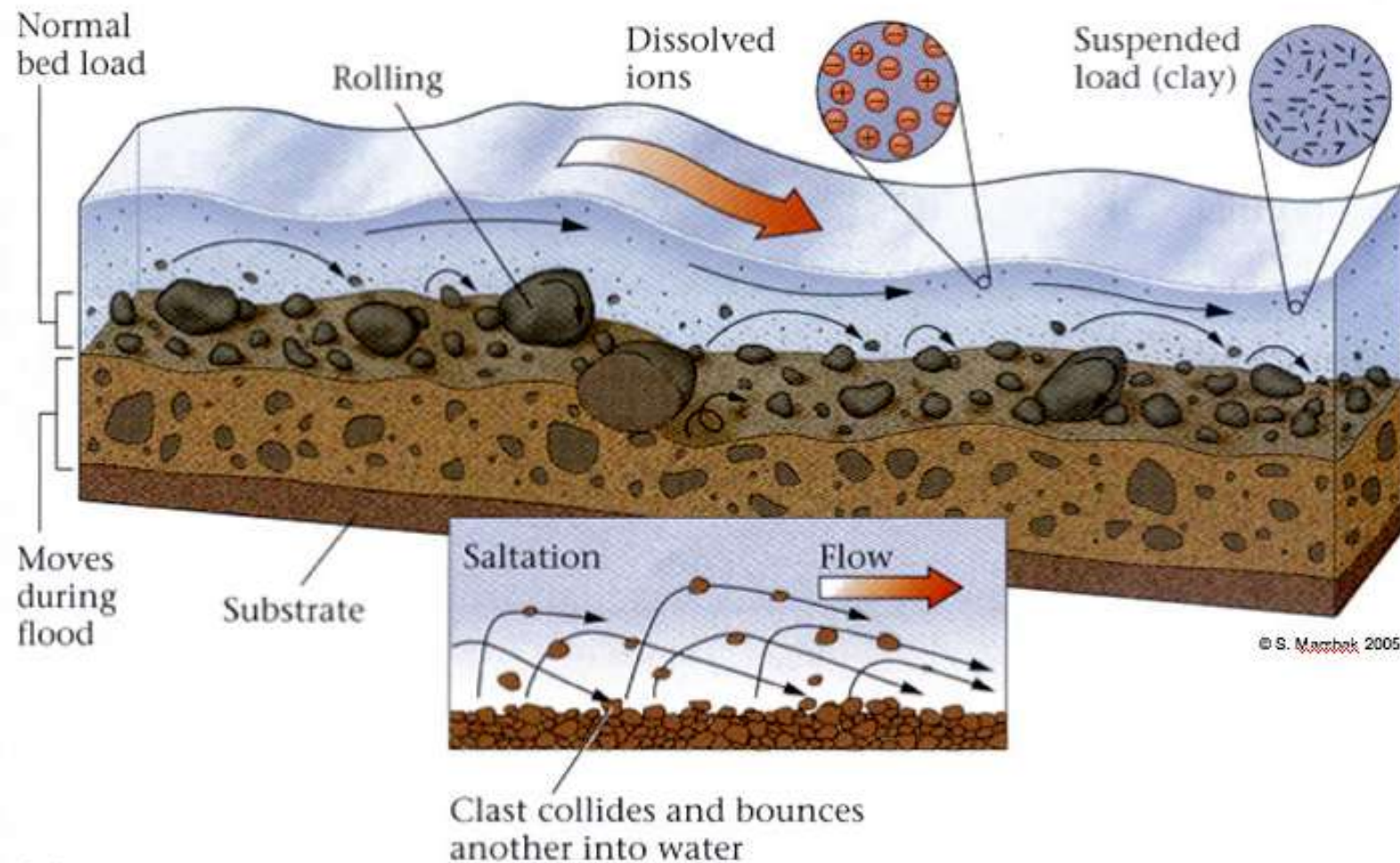
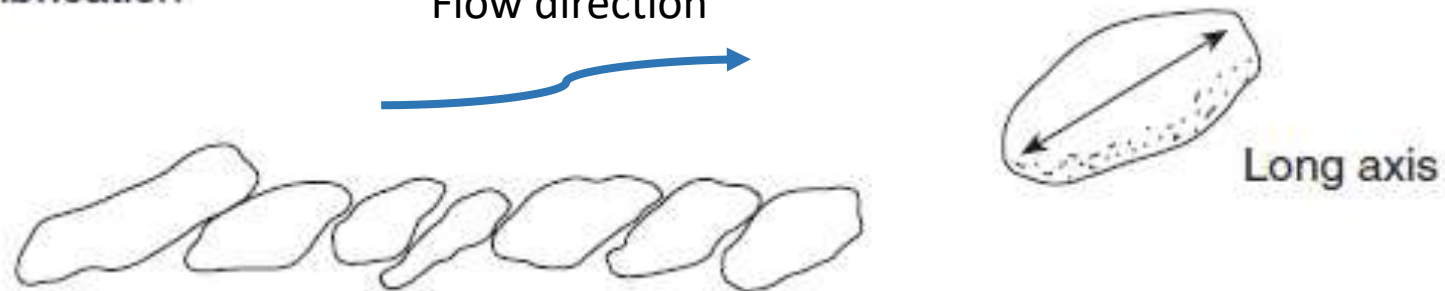
# River Transportation

## Sediment Transportation in Streams

### Bed Load

Imbrication

Flow direction



<https://www.wikidata.org/wiki/Q589004>

<https://earthsurface.readthedocs.io/en/latest/sedtransport.html>

*Sediment transport stages regarding the hydrologic, hydraulic, and geomorphological conditions: adapted from Marshak 2005.*

# River Transportation

## Sediment Transportation in Streams

### Imbrication

The pebbles in the bed load overlap each other at low angles to indicate the direction of flow.



# River Transportation

## Sediment Transportation in Streams

Bed Load



# River Transportation

## Sediment Transportation in Streams

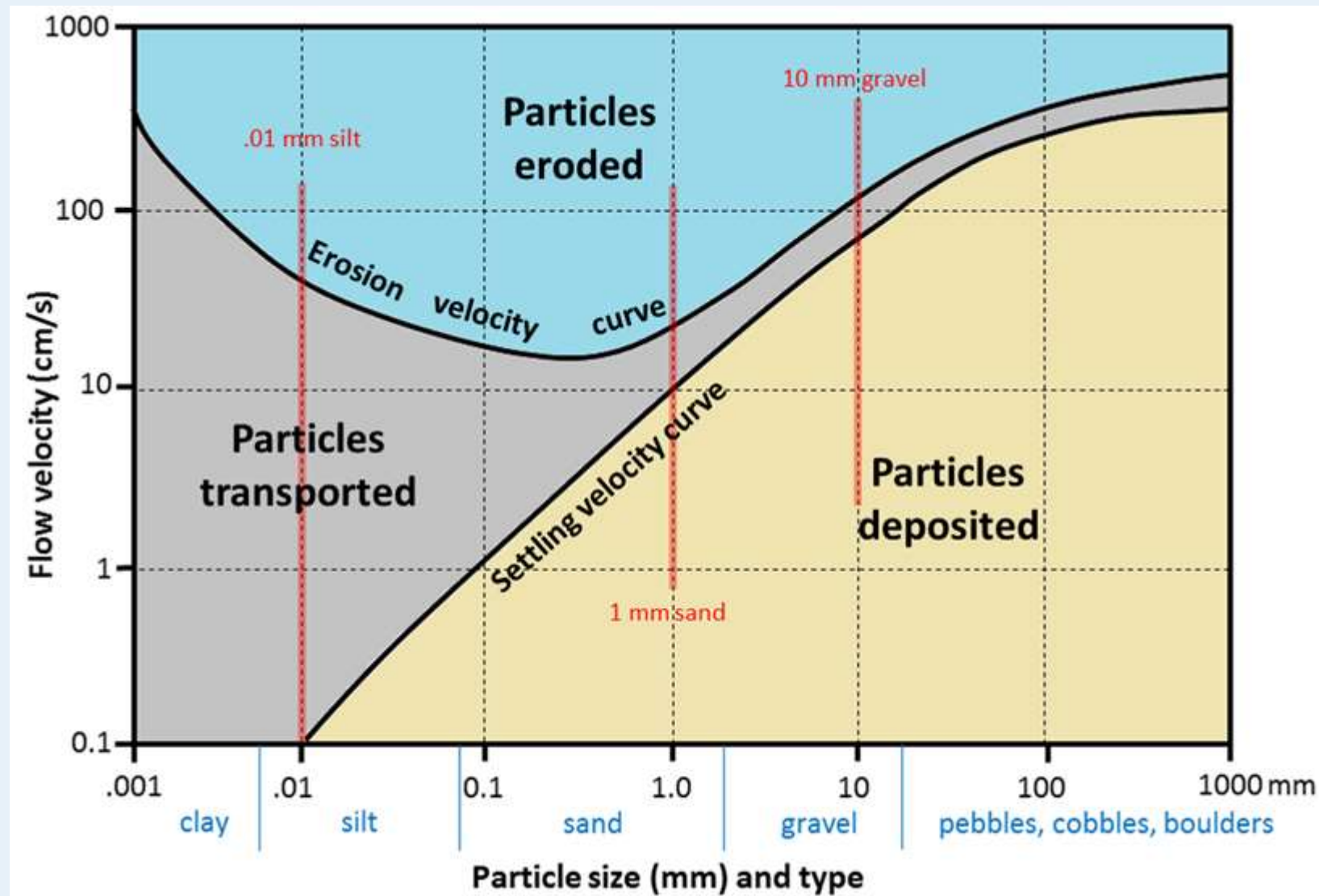
### Suspended Load

Suspended load is that part of the of the total sediment load of a stream that is carried for a considerable period of time in the water column and does not contact the bed surface.



# River Transportation

## The Hjulström-Sundborg diagram



<https://openeeducationalberta.ca/practicalgeology/chapter/8-1-stream-erosion-and-deposition/>

# River Transportation

## Agents of Erosion

1. Wind
2. Water
3. Gravity
4. Glaciers

## Agents of erosion and deposition

- **Water-** smooth and round



- **Wind-** flat edge with holes



- **Glaciers-** “scraped” with visible lines



- **Gravity-** all shapes and sizes



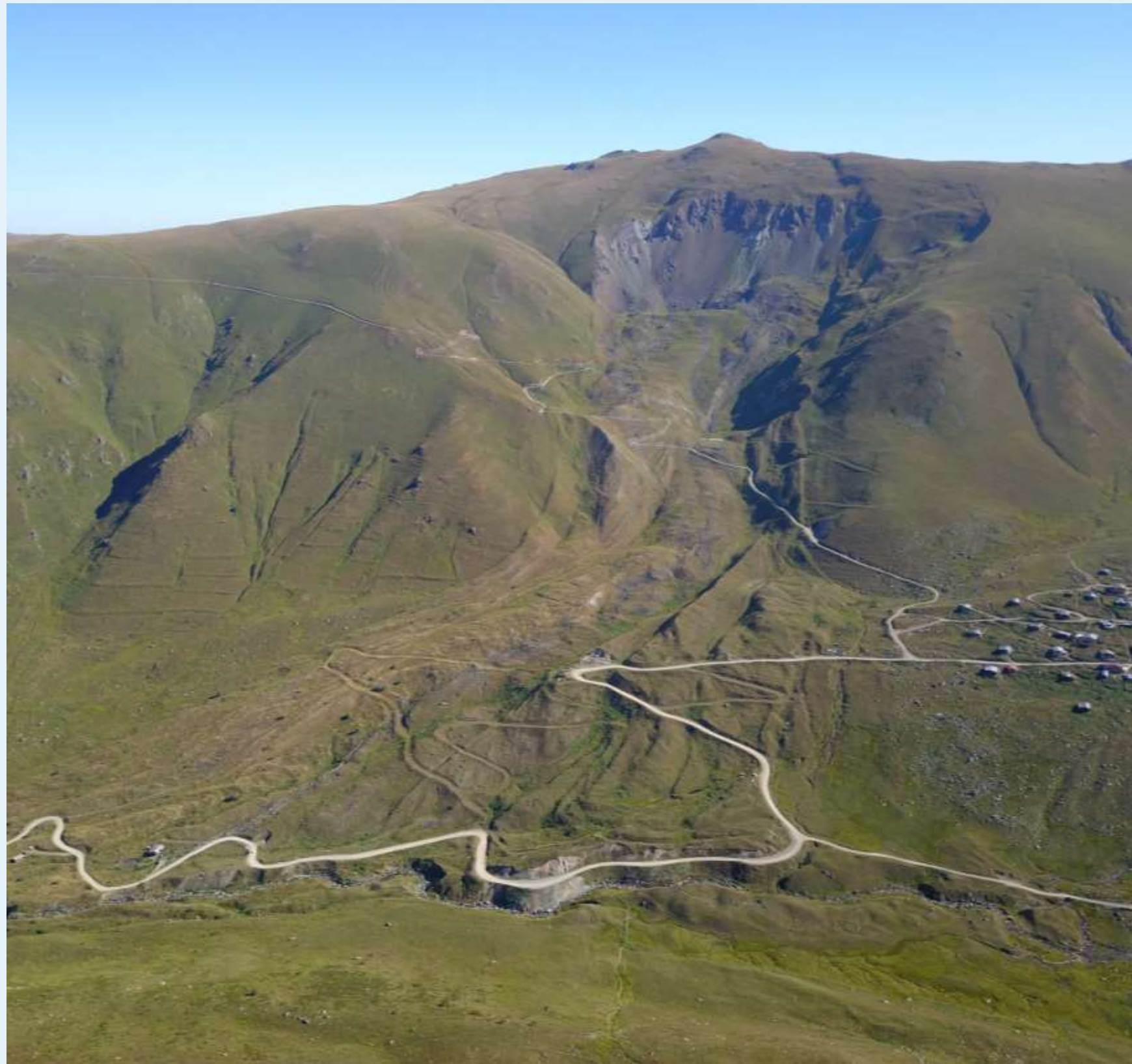


# River Transportation

## Agents of Erosion

Gravity

➤ Landslides



# River Transportation

## Agents of Erosion

Gravity

➤ Talus



# River Transportation

## Agents of Erosion

Gravity

➤ Talus



# River Transportation

## Agents of Erosion

Gravity

➤ Talus



# River Transportation

Agents of Erosion

Gravity/Glaciers

➤ Periglacial/Rock Glacier



# River Transportation

Agents of Erosion

Glaciers



# River Transportation

## Agents of Erosion

### Glaciers

