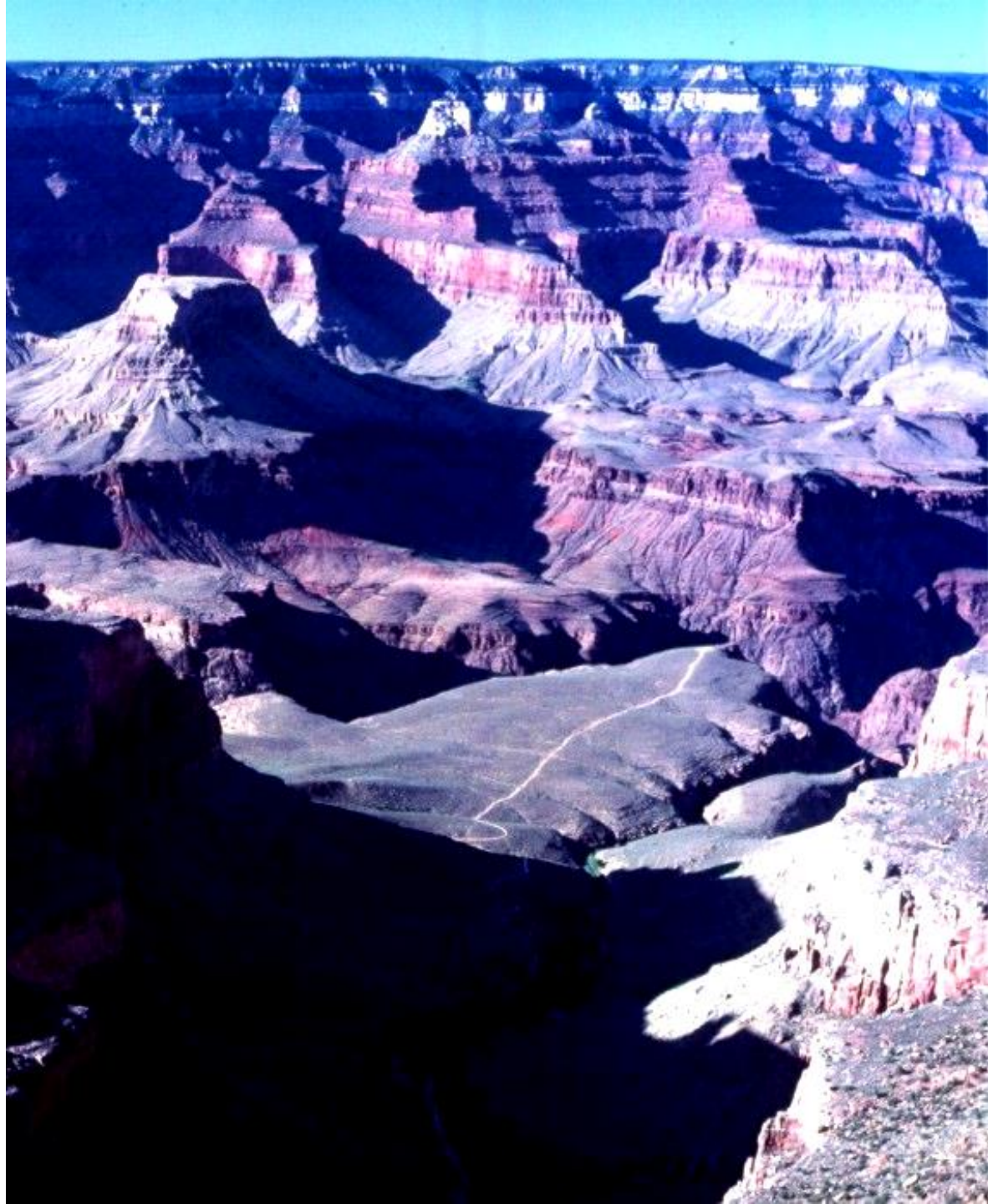


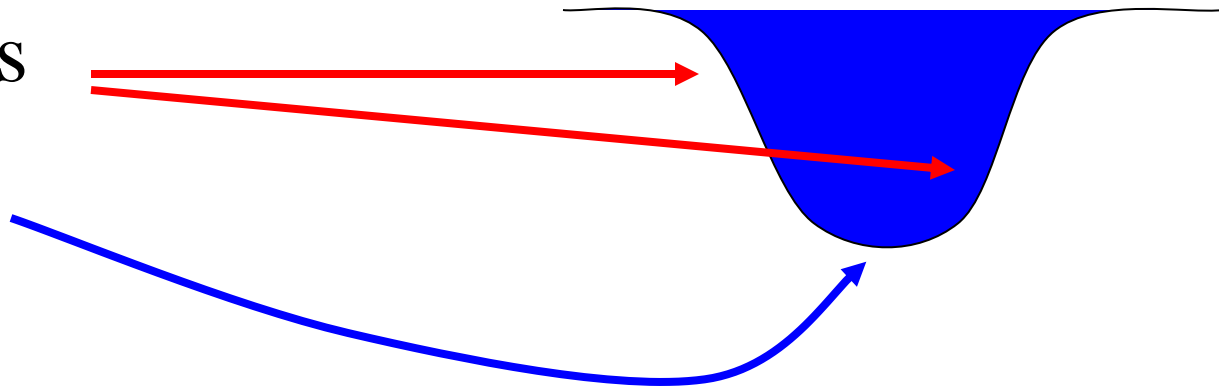
Fluvial Landforms

Shaped by
Running
Water



Stream

- Water Flowing in a Channel
- Banks
- Bed



Fluvial Processes

- Erosion
- Transportation
- Deposition



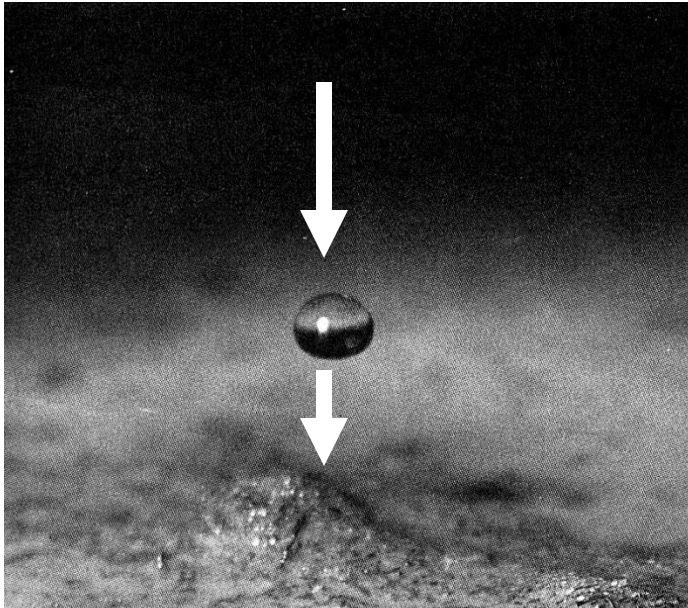
Erosion by Water

- Removal of Rock/Soil
 1. Splash Erosion
 2. Sheet (Slope) Erosion
 3. Stream Erosion



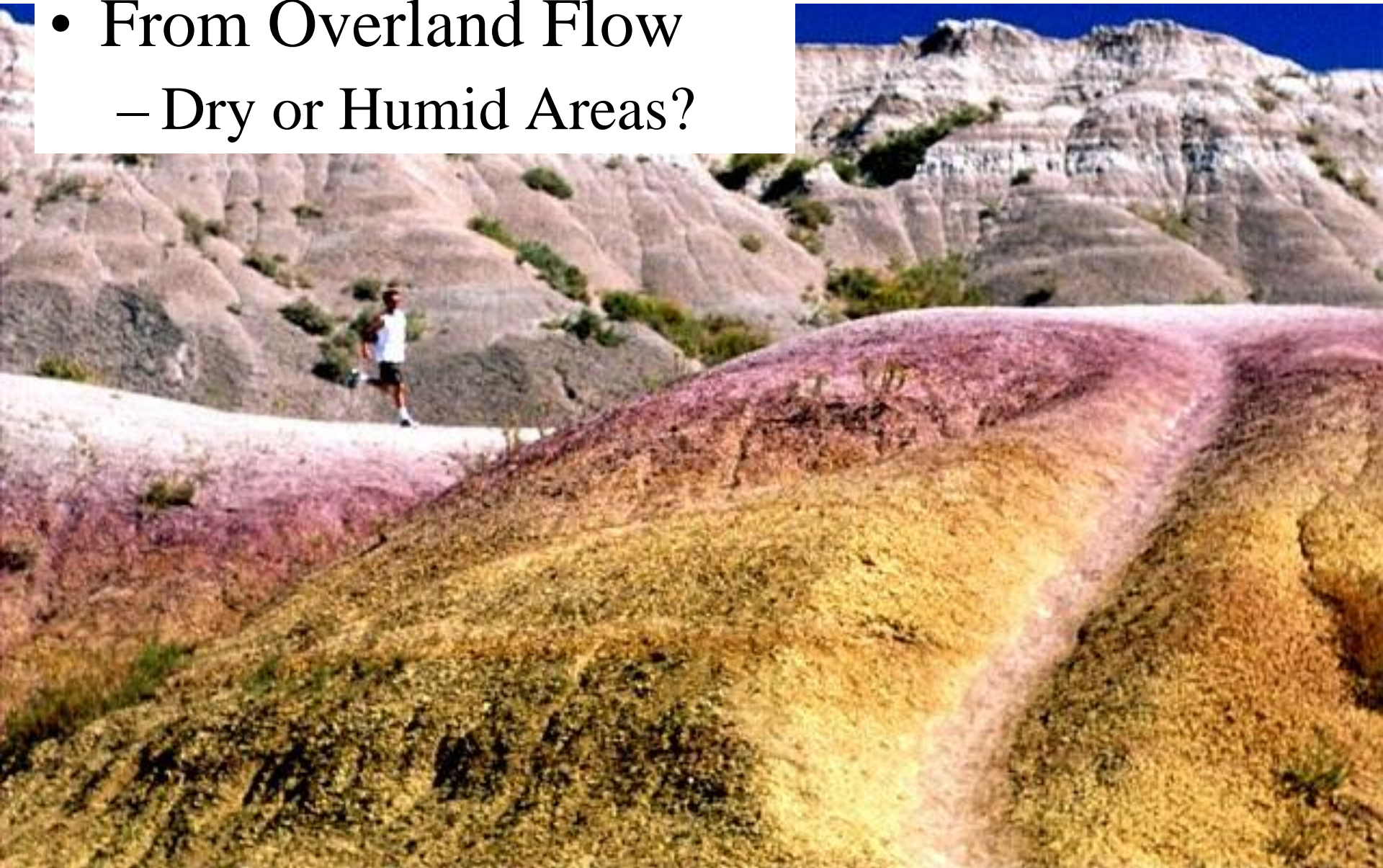
1. Splash Erosion

Impact of Raindrops on Soil



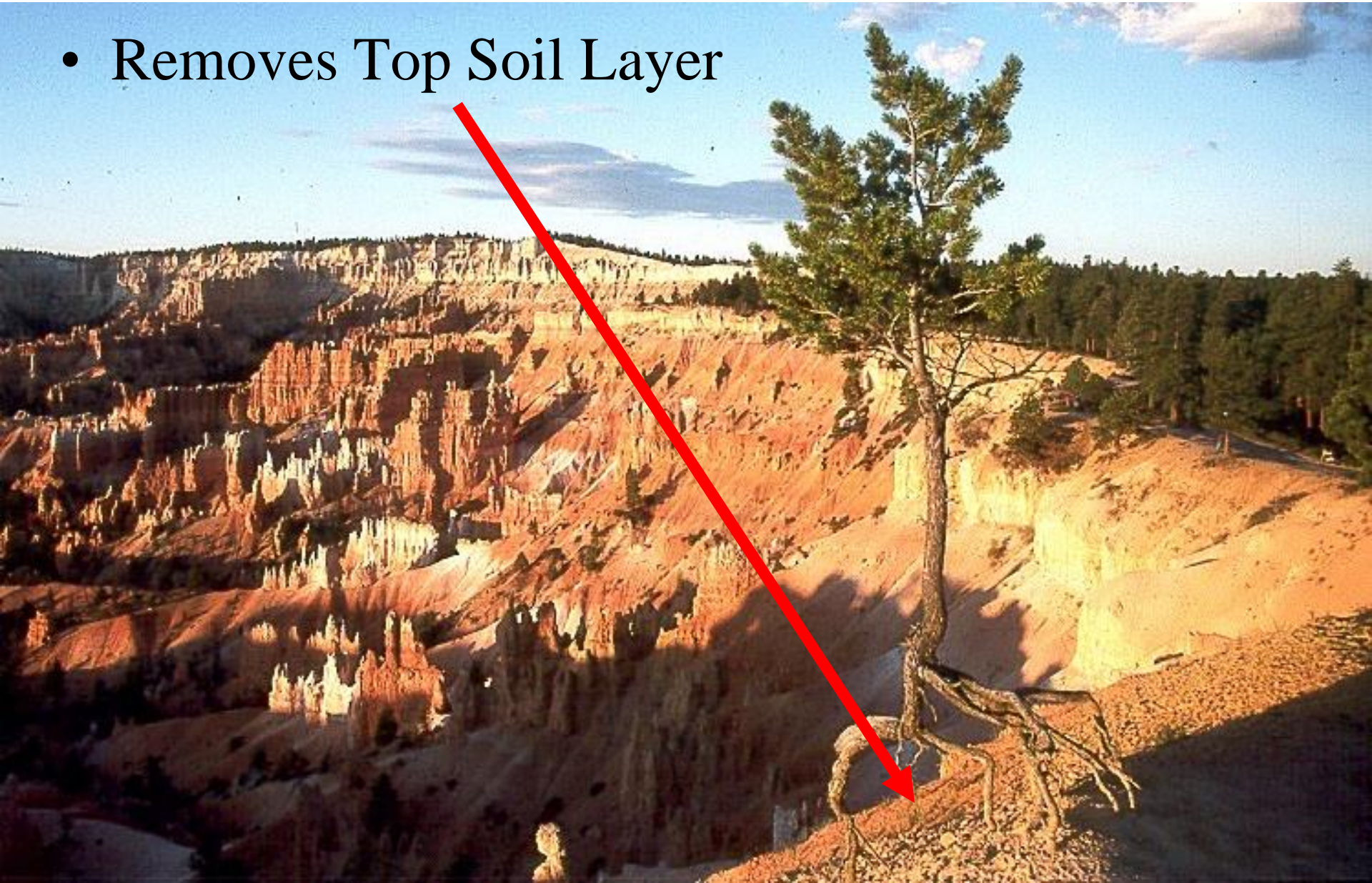
2. Sheet (Slope) Erosion

- From Overland Flow
 - Dry or Humid Areas?



Sheet (Slope) Erosion

- Removes Top Soil Layer



Flash Floods

- Rapid Overland Flow
- Directed to Cyn



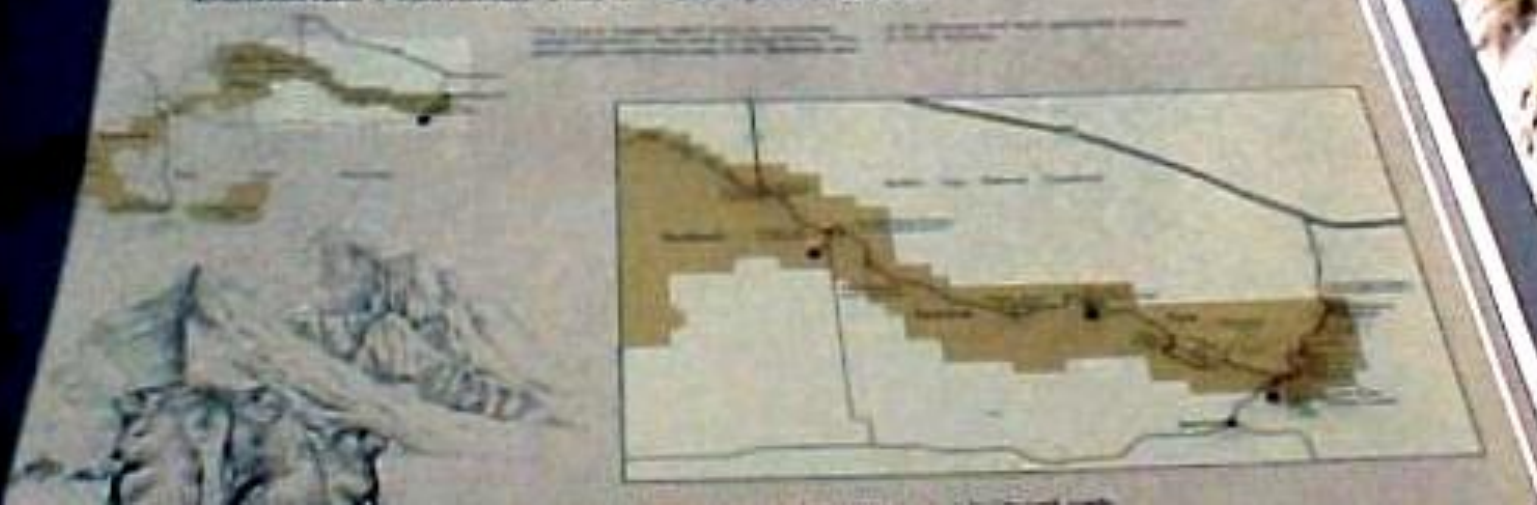
Badlands

- From Severe Sheet Erosion



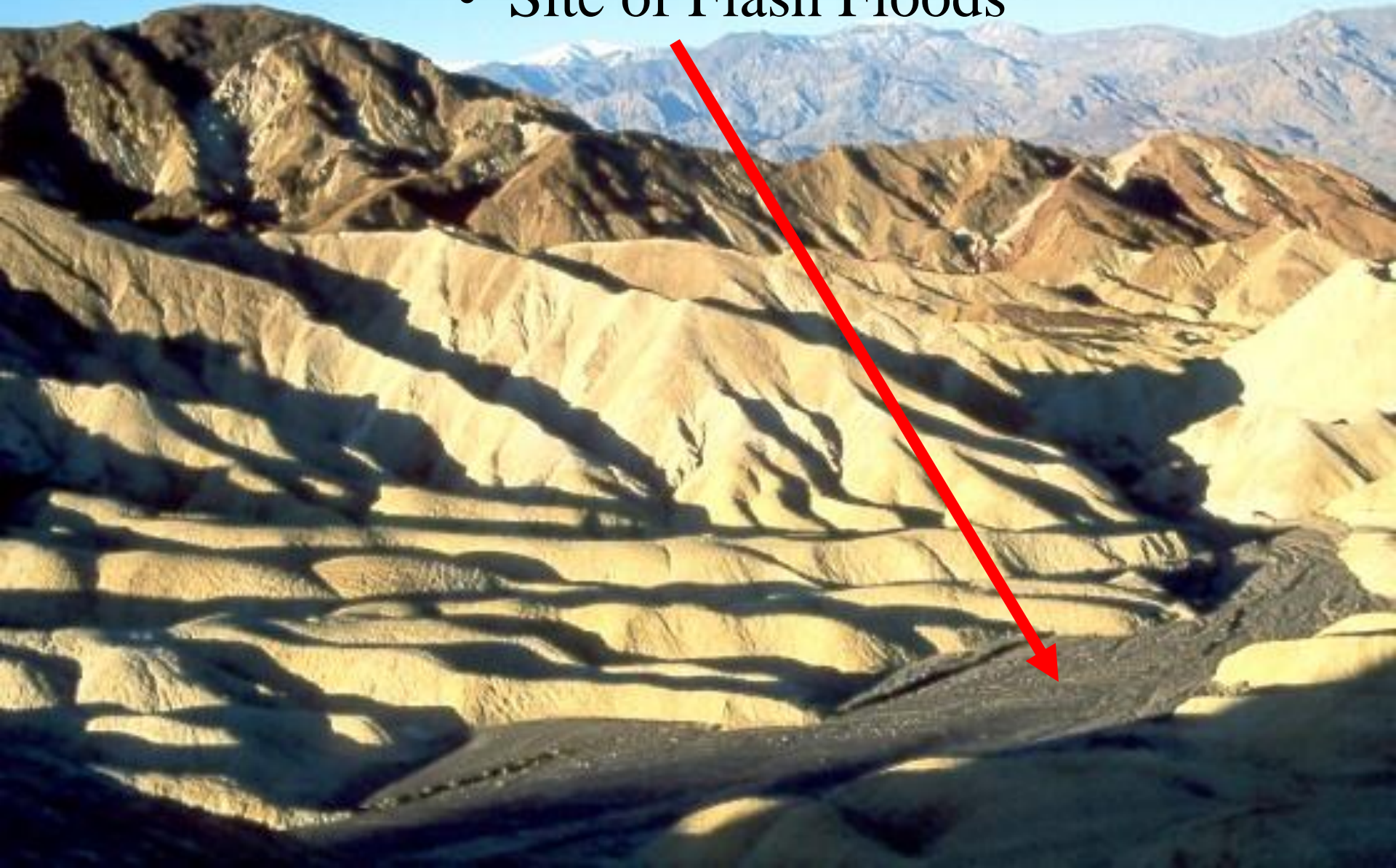
The Big Badlands

Badlands National Park – 214,000 acres



Badlands, Death Valley

- Site of Flash Floods



3. Stream Erosion

- Erosion of Stream Bed & Banks
- 2 Main Ways
 - Hydraulic Action (Suction)
 - Abrasion



Hydraulic Action (Suction)

- Force of H₂O
 - Removes Loose Rocks & Sediment



Abrasion

- Solids carried in the Stream
 - Grind Bed & Banks

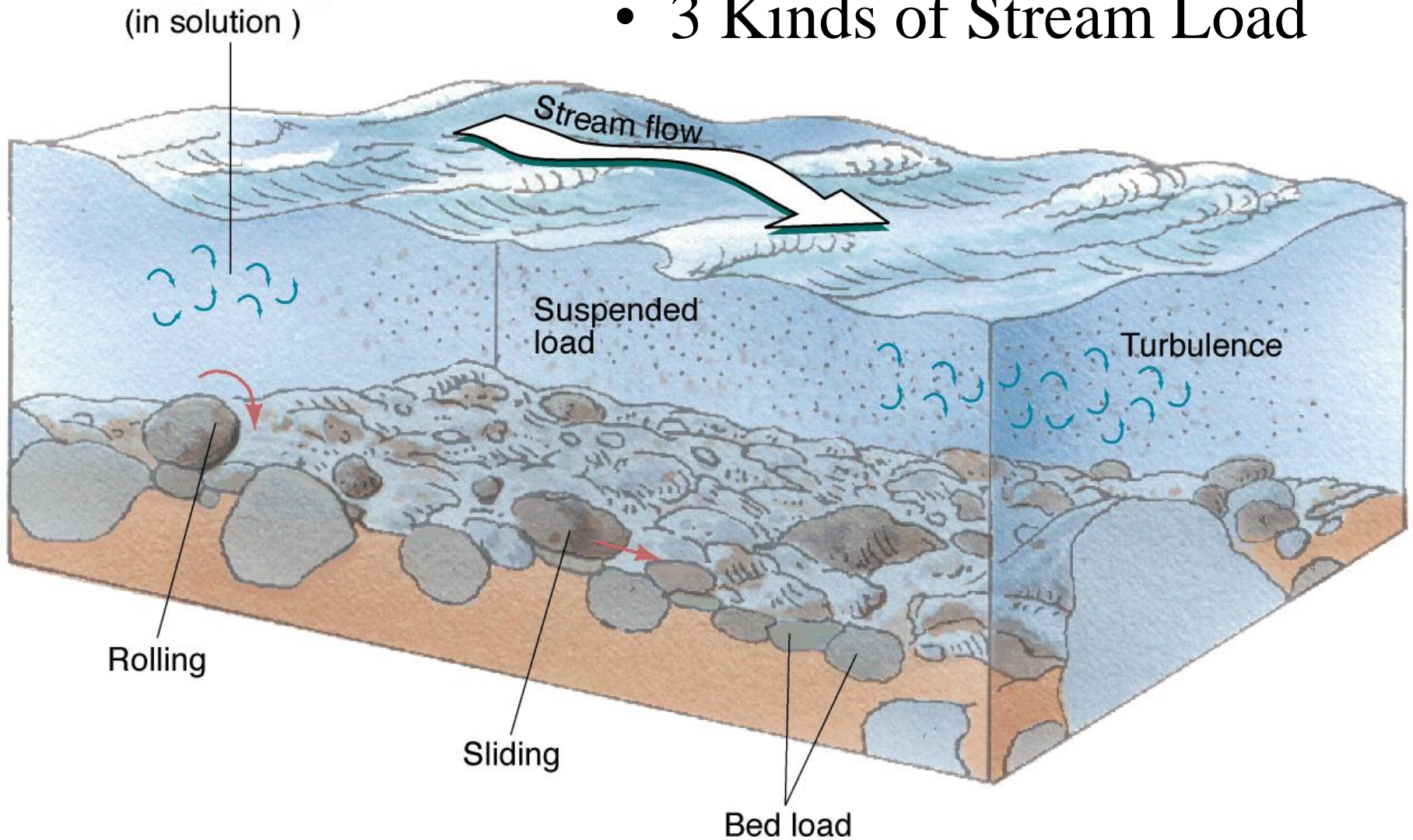


Transportation by Water

“Stream Load” =

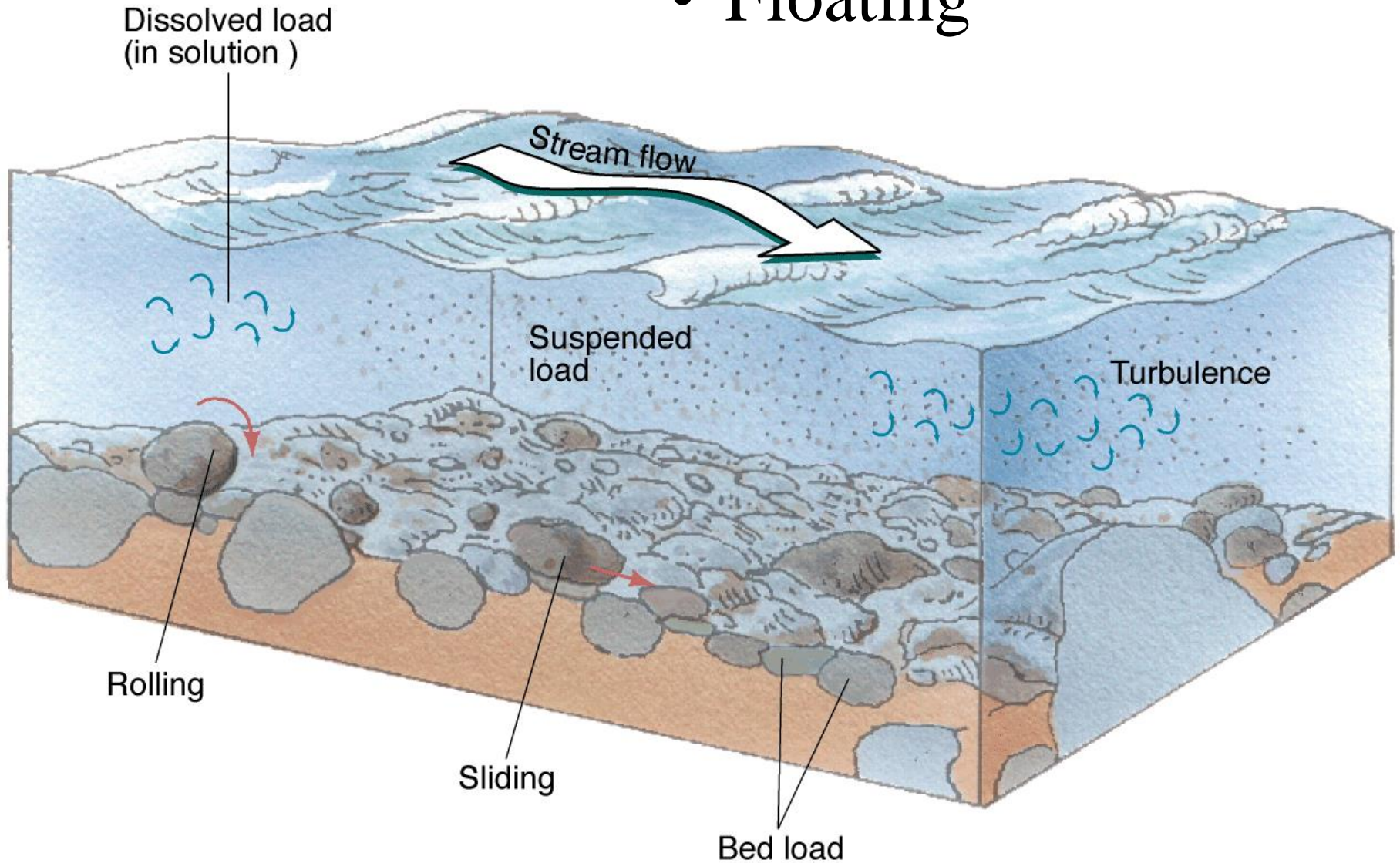
Solids Carried by Stream

- 3 Kinds of Stream Load



Suspended Load

- Clay & Silt
- Floating

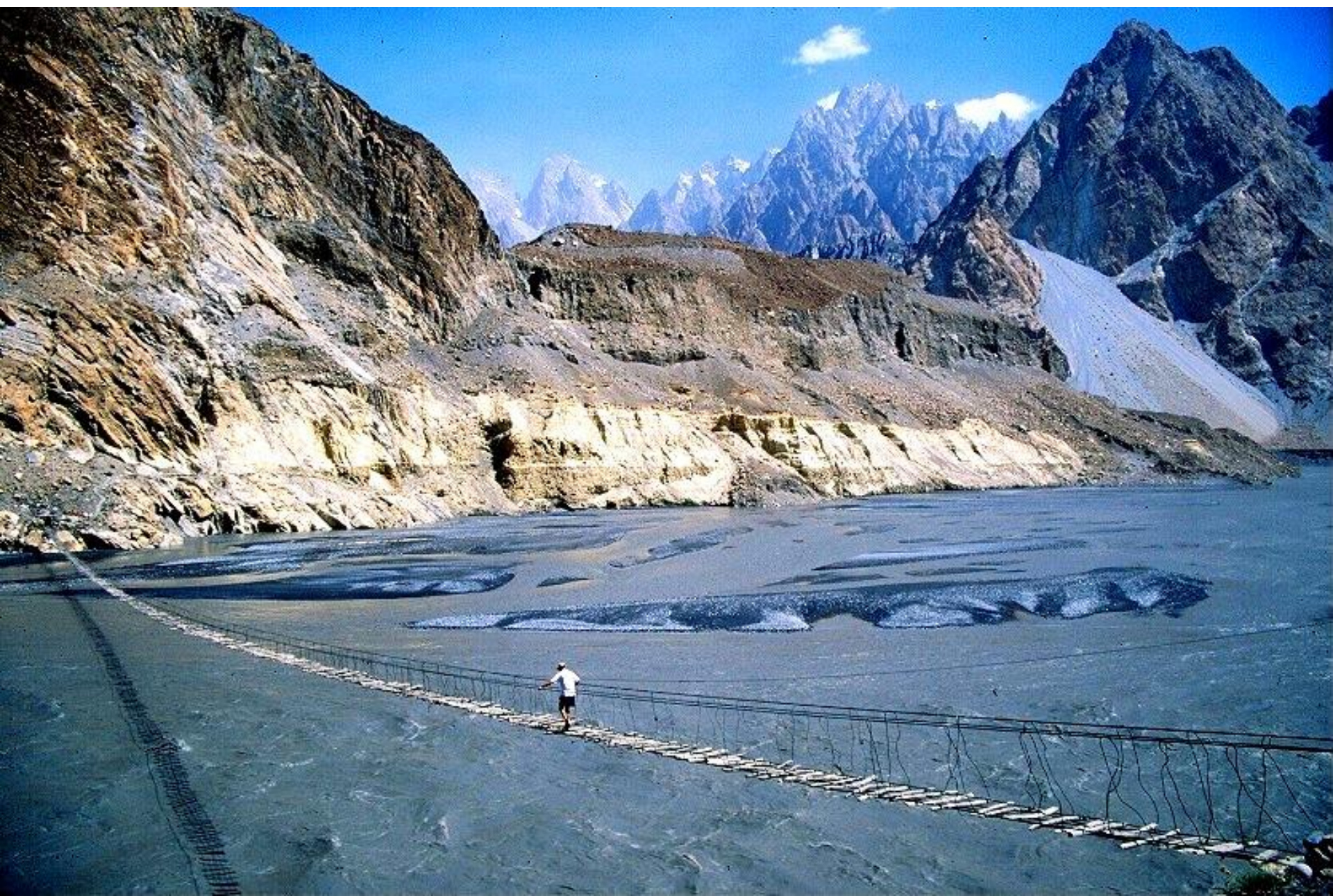


Suspended Load → Muddy Water

- Main Load in Large Rivers

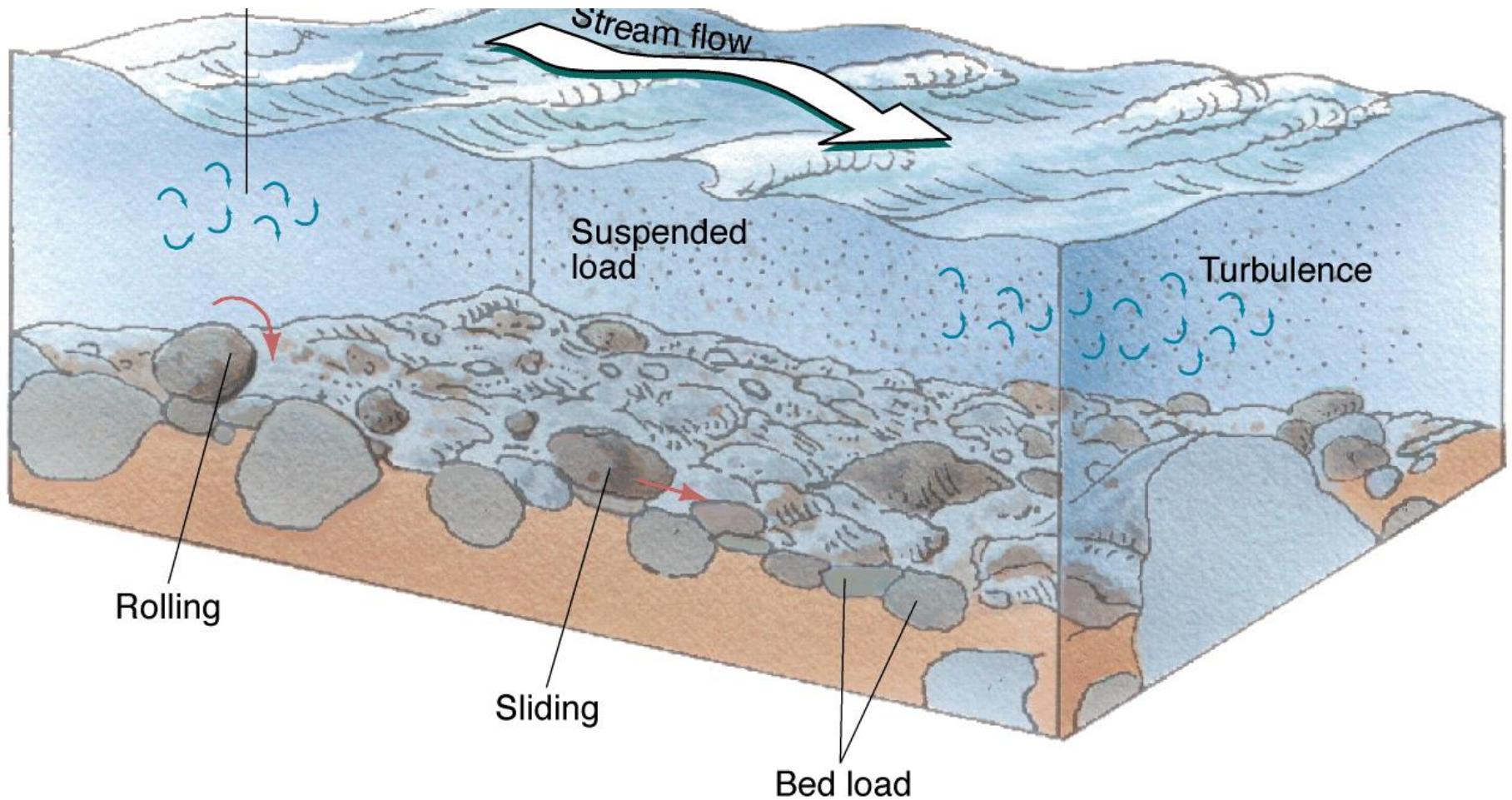


River with Suspended Load



Bed Load

- Heavier Solids
- Sand, Gravel, Boulders
- Sliding & Bouncing on Bed
- Cause of Abrasion

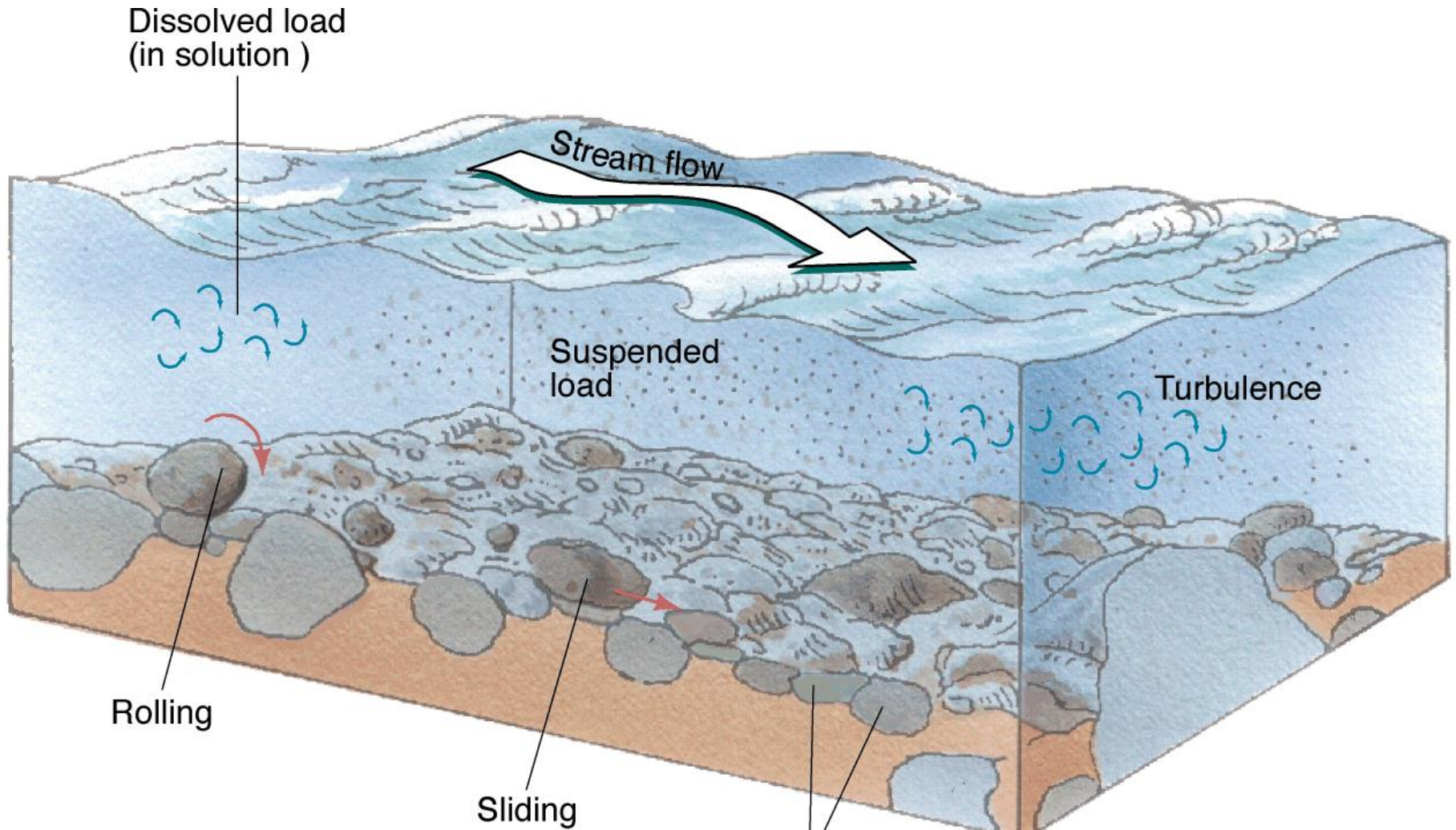


Heavy Bed Load



Dissolved Load

- Invisible
- Gives Taste to H₂O



Deposition

- When Water Slows Down
- Sediment Deposited by Water
 - “Alluvium”



FLUVIAL LANDFORMS

- **Badlands**



Stream Valleys

- **V-Shaped**
– **Why?**

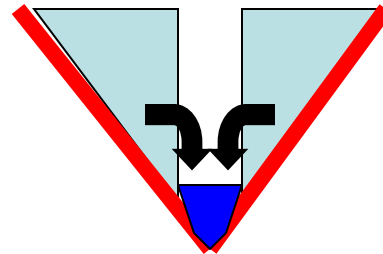


V-Shaped Valleys

1. Abrasion of Bed

- “Downcutting” of Valley

2. Erosion & Landslides of Valley Walls



Base Level of Stream

- Lowest Limit of Downcutting
 - Potential Depth of Valley
 - Always Sea Level?
- Elevation of Water Body Stream Flows Into

Base Level of Colorado River?



Base Level Changes

- Dams...

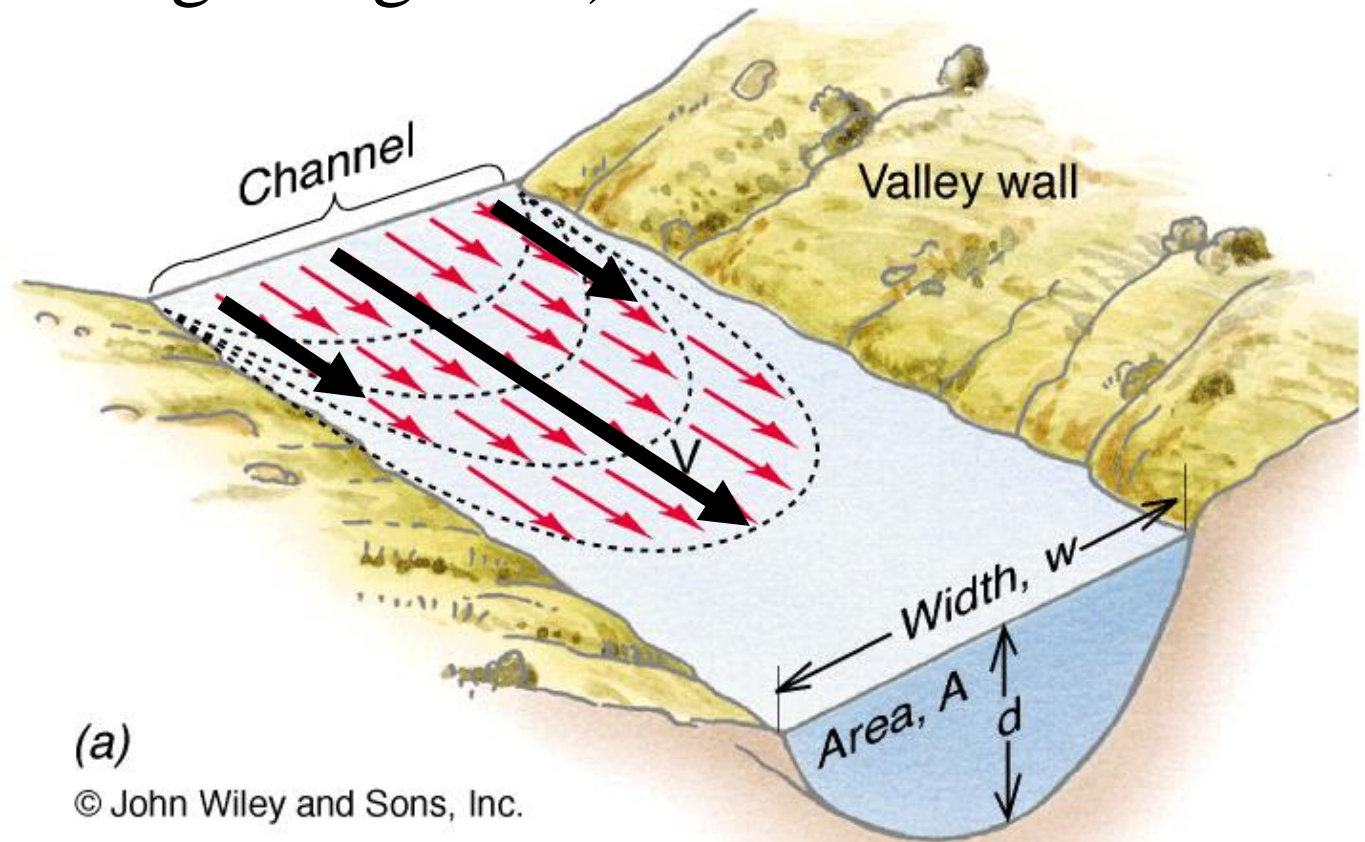


Lateral Erosion

- Erosion of Banks
- When Stream is Close to Base Level
 - Little Downcutting

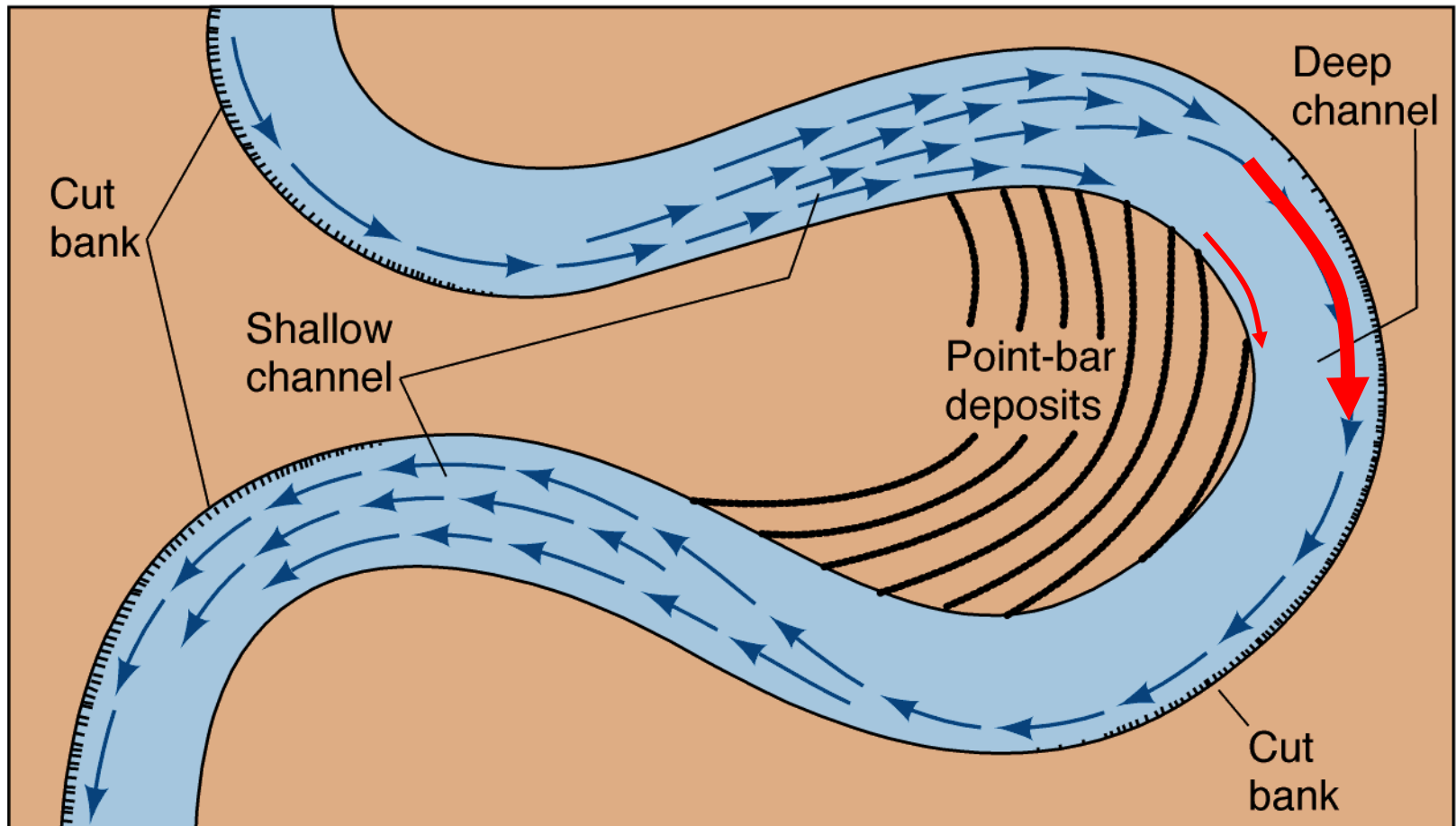
Stream Velocity

- Fastest in middle
(on straight segment)



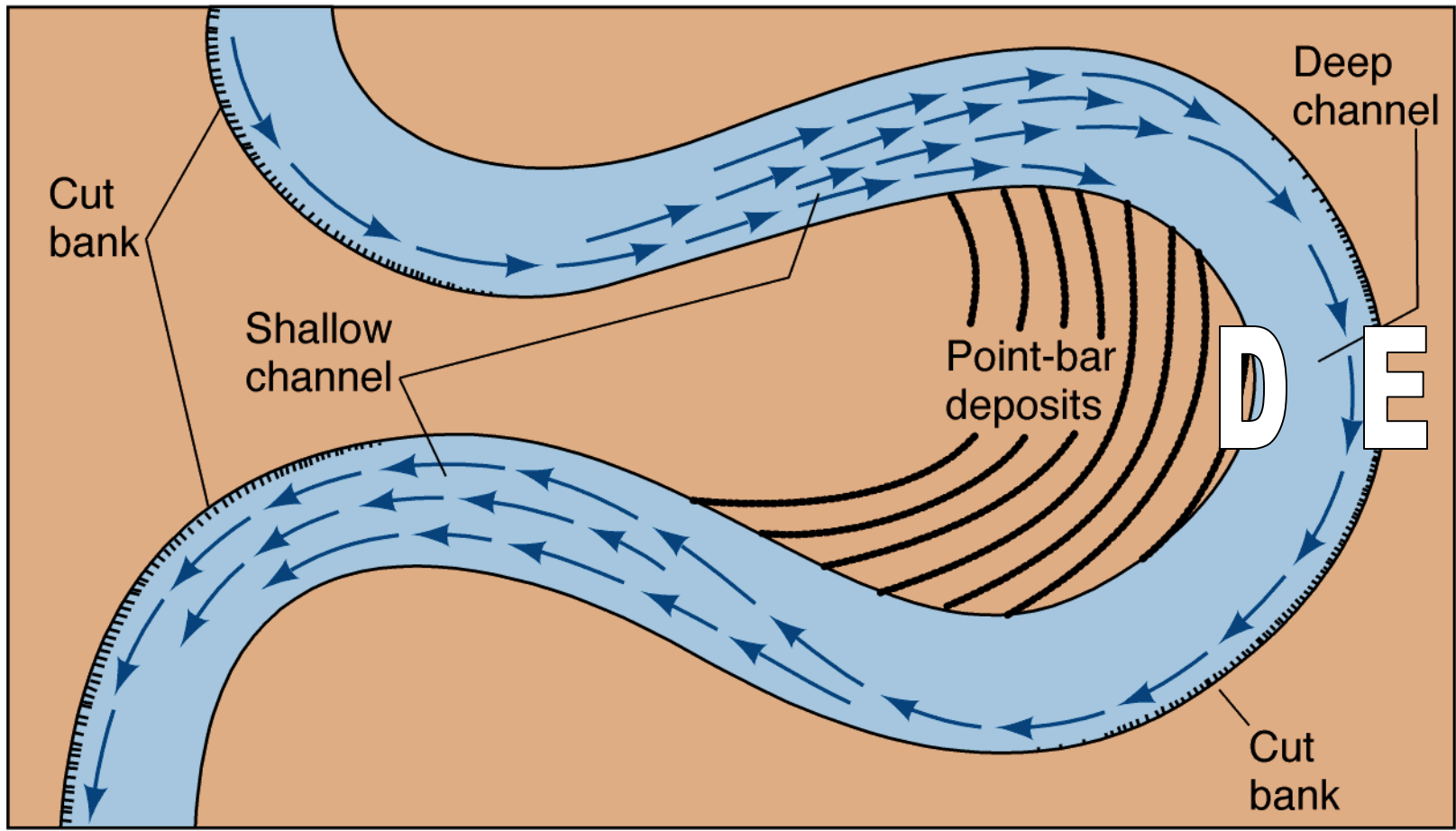
Stream Meander

- Bend of a Stream
- Faster Flow Inside or Outside?



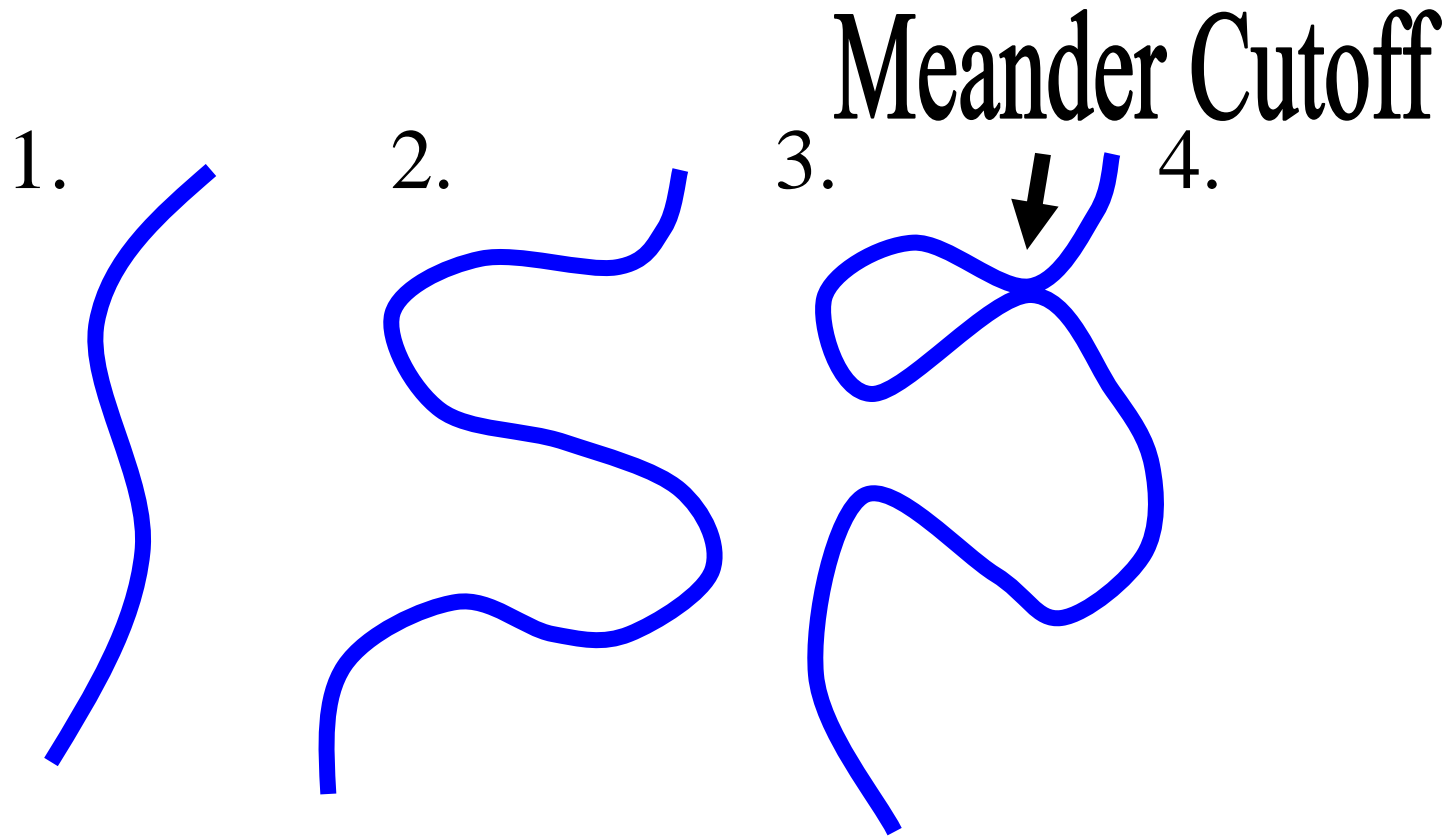
Lateral Erosion

- Inside or Outside Bank?
- Deposition on which bank?
- Deeper Water?



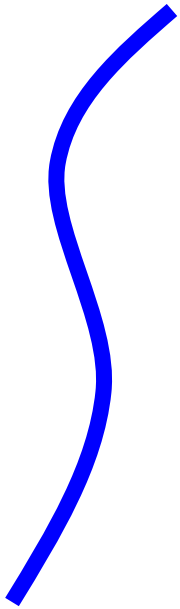
Lateral Erosion

- Changes the River Course

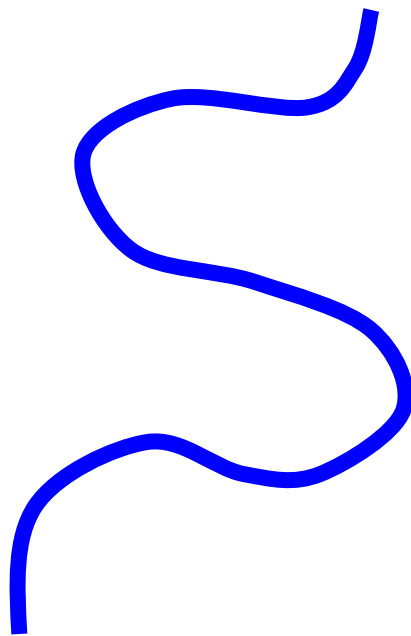


Lateral Erosion

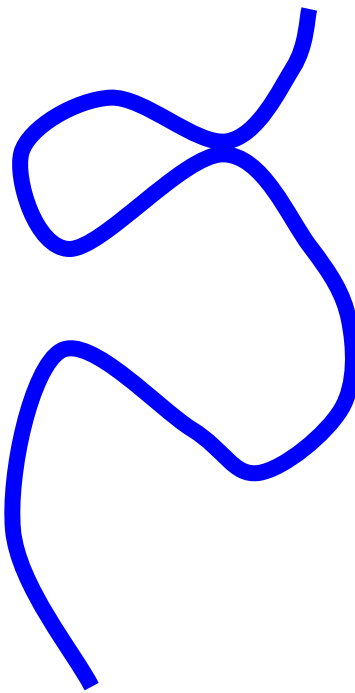
1.



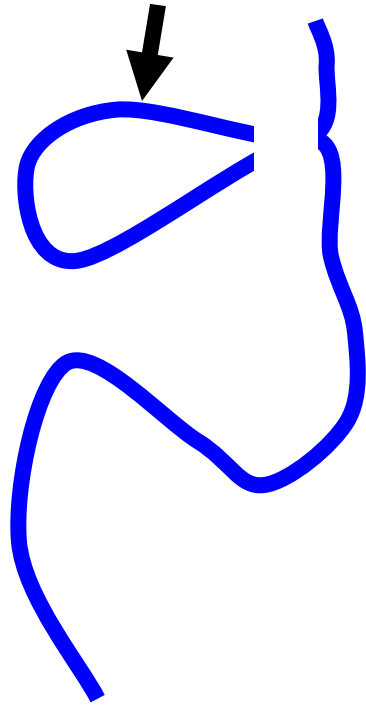
2.



3.

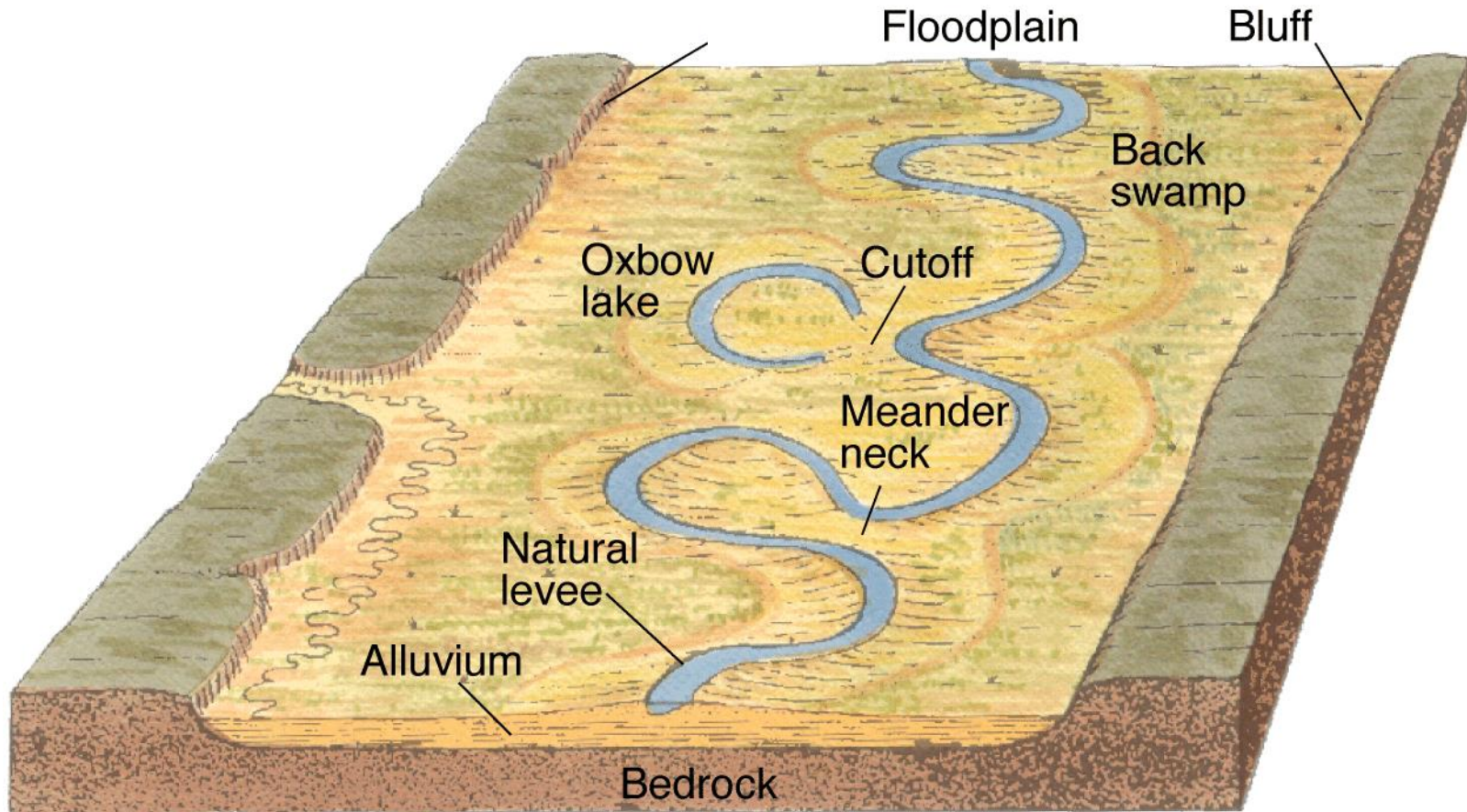


Oxbow Lake



Floodplains

- Wide Stream Valley
 - Caused by Meandering
 - Subject to Floods



River Meanders & Floodplain

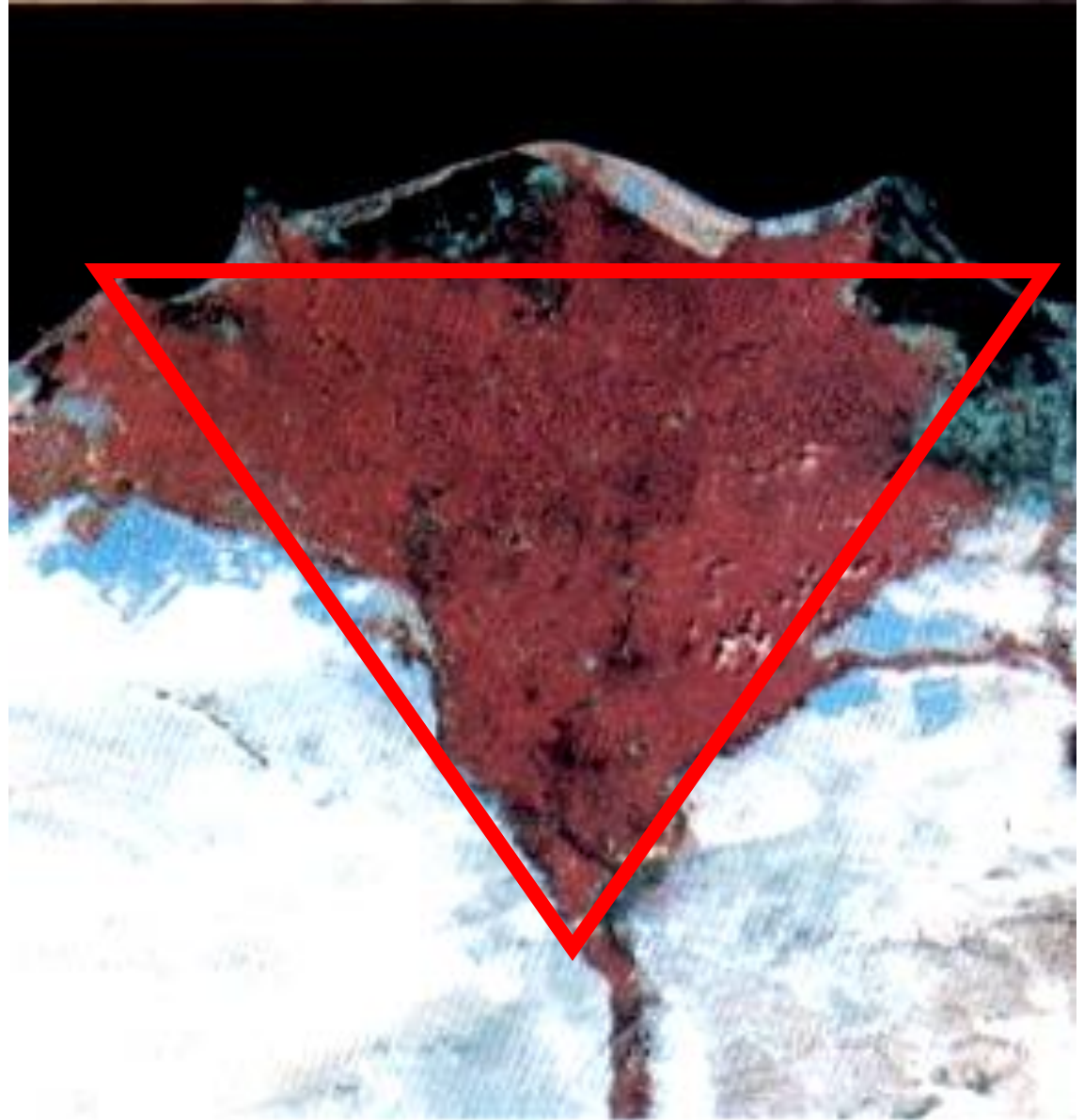


Delta

- Deposit of Sediment At Stream's Mouth
- Nile Delta



pg. 215



Deltas

- Sometimes shaped like “Bird’s Foot”
 - Mississippi River



Delta coast (*d*)

Deltas

- Why formed?
- Stream Slows Down at Ocean
- But not all rivers have deltas



Niger River

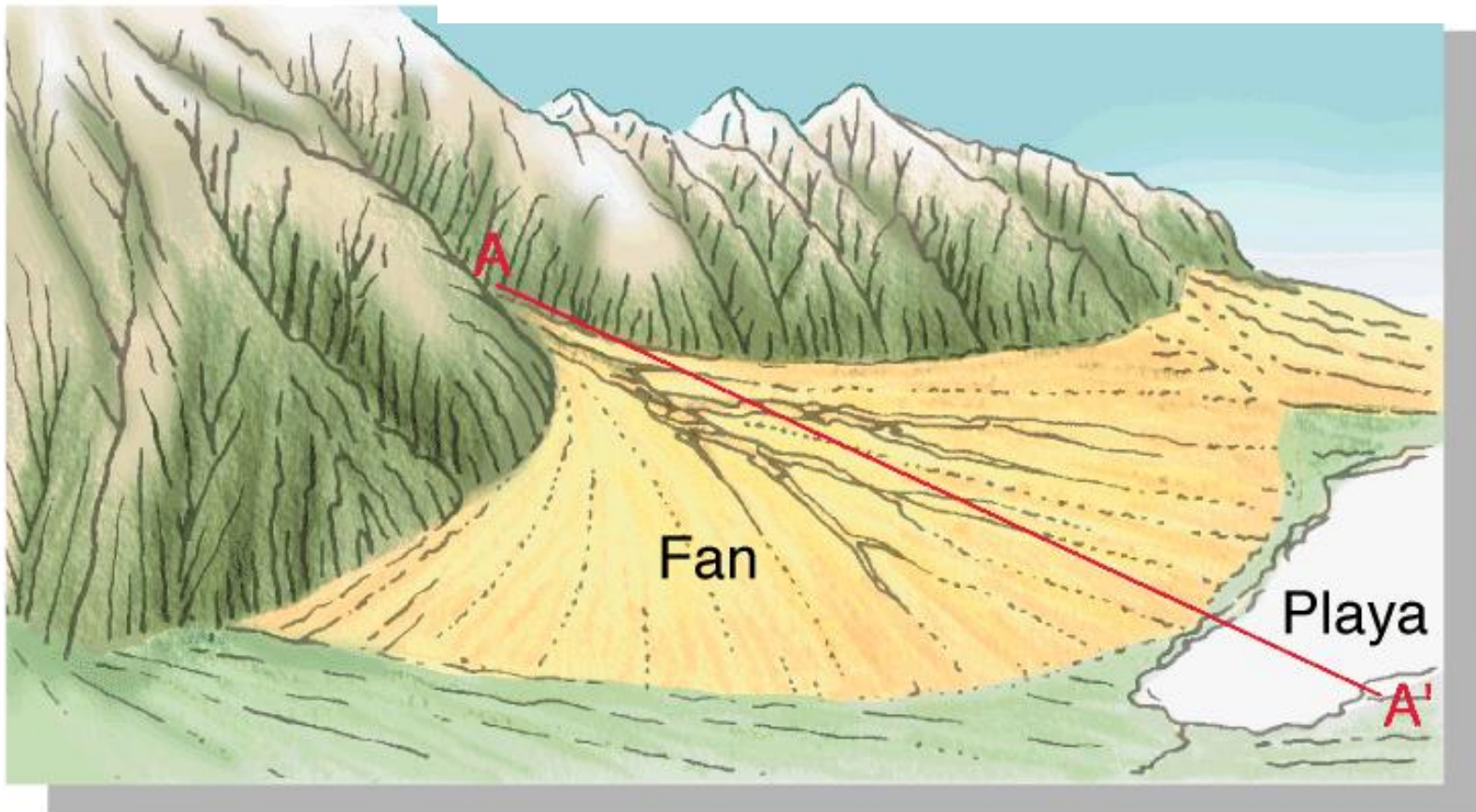
Congo River

- No Delta on Congo
- Ocean Currents...



Alluvial Fans

- Fan-Shaped Deposit of Sed. At Base of Cyn
– In Dry, Mtn Env



Alluvial Fan • Why in Dry Env?

– Lack of Veg →

Rapid Runoff & Erosion

• Mudflows in Cyns



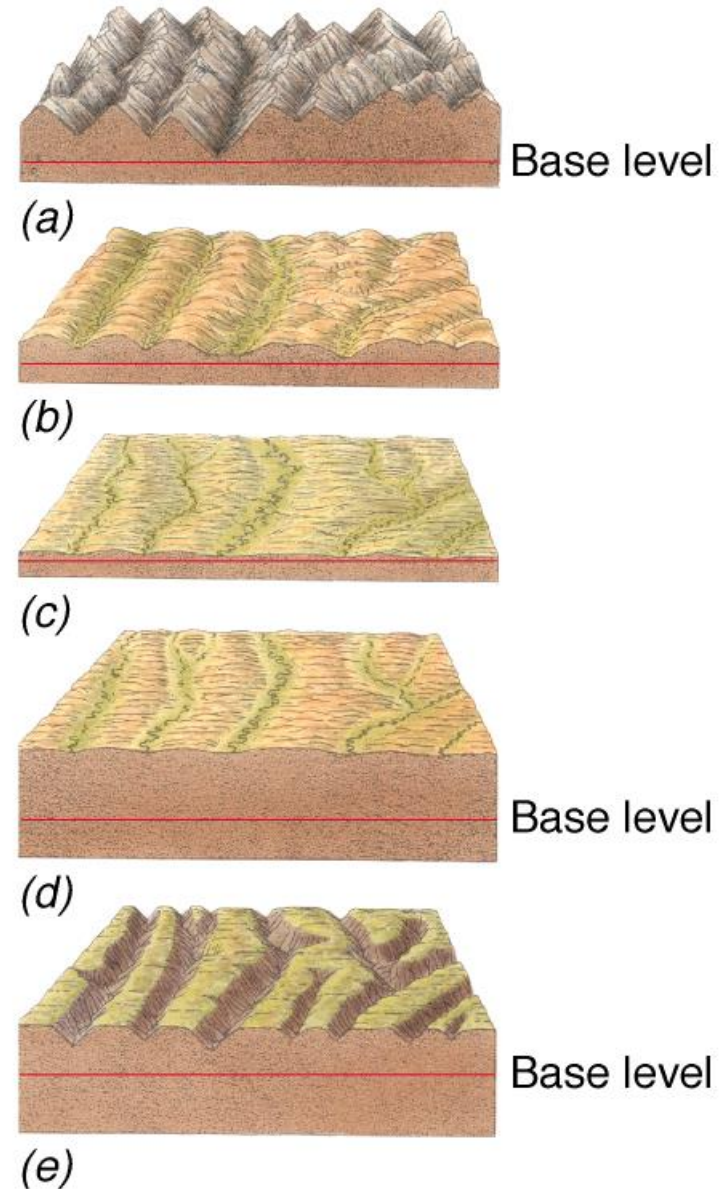
Desert Landforms

- Mostly Fluvial
- Cyns & Alluvial Fans

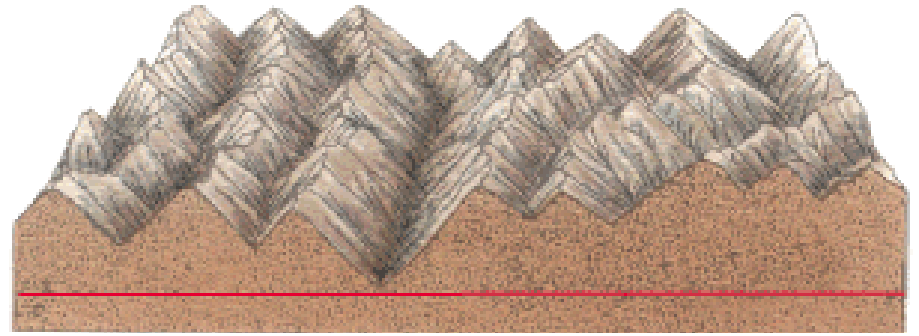


Cycle of Erosion

- Landscape Evolution
Due to Fluvial Erosion
- 3 Stages
 - Youthful
 - Mature
 - Old Age



Youthful Landscape

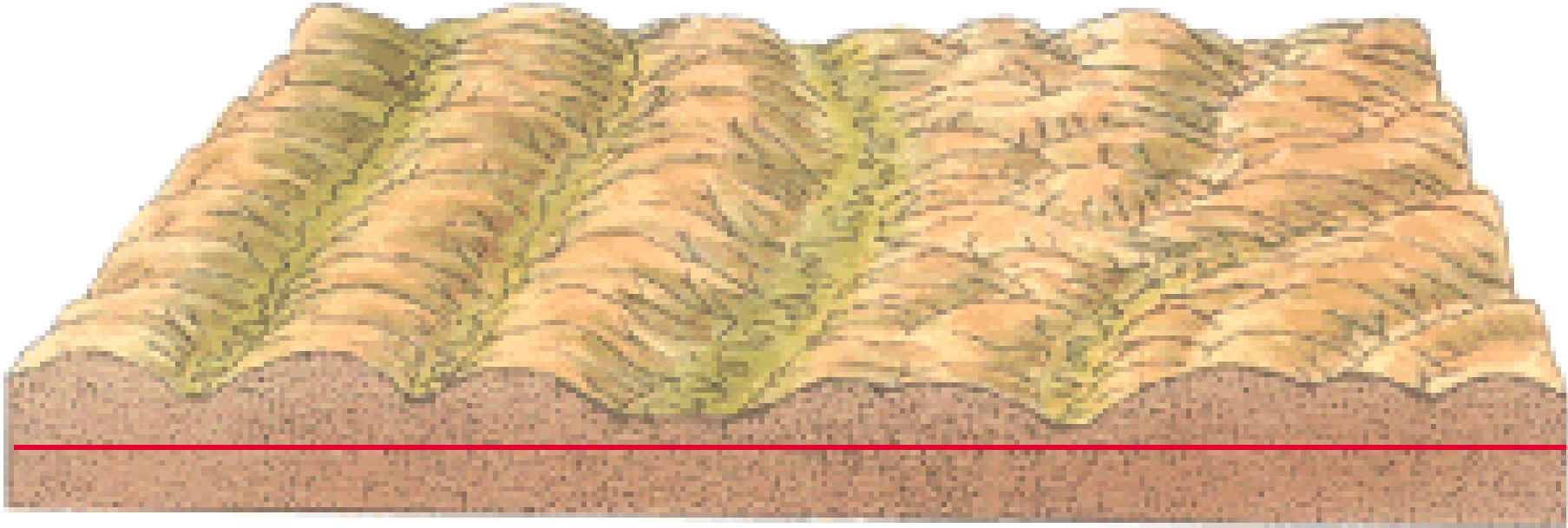


- High Above Base Level
- Fast Streams
- Rugged, Deep Cyns



Mature Landscape

- Rounded Hills
- Meandering Begins



(b)

Mature Landscape



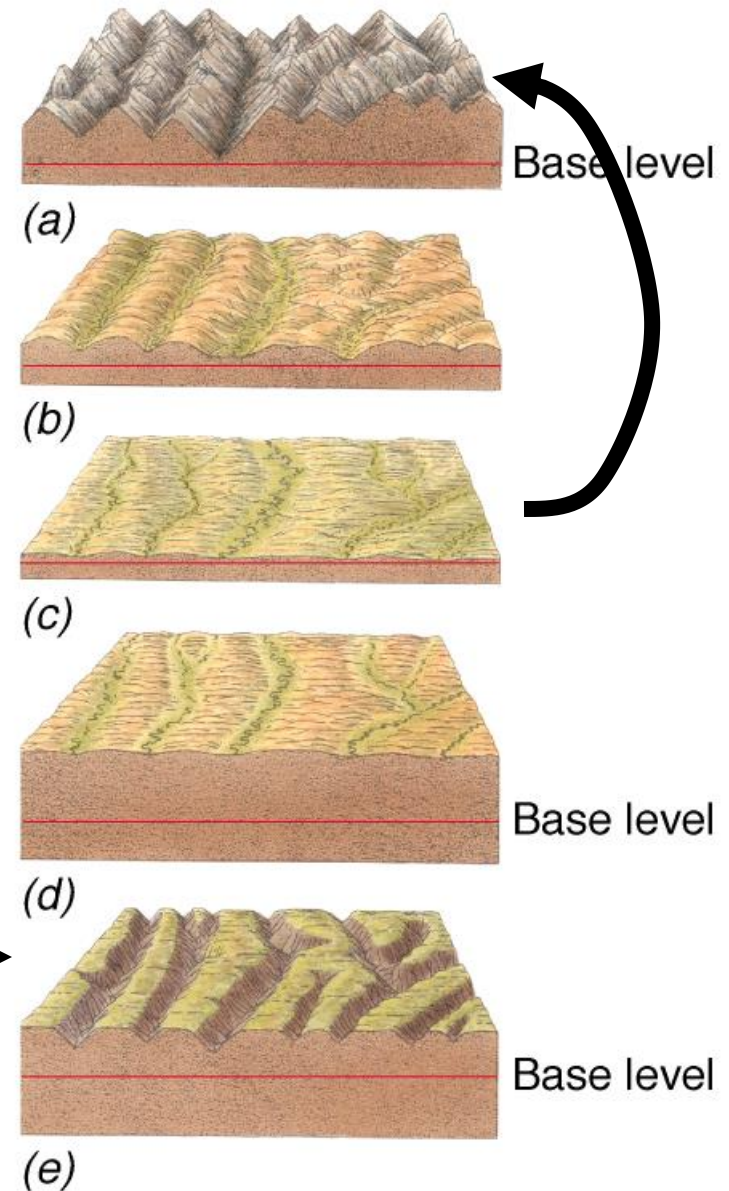
Old-Age Landscape

- Flat
- Close to Base Level
- Lots of Meandering



Rejuvenation

- Old Age Landscape Can be Made Youthful
 - Earthquakes Lift Land Above Base Level →
 - Streams Resume Downcutting →



Entrenched Meanders

- Uplift of Old-Age Meandering Stream

