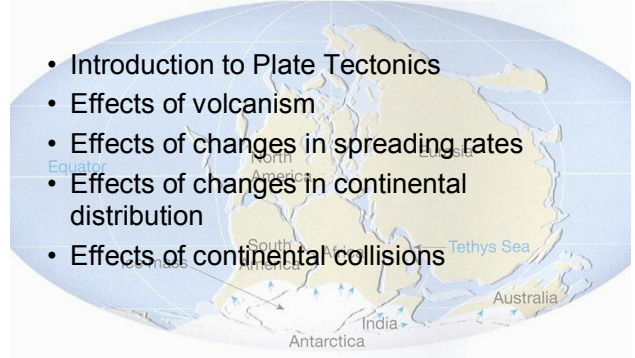
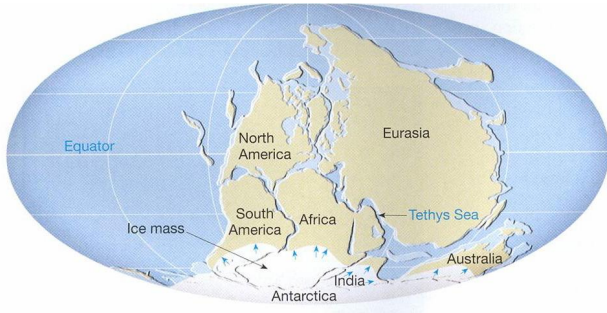
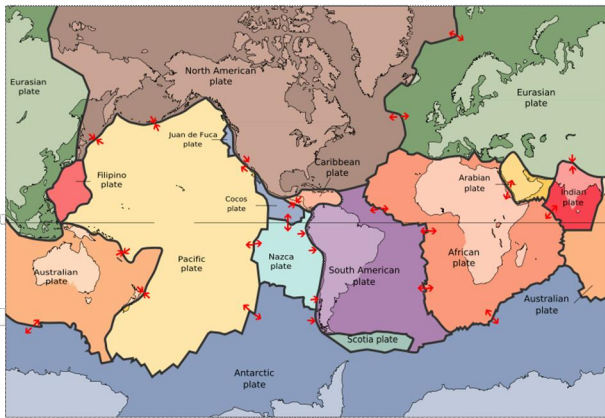


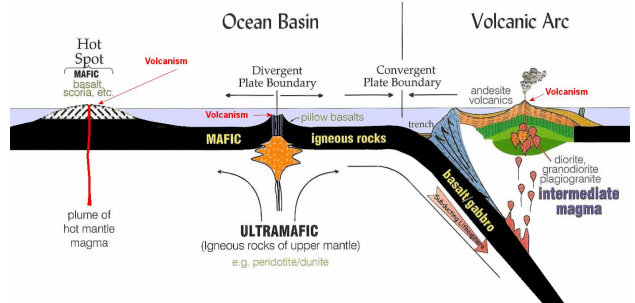
Plate tectonics and Climate Change



- Introduction to Plate Tectonics
- Effects of volcanism
- Effects of changes in spreading rates
- Effects of changes in continental distribution
- Effects of continental collisions



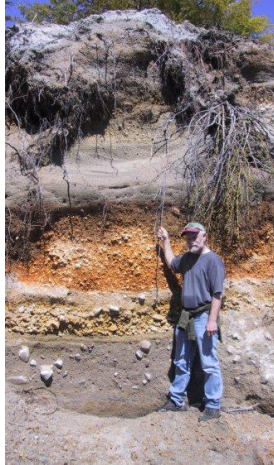
- types of plates boundaries - rates of plate motion



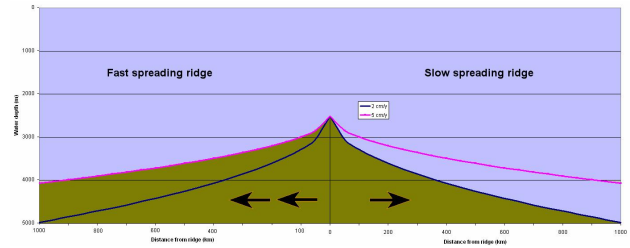
Mantle plume volcanism







Effects of changes in spreading rate



- More sea water displaced so higher sea levels
- Increased rates of volcanism at spreading centres and at subduction zones
- Possible increase in rate of tectonics-driven continental uplift

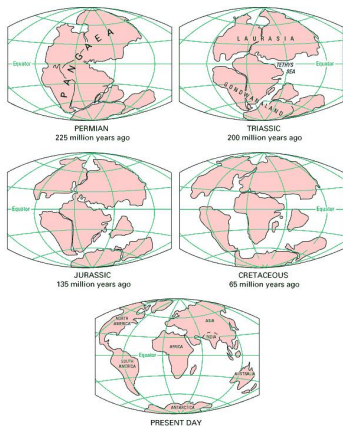
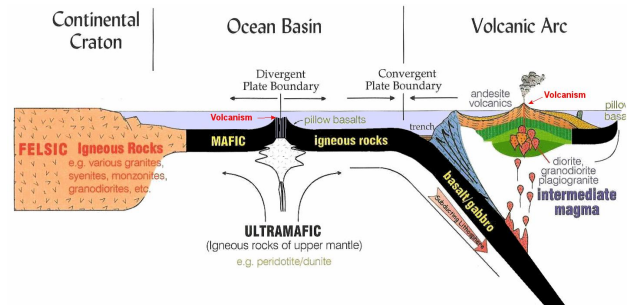
What are the implications of these changes?



The Cretaceous warm interval is thought to be coincident with a period of accelerated spreading rates.

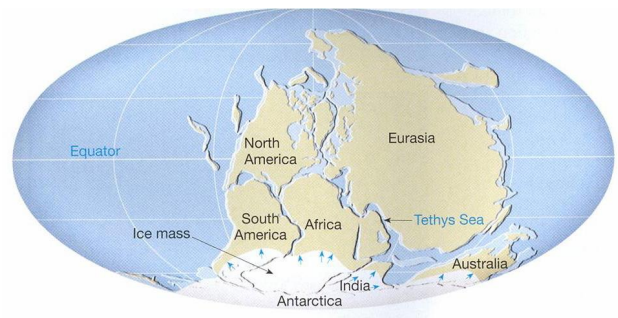


Effects of continental drift

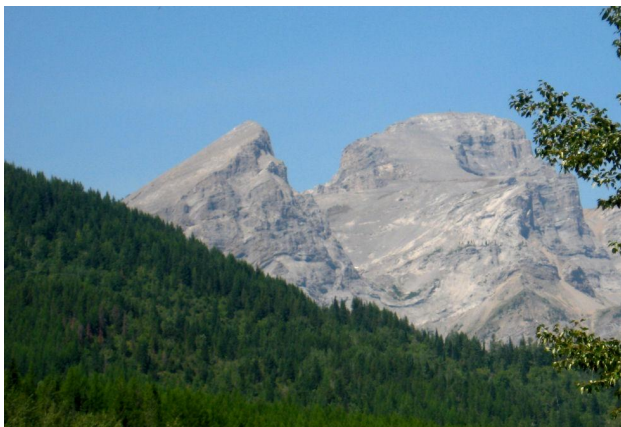
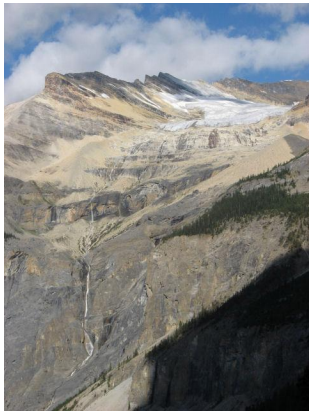
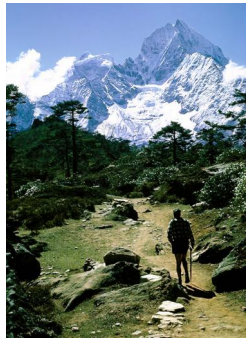
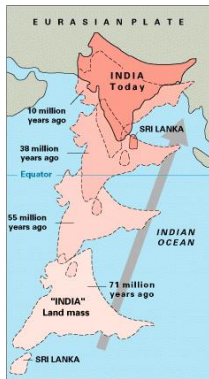


<http://www.ucmp.berkeley.edu/geology/tectonics.html>

Carboniferous and Permian glaciation of Pangea (~330-250 m.y.)

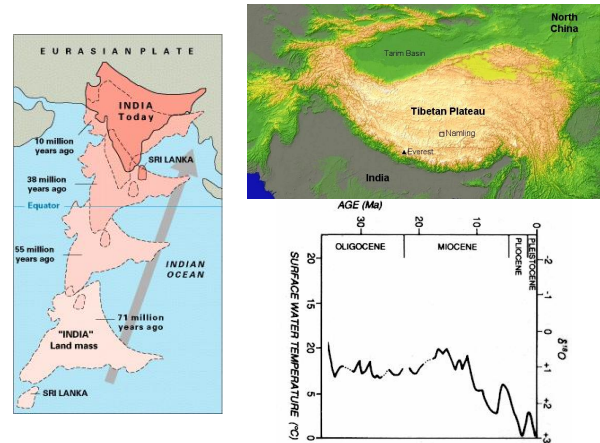
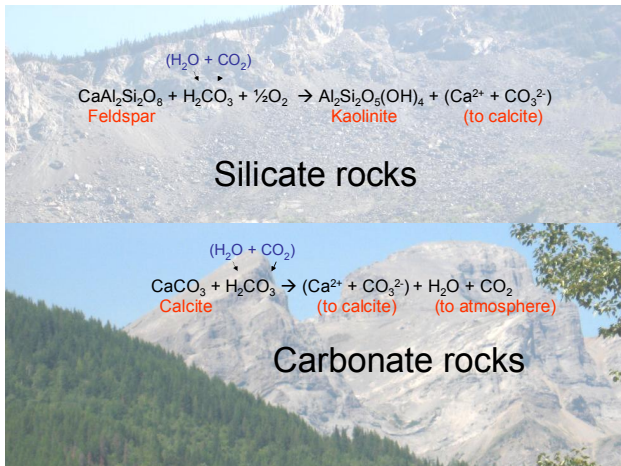
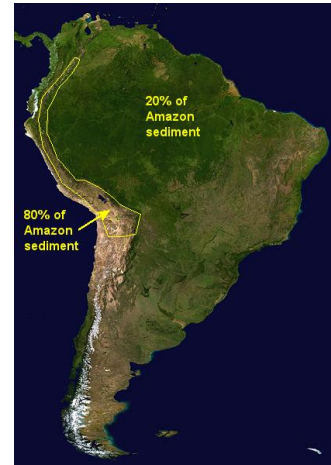
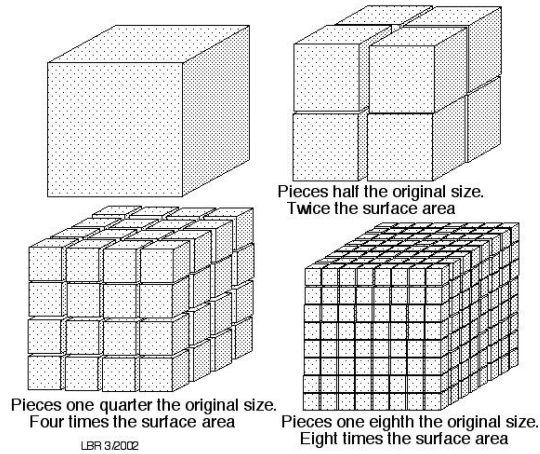


Continental collisions and climate change



Rates of erosion in mountainous areas are typically in the order of 10 times higher than those on plains

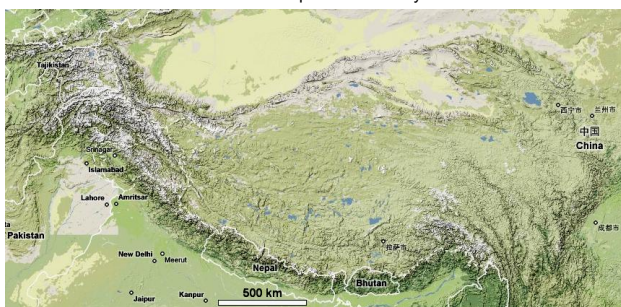




Tibetan Plateau and Himalayas

(~ 1200 km N-S by 3000 km E-W)

These huge mountains and the enormous plateau have largely been created over the past 10 million years.



Global average rate of erosion 0.1 mm/y. Rate for the Himalayas is cited as being over 10 mm/y. The average rate for the Plateau and Himalayas combined is probably in the order of 1 mm/y.

CO2 levels over the past 600 Ma

