

# The Work of Rivers



# The Work of Rivers

The erosional work of streams/rivers carves and shapes the landscape through which they flow.

3 functions of rivers

- a. Erosion
- b. Transportation
- c. Deposition



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## A. Erosion

- A river may erode in 4 ways

### **1. Abrasion/corrasion**

Load carried by a river will grind against its bed and sides.

This process slowly wears the bed and sides away.

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## A. Erosion

### 2. Attrition

When thrown against the sides and bed of rivers, the load gets broken into smaller pieces.

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## A. Erosion

### 3. **Hydraulic action**

The work of turbulence in the water.

Running water causes friction in the joints of rocks in a stream channel

Joints may be enlarged

Loosened fragments of rocks get swept away.

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## A. Erosion

### 4. **Solution/Corrosion**

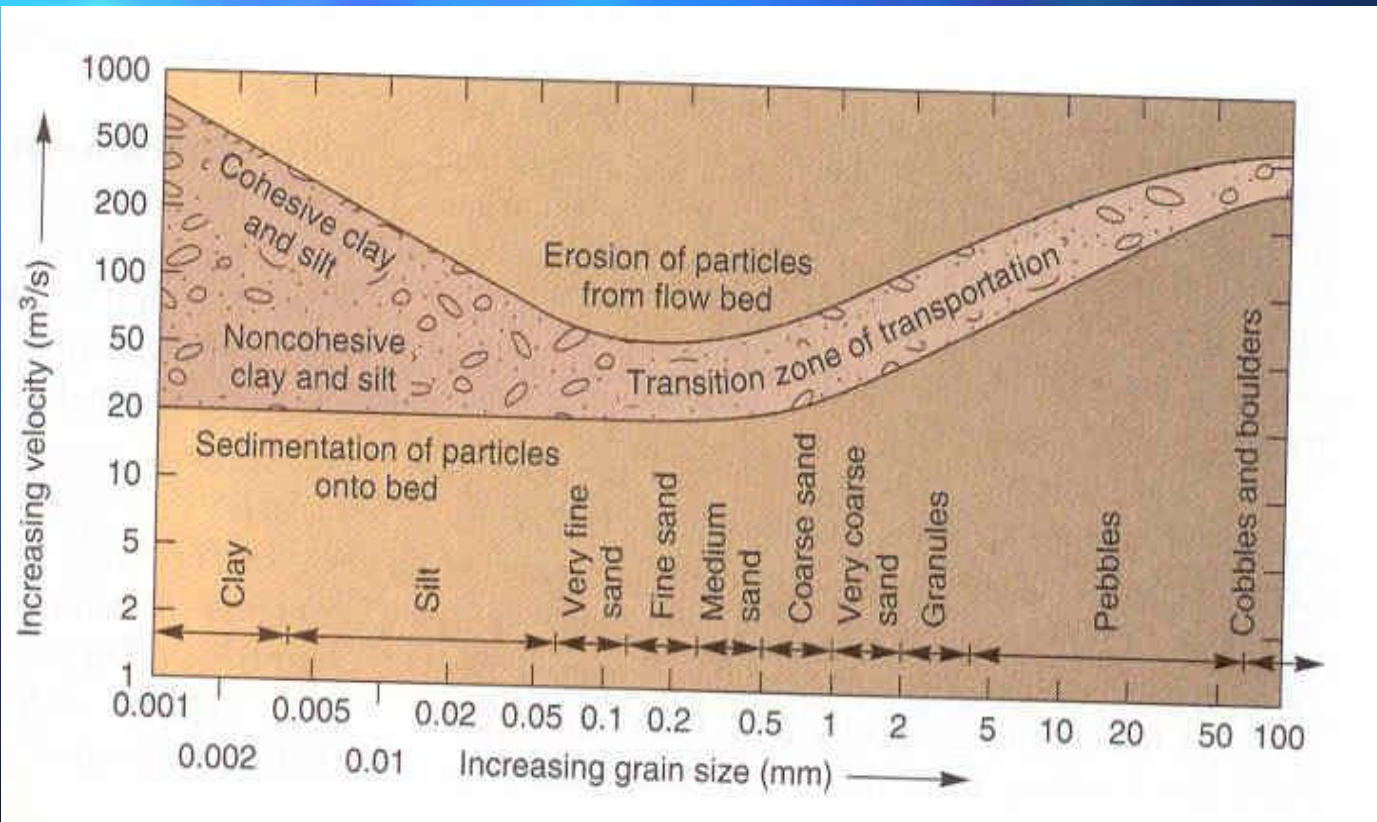
Certain minerals in rocks like limestone can be dissolved in water.

Rocks are then eroded.



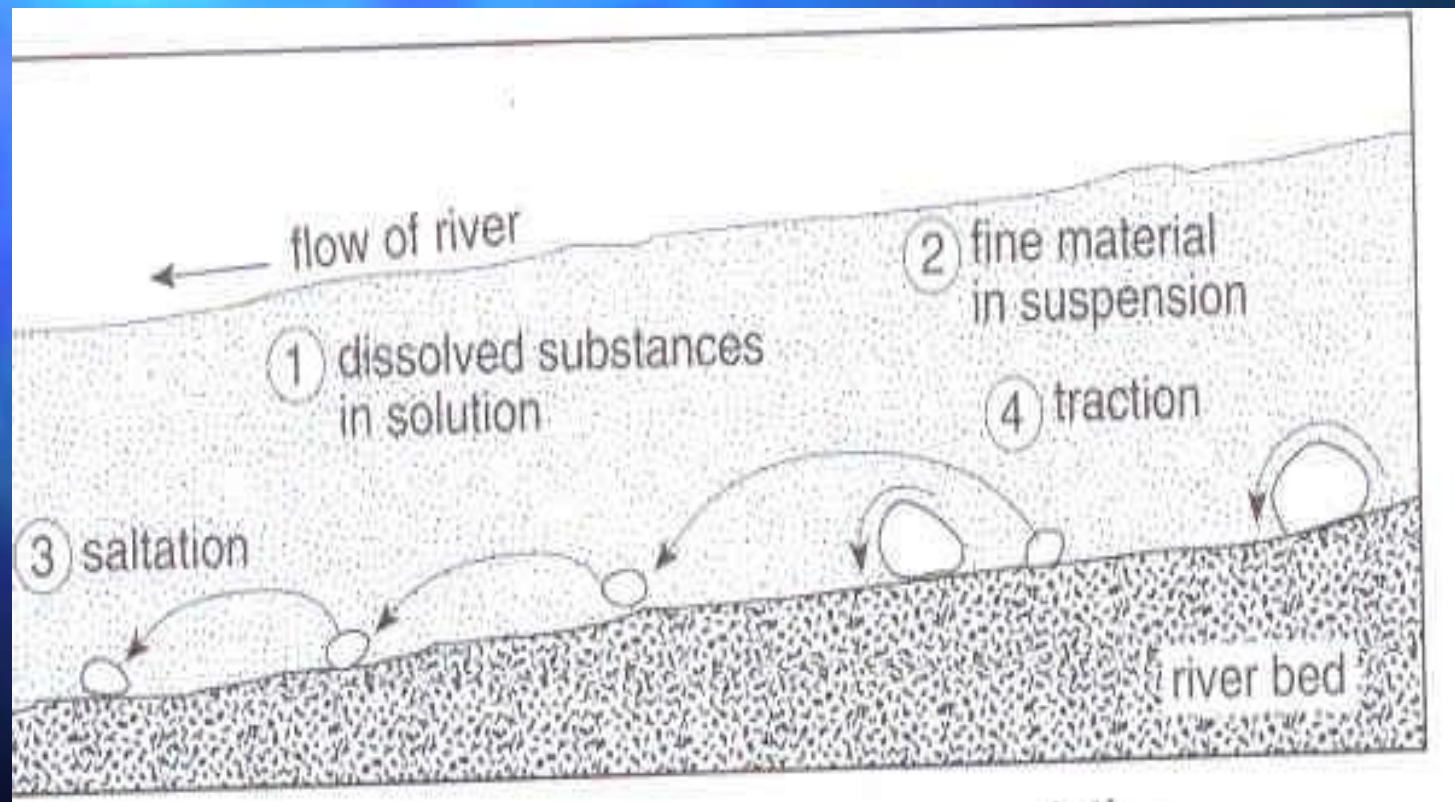
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## Relationship of velocity and sediment size to erosion



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## B. Transportation (4 ways)





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## B. Transportation (4 ways)

### **1. Traction**

Larger and heavier rocks/gravels are dragged or rolled along the bed.

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## B. Transportation (4 ways)

### 2. **Saltation** (*saltim: by leaps/jumps*)

Smaller and lighter rock fragments and sand hop and bounce along the river bed.

*At times, the distinction between traction and saltation may be difficult to determine.*

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## B. Transportation (4 ways)

### 3. Suspension

Some of the load like silt and clay (fine-grained) will float along.

They may only be deposited when stream velocity reaches near 0.

Turbulence in the water is crucial in holding a load of sediments.



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## B. Transportation (4 ways)

### 4. Solution

Some minerals are transported in dissolved form.

Especially chemical solution derived from minerals like limestone or dolomite.

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## C. Deposition

A river will drop its load when:

- a. Volume decreases
- b. Speed decreases

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## C. Deposition

A river's volume decreases when

- Dry season
- Dry region with high evaporation
- Presence of permeable rocks
- Receding flood waters



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## C. Deposition

A river's speed decreases when

- It enters a lake
- It enters a calm sea
- It enters a gently sloping plain

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The work of a river depends on its energy

Energy a function of

- a. Volume of water
- b. Speed of water flow (dependent on gradient)















