November 21, 2011

Deforming Earth's Crust

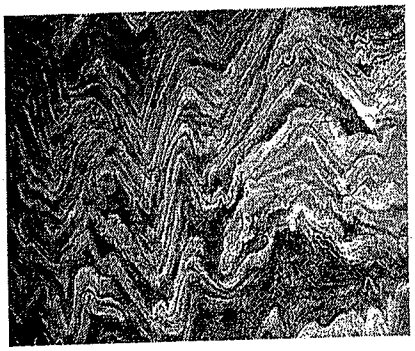
Deformation: The process by which the shape of a rock cahnges because of stress.

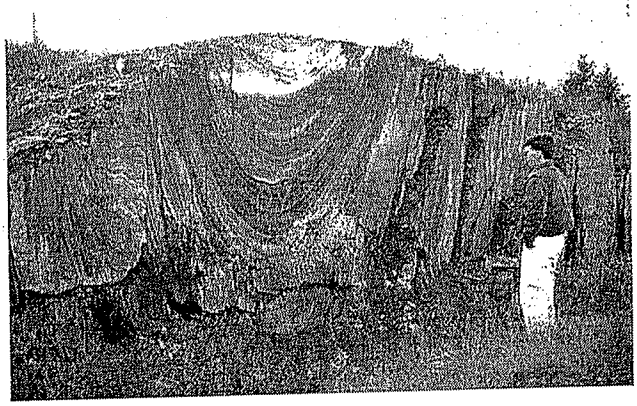
- May deform by bending or breaking
  - As plates shift, stress is placed on the layers of rock near the plate boundaries
  - Stress bends the rock layers
  - Enough stress can cause the rock layers to reach their elastic limit and break

2 Types of Stress:

1. **Compression:** When two plates collide and an object is squeezed
   - Compression that occurs at a convergent boundary can produce large mountain ranges
2. **Tension:** Stess that occurs when forces act to stretch an object
   - Occurs at _____ boundaries

-The bending of rock layers because of stress in the Earth's crust is called **folding**
-Scientists assume that all rock layers started as horizontal layers
-A fold indicates that deformation has occurred





- The two most common types of folds are:

anticlines: Upwards-arching folds

synclines: Downwards-arching folds

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Faulting

-some rock layers break when stress is applied
-The surface along which rocks break and slide past each other is called a **fault**
-The blocks of crust of crust on each side of the fault are called **fault blocks**
-When a fault is not vertical, it has two distinct sides:

- Hanging Wall:

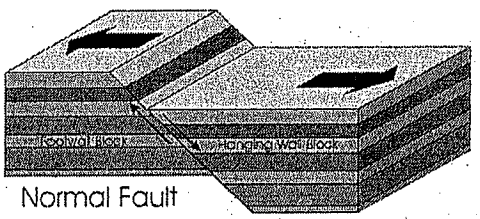
- Foot Wall:

Three types of faults can form depending on how the two walls move in relation to on another:

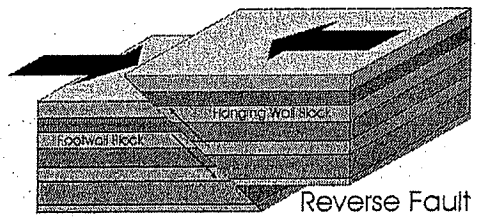
1.**Normal Faults** - Hanging wall moves down relative to footwall
-Usually caused by tension

2. **Reverse Faults** - Causes hanging wall to move up relative to footwall
-usually caused by compression that pushes rock together

3. **Strike-Slip Faults** - Opposing forces cause rock to break and move horizontally
-San-Andreas fault would be an example

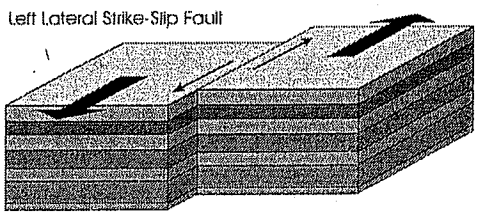


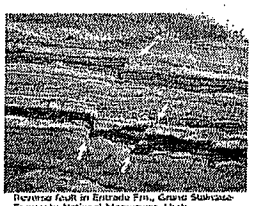
Normal Fault



Reverse Fault

Left Lateral Strike-Slip Fault




Reverse fault in Entrada Fm., Grand Staircase-Escalante National Monument, Utah