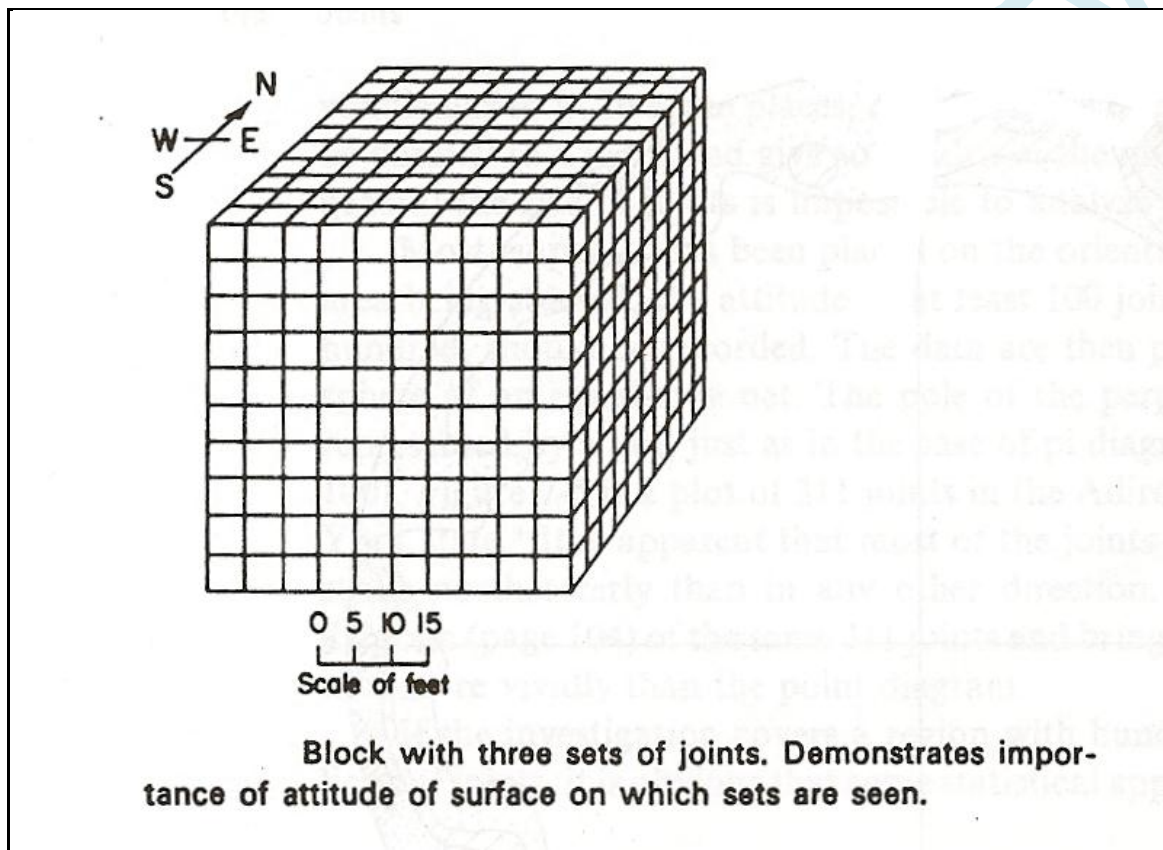


Joints

Fracture without displacement, some joints are vertical other are horizontal, and many are inclined at various angles.

Joint set: consists of a group of more or less parallel joints.

Joint system: consists of two or more joint sets or any group of joints with a characteristic pattern.



Veins

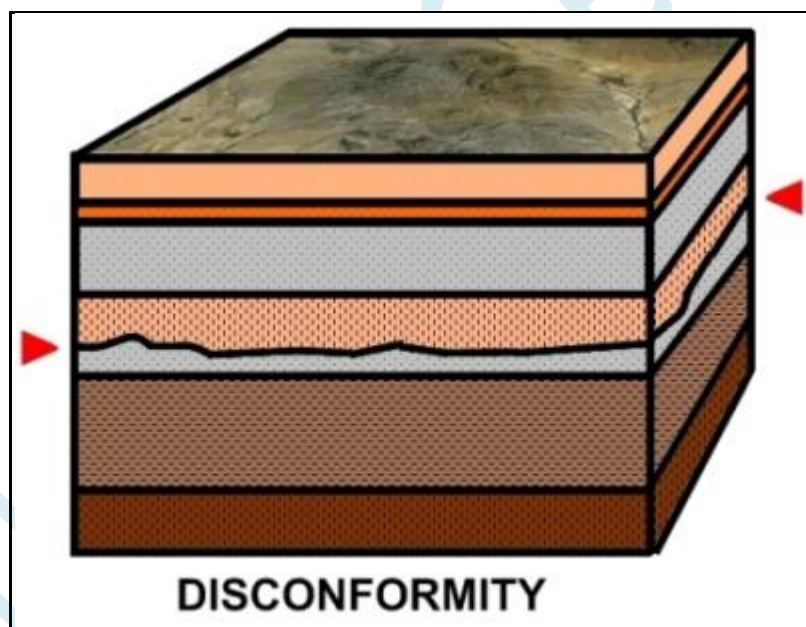
if the fractures are filled mostly crystals of quartz and calcite . But there are some minerals that can be found inside the veins, such as Zeolite and Chlorite.

Unconformities

An **unconformity** is a contact between two rock units in which the upper unit is usually much younger than the lower unit. Unconformities are typically buried erosional surfaces that can represent a break in the geologic record of hundreds of millions of years or more. For example, the contact between a 400-million-year-old sandstone that was deposited by a rising sea on a weathered bedrock surface that is 600 million years old is an unconformity that represents a **time hiatus** of 200 million years. The sediment and/or rock that was deposited directly on the bedrock during that 200-million-year span was eroded away, leaving the “basement” surface exposed. There are three kinds of unconformities: disconformities, nonconformities, and angular unconformities.

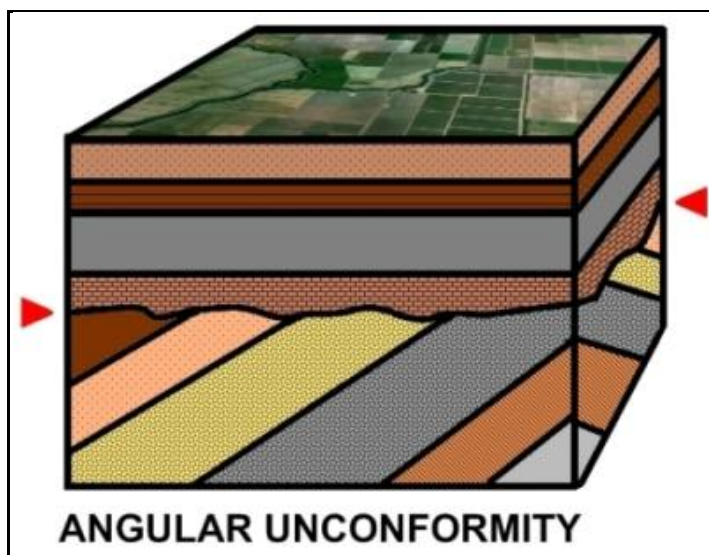
Disconformities :

is a surface of erosion or non deposition between younger and older beds that are parallel one another. Where the older beds are under the younger beds.



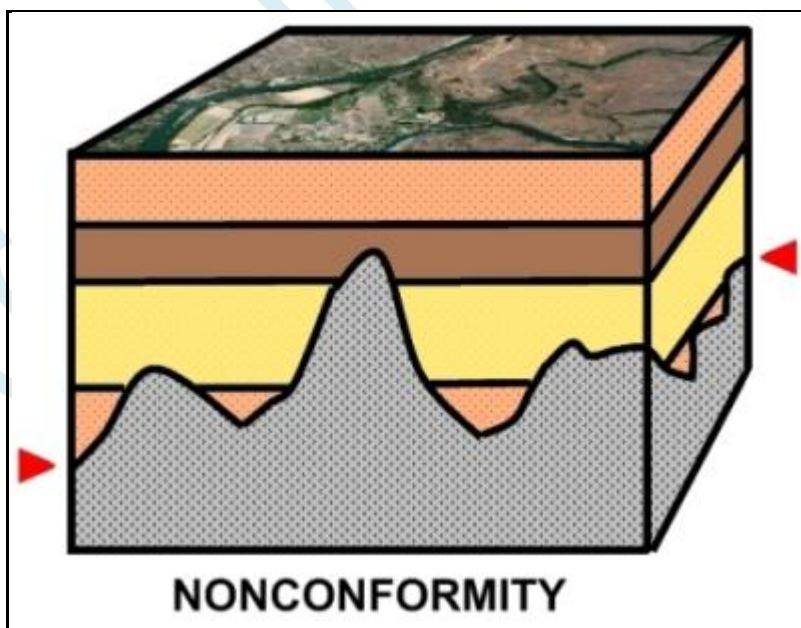
Angular Unconformity:

is an erosional surface on tilted or folded strata over which younger strata have been deposited. Both younger and older strata may dip, but if their dip angles are different, generally the older strata dip more steeply, an angular unconformity is present.



Nonconformity:

an erosion surface cut into metamorphic or igneous rocks is covered by sedimentary rocks.



SEDIMENTARY ENVIRONMENTS

is a geographic setting where sediment is accumulating over time.

Types of Sedimentary Environments:

1. THE CONTINENTAL ENVIRONMENT.
2. THE TRANSITIONAL ENVIRONMENT.
3. THE MARINE ENVIRONMENT.

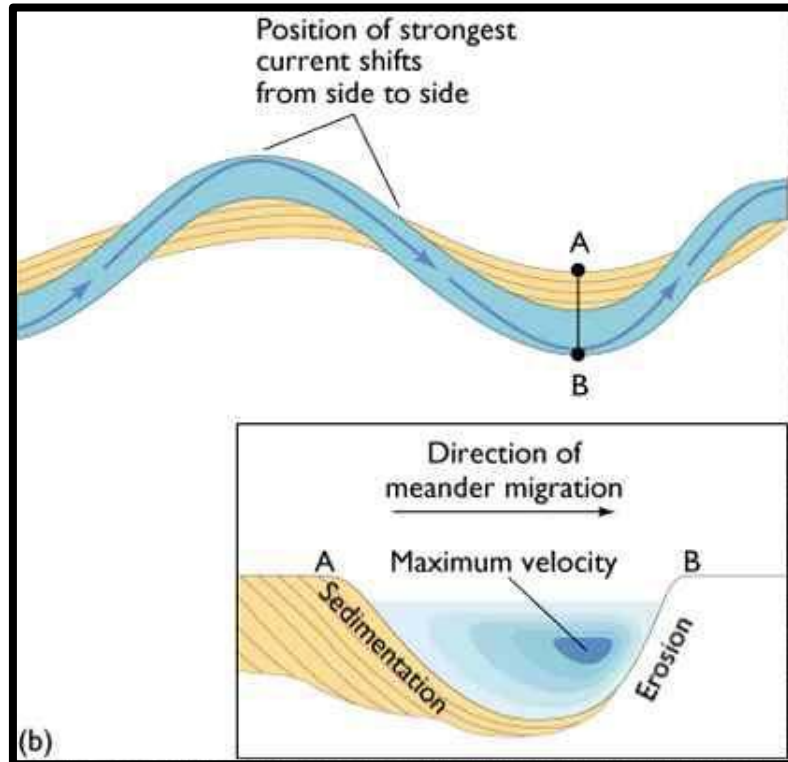
▶ The continental environment :

1. FLUVIAL (RIVER)

A large natural stream of water emptying into an ocean, lake, or other body of water and usually fed along its course by converging tributaries.

Grain-Size Characteristics of Fluvial Sediments:

- A. Channel deposits: - Sand to gravel size,
 - Moderate to good sorting,
 - Clay content is low.
- B. Bank deposits: - Fine sand to silt,
 - Moderately sorted.
- C. Flood basin deposits: - Silt to clay,
 - Poorly sorted,
 - High content of clay fraction.



River erosion and sediment

2. Desert Environment

Desert -- arid land with less than 250 mm (10 inches) precipitation per year or in which evaporation exceeds precipitation. No significant vegetation exists. It need NOT be hot and dry.

Includes 25% of the world's land area outside the Polar Regions

-Erosion is less than in water.

-Mechanical weathering is a dominant factor, involving processes such as exfoliation, splitting and crushing of rocks.

-Chemical weathering resulting from rainfall sometimes.

-High rate of evaporation produces increasing in dissolved salt, oxides of iron and manganese (these are called **varnish desert**).

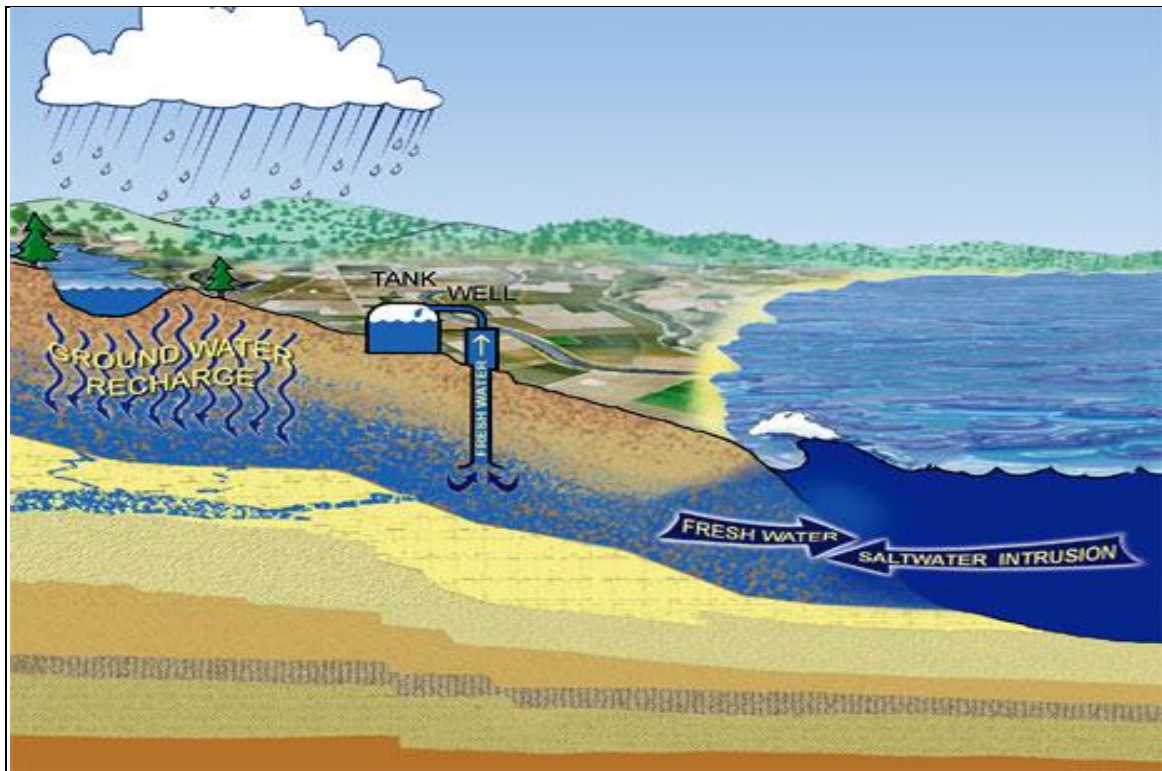
- The wind – laid desert sediments to be differentiated into two deposits: a. Dust deposits, b. Sand deposits .

3. LAKE :

A body of fresh or salt water of considerable size, surrounded by land.

4. GROUNDWATER:

Water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. Groundwater originates from rain and from melting snow, ice, stream and sea.



Groundwater sources

5. Glacial:

A large mass of ice formed over many years that does not melt during the summer. Glaciers move slowly over an area of land.