Intrusive Activity

Chapter 18.2

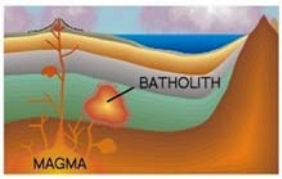
Magma on the move

- Convection causes magma to move upward
- Enters fissures in crust
- Breaks off blocks of rock
- Melts rock it comes in contact with
- Magma cools to form coarse grained igneous rocks (recall what determines grain size)
- These rock bodies are called **plutons**

Plutons

•Cut across older rocks

•Take millions of years to cool



- Batholith
  - Very large - covers over 100 km^2
  - Can make up interior of mountains
  - Igneous rock
- Stock - silimar but smaller

This Batholith remains as weathering and erosion of surrounding rock continues

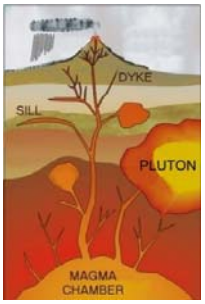
Plutons

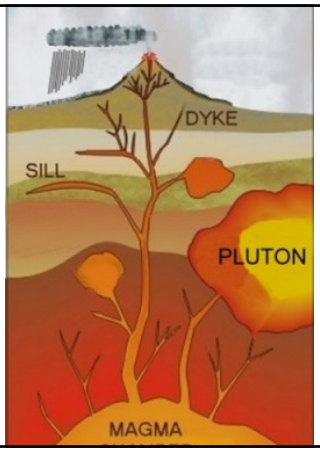
- Laccolith
  - Mushroom shaped intrusion
  - Up to 16 km wide
  - Magma pushed crust upward

Laccolith

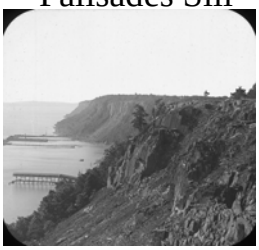
Plutons

- Sill
  - Magma intrudes parallel to rock layers
  - Horizontal intrusion
  - From a few cm to 100's of meters thick
  - Palisades cliffs = 300 foot thick sill of igneous rock
- Dike
  - Cuts across existing rocks
  - Upward / vertical direction



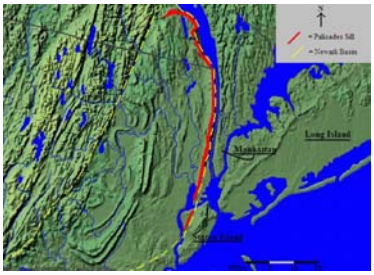


Palisades Sill



Uplift, weathering and erosion exposes the sill (or any pluton) to the surface

Palisades Sill



Dikes cut across other rocks

Dikes

Cross Cutting Relationships

- The principle of cross-cutting relationships states that an igneous intrusion is always younger than the rock it cuts across.

Sequence the events below