

Chapter 20

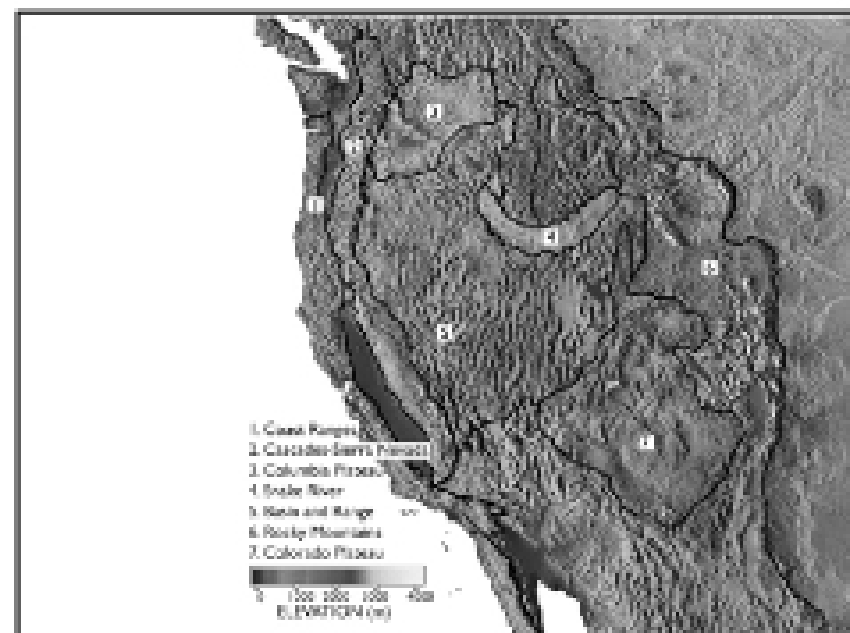
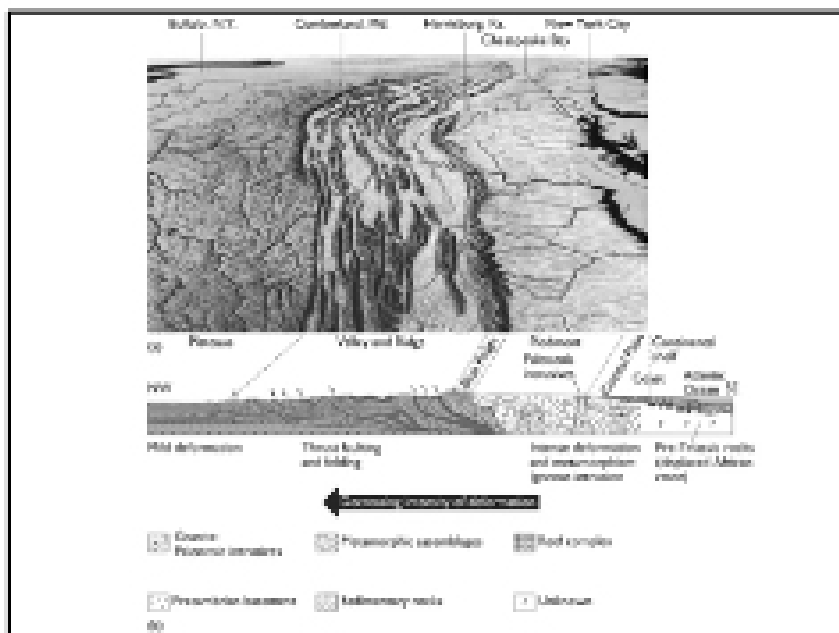
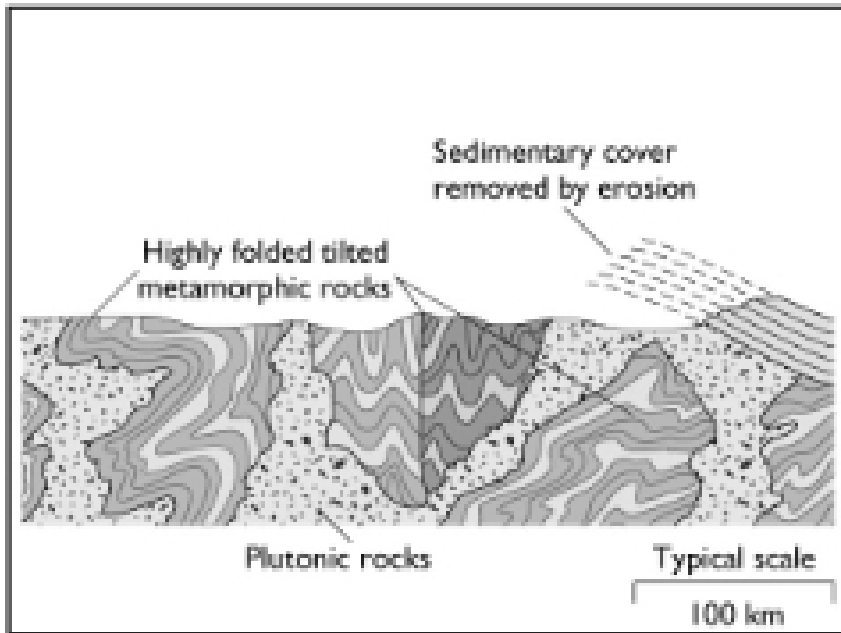
Continental Crust

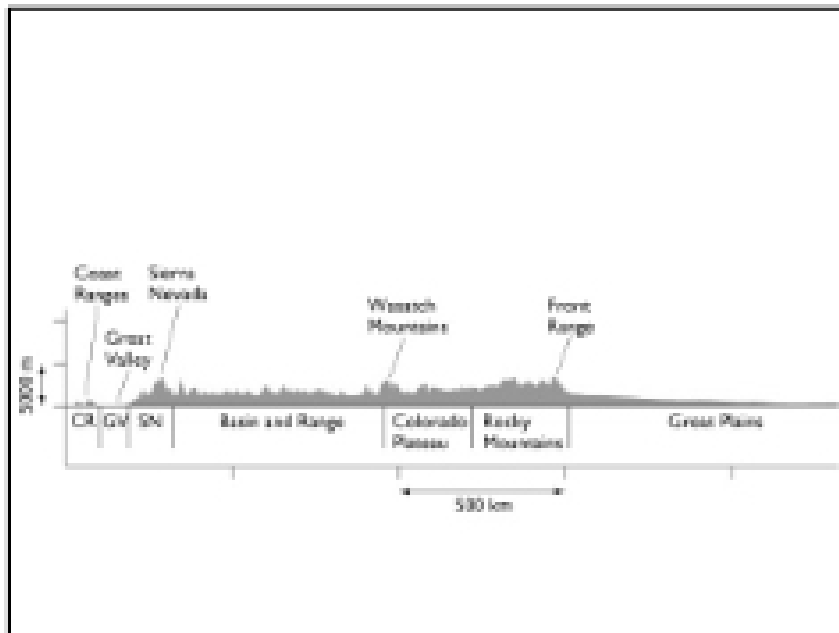
Continental Crust

- **It is thick (30-60km),**
- **It is old (250 - 4000 my),**
- **It is light ($\rho = 2.75 \text{ g/cm}^3$)**
- **It is silicic (dioritic to granitic in composition).**
- **It has a stable interior called the craton.**
- **It grows at active margins.**
- **It does not subduct.**

Continental Crust

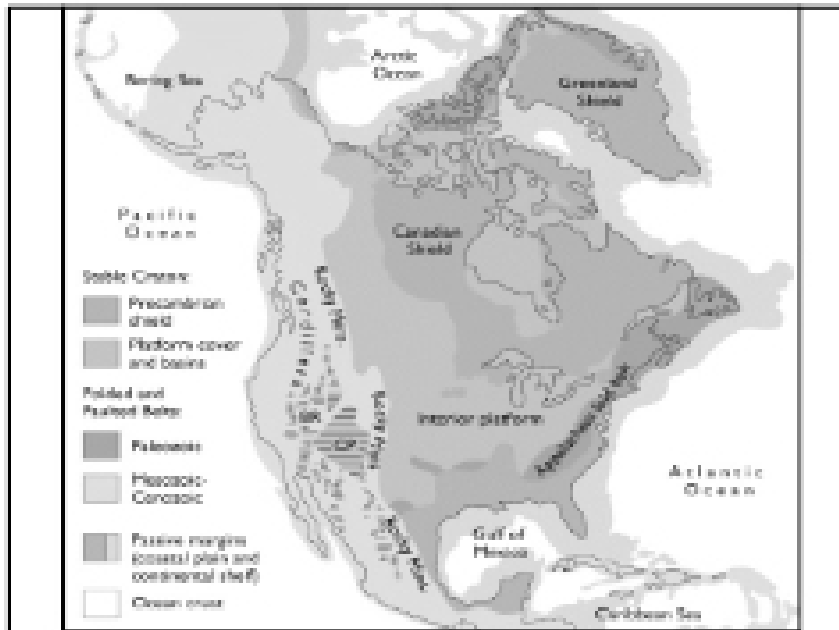
- **Because continental crust is thick and old, it has experienced and recorded many orogenic events.**
 - **It is extremely heterogeneous**
 - **Oldest rocks are about 4 billion years old**





Cratons and Shields

- **The craton is the stable interior part of the continent.**
- **The craton may be covered by a thin (<2km) veneer of sedimentary rocks.**
- **The shield is that portion of the craton that is free of sedimentary cover.**
- **Shields occur in Canada, Southern Africa, Western Australia, and Scandinavia.**

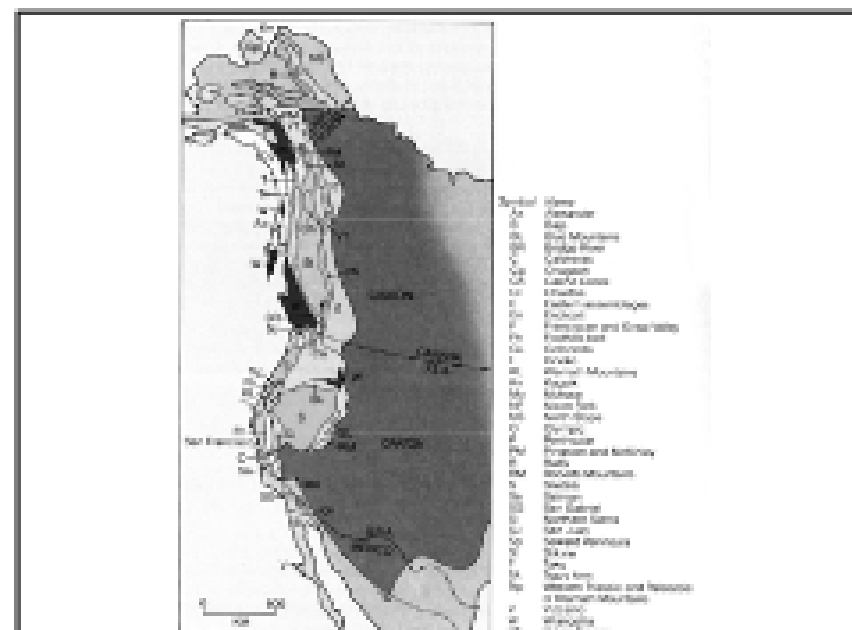


Terranes

- **A terrane is a co-genetic block of crust.**
- **Continents are composed of terranes or blocks of similar age and origin.**
- **The terrane we are on gives a metamorphic age of 1800 my.**
- **The CO-WY border is also a terrane boundary**
- **The Wyoming terrane is Archean.**

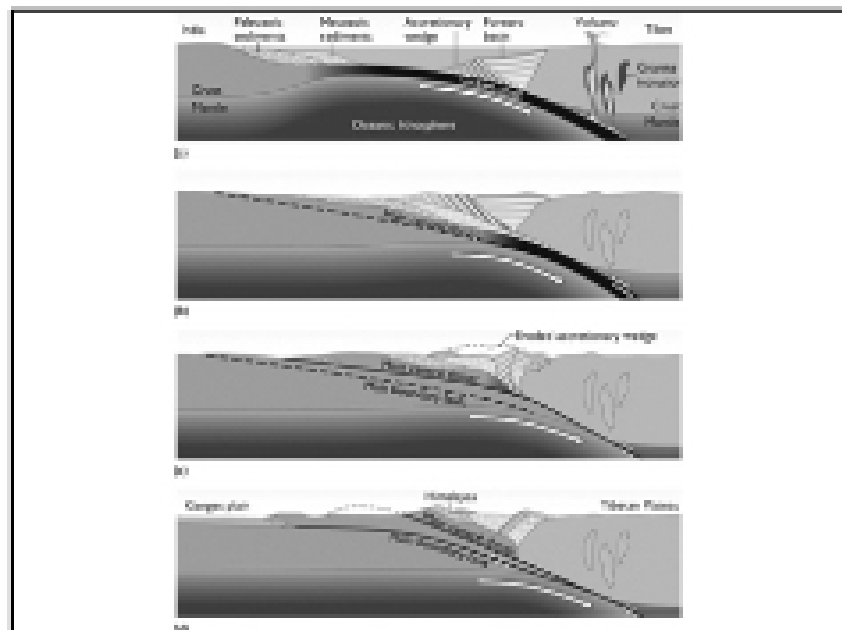
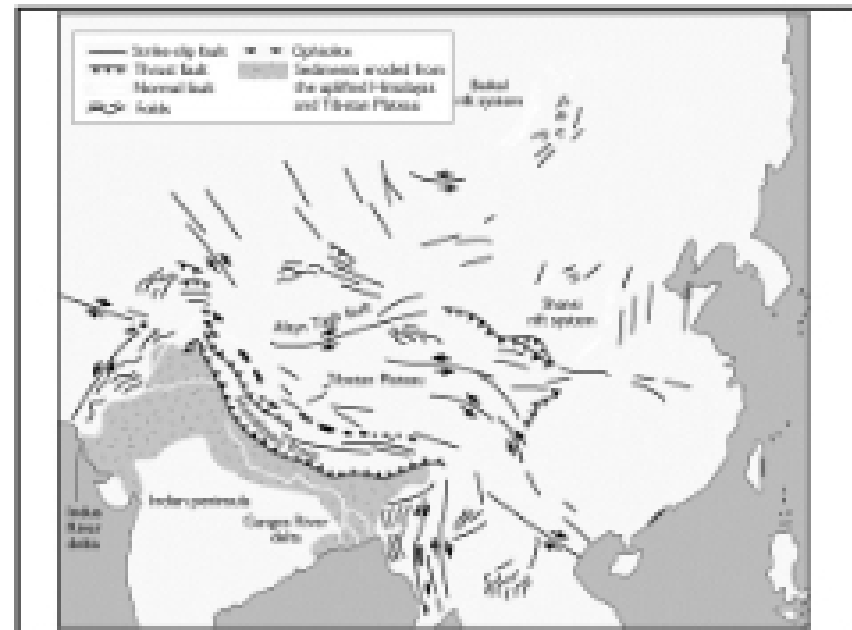
Growth of Continents

- **Continents grow at active margins**
- **They grow by addition of accreted or exotic terranes.**
- **A exotic terrane (= accreted terrane) is a small block of crust "scraped off" a subducting plate.**
- **Much of SE Alaska and British Columbia is composed of accreted terranes.**



Mountain Belts

- **An orogeny is an episode of mountain building.**
- **An orogenic belt is a co-genetic belt of mountain ranges. (e.g. Alps, Himalayas, Rocky Mountains)**
- **Mountain belts tend to have thicker sedimentary cover (2-10 km).**



Plumes and Hot Spots

- **A 'Plume' is a small convective upwelling from the mantle.**
- **Plumes may cause 'hot spot' volcanism**
 - **Yellowstone**
 - **Hawaii**

Plume Hypothesis

