

Sedimentary Structures:

- Features in sedimentary rocks that reflect depositional or diagenetic processes.
 - Diagenesis:
 - physical and/or chemical changes to sediments following deposition and up to metamorphism.

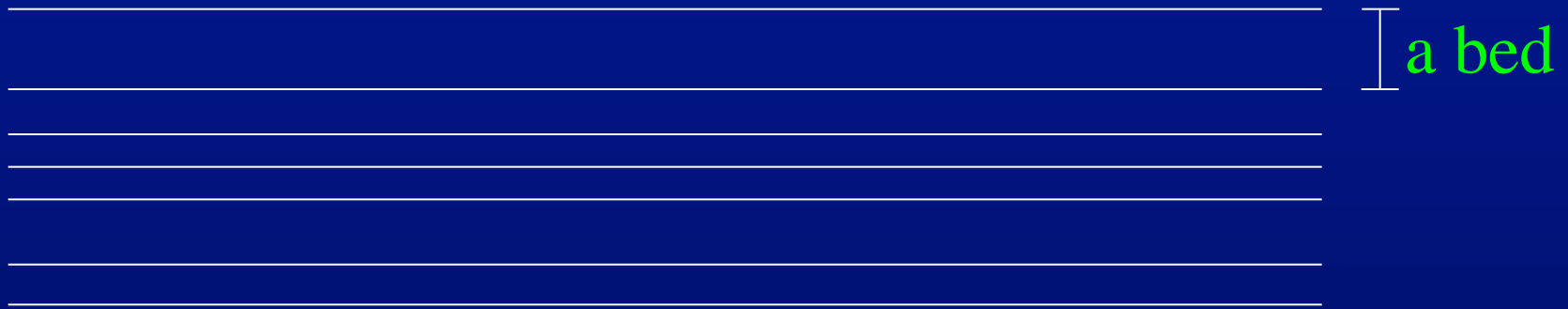
Sedimentary Structures:

- Sedimentary structures can sometimes yield information on:
 - paleocurrent direction, and
 - stratigraphic “up” direction
 - Latter is useful if working in folded and potentially overturned rocks.



Sedimentary Structures:

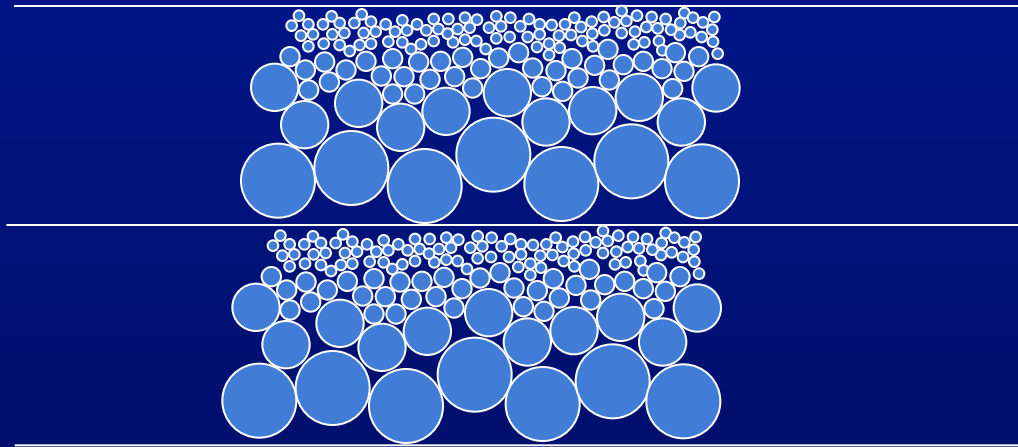
- 1) bedding:
 - sediments deposited in layers (most commonly parallel to Earth's surface)



If layers are thinner than 1 cm, typically termed “laminations”

Sedimentary Structures:

- 2) graded bedding:
 - coarser sediments on bottom



Deposition from a **waning** current

Sedimentary Structures:

- 2) graded bedding:



Sedimentary Structures:

- 2) graded bedding:



Sedimentary Structures:

- 2) graded bedding:



Sedimentary Structures:

- 3) imbricated clasts:
 - flattened clasts imbricated in stream bottom:



Can't be used for stratigraphic "up"

Sedimentary Structures:

- 3) imbricated clasts:



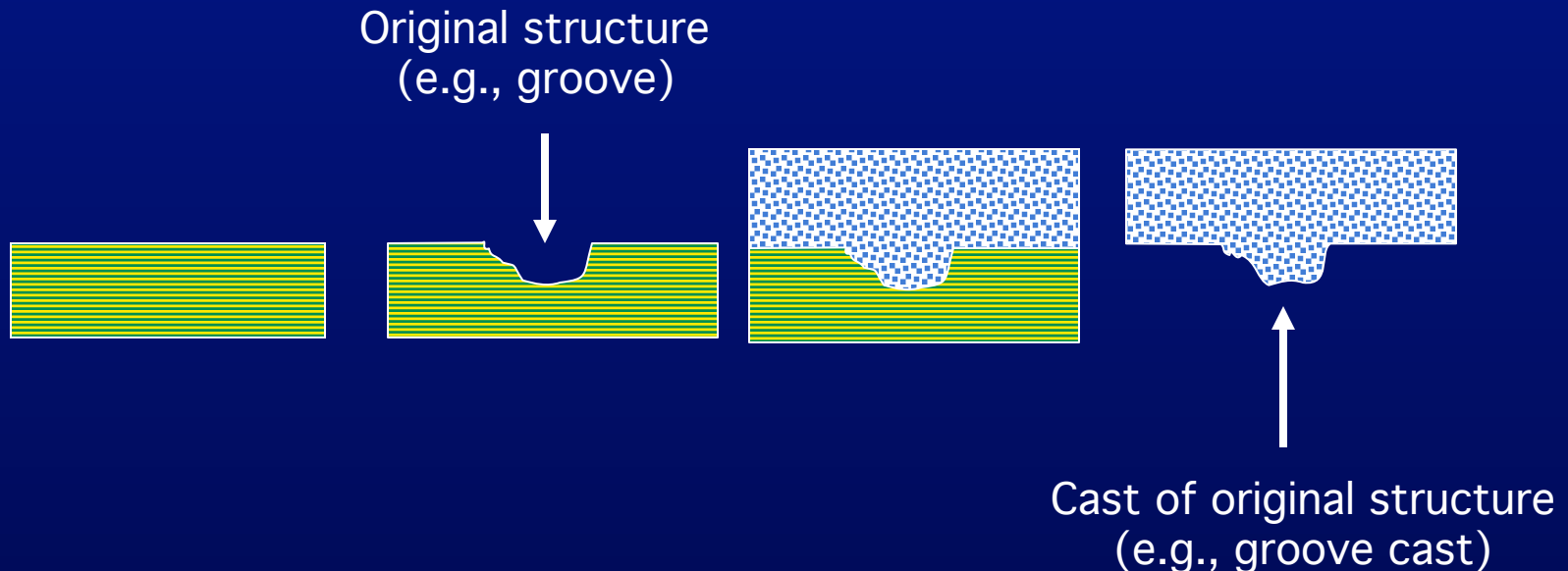
Sedimentary Structures:

- 3) imbricated clasts:



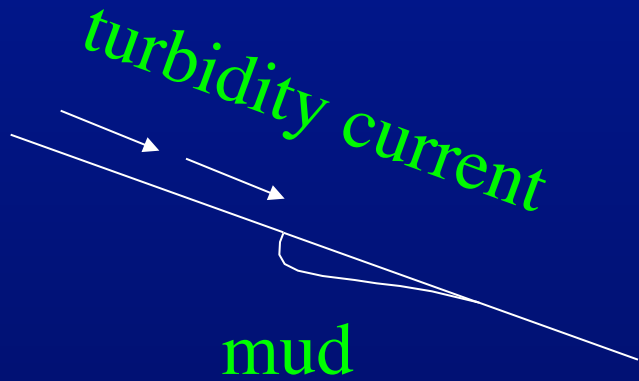
Sedimentary Structures:

- 4) Sole Marks & Casts:
 - Sedimentary structures preserved on the underside of a bed
 - Typically an infilling (cast) of a depression in the underlying bed

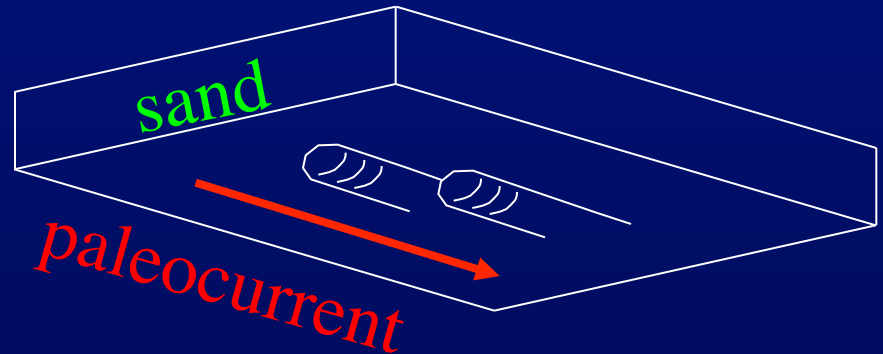


Sedimentary Structures:

- 4) Sole Marks I; flute casts
 - Scoured out depressions in mud (usually associated with turbidity currents).



up ↑



Steep side faces current!

Sedimentary Structures:

- 4) flute casts:



Sedimentary Structures:

- 4) flute casts:



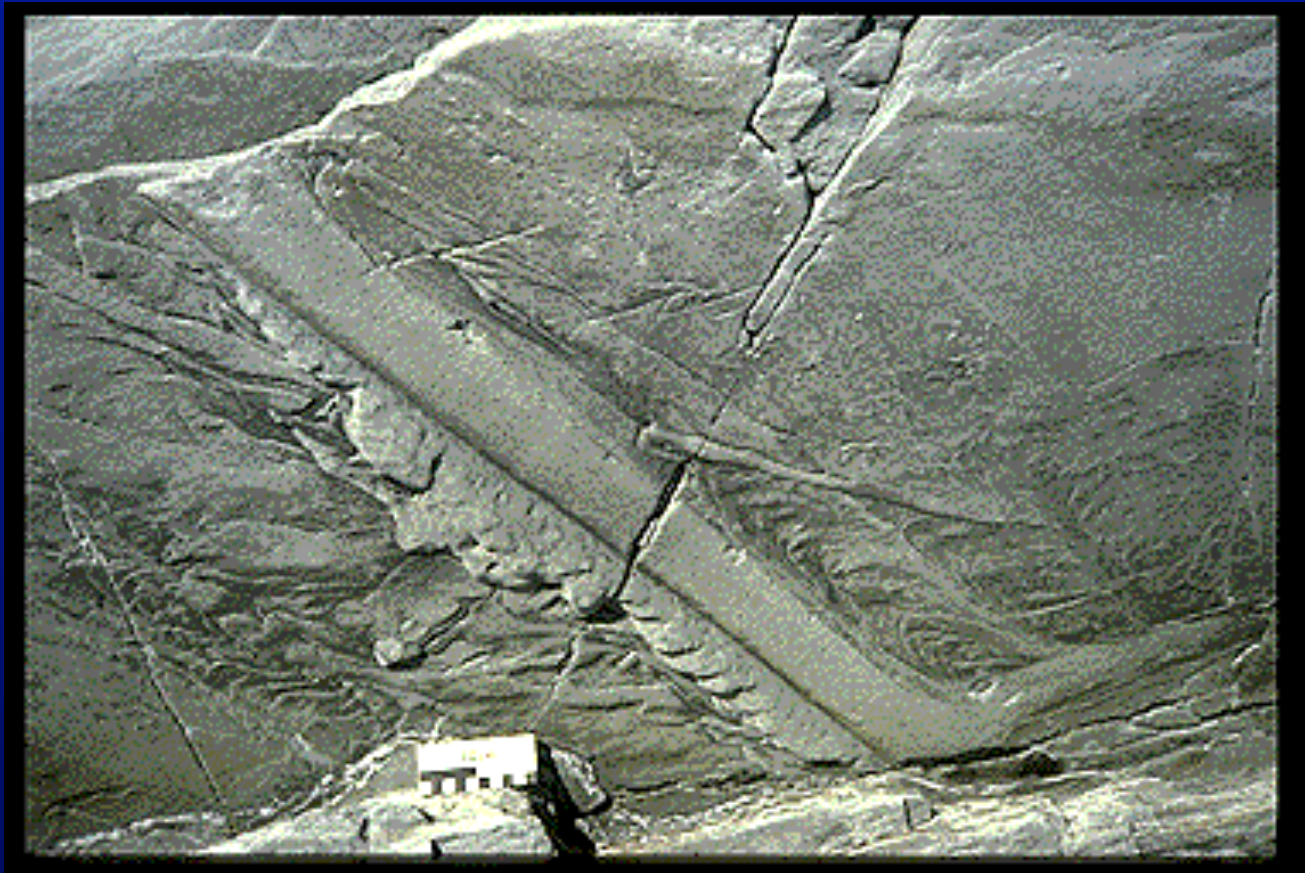
Sedimentary Structures:

- 4) flute casts:



Sedimentary Structures:

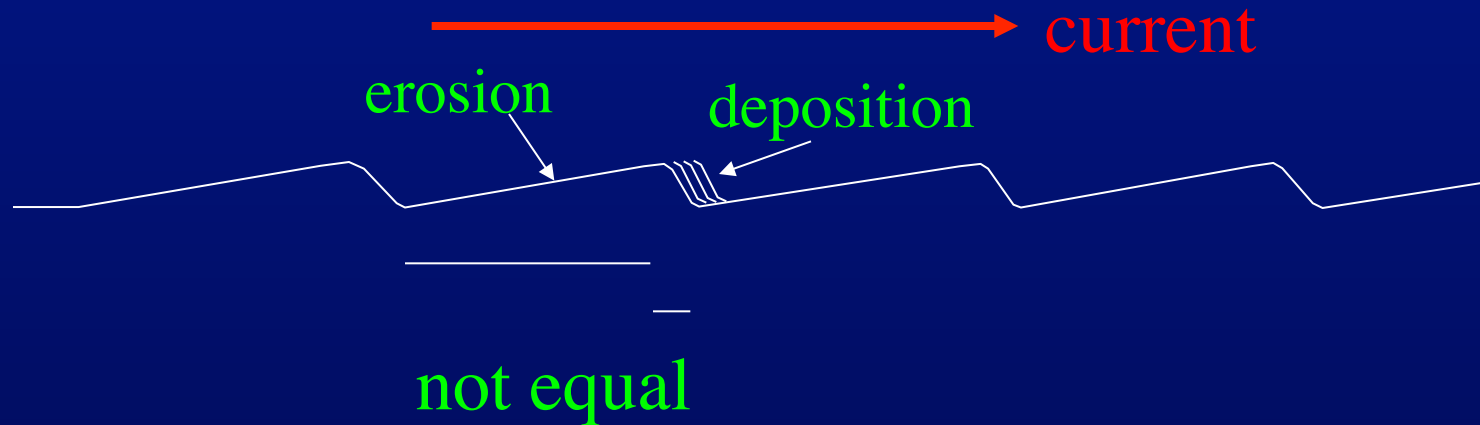
- 4) Sole Marks II: groove casts



Sedimentary Structures:

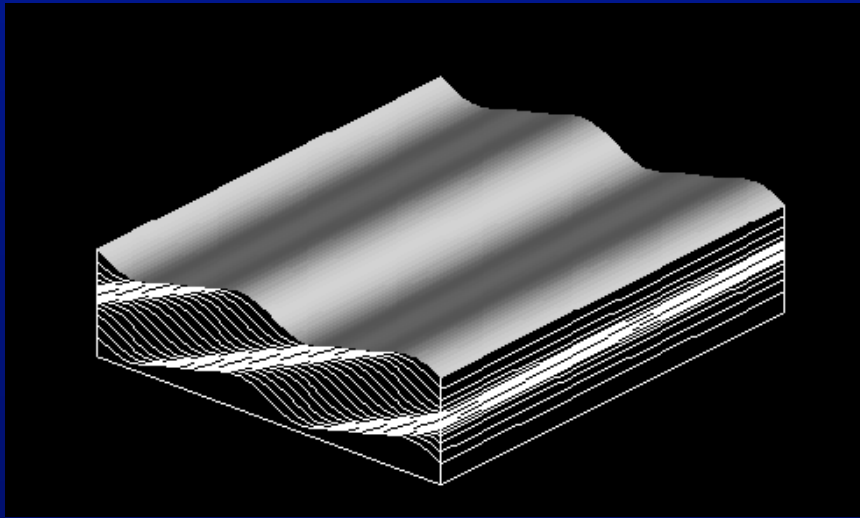
- 5) current ripple marks:

Current ripples are asymmetric...



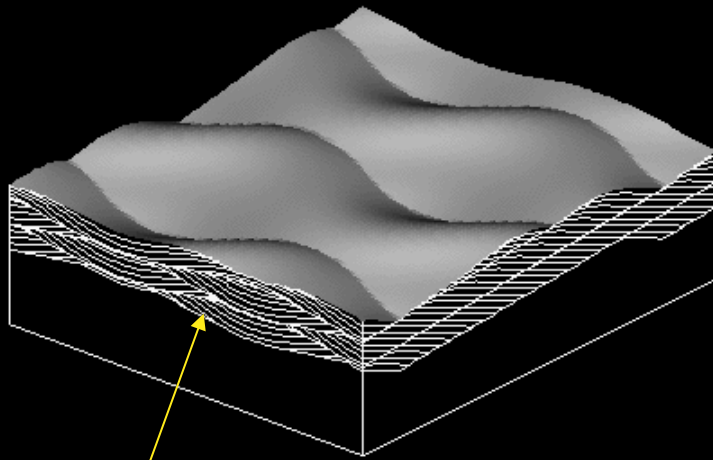
Sedimentary Structures:

- 5) current ripple marks:

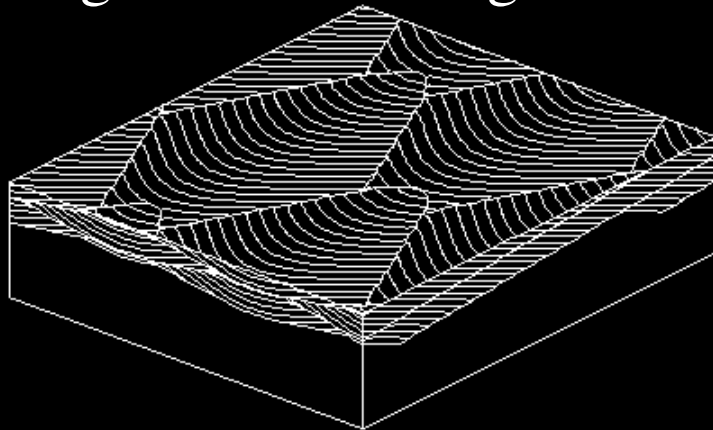


Sedimentary Structures:

- 5) current ripple marks:



trough cross-bedding

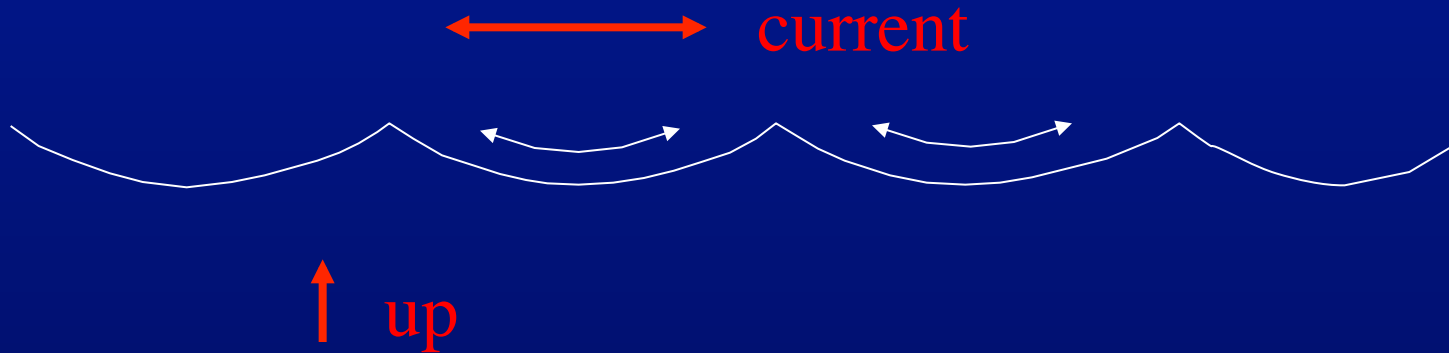


Three-dimensional ripples

Sedimentary Structures:

- 6) oscillation ripple marks:

oscillation ripples are symmetric...



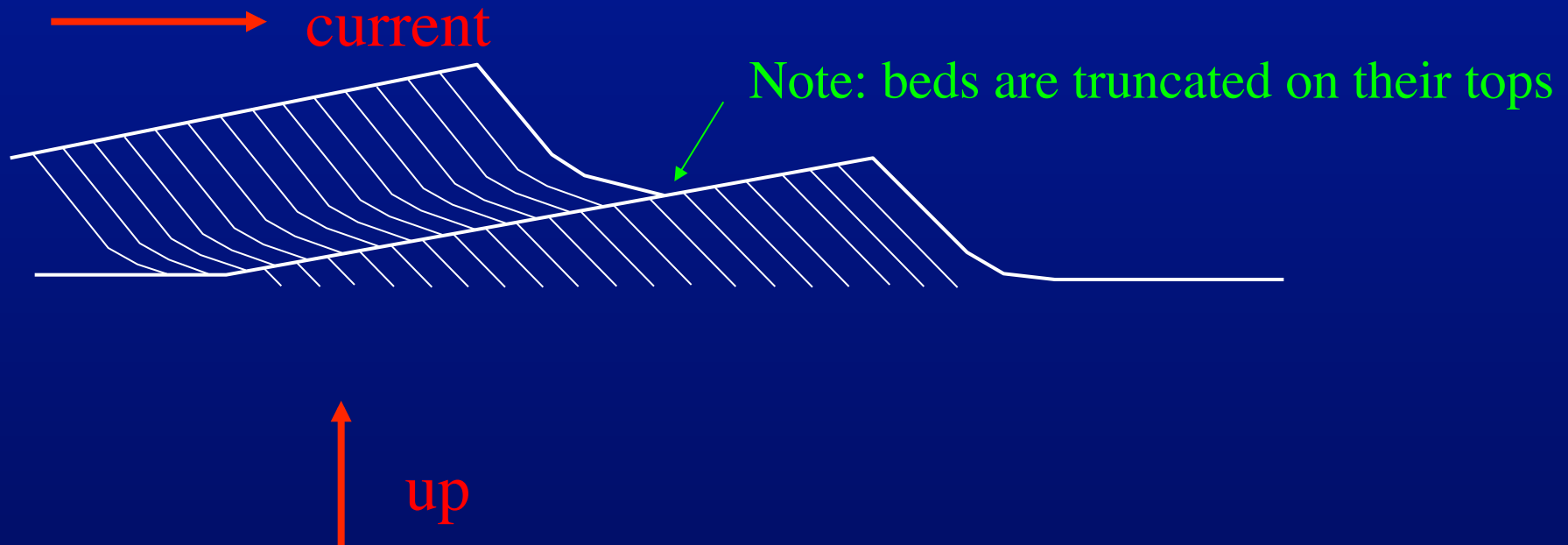
Sedimentary Structures:

- 6) oscillation ripple marks :



Sedimentary Structures:

- 7) cross beds :
 - Internal structure of ripples or dunes



Sedimentary Structures:

- 7) cross beds :



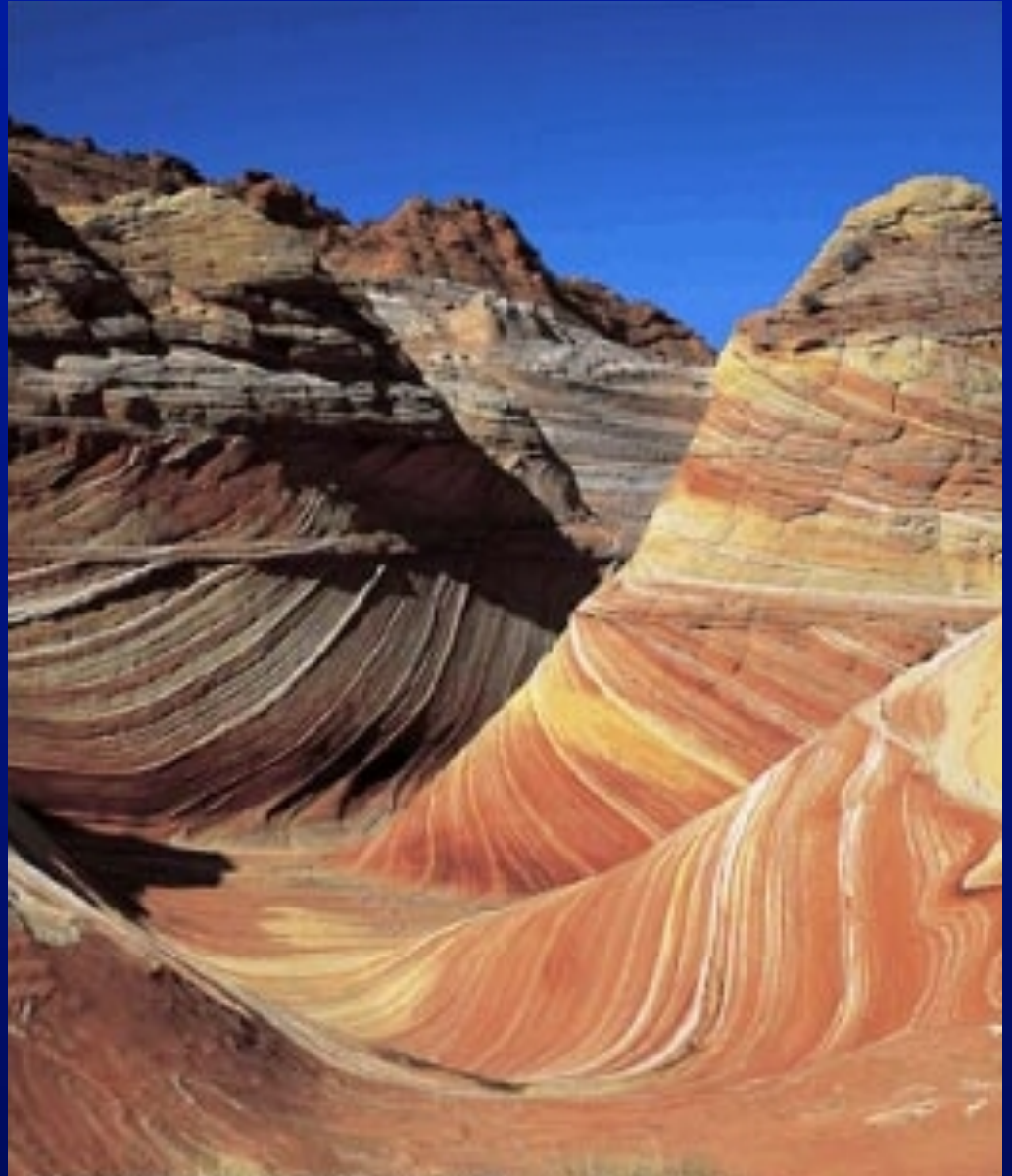
Sedimentary Structures:

- 7) cross beds :



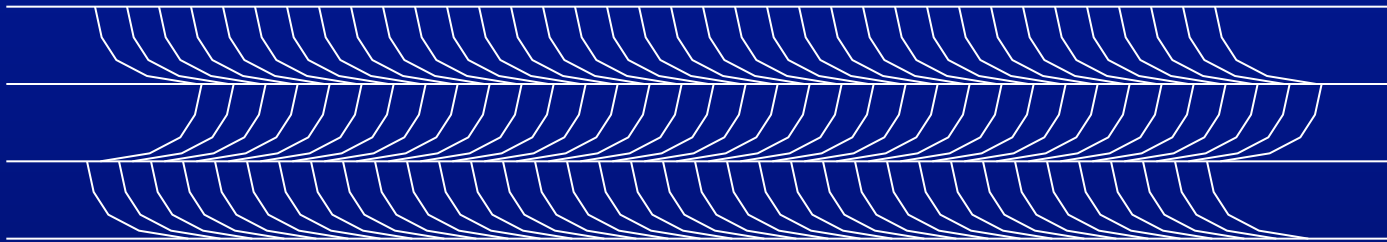
Sedimentary Structures:

- 7) cross beds :



Sedimentary Structures:

- 8) herringbone cross beds:



Common in areas with tidal influence...

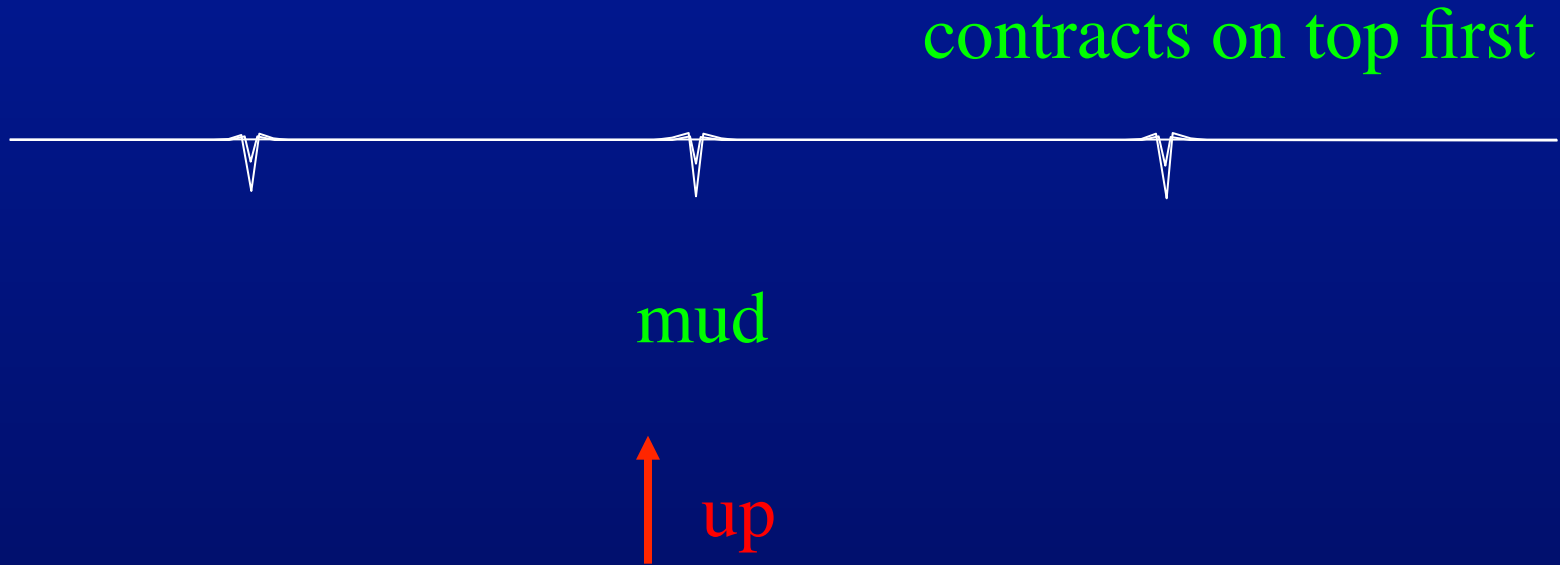
Sedimentary Structures:

- 8) herringbone cross beds:



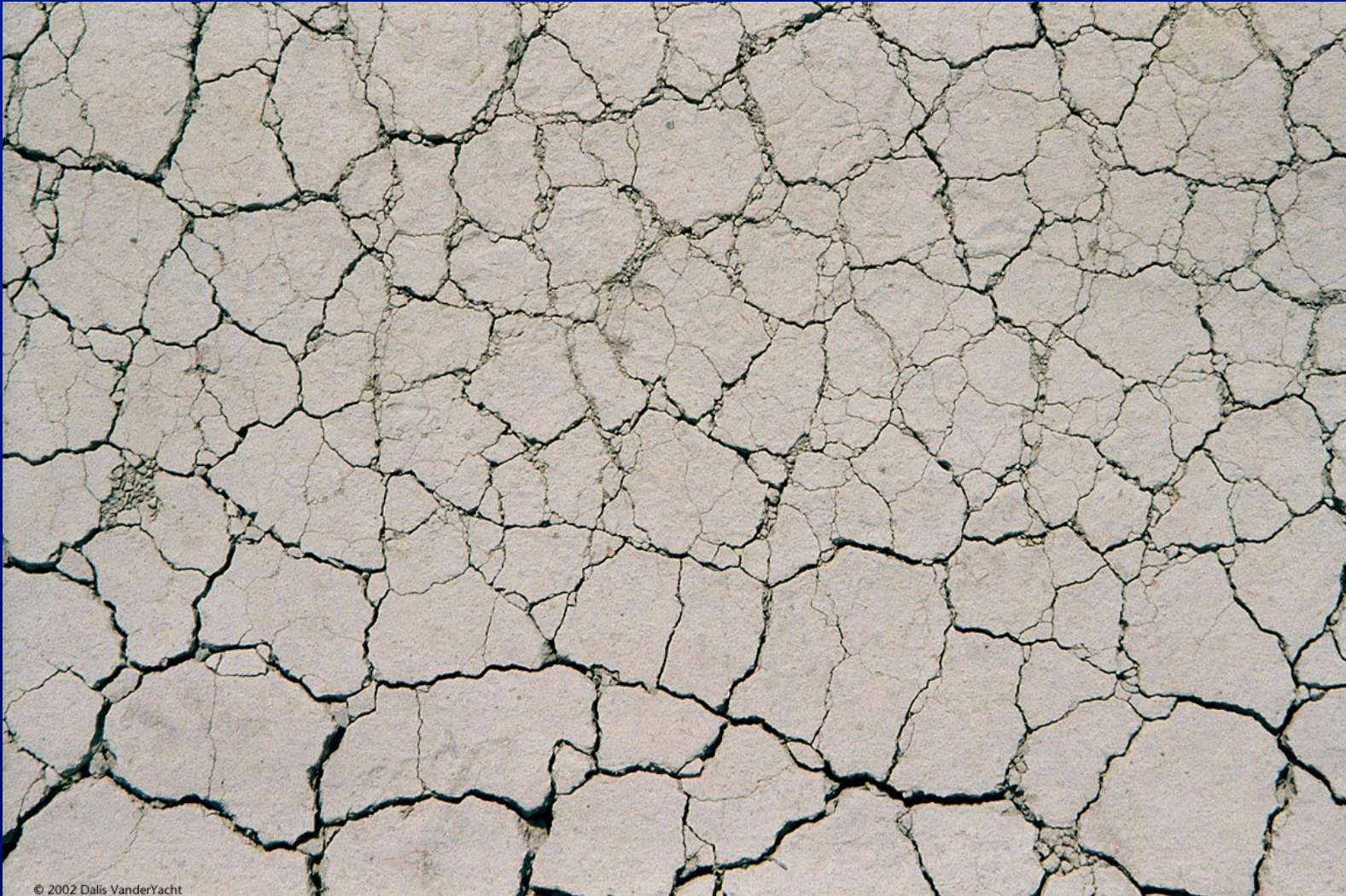
Sedimentary Structures:

- 9) mudcracks :
 - Formed in drying mud.



Sedimentary Structures:

- 9) mudcracks:



Sedimentary Structures:

- 9) mudcracks in rocks:

