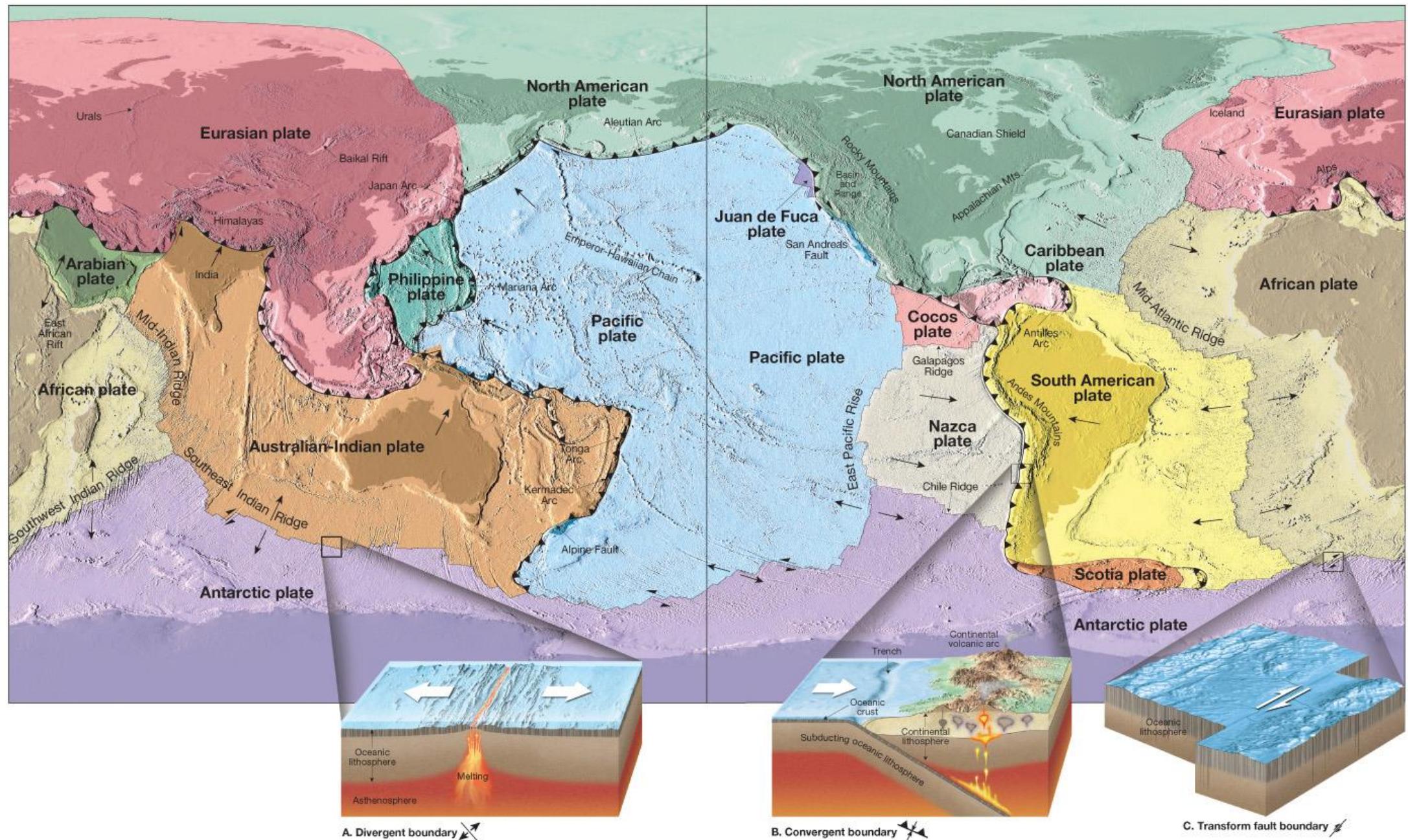




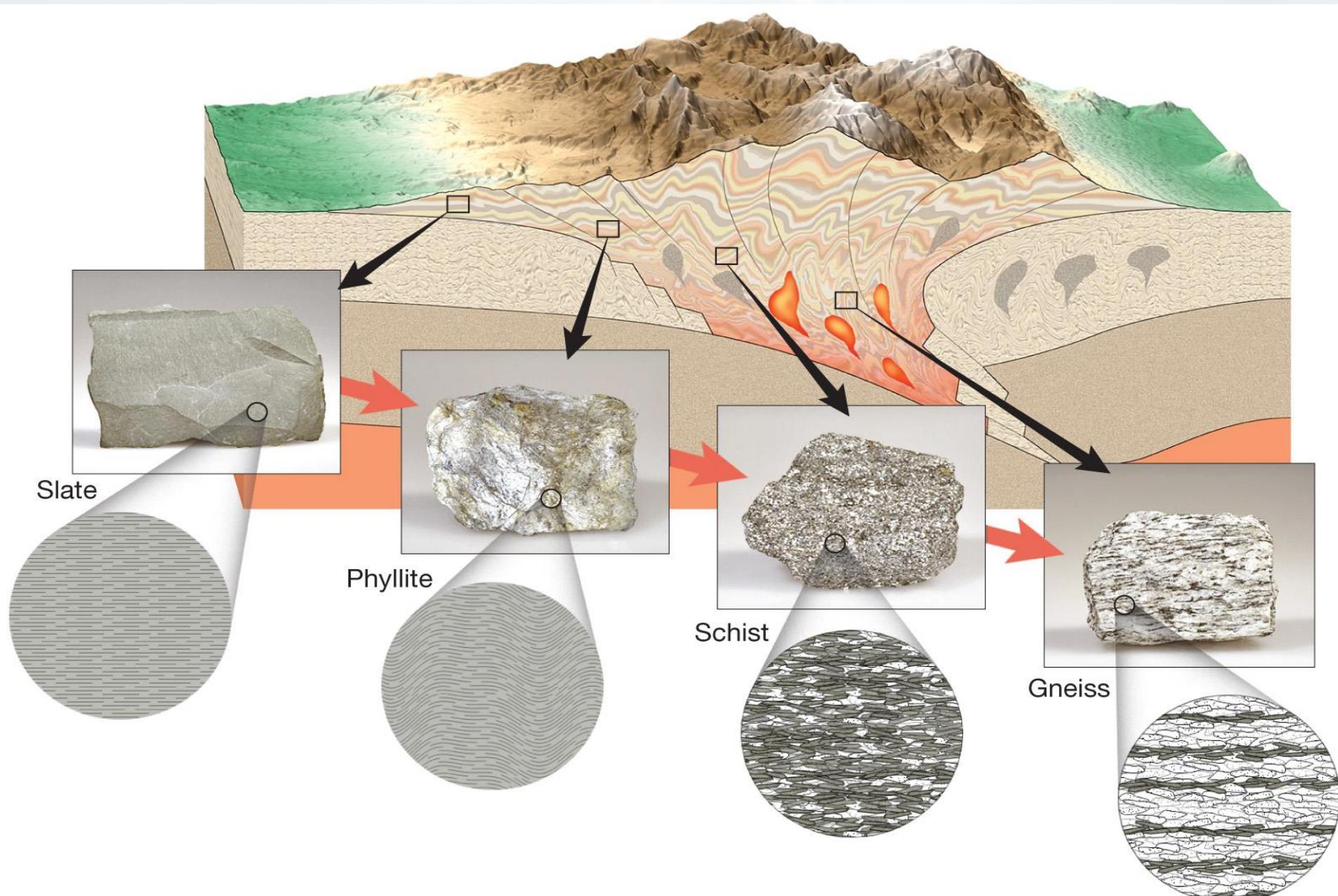
GY4051 Earth Science and Society

Erosion, Transport, and Deposition













Slate Mine, Llanberis, Wales





Transport - processes

- Gravity



Transport - processes

- Gravity
- Water



Transport - processes

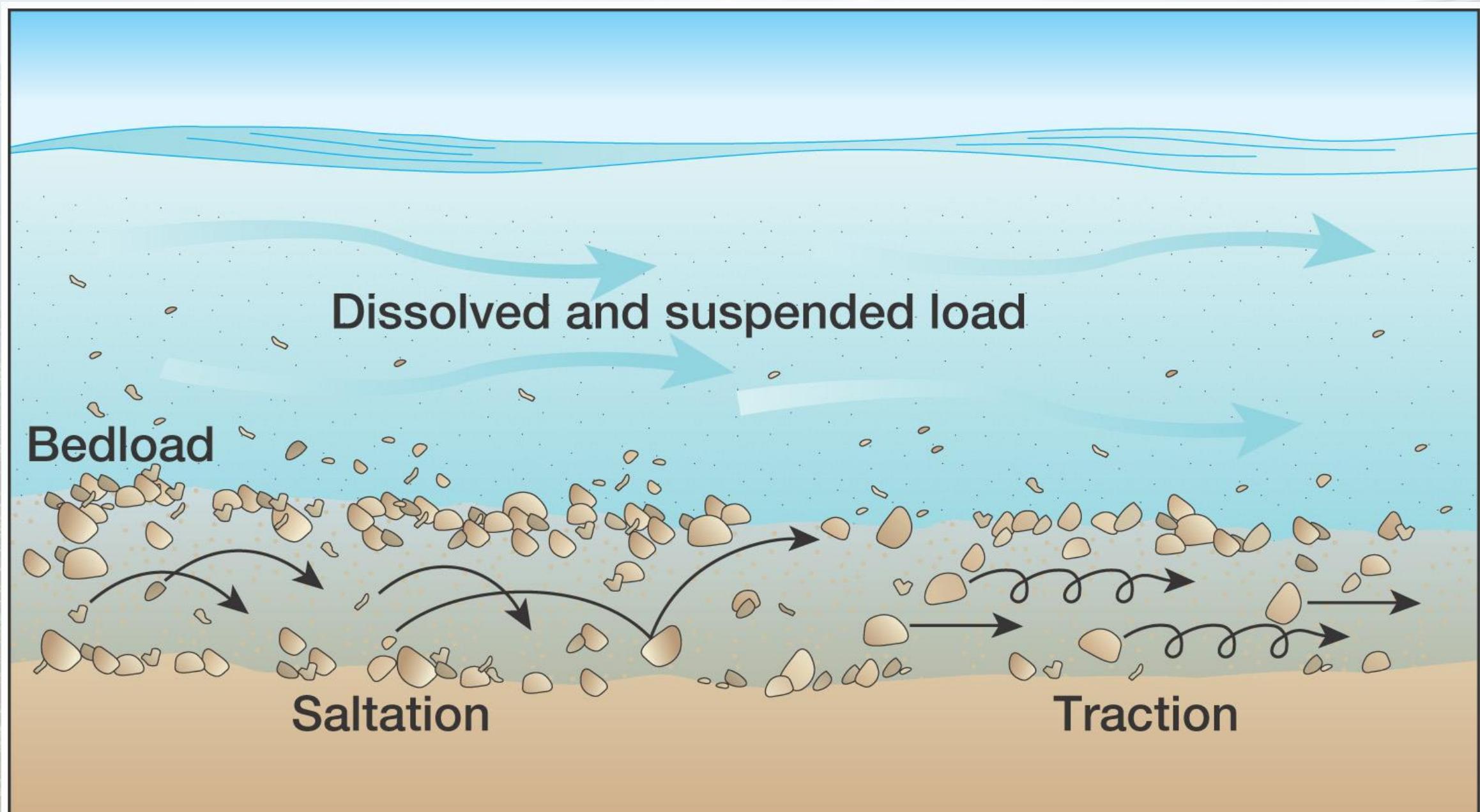
- Gravity
- Water
- Ice

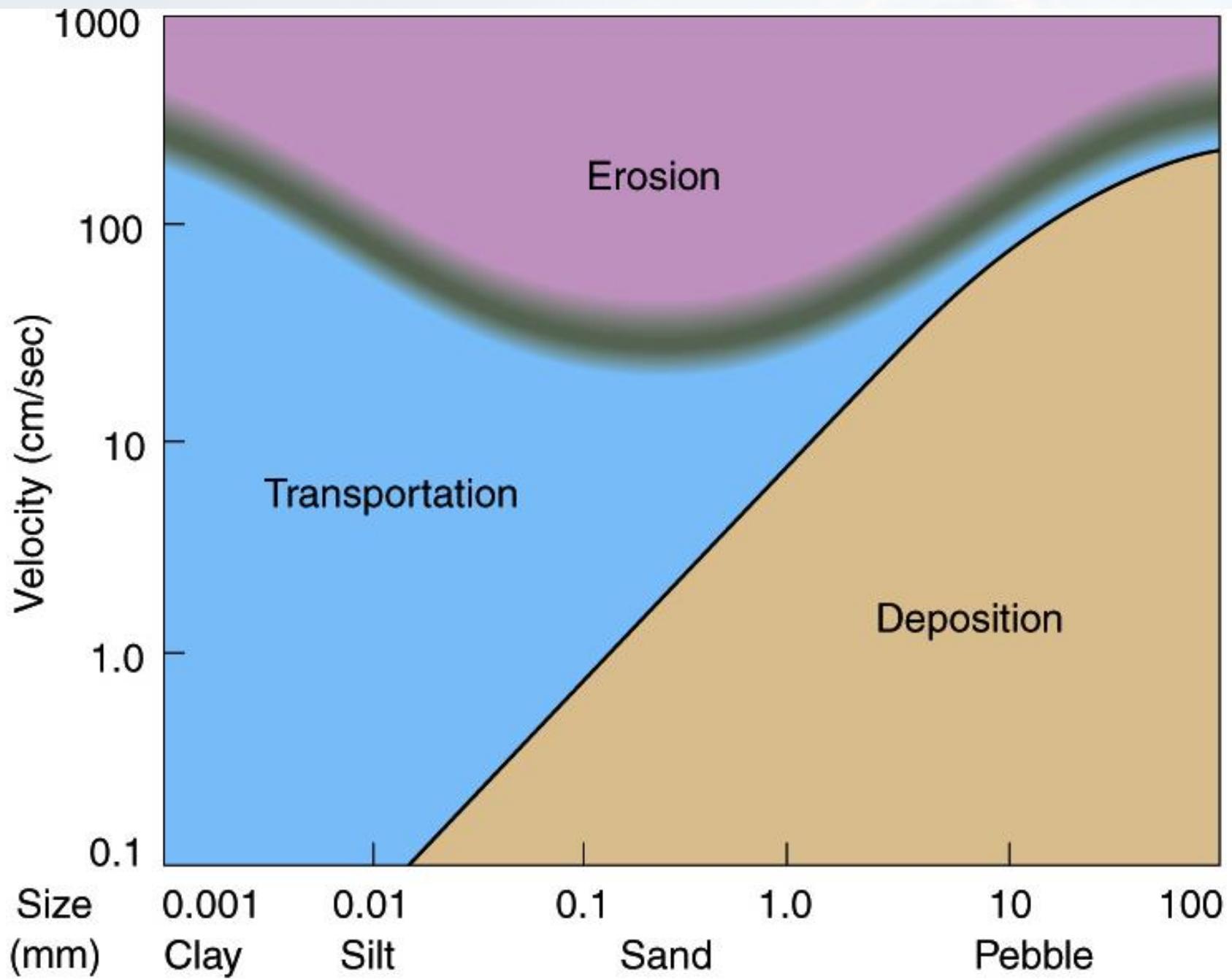


Transport - processes

- Gravity
- Water
- Ice
- Air







A. Grain size	
"Gravel" > 2mm	Pebbles 4–64 mm
	Granules 2–4 mm
	Coarse sand 0.5–2 mm
	Medium sand 0.25–0.5 mm
	Fine sand 0.06–0.25 mm
	Silt 0.004–0.06 mm
	Clay < 0.004 mm

Photographs corresponding to the grain size categories are shown to the right of the table.

Distance of transport

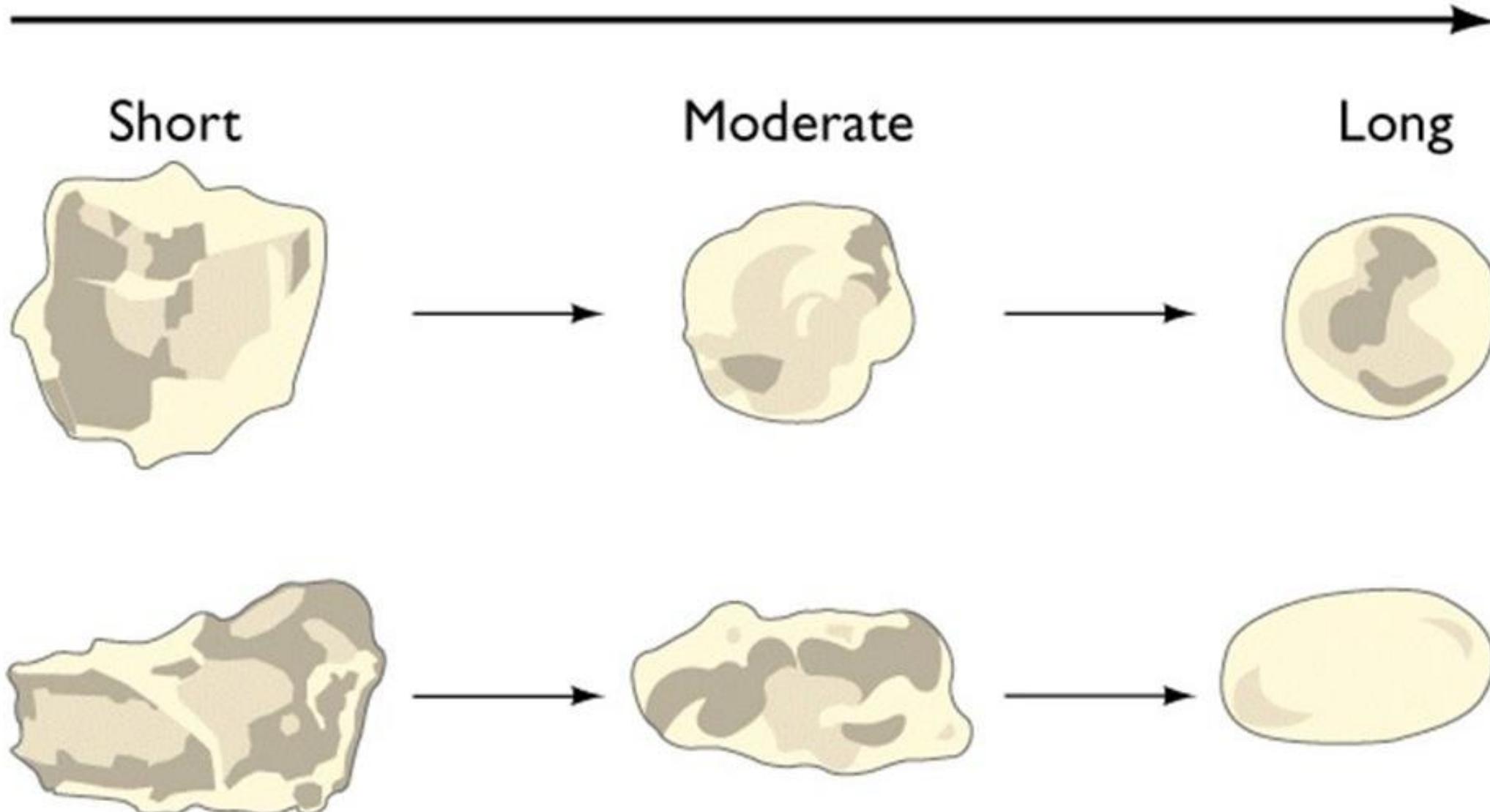
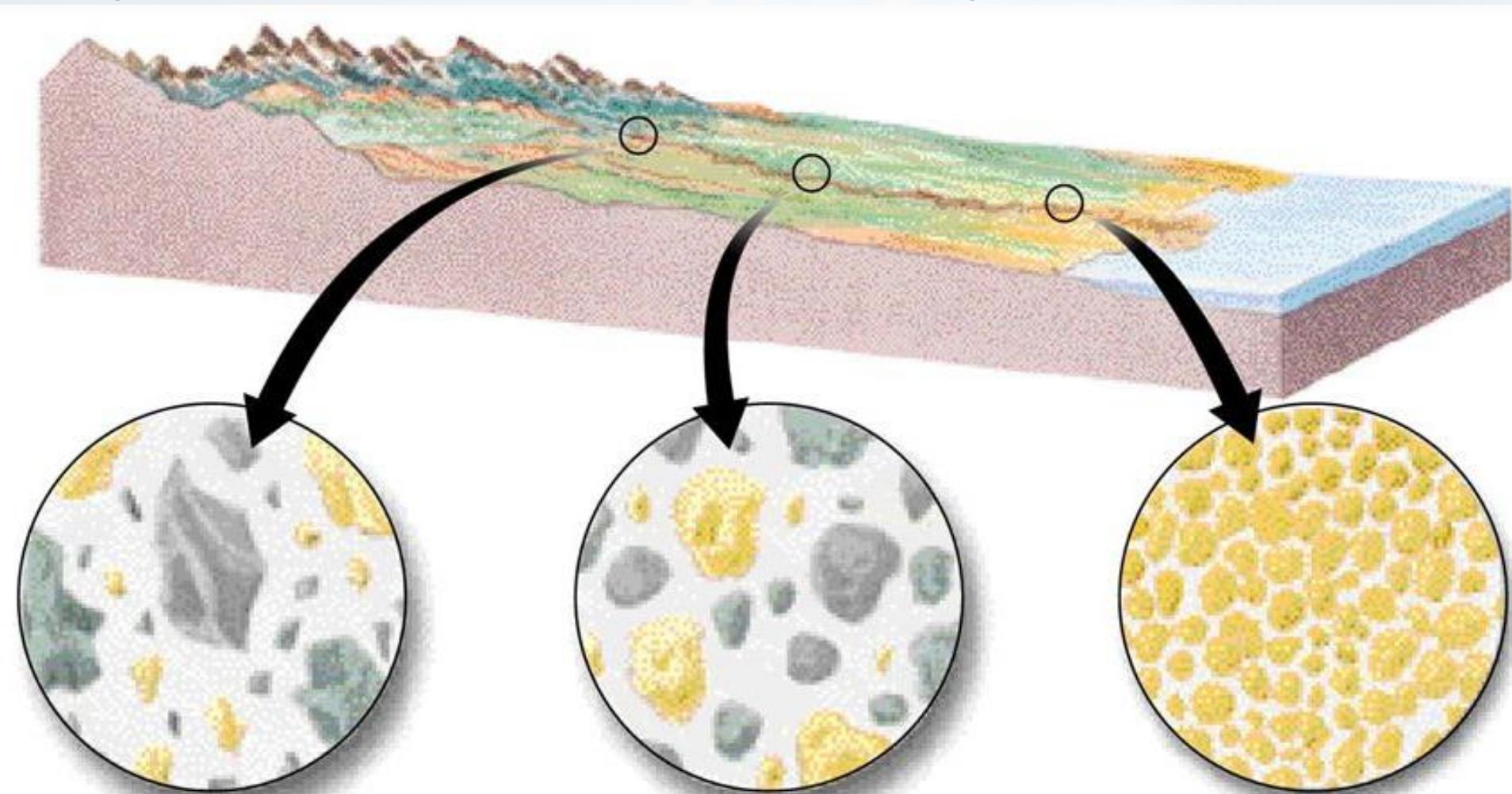


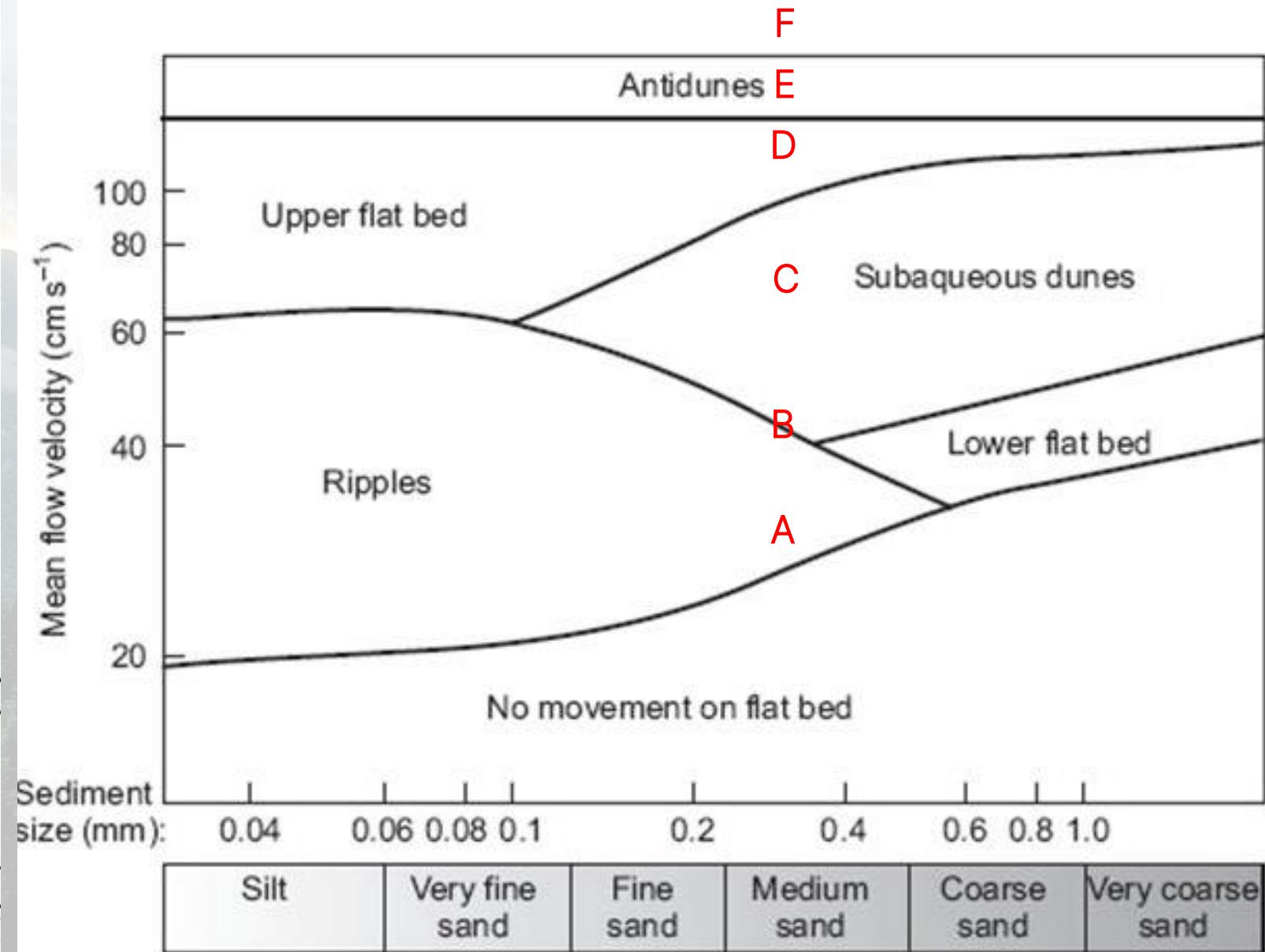
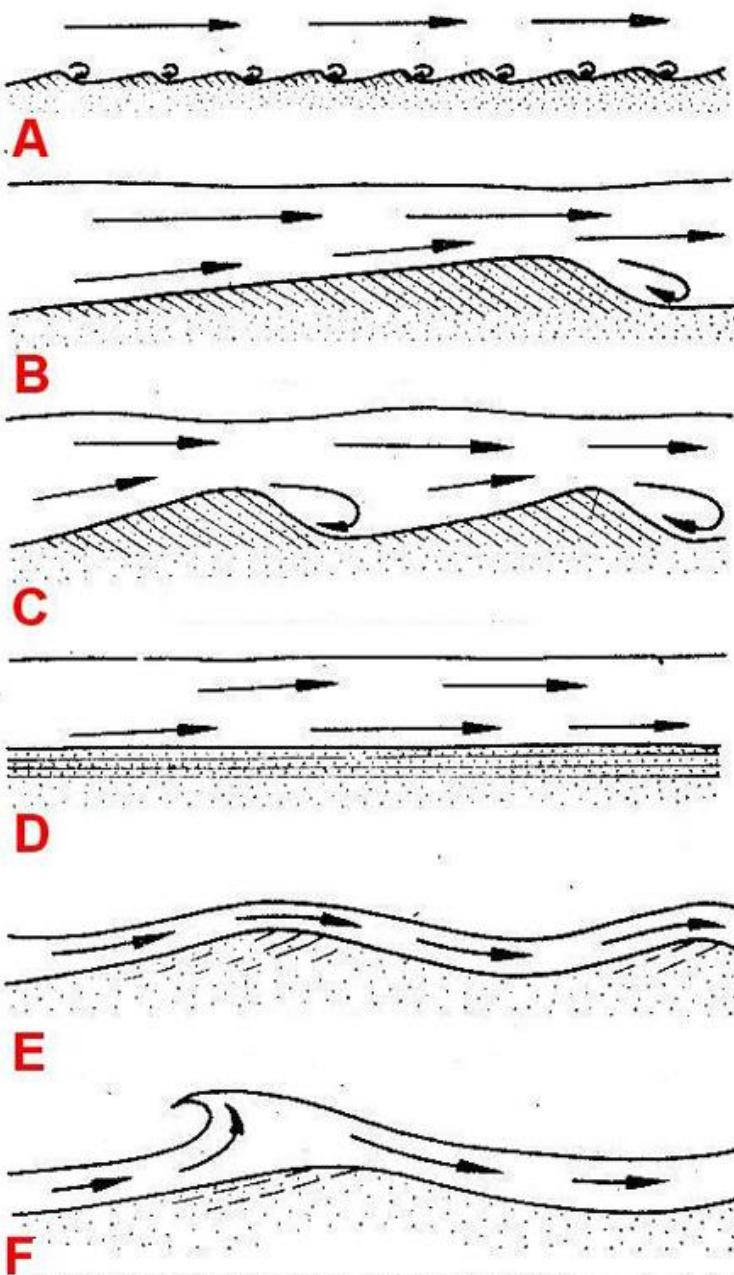
Fig. 7.3



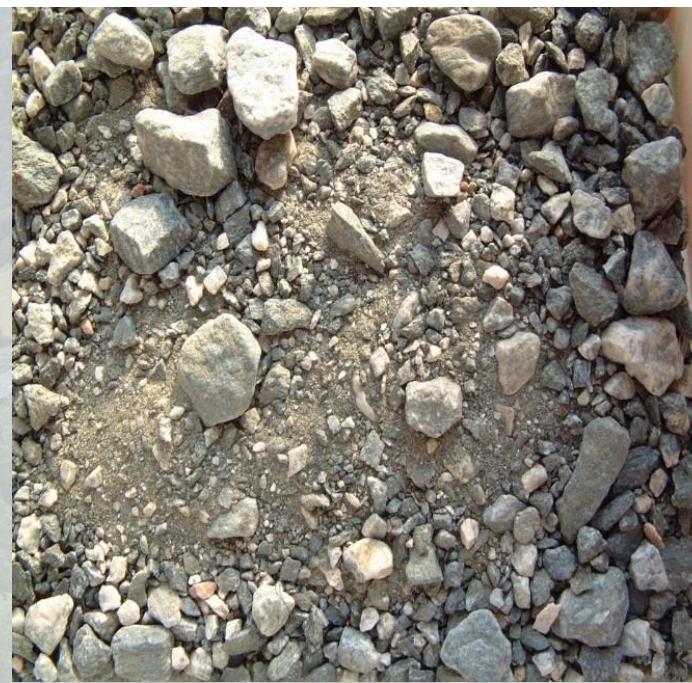
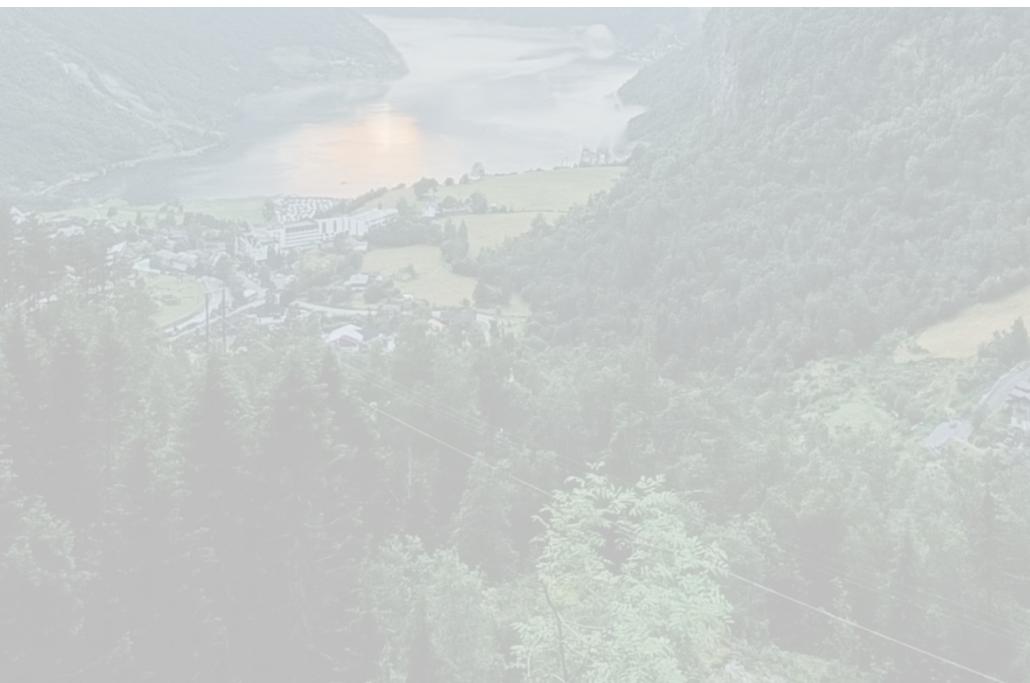
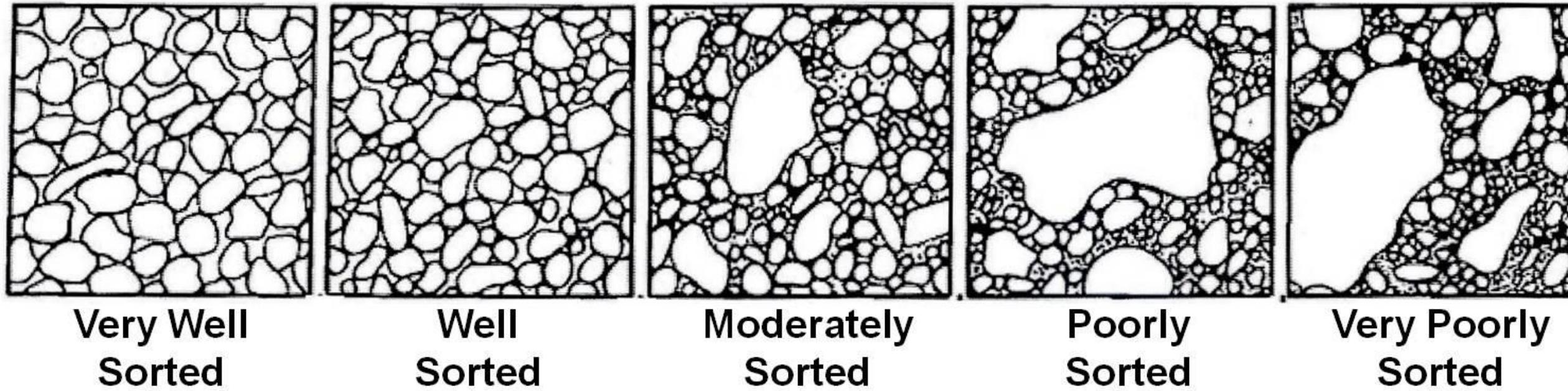
1 Particles are large and irregular, and consist of a variety of minerals, including some that weather easily

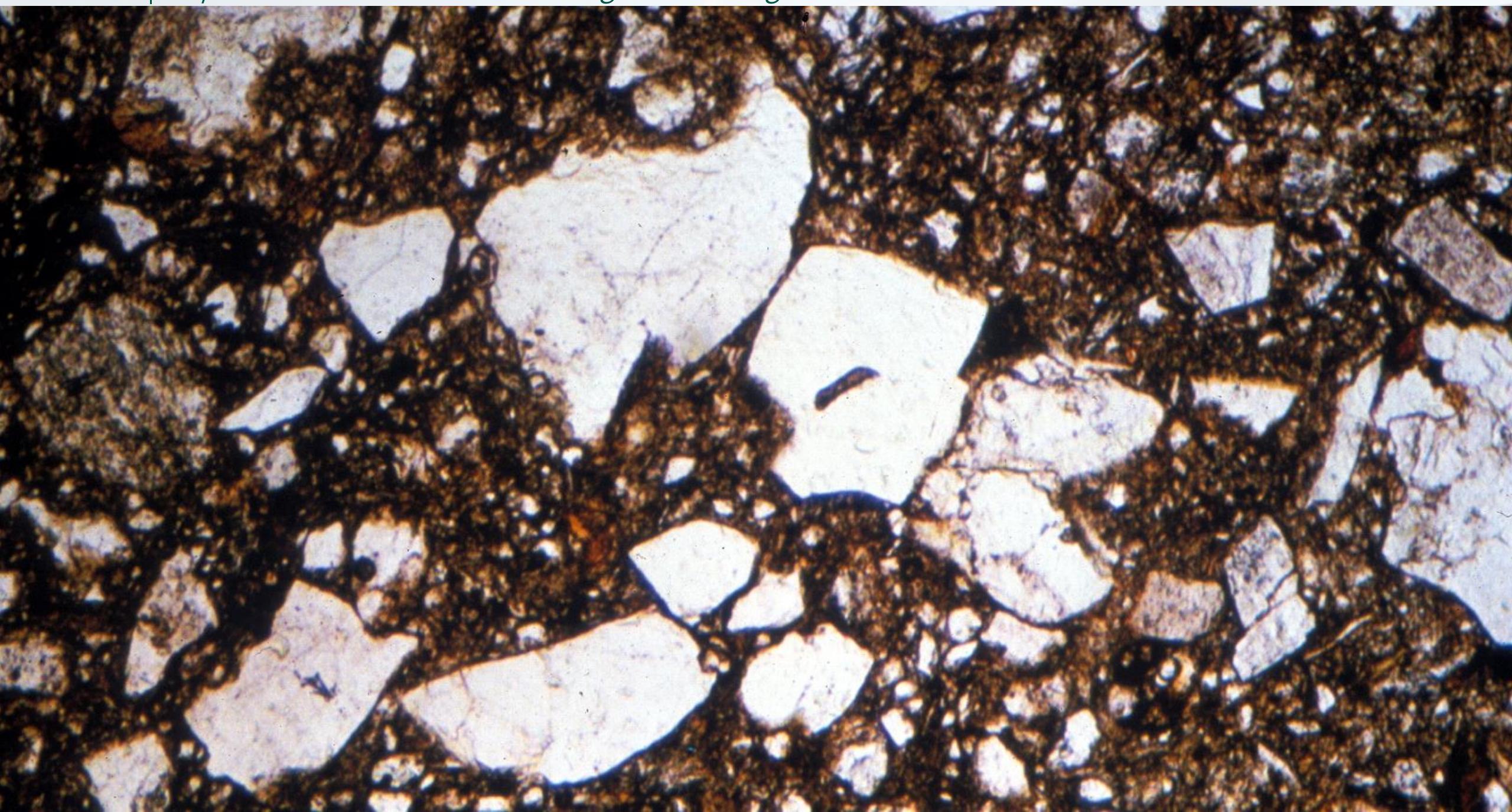
2 Particles are mid-sized and more rounded, and include fewer minerals that weather easily

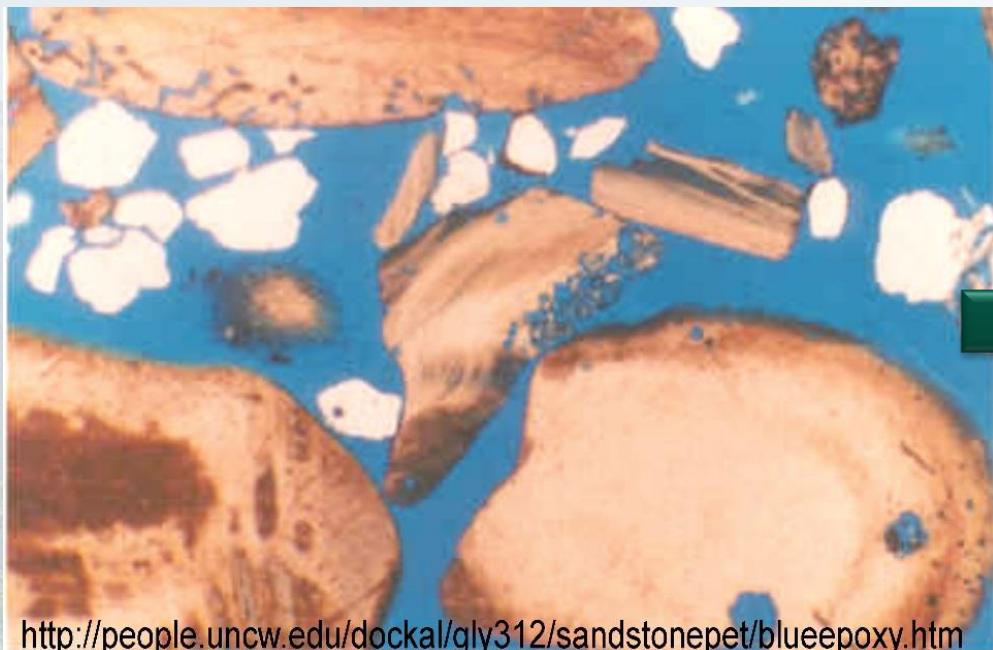
3 Particles are small and rounded, and consist mainly of minerals that resist weathering, such as quartz



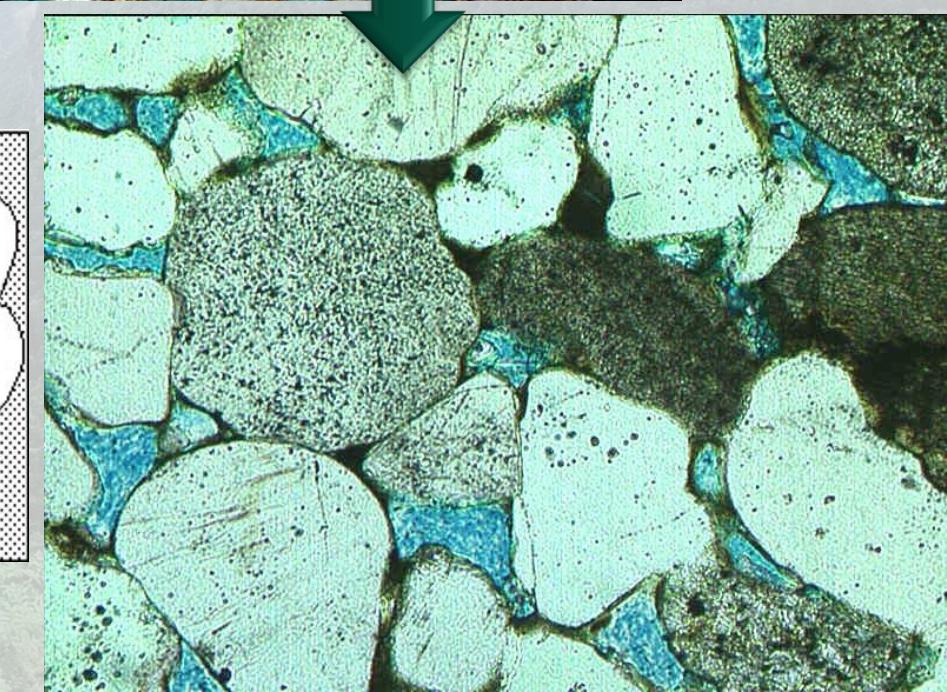
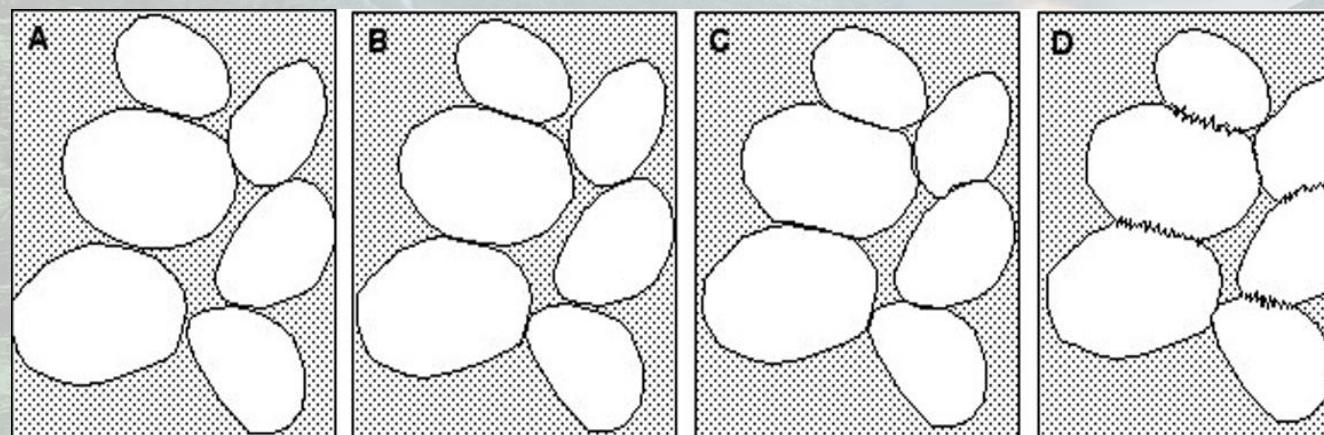
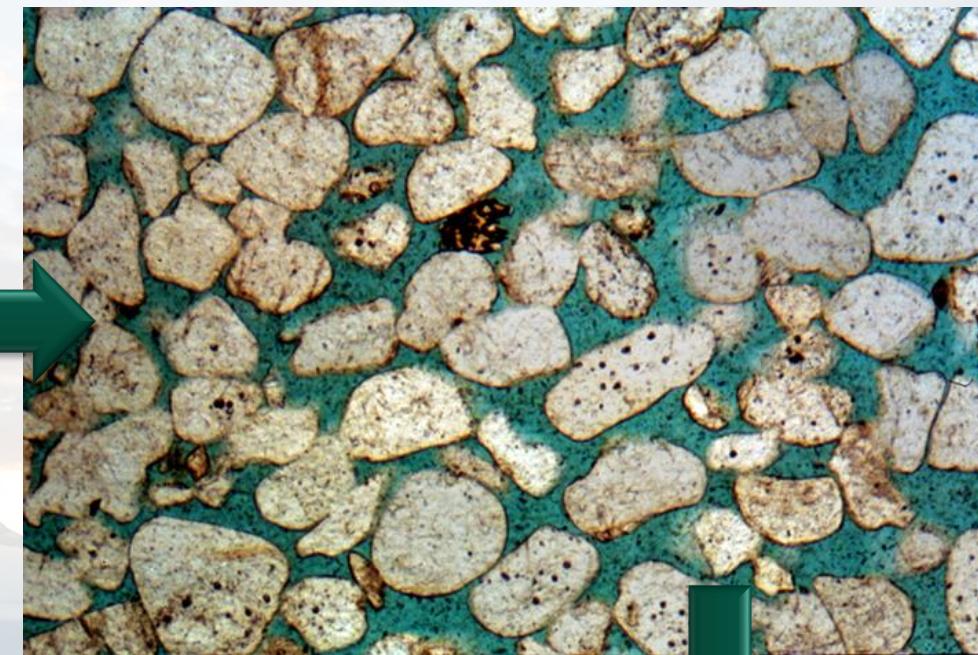




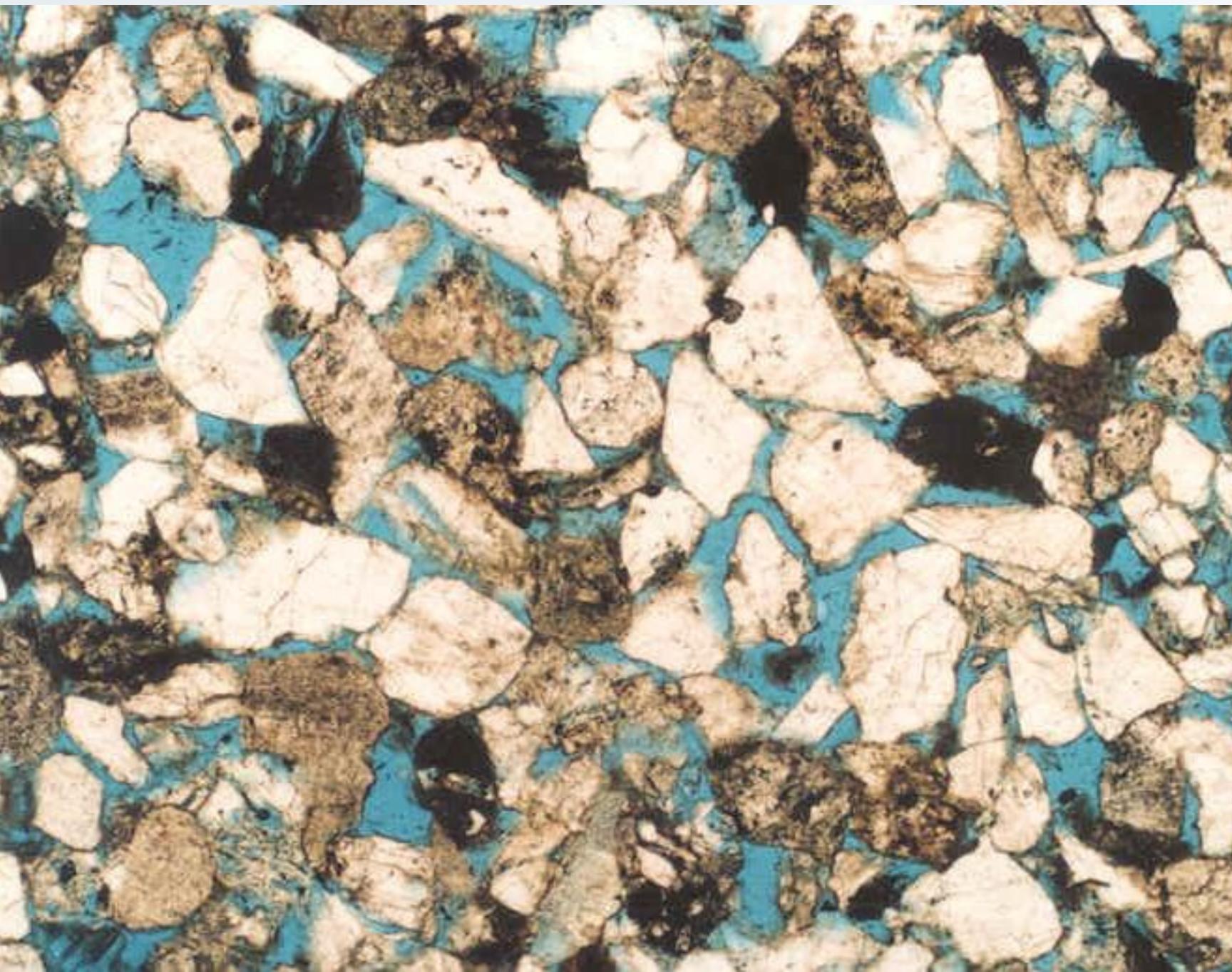




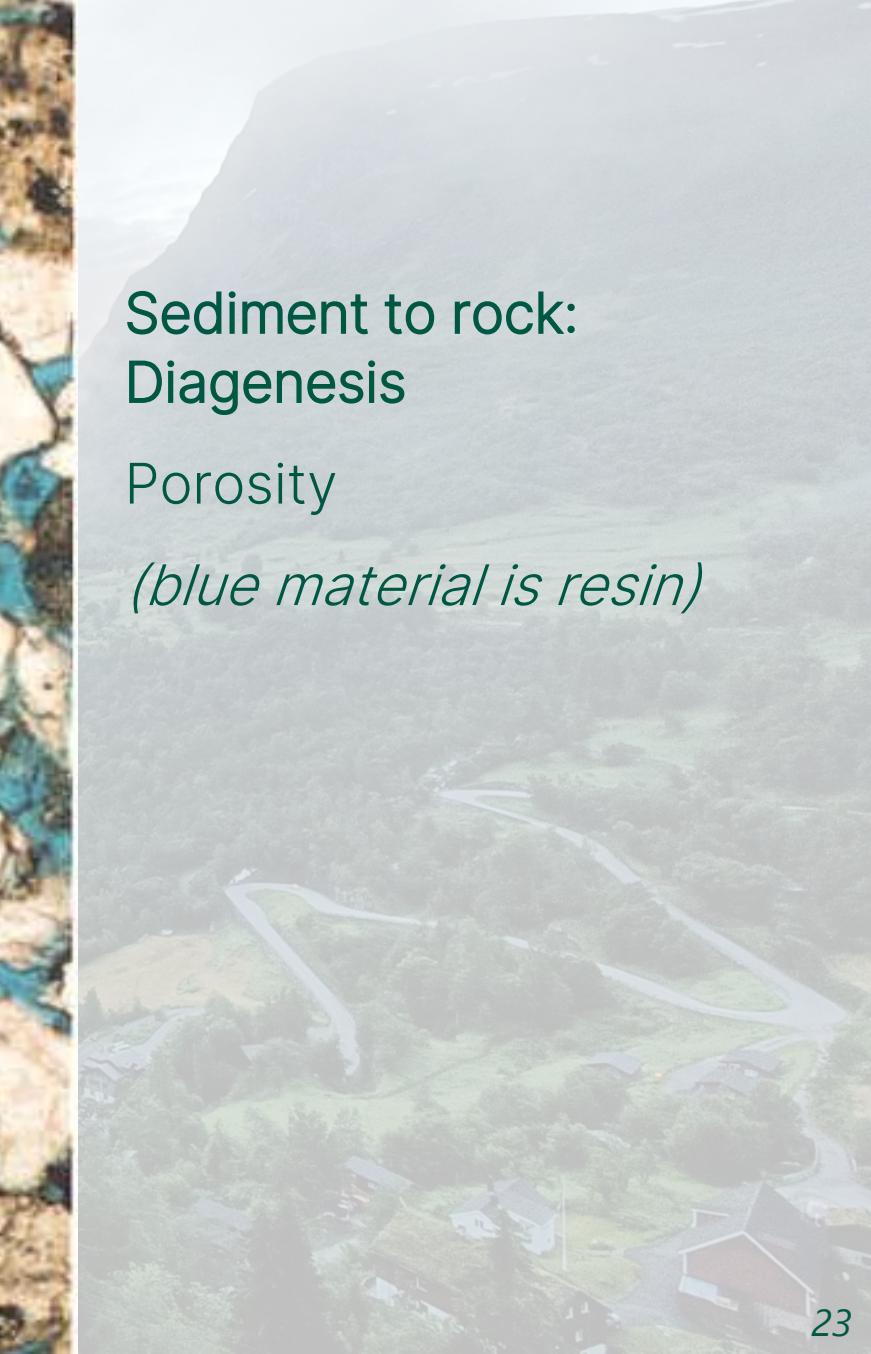
<http://people.uncw.edu/dockal/gly312/sandstonepet/blueepoxy.htm>

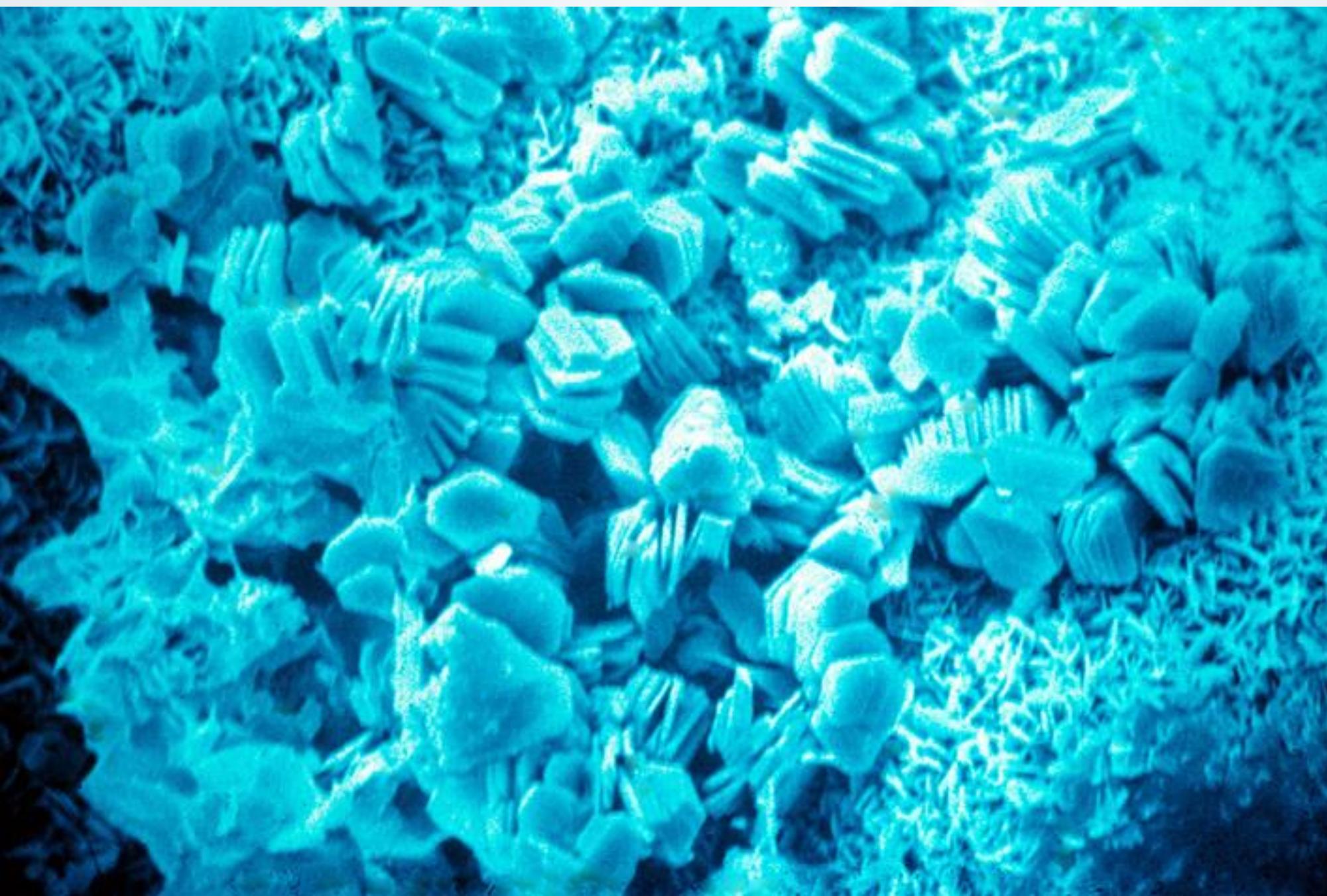


Sediment to rock: Diagenesis | Compaction

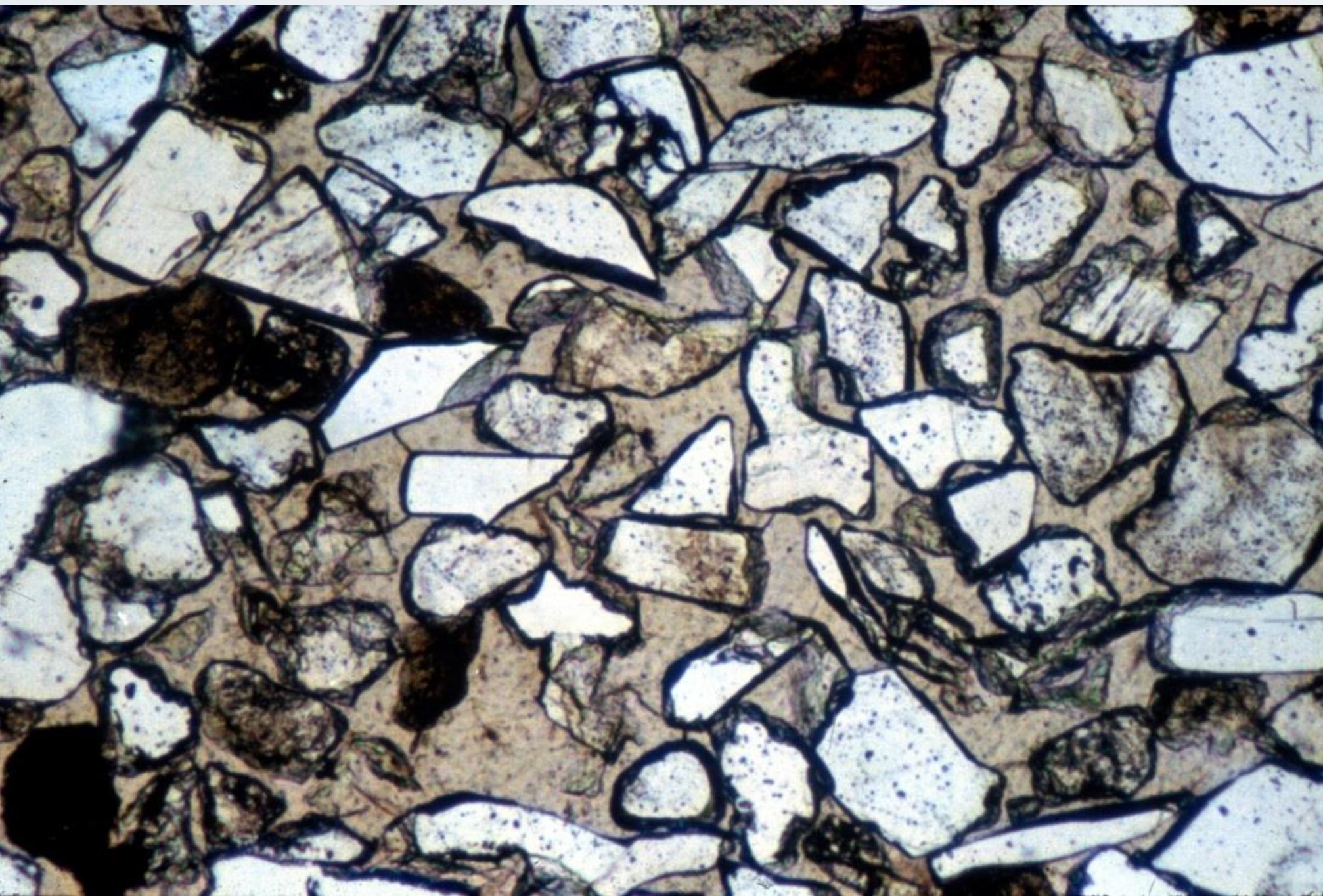


Sediment to rock:
Diagenesis
Porosity
(blue material is resin)

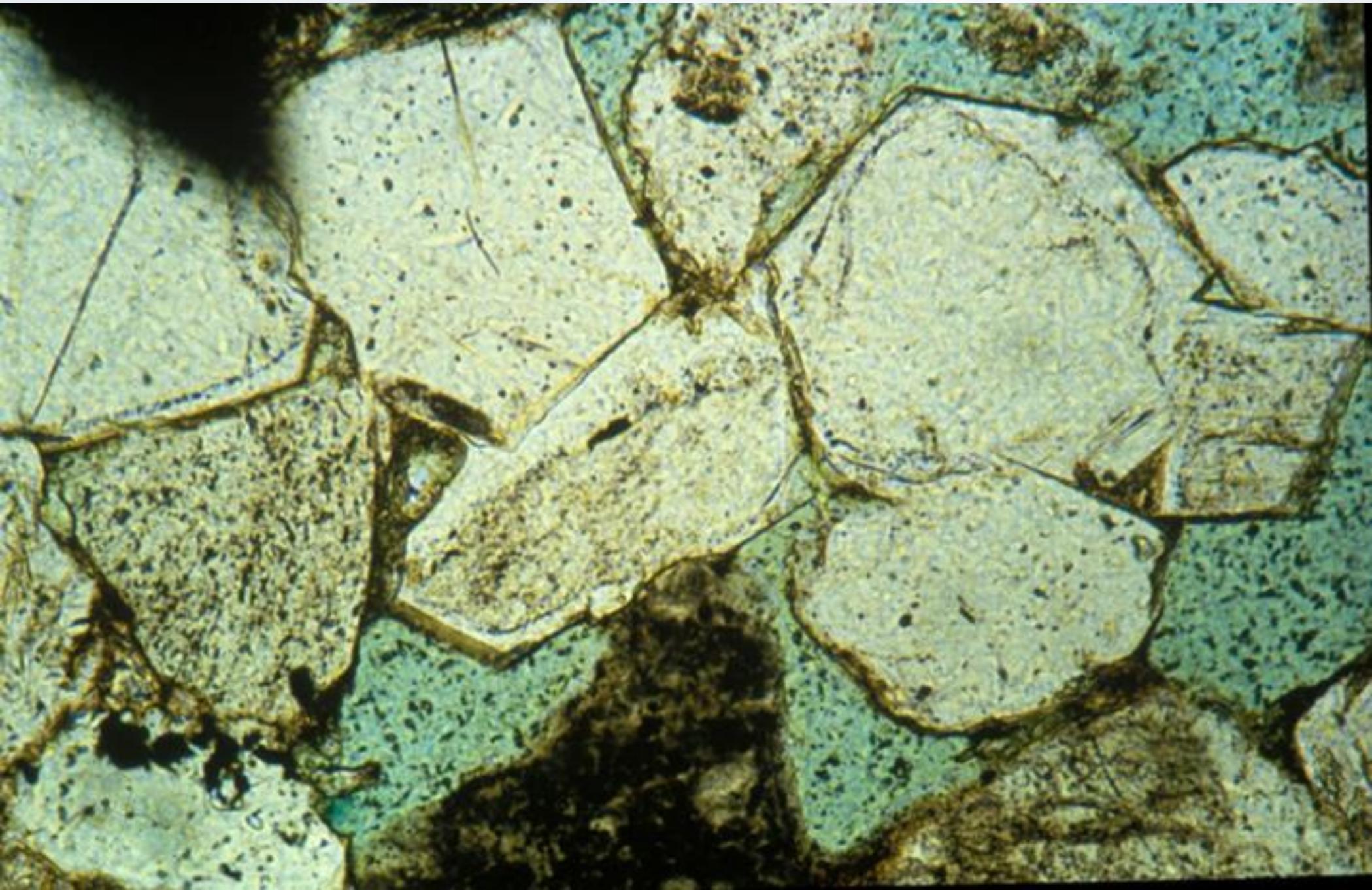




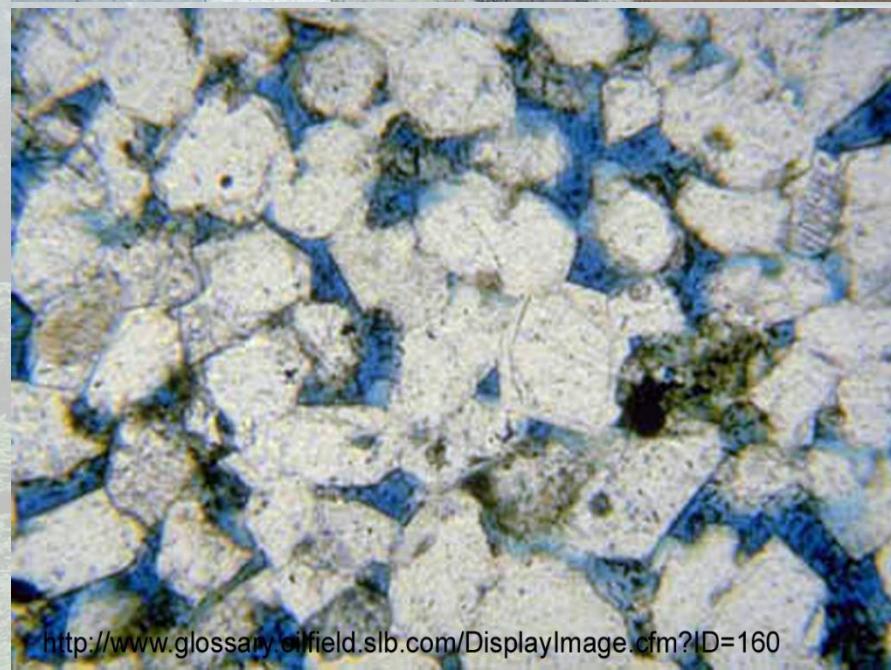
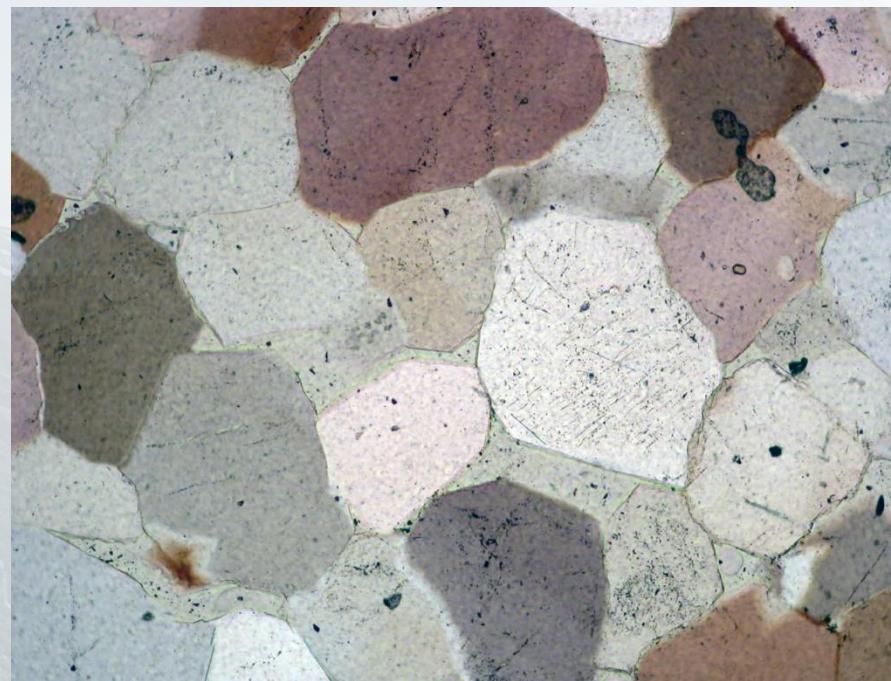
Sediment to rock:
Diagenesis
Authigenesis



Sediment to rock:
Diagenesis
Cement (calcite)



Sediment to
rock: Diagenesis
Cement (quartz)



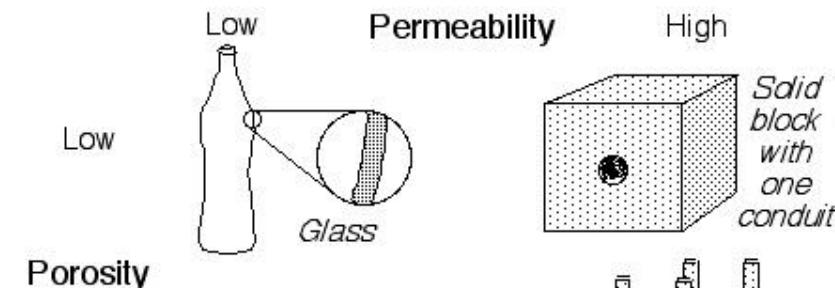
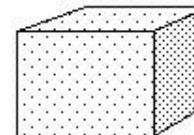
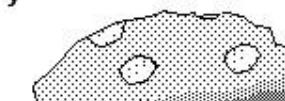
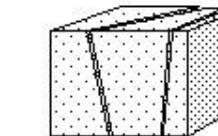
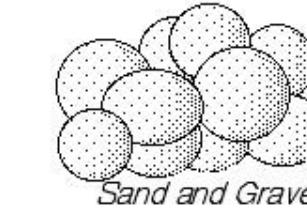
<http://www.glossary.oilfield.slb.com/DisplayImage.cfm?ID=160>

Porosity:

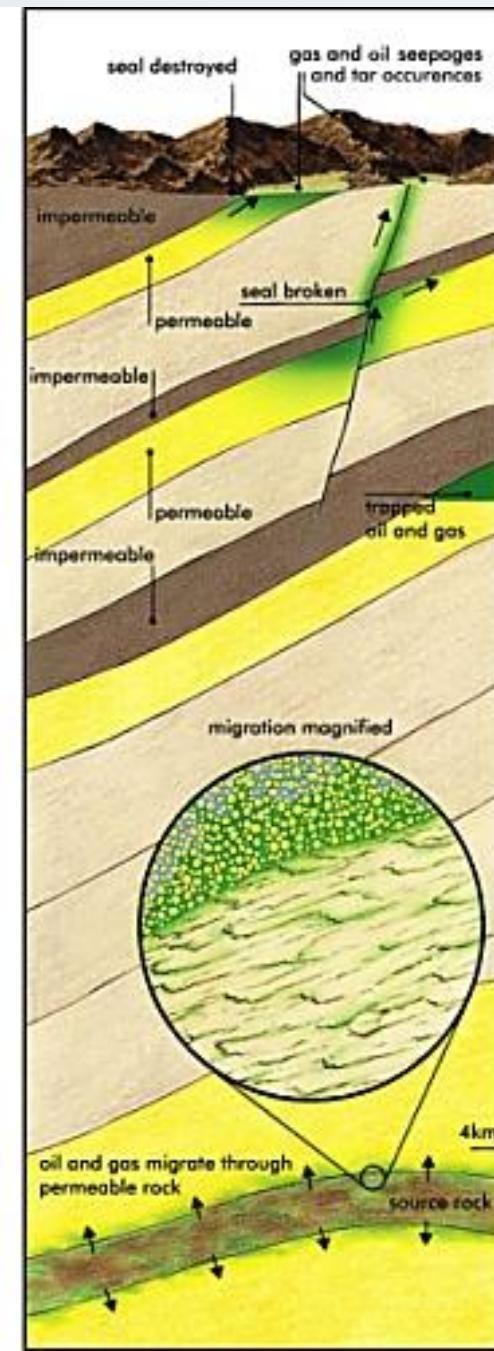
proportion of non-mineral space in a rock or sediment.

Permeability:

extent to which fluids can pass through a rock or sediment.

**Porosity****High****Geologic Examples:****Low****Porosity****High****Permeability****High***Granite**Fractured Granite**Pumice or Vesicular Basalt**Sand and Gravel*

LBR 3/2002

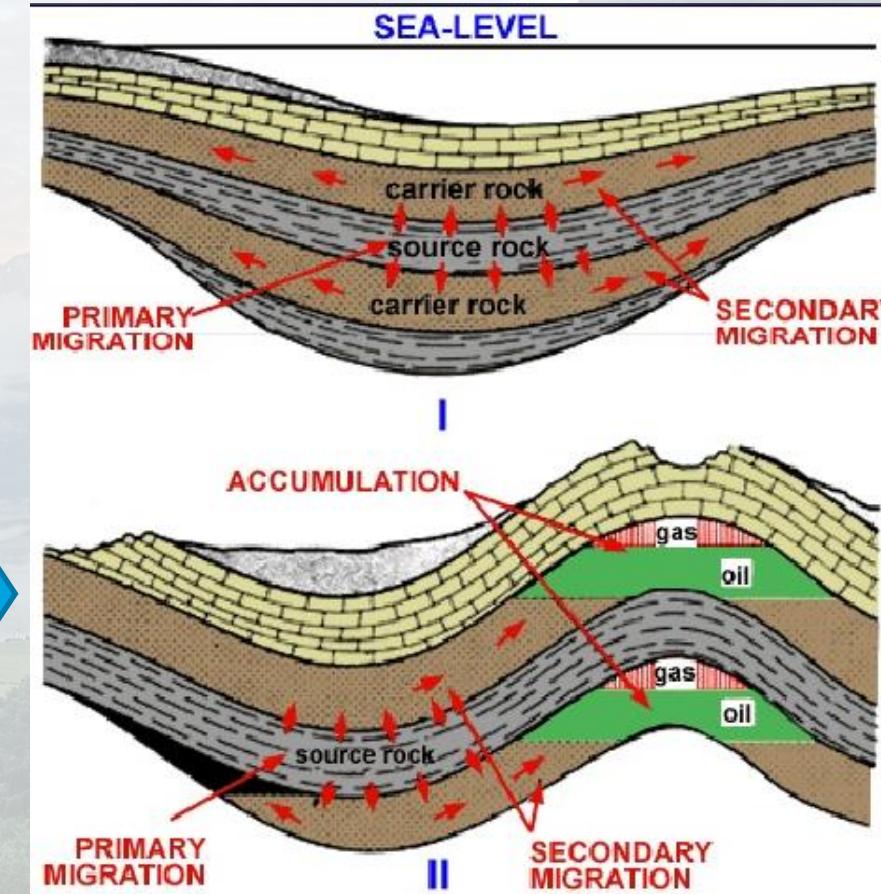


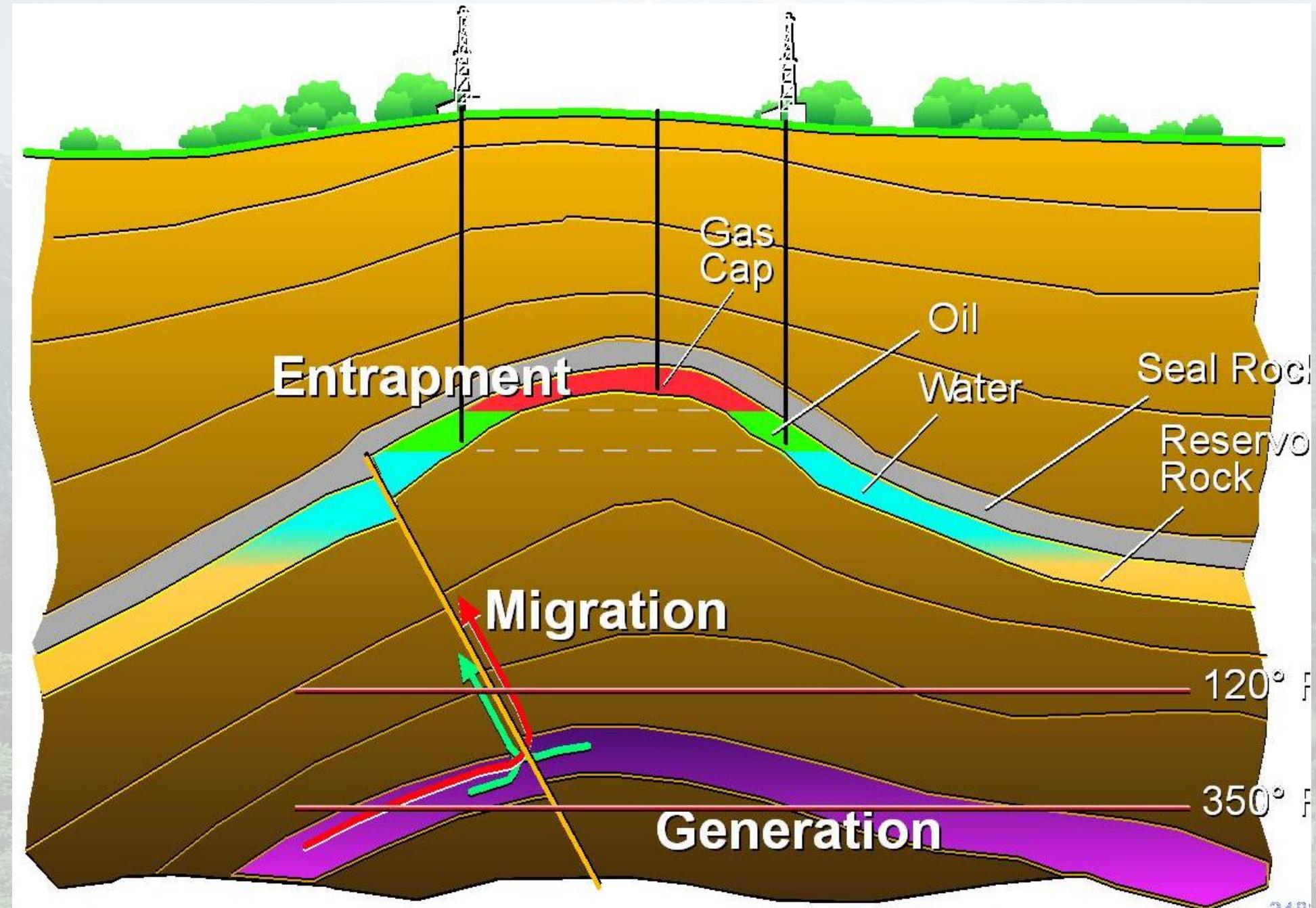
SEAL is mudrock or salt which is impermeable to oil, gas or water

RESERVOIRS have many pores between sand or shell grains

MIGRATION is the buoyant movement of oil or gas for 1 to 200km

SOURCE rocks are rich in fossil organic debris
Plant: gas,
Marine : oil









Glacial
diamictite



Glacial
diamictite









River conglomerates
and river sandstones

Often red due to
oxidation of iron
(just like rusting metal)

























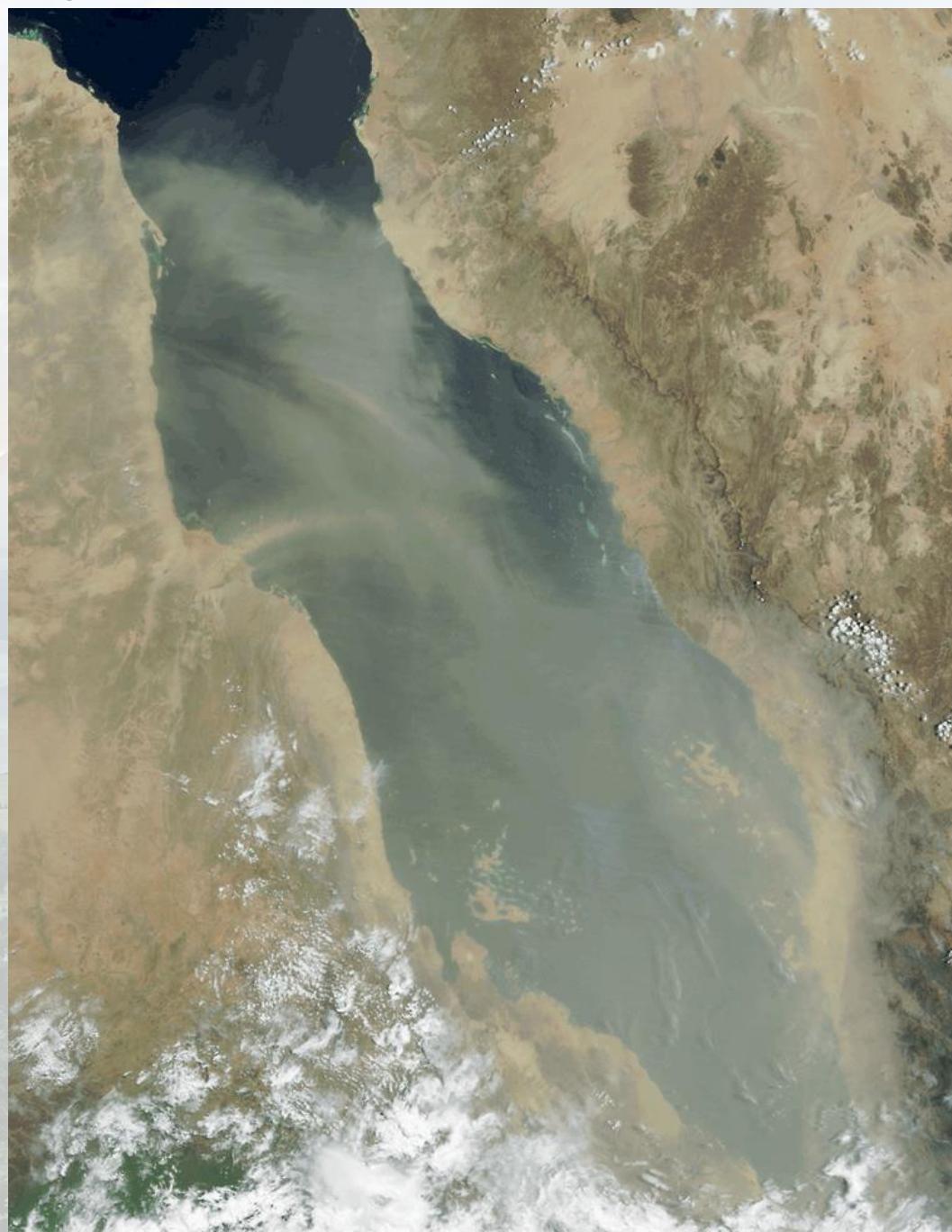
Desert dune sandstones

Usually red due to
oxidation of iron

(just like rusting metal)









Jean Lafitte National Historical Park, Louisiana, USA <http://featherbyfeather.com/2013/03/26/swamp-things/>



Increase in depth of burial and temperature

<0.2 km/0-25°C

0.2-1.5 km/25-40°C

1.5-2.5 km/40-75°C

2.5-6 km/75-180°C

>6 km/>180°C



Peat

Carbon content: <20 %



Lignite

Carbon content: 20–35 %



Sub-Bituminous

Carbon content: 35–45 %



Bituminous

Carbon content: 45–80 %



Anthracite

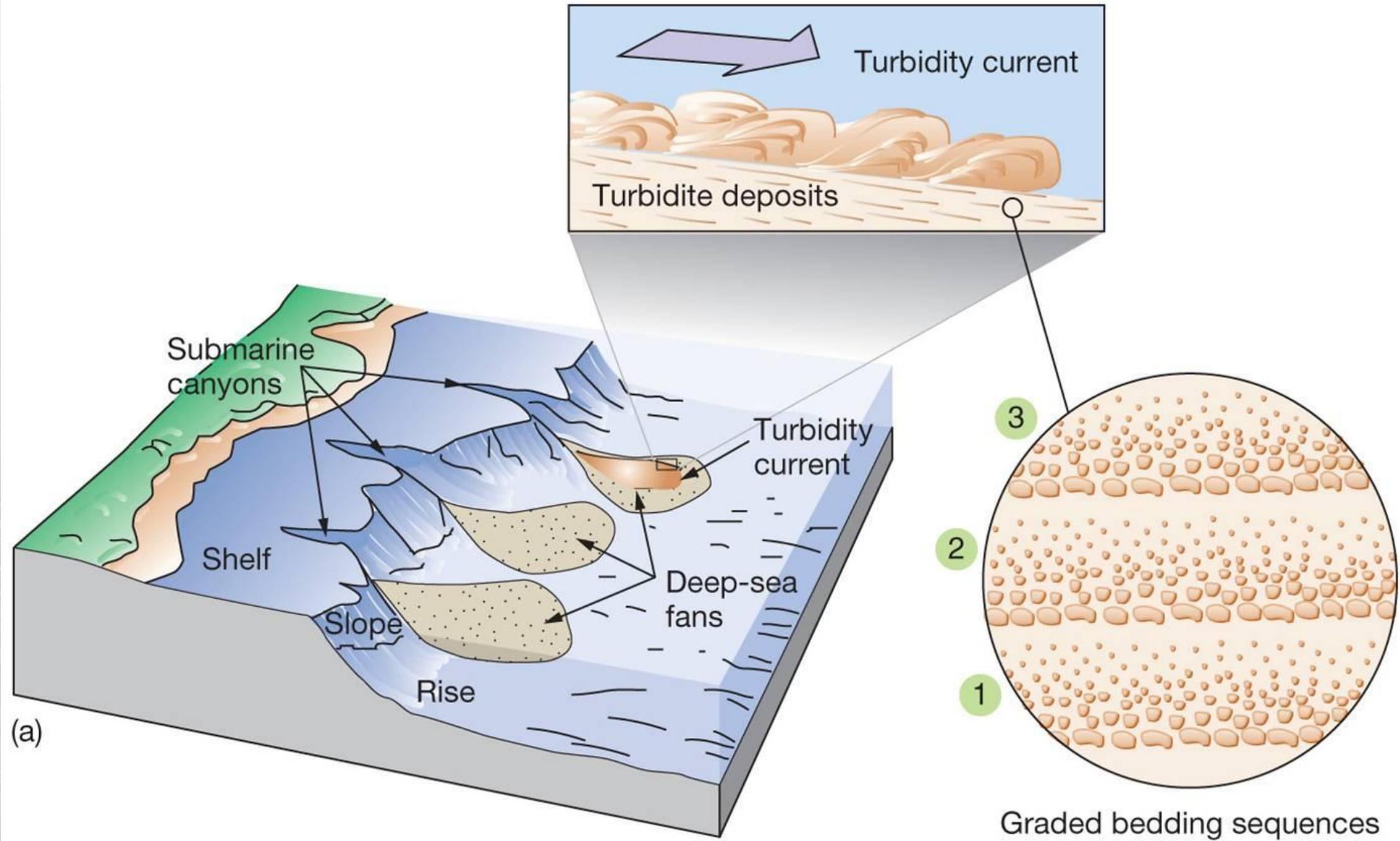
Carbon content: > 80 %



Shallow marine storm-dominated shelf sandstones

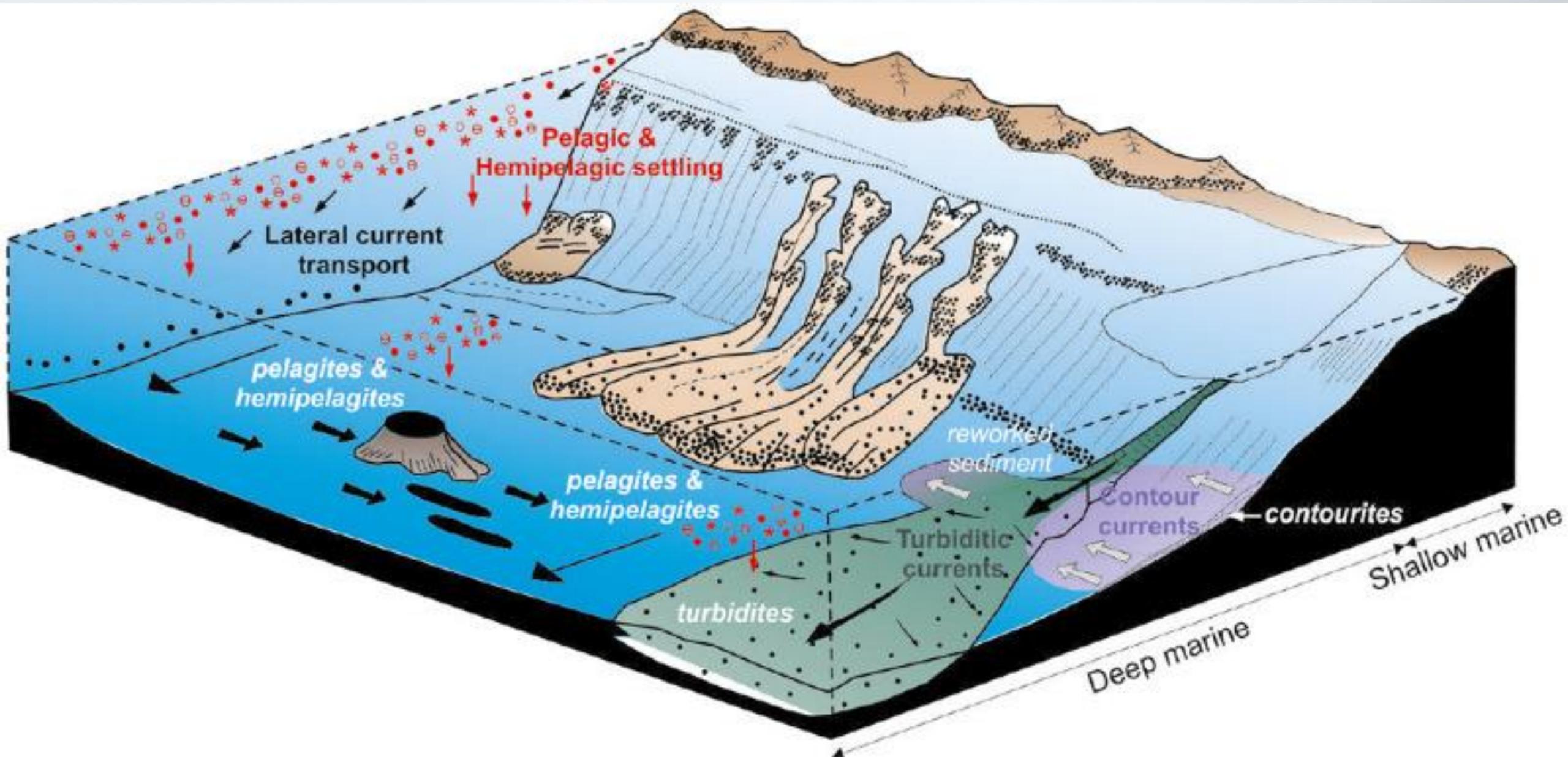
Submarine fan sandstones





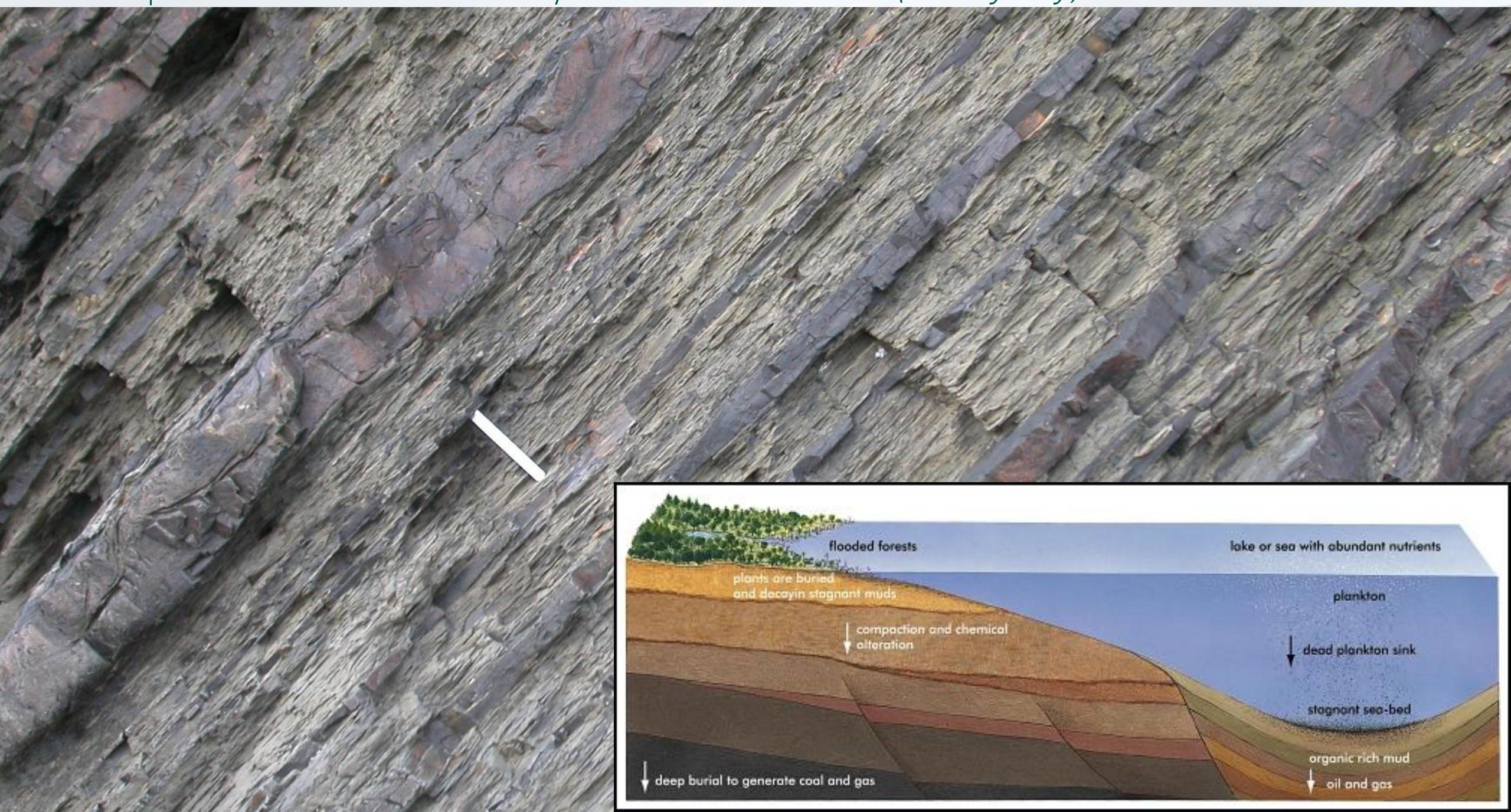
Deep marine turbidite

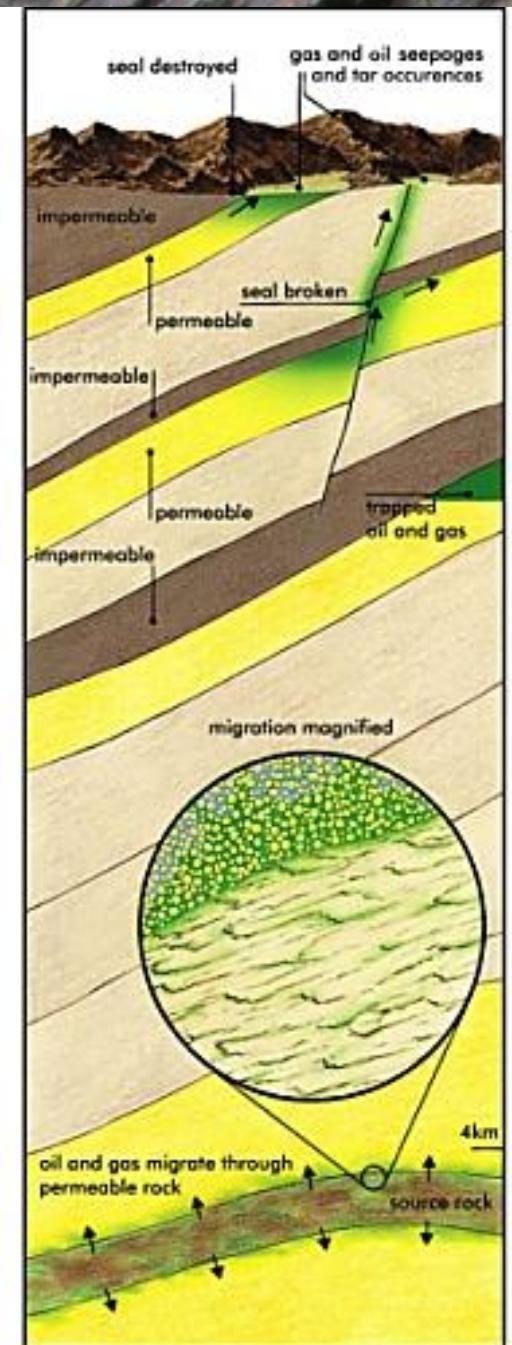




Deep marine contourite
+ deep marine shales







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Plant: gas,
Marine : oil

