Geoarchaeology

Sediments

Describe the sedimentary samples (individually/without partners)

Weathering

- Types: Mechanical, Chemical, and Biologic

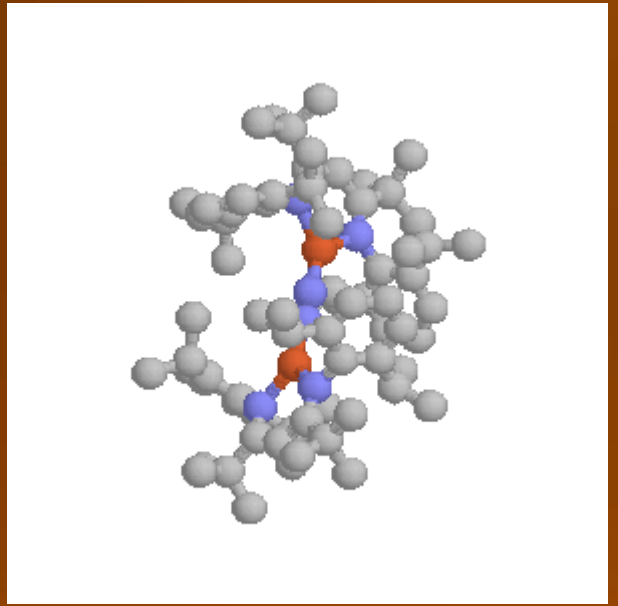
- Converts rock into sediments
  - Converts sediments into smaller sediments
    - Converts sediments into soil
      - Major component of the rock cycle

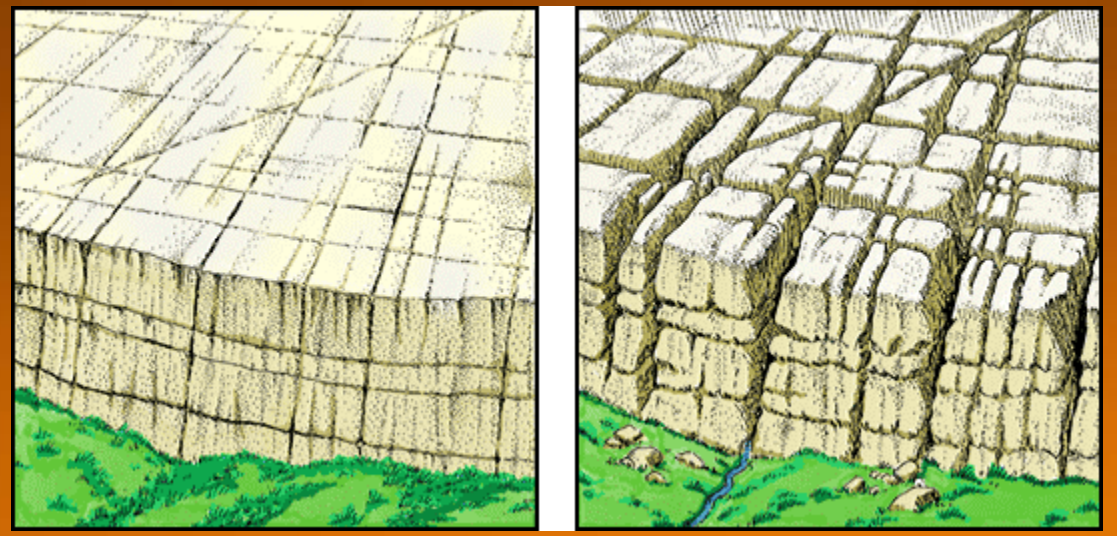
Mechanical

- Dry and cool climates
- End point reduction – sand sized particles
- NOT capable of soil development

Chemical

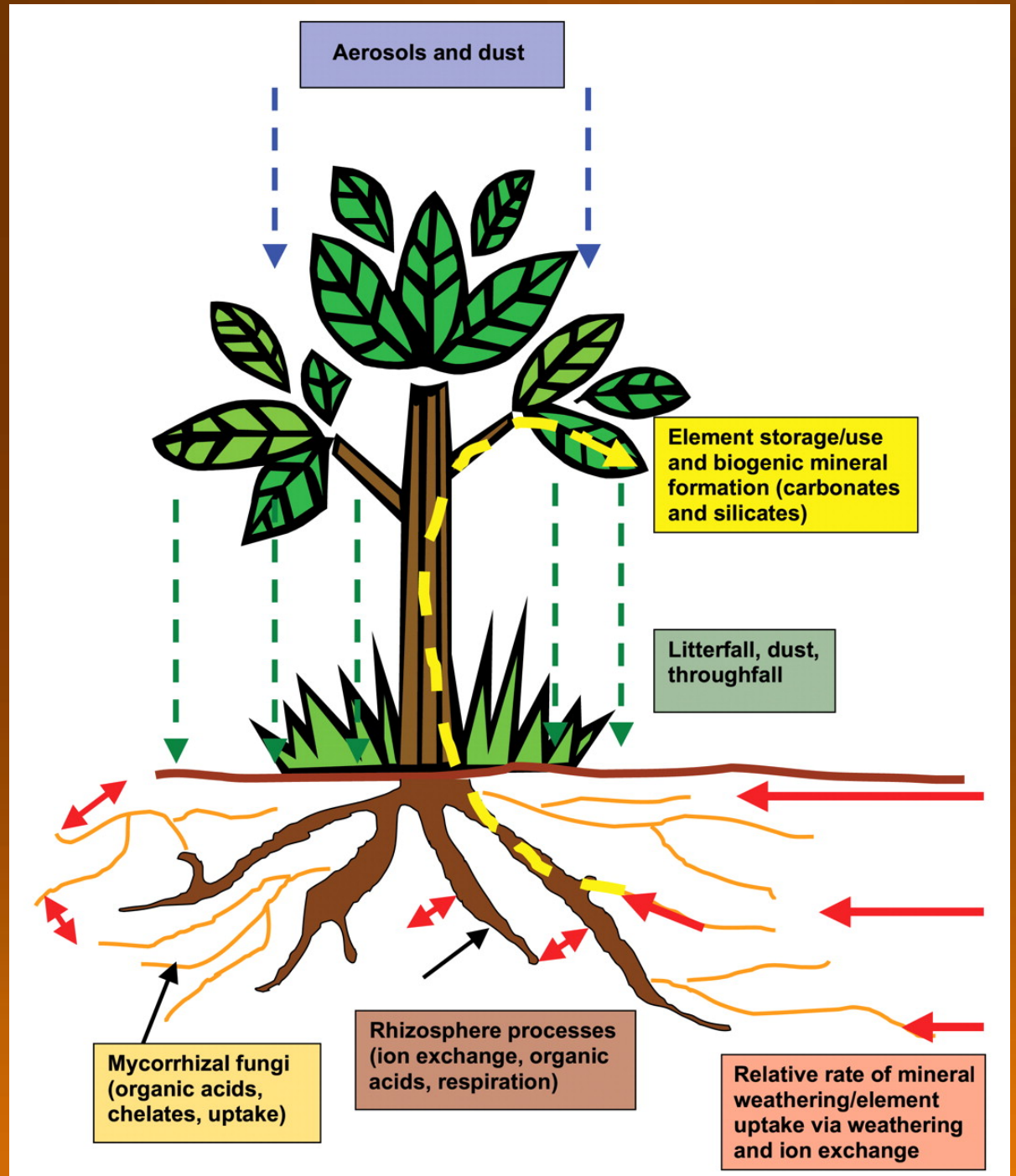
- Humid and warm climates
- End point reduction = clay and dissolved ion
- Necessary for soil development



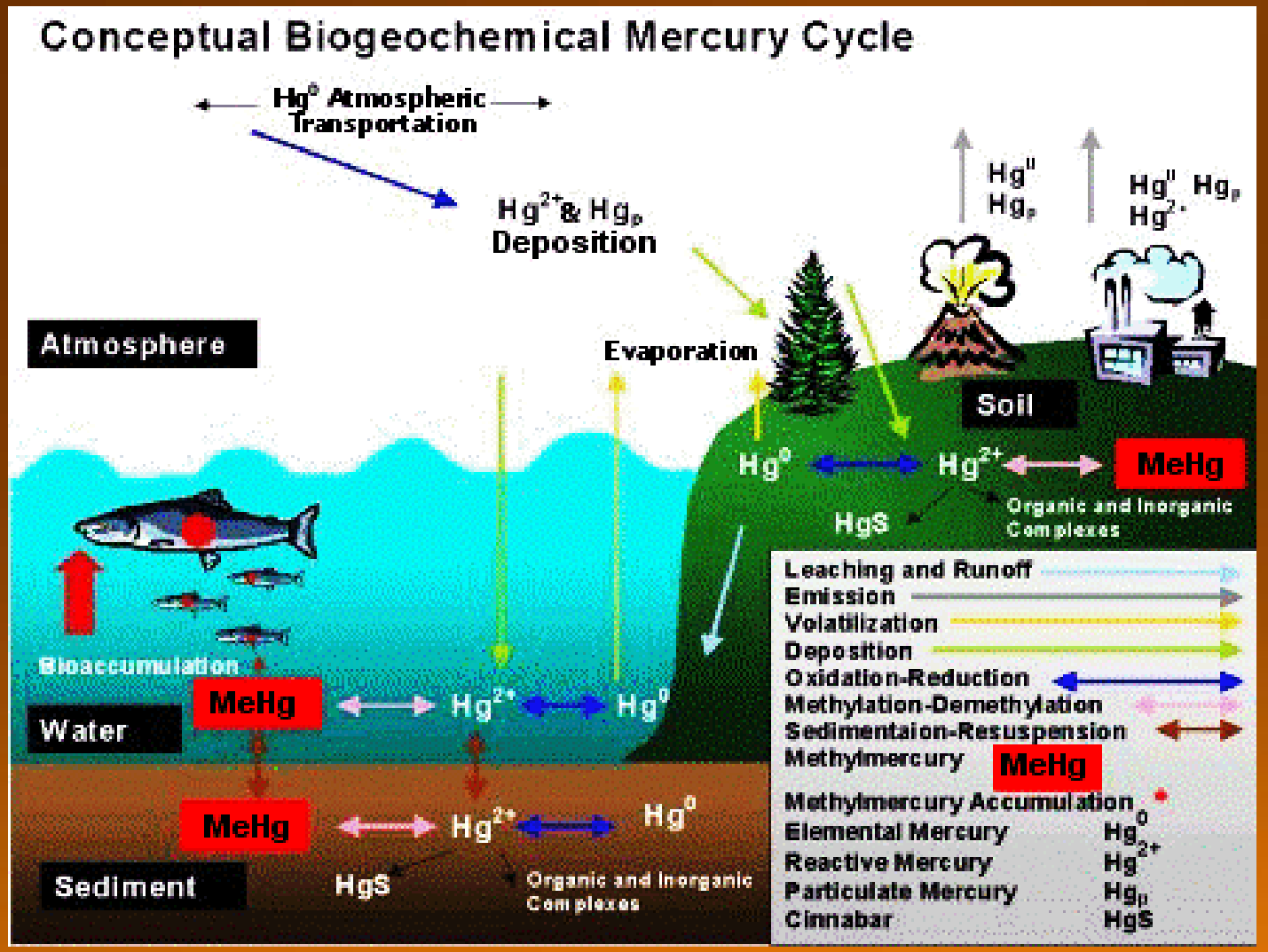


Biologic

- Prefers humid and warm climates, but occurs everywhere on Earth
- Does not act alone, possesses actions in Mechanical and Chemical settings
- Also important in soil development



BioGeoChemical Environments



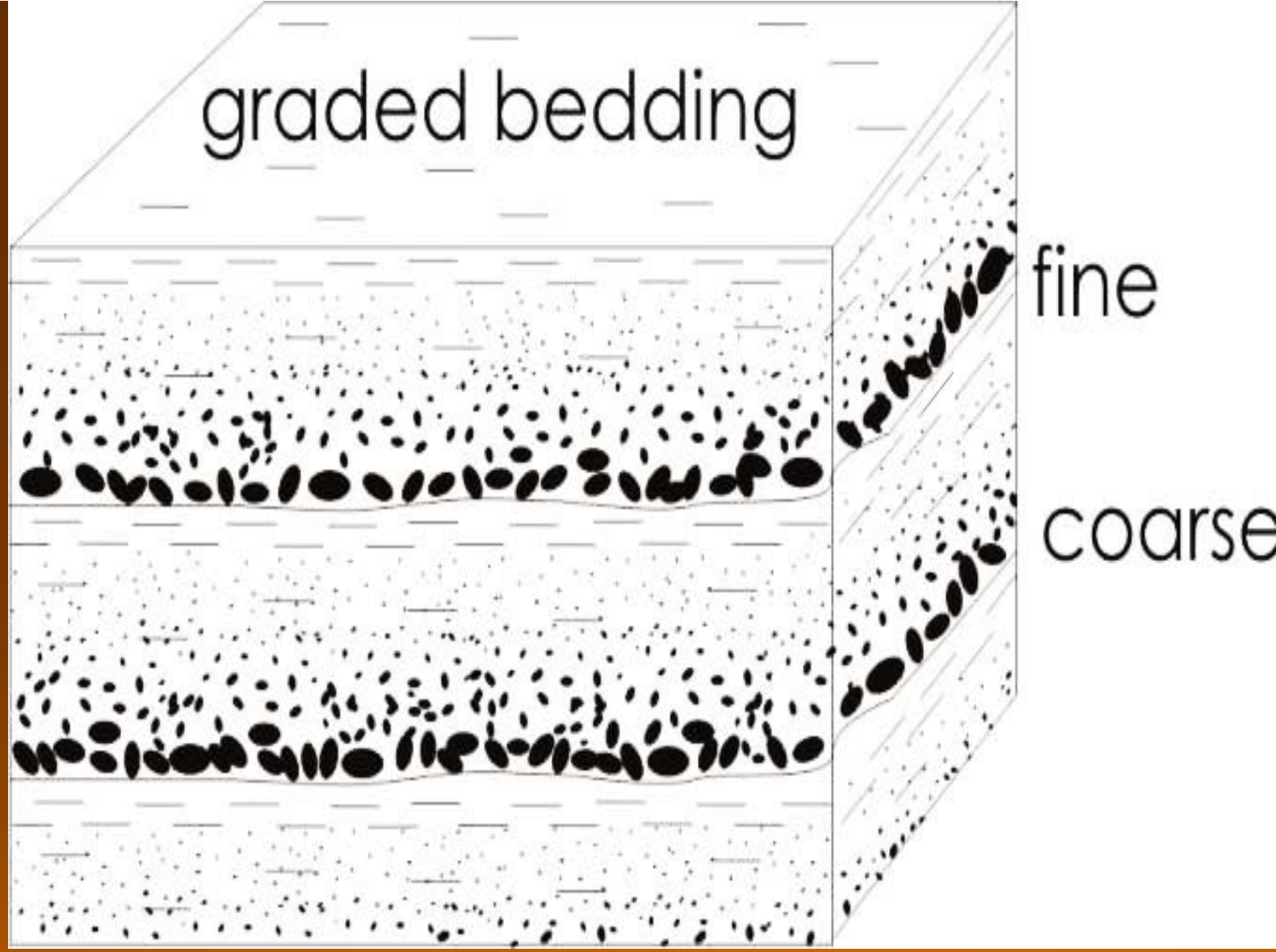
Classification

Sediments are classified upon particle size

Grain Diameter millimeters	Grain Diameter microns	Grain Diameter phi	Wentworth Size Class		
			Boulder		Gravel
256		-8.0	Cobble		Gravel
64		-6.0	Pebble		Gravel
4.0	4000	-2.0	Granule		Gravel
2.0	2000	-1.0			
			vcU	Very coarse sand	Sand
1.41	1410	-0.5	vcL	Very coarse sand	Sand
1.0	1000	0.0			
			cU	Coarse sand	Sand
.71	710	0.5	cL	Coarse sand	Sand
0.5	500	1.0			
			mU	Medium sand	Sand
0.35	350	1.5	mL	Medium sand	Sand
0.25	250	2.0			
			fU	Fine sand	Sand
0.177	177	2.5	fL	Fine sand	Sand
0.125	125	3.0			
			vfU	Very fine sand	Sand
0.088	88	3.5	vfL	Very fine sand	Sand
0.0625	62.5	4.0			
			Silt		Mud
0.002	2.0	9.0	Clay		Mud

Secondary characterizations

- Color (Munsell)
- Roundness
- Sphericity
- Sorting
- Gradation



Applied learning, Part 2

- Characterize the provided sediment samples…

Energy transfer = Landscape change

Transportation

- Energy increase break the 'Critical thresholds'
- Pathways
  - Rivers
  - Ice
  - Wind
  - Gravity

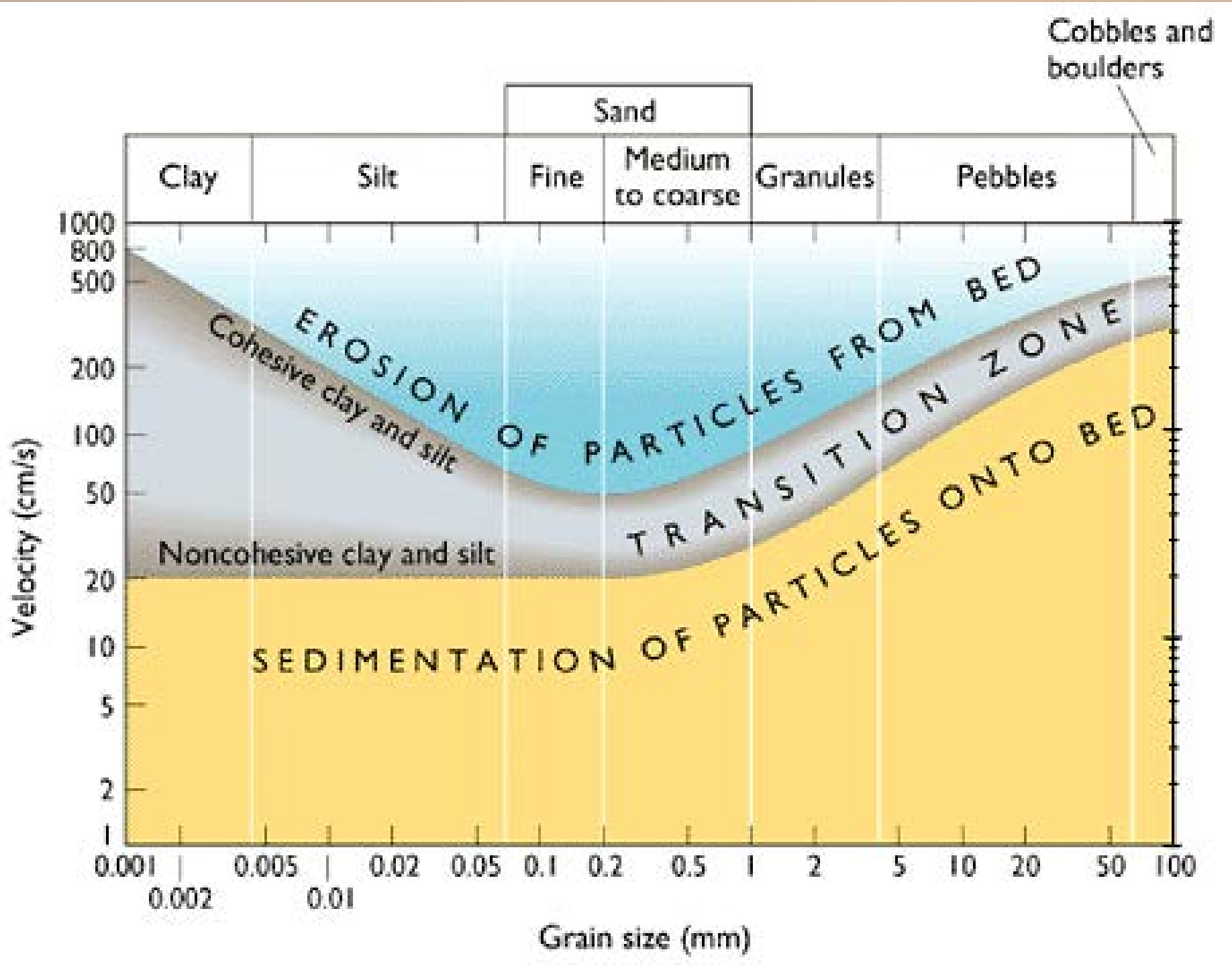
Deposition

- Energy decrease vs. particle traits
- Produces specific sediment patterns, structures, and associations

Two important geologic concepts

- Uniformitarianism
- Superposition

Hjulström curve



Sedimentary *maturity*

Immature

- Physical = Large
- Sorting = Mixed (large next to small)
- Chemical = Heterogeneous
- Color = Multiple (Blk/red/white)
- Roundness = Rounded
- Sphericity = Spherical

Mature

- Physical = Small
- Sorting (Uniform size)
- Chemical = Homogeneous
- Color = Singular / light
- Roundness = Angular
- Sphericity = Non-spherical

Bonus Activity

- Using only materials in your possession create a representation of :
  - Immature sediment Vs. Mature sediment!
  - In less than 5 minutes!
- 5 points to the best example!
- Go!

Relevance to the Archaeological Record

- Location, Location, Location
  - Site placement
    - Resources
    - Strategic
    - Spiritual
  - Primary versus secondary

- BioGeoChemical environment
  - Site preservation
  - Site conservation

Landscapes

- Where do humans choose to live…

Anthropogenic Landscapes (Week 4)

1. Rock Shelters and Caves
2. Alluvial/Rivers Humid
3. Alluvial/Rivers Dry
4. Lake margin
5. Coastal
6. Wetlands
7. Deserts
8. Glacial

What do we know about these places?