Mountain Building

Andes Mountains

http://pubs.usgs.gov/publications/text/Nazca.html

Mt. Everest

http://tlacaelel.igeofcu.unam.mx/~GeoD/colision/colision.html

Alps

http://www.globalchange.umich.edu/globalchange1/current/lectures/topography/topography.html

Aleutian volcanoes

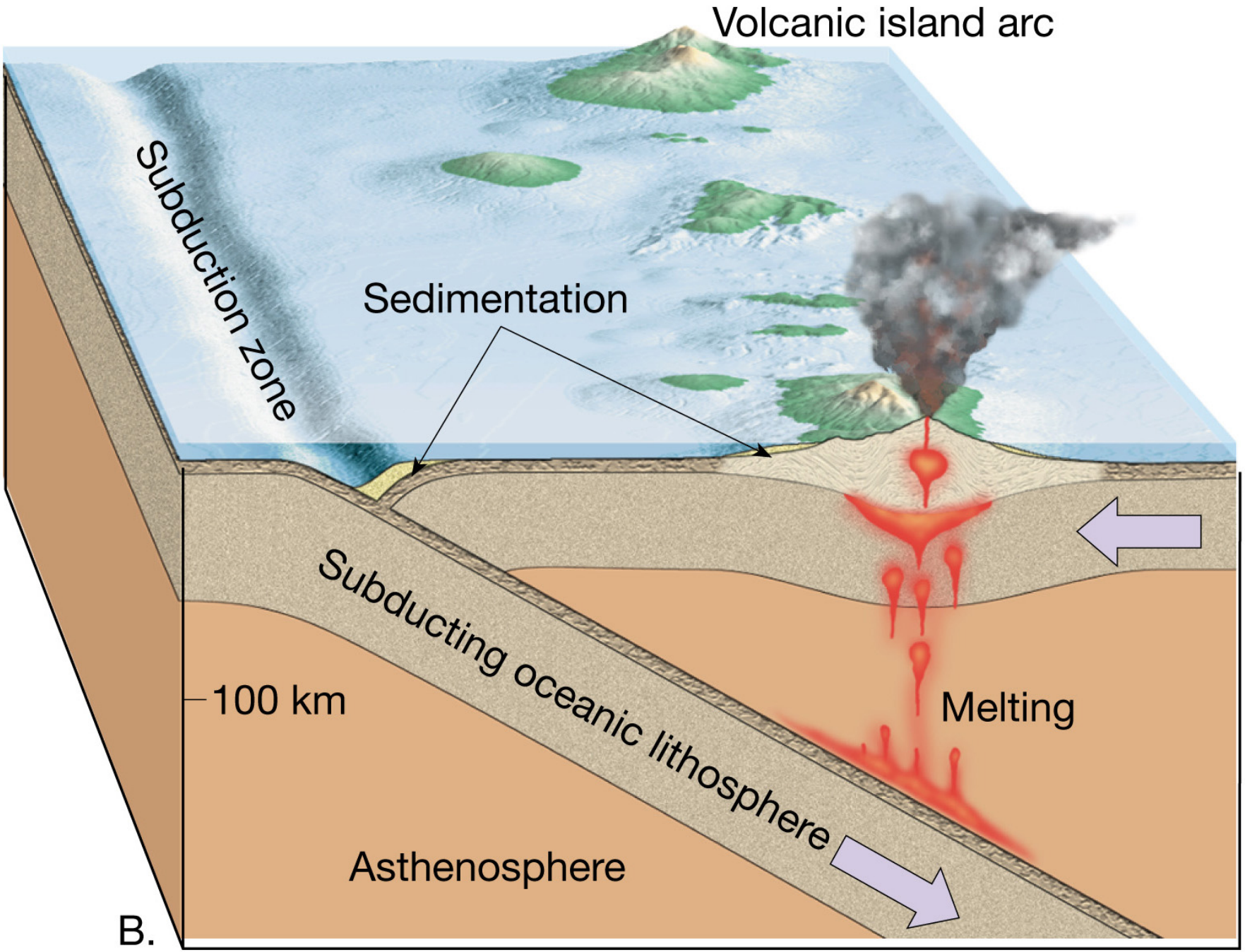
http://www.tamug.edu/Labb/Alaska/Stellers/Volcanos/Alaska_Volcanos.htm

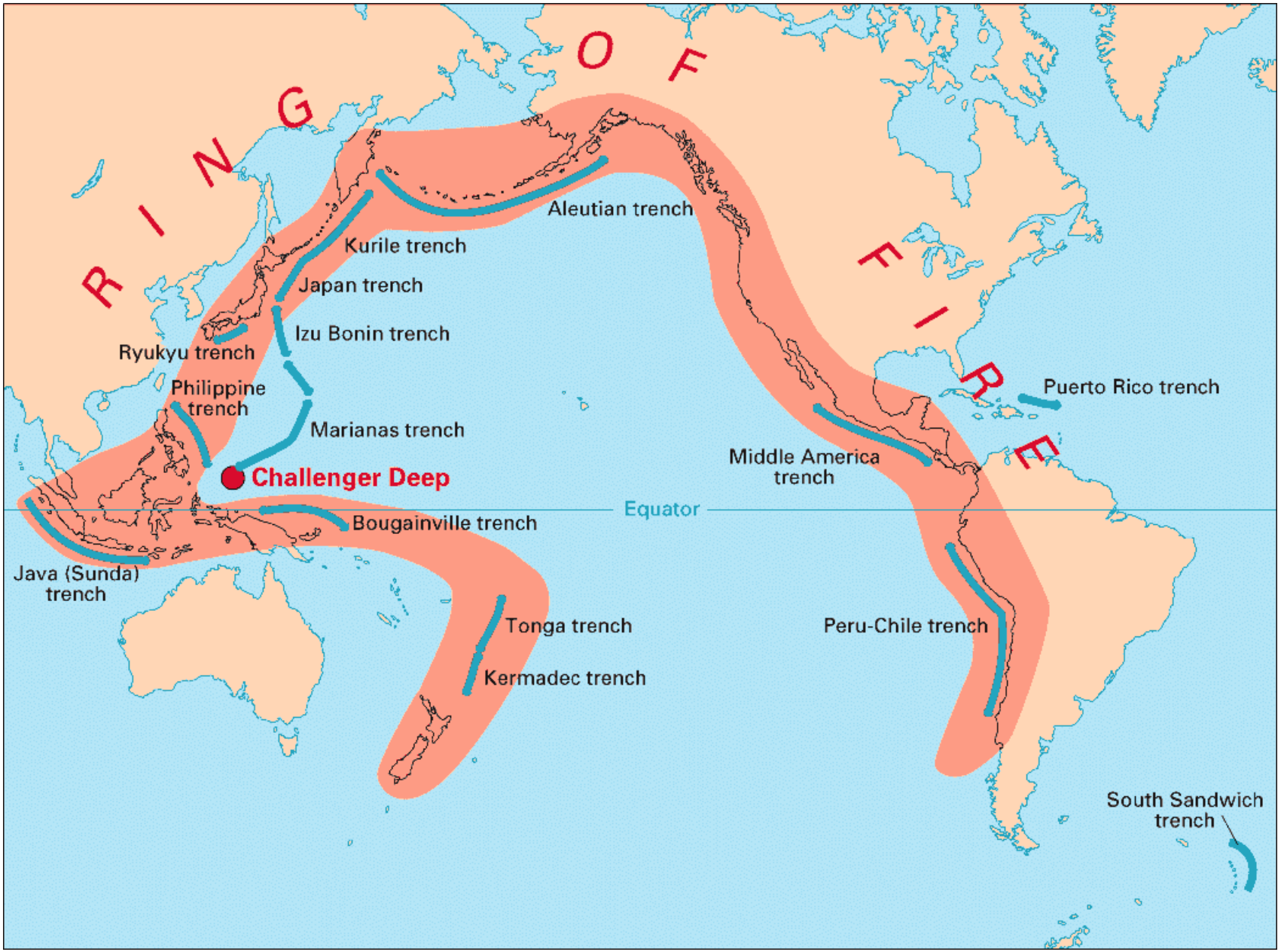
Taken on the STS-56 shuttle mission, in April 1993. Image number: STS056-071-031

http://en.wikipedia.org/wiki/Image:Aleutians-space.jpg

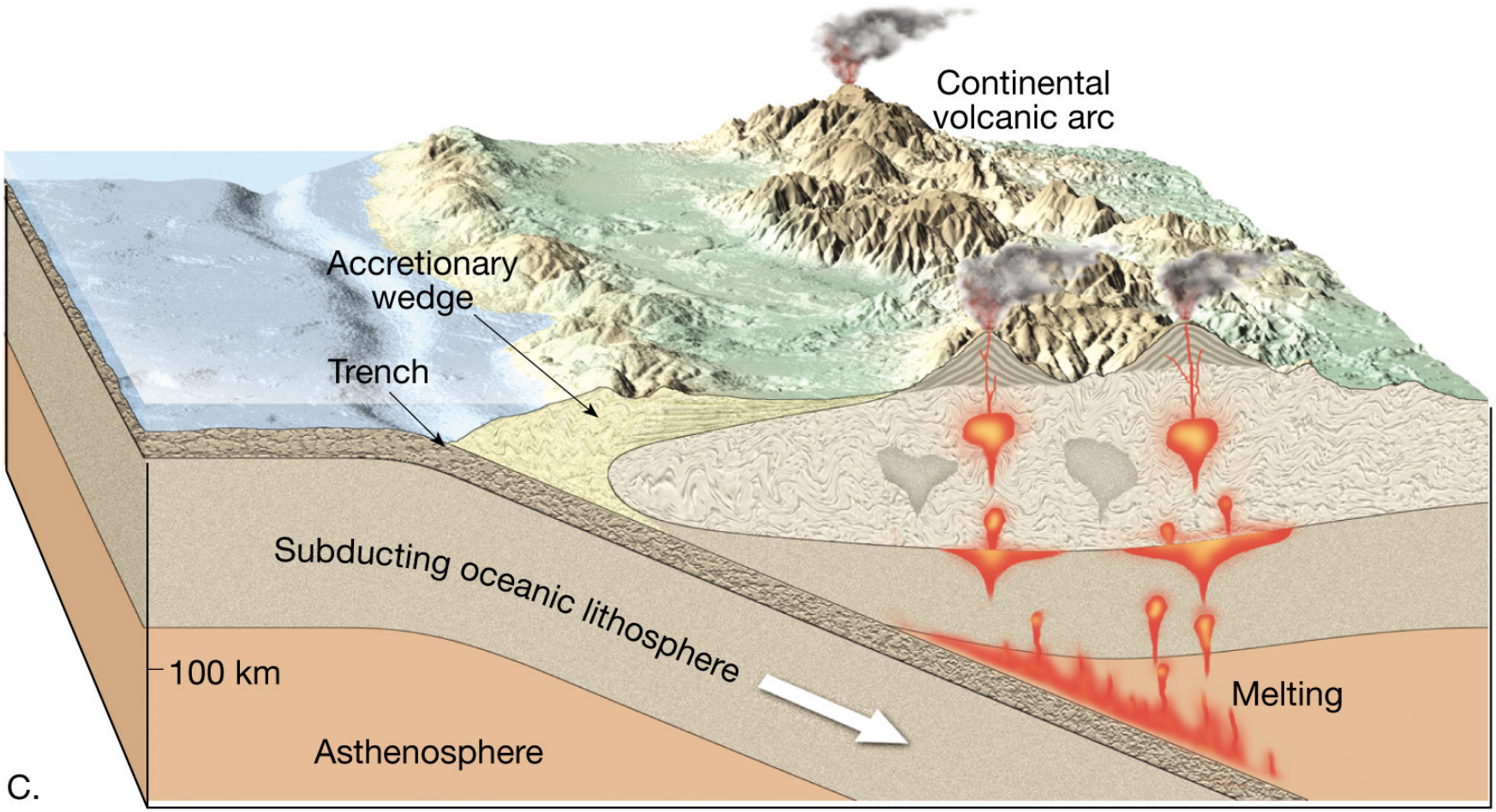
http://home.earthlink.net/~patron9/ with permission of author tom bigley

http://www.nationmaster.com/encyclopedia/Image:Aleutians-aerial.jpg


Volcanic island arc
Subduction zone
Sedimentation
Subducting oceanic lithosphere
100 km
Melting
Asthenosphere
B.



http://pubs.usgs.gov/publications/text/fire.html


Continental
volcanic arc
Accretionary
wedge
Trench
Subducting oceanic lithosphere
100 km
Asthenosphere
Melting

C.

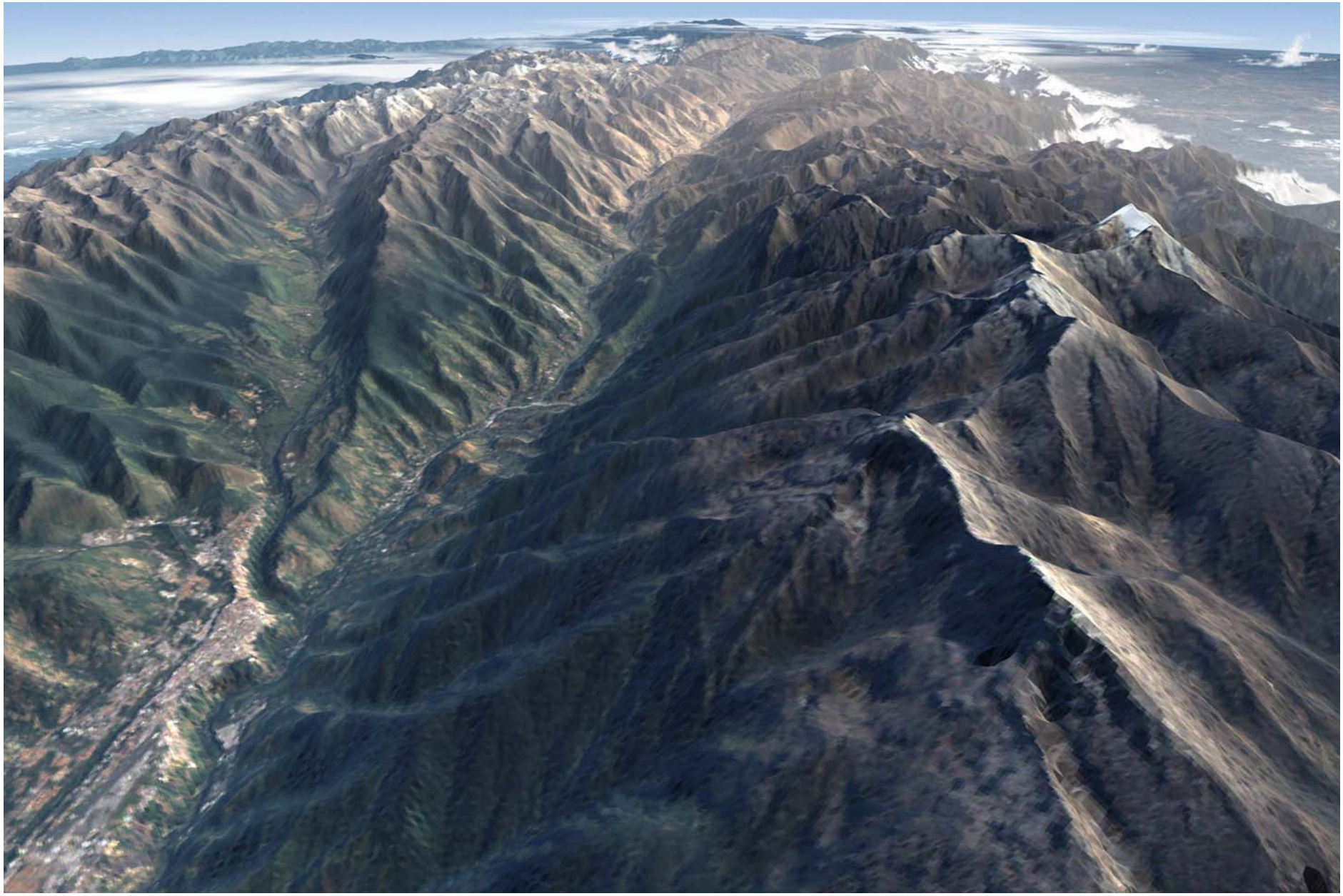
Mt St Helens

- Link to
- Mt Hood activity below

http://vulcan.wr.usgs.gov/Volcanoes/Hood/CurrentActivity/framework.html

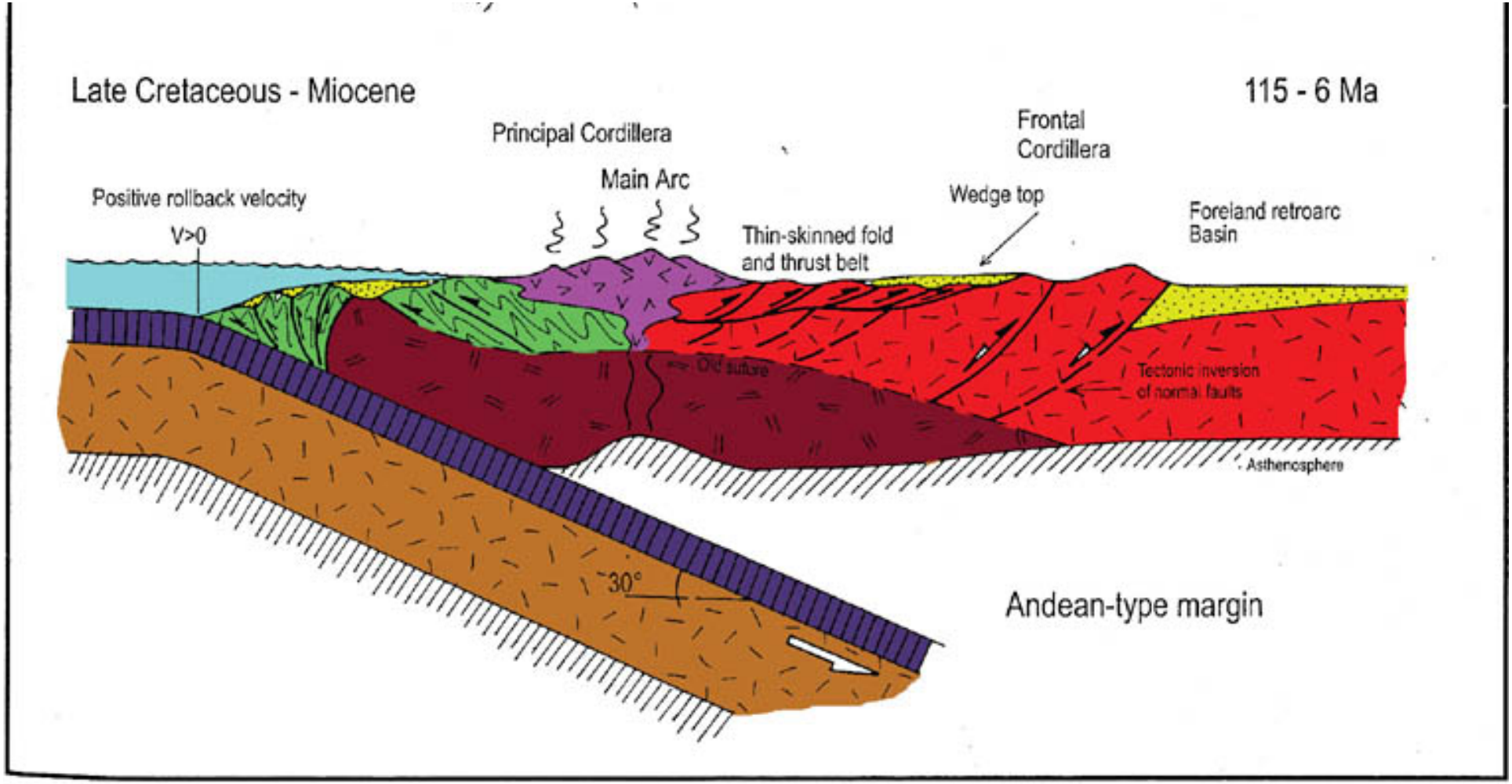
http://vulcan.wr.usgs.gov/Volcanoes/MSH/Eruption04/MSH25Years/msh_from_harrys_ridge.html

http://www.astro.uni-bonn.de/~maltmann/photgal_cz.html

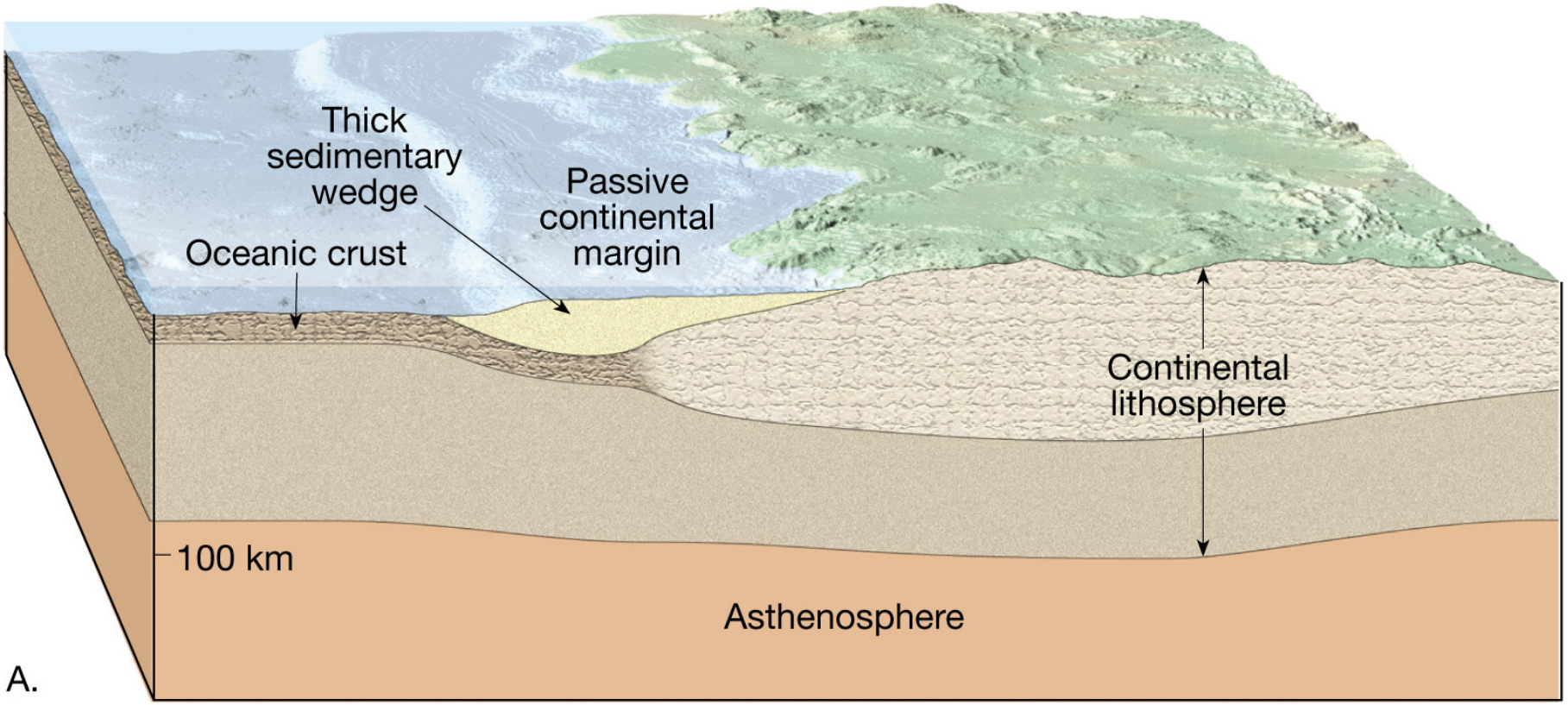


http://www.3dnworld.com/gallery.php?user=RPrato

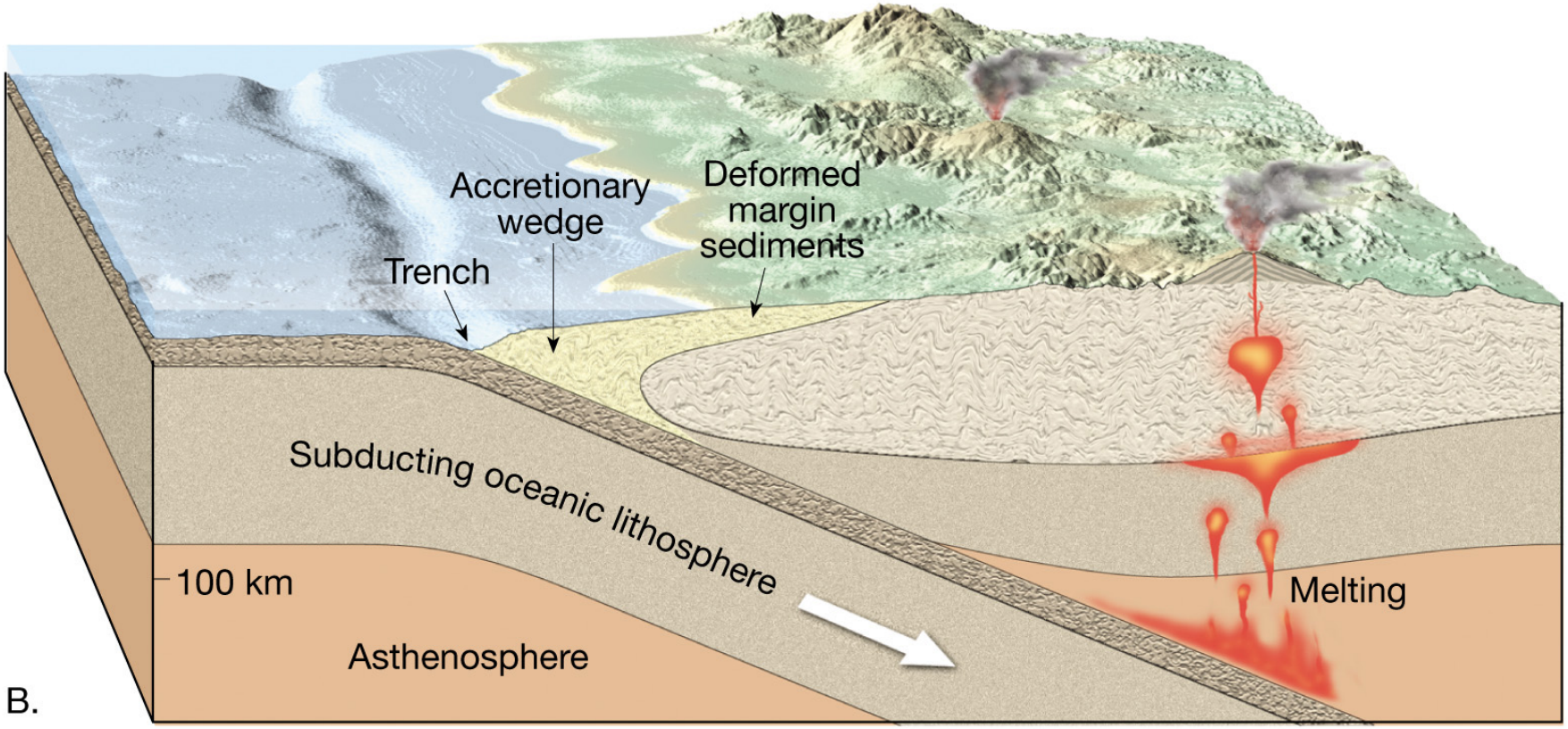
http://worldwind.arc.nasa.gov/screenshots-bm.html



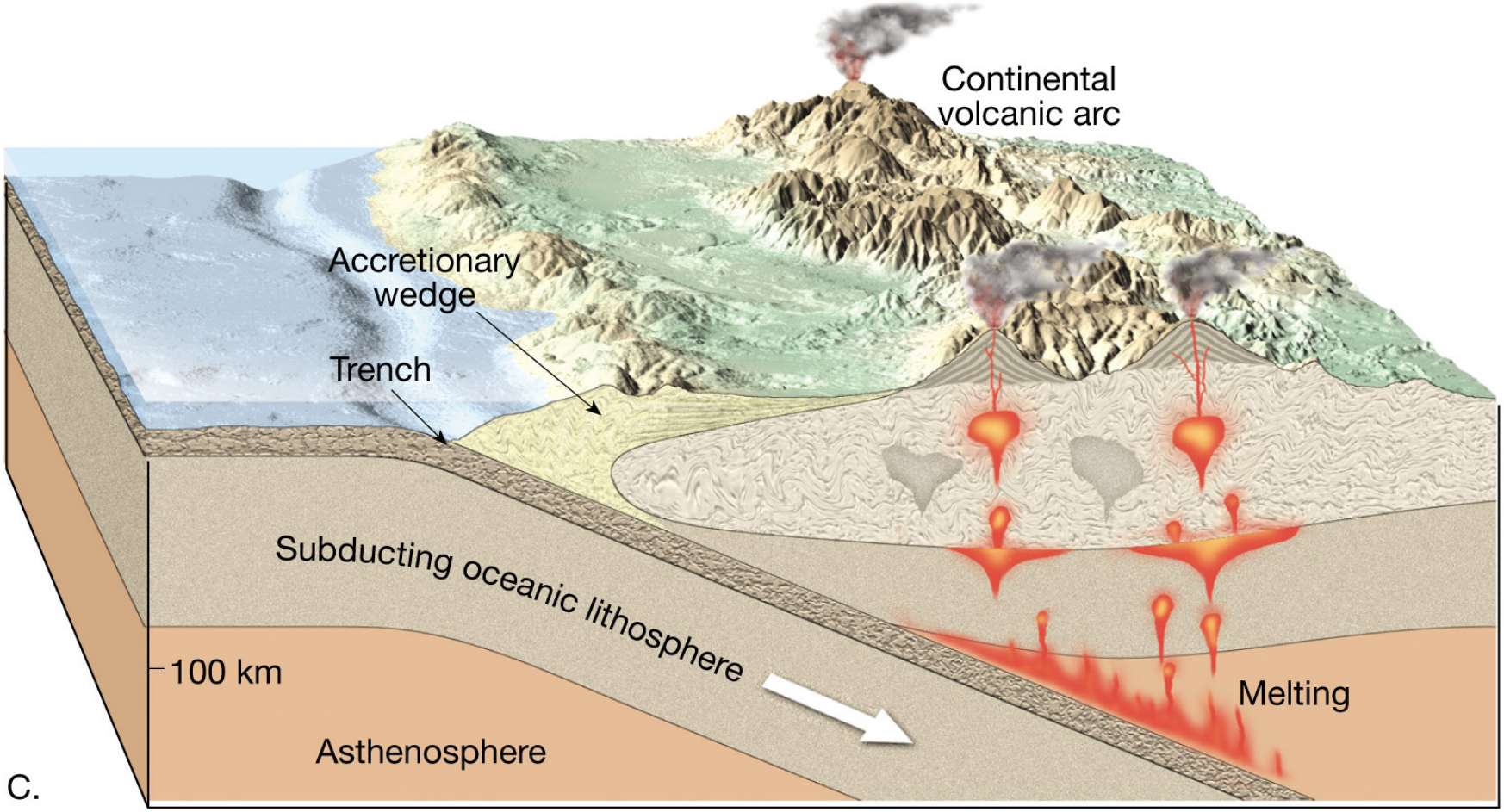
http://www.geo.arizona.edu/geo5xx/geo527/Andes/intro.html



Continental volcanic arc

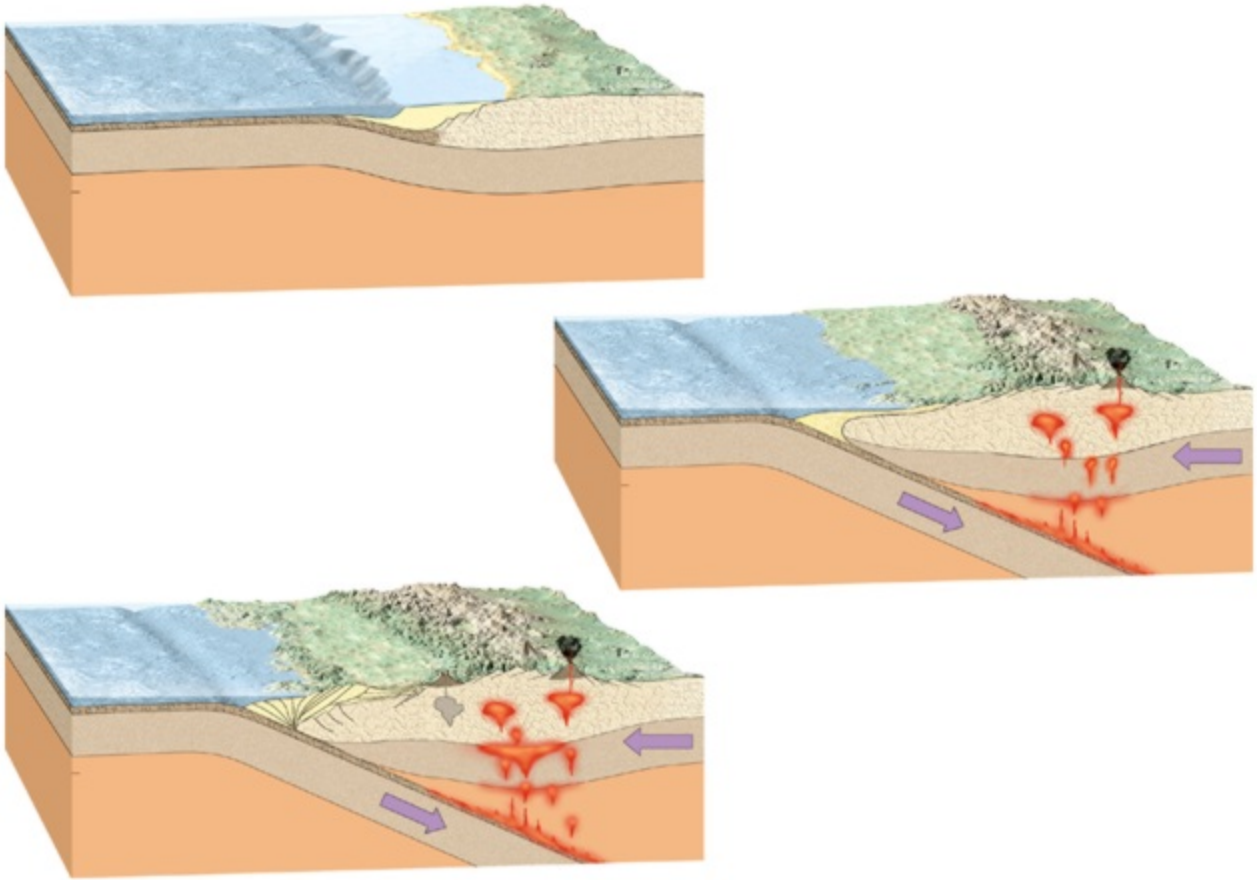

Accretionary
wedge
Deformed
margin
sediments
Trench
Subducting oceanic lithosphere
100 km
Asthenosphere
Melting

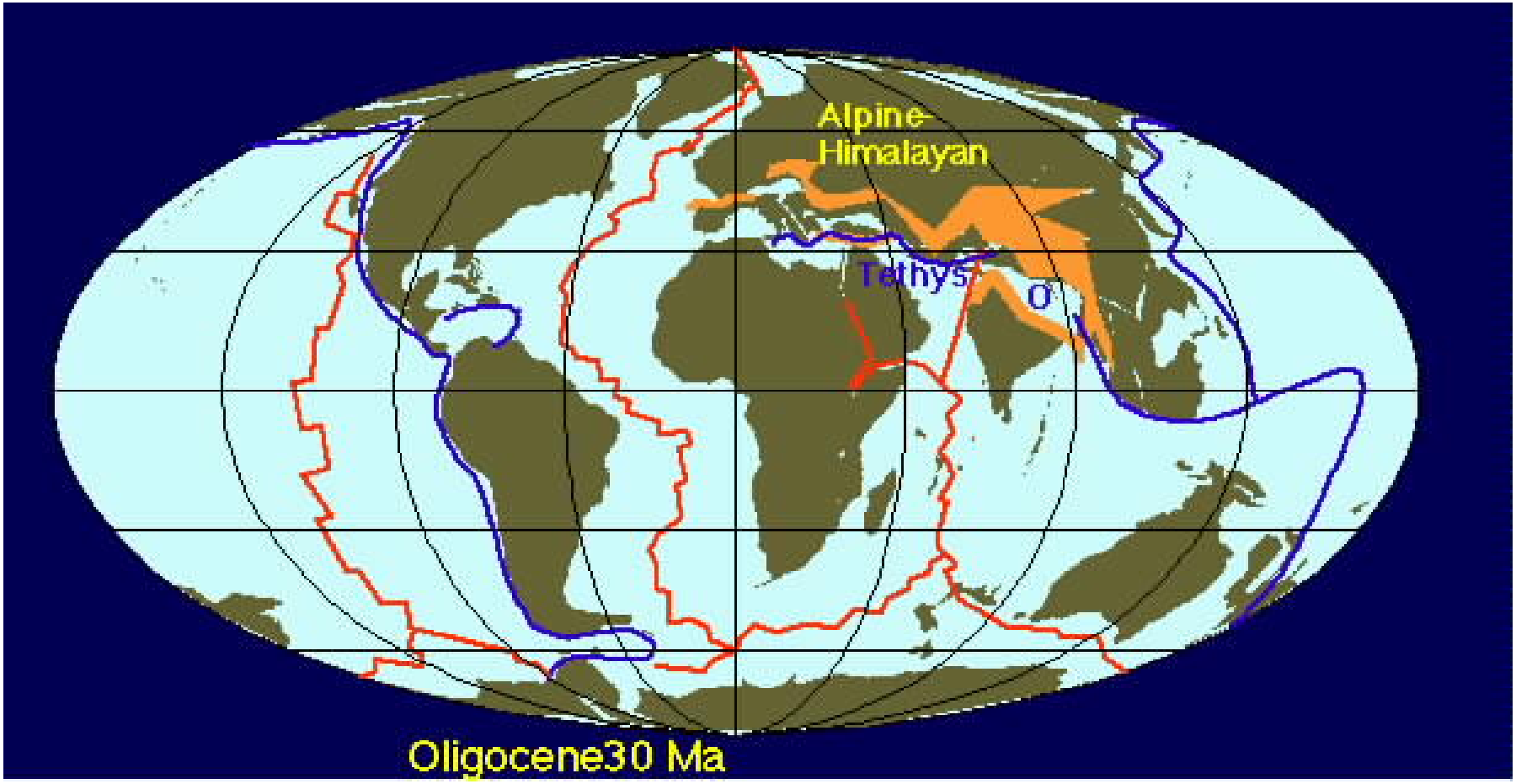
B.


Continental
volcanic arc
Accretionary
wedge
Trench
Subducting oceanic lithosphere
100 km
Asthenosphere
Melting

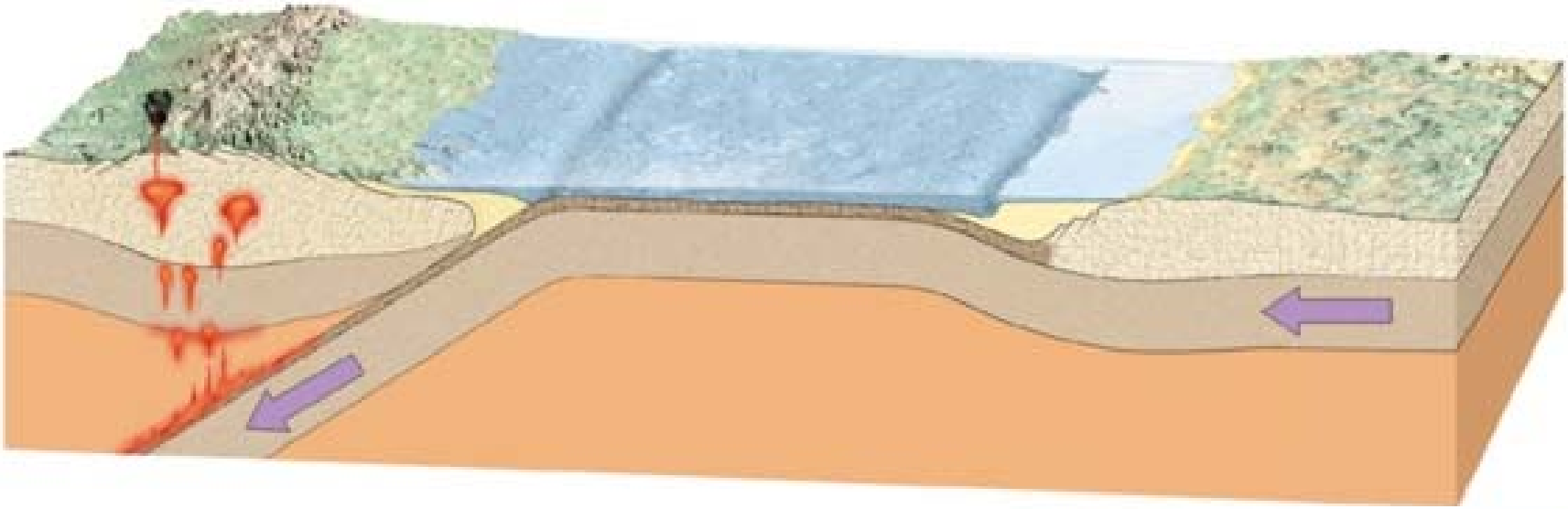
C.

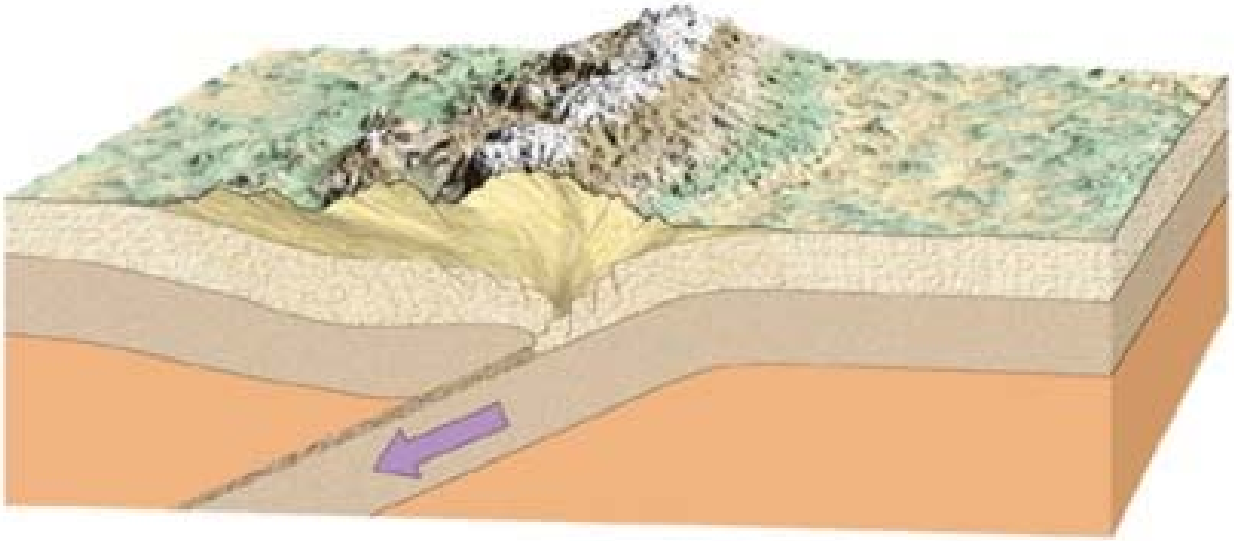
Stages of orogenesis

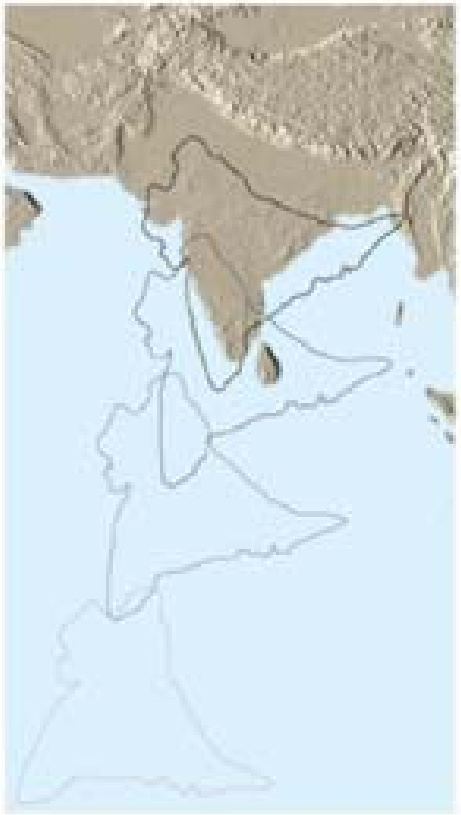


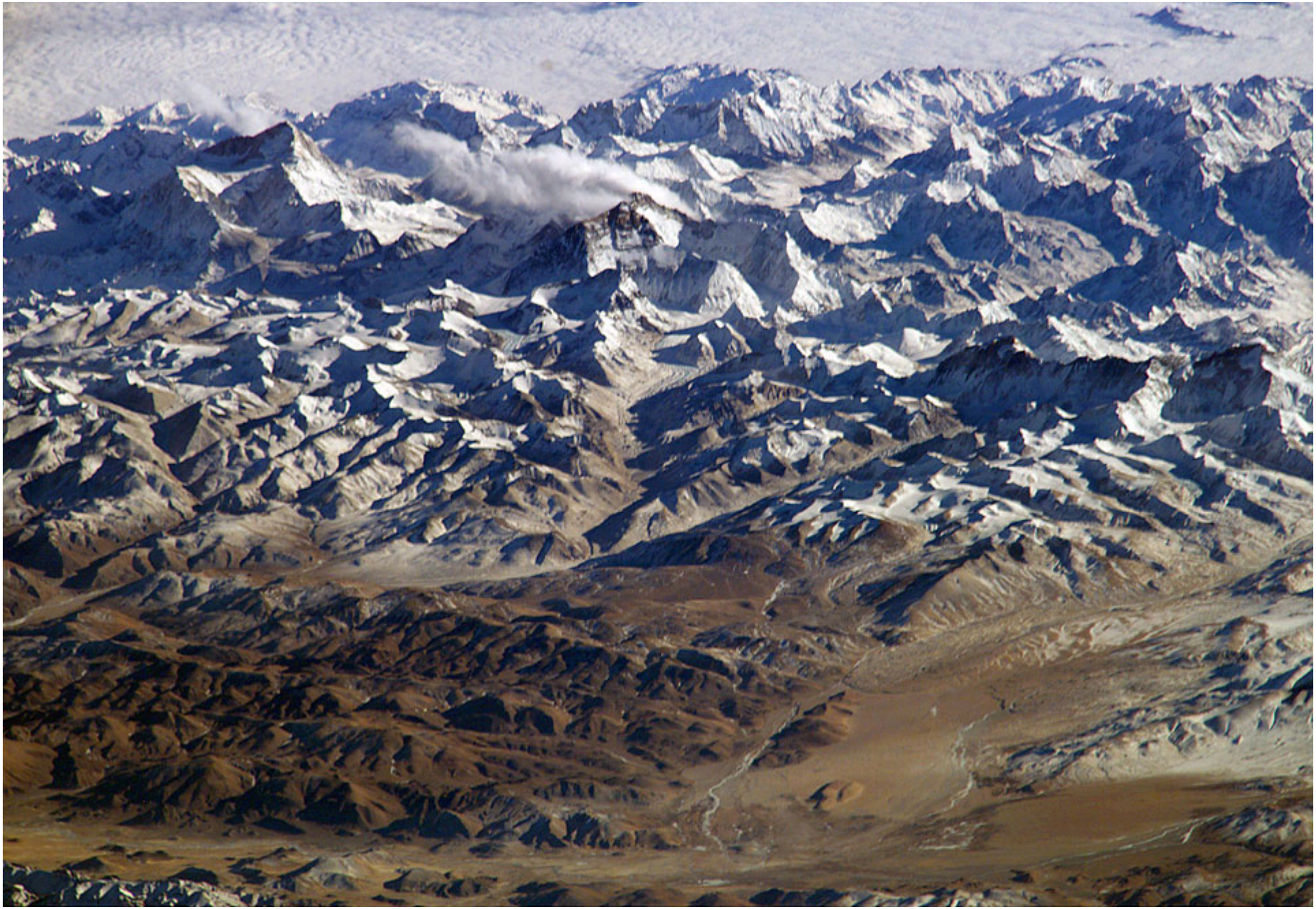


http://tlacaelel.igeofcu.unam.mx/~GeoD/colision/colision.html



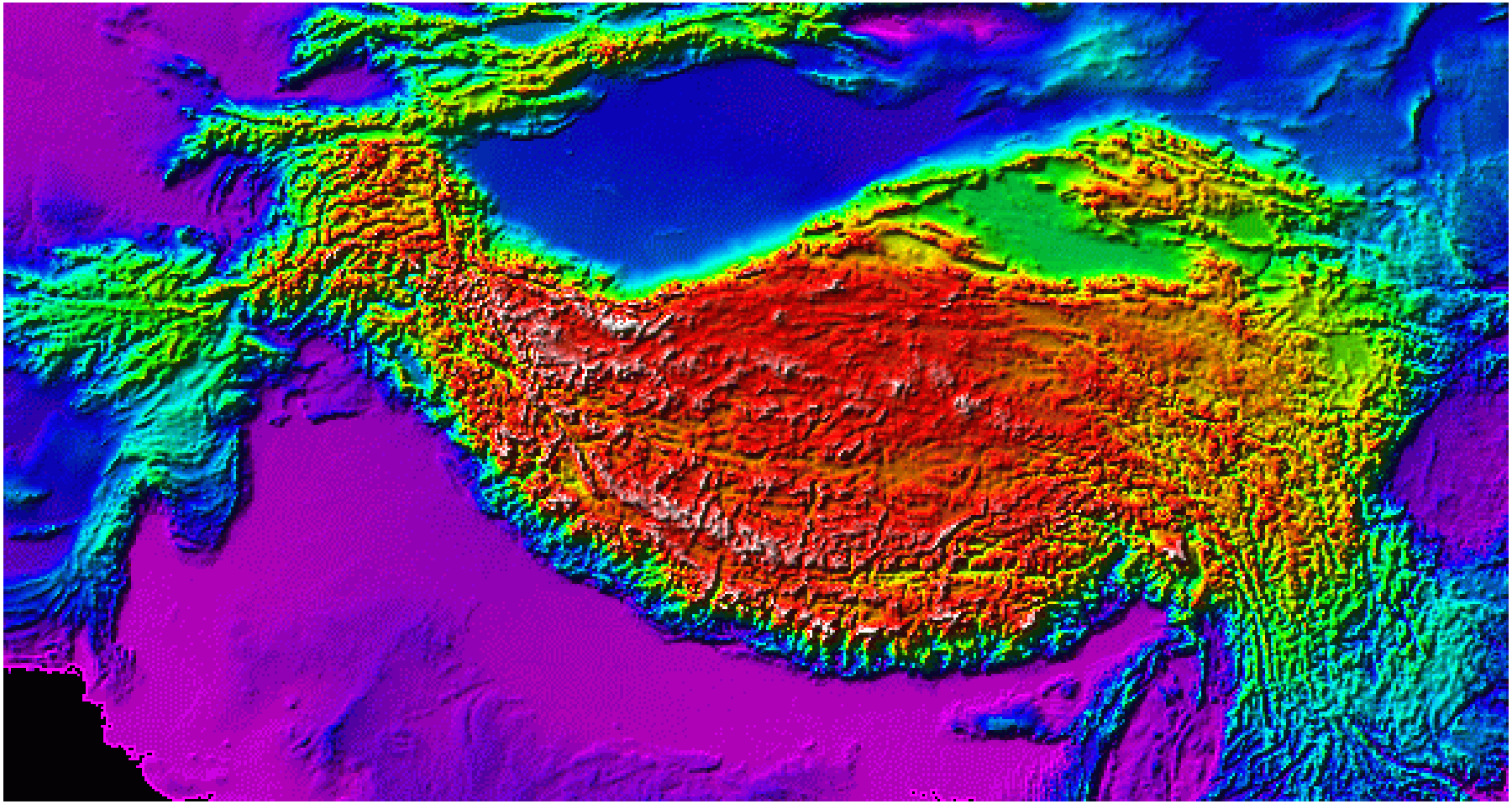




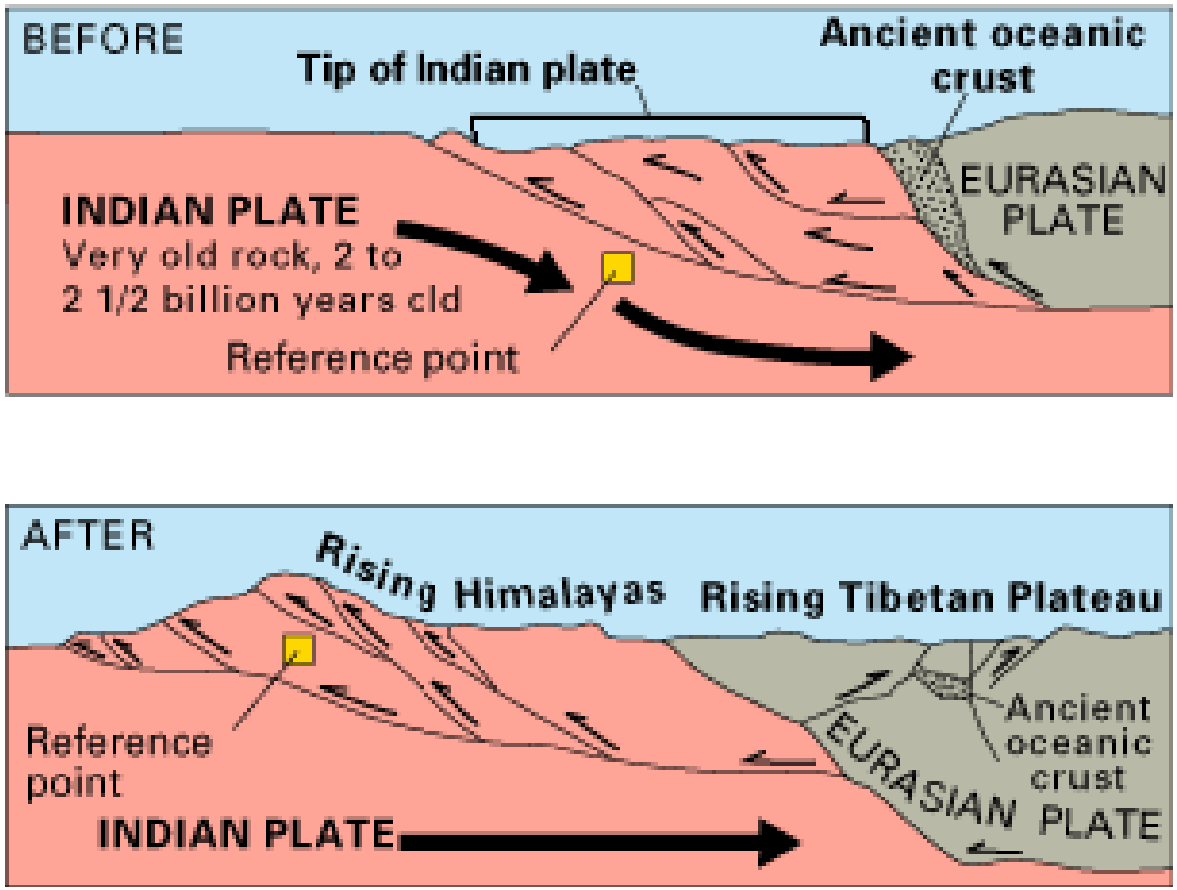


http://www.answers.com/topic/himalayas-jpg

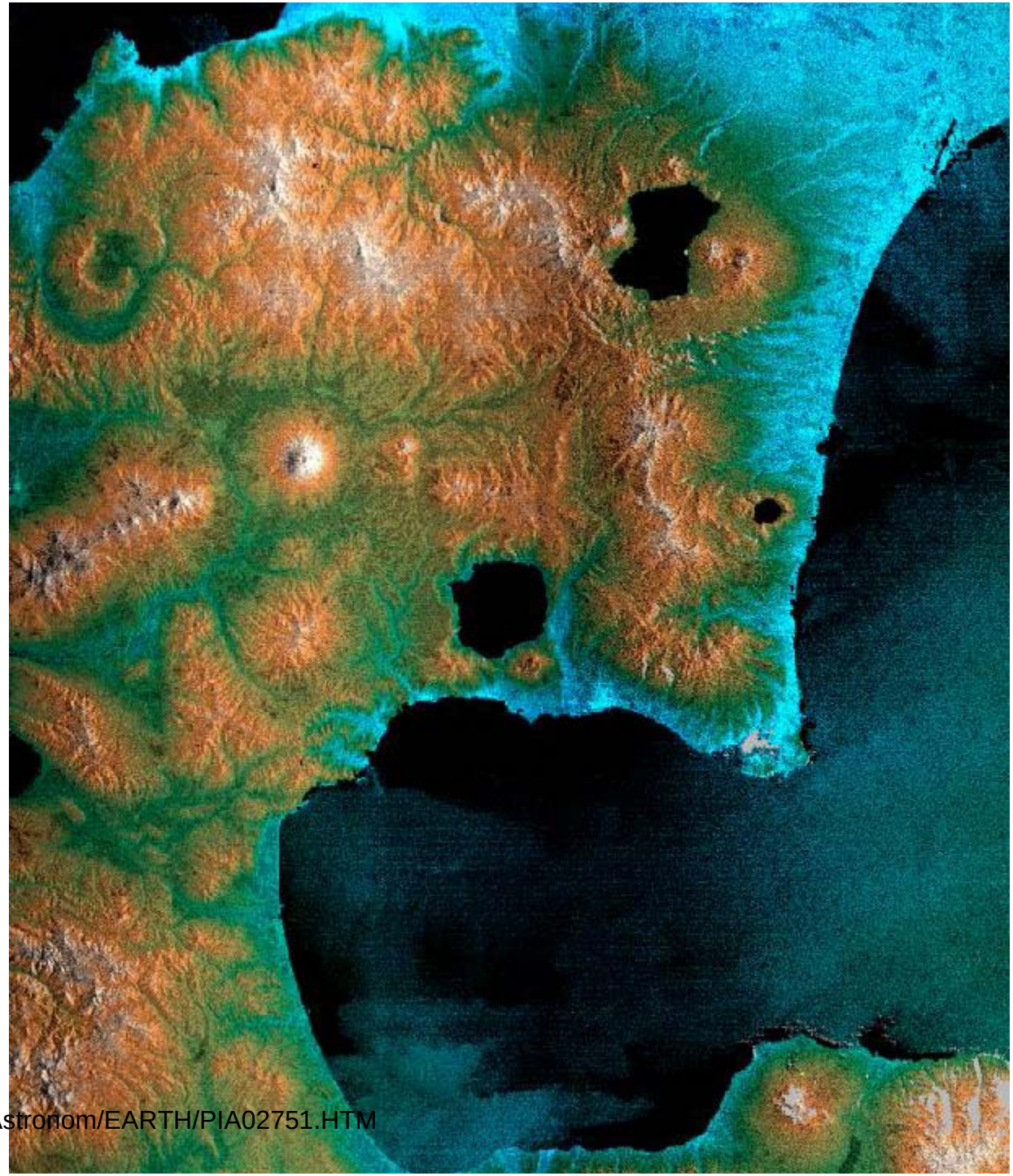
Himalaya topography



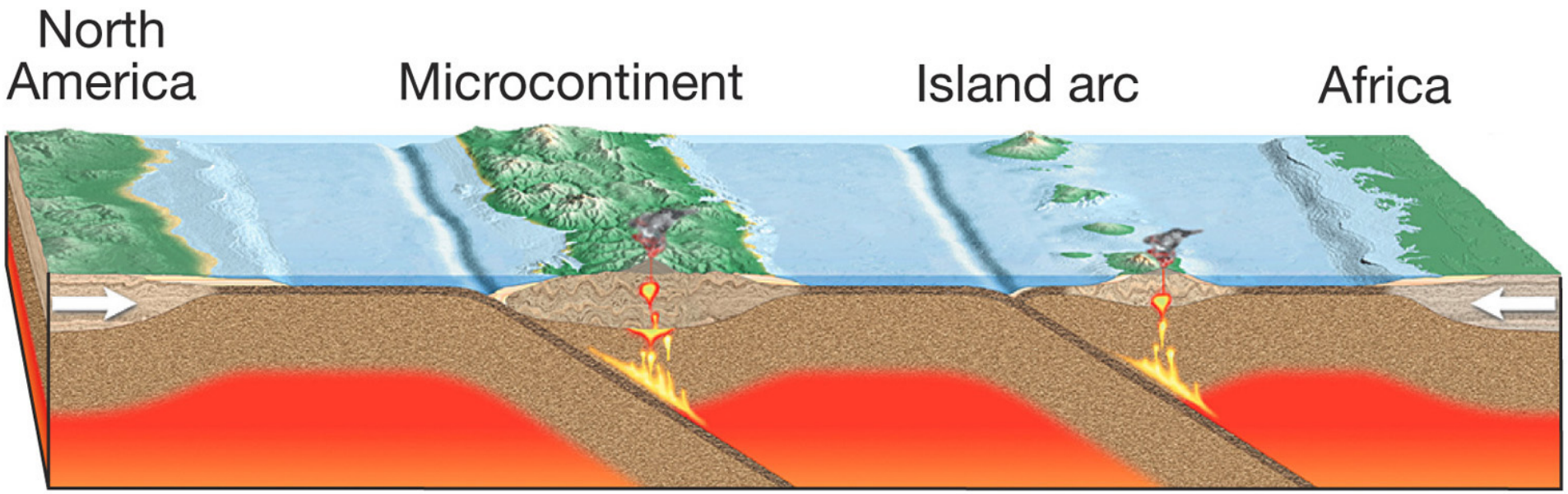
http://www.geo.cornell.edu/grads/duncan/topo/



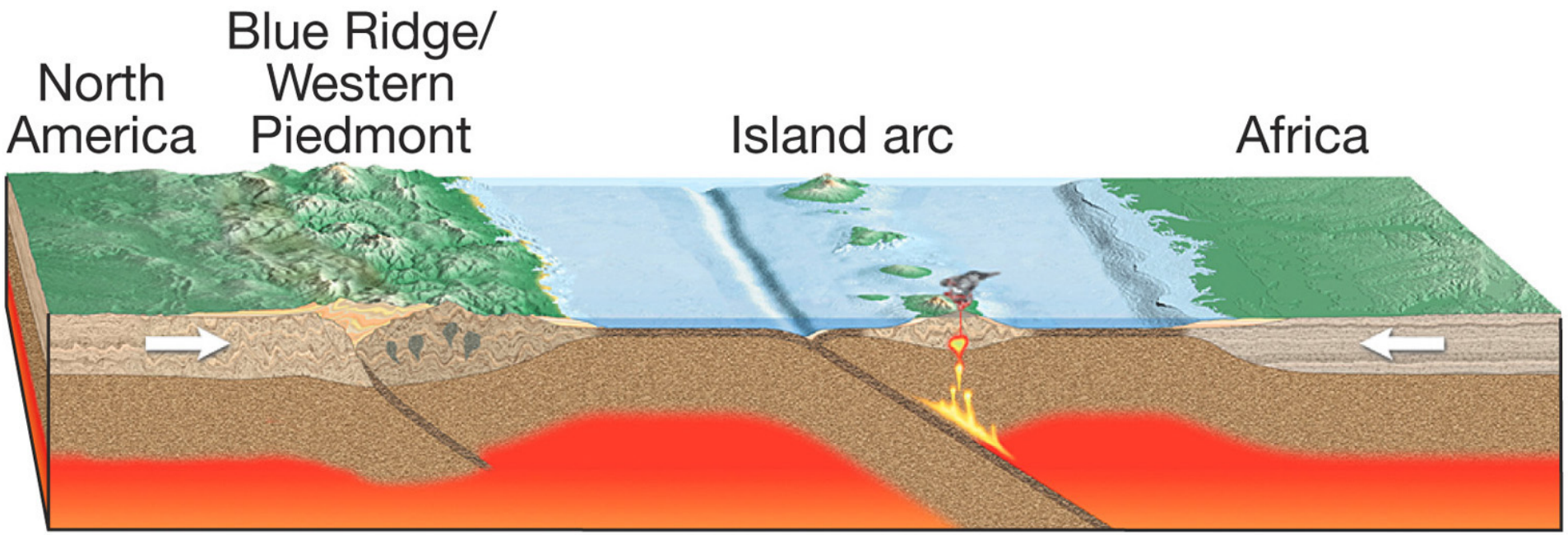
http://pubs.usgs.gov/publications/text/understanding.html#anchor4665685



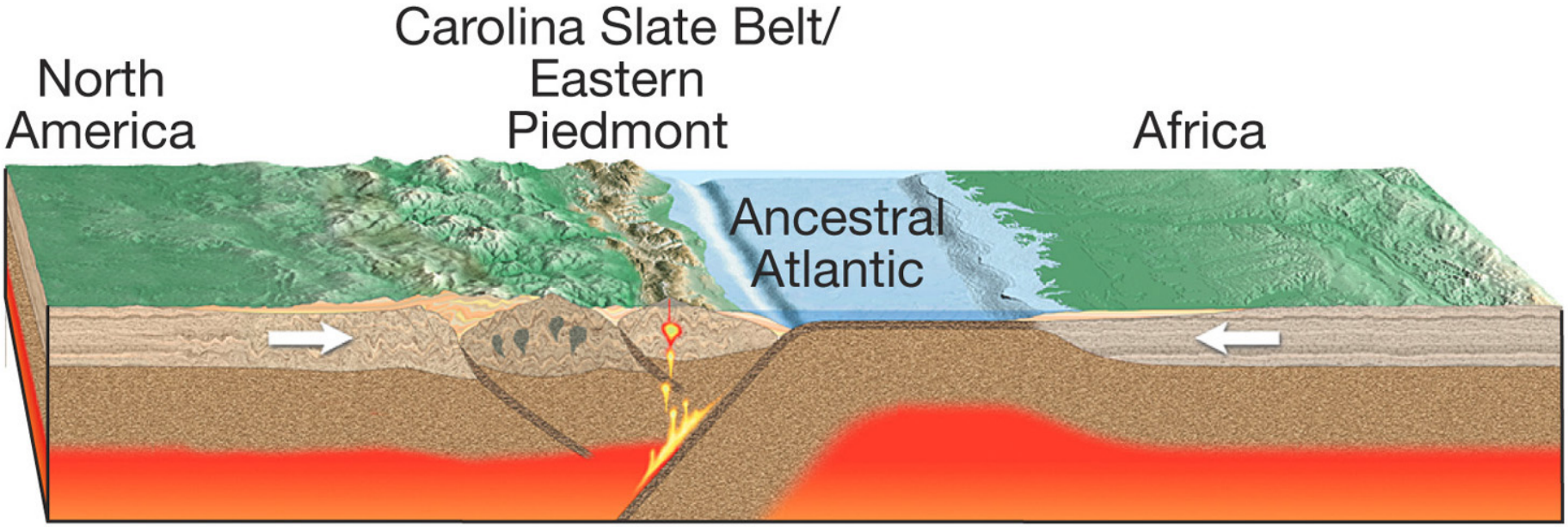
http://astroa.physics.metu.edu.tr/Astronom/EARTH/PIA02751.HTM



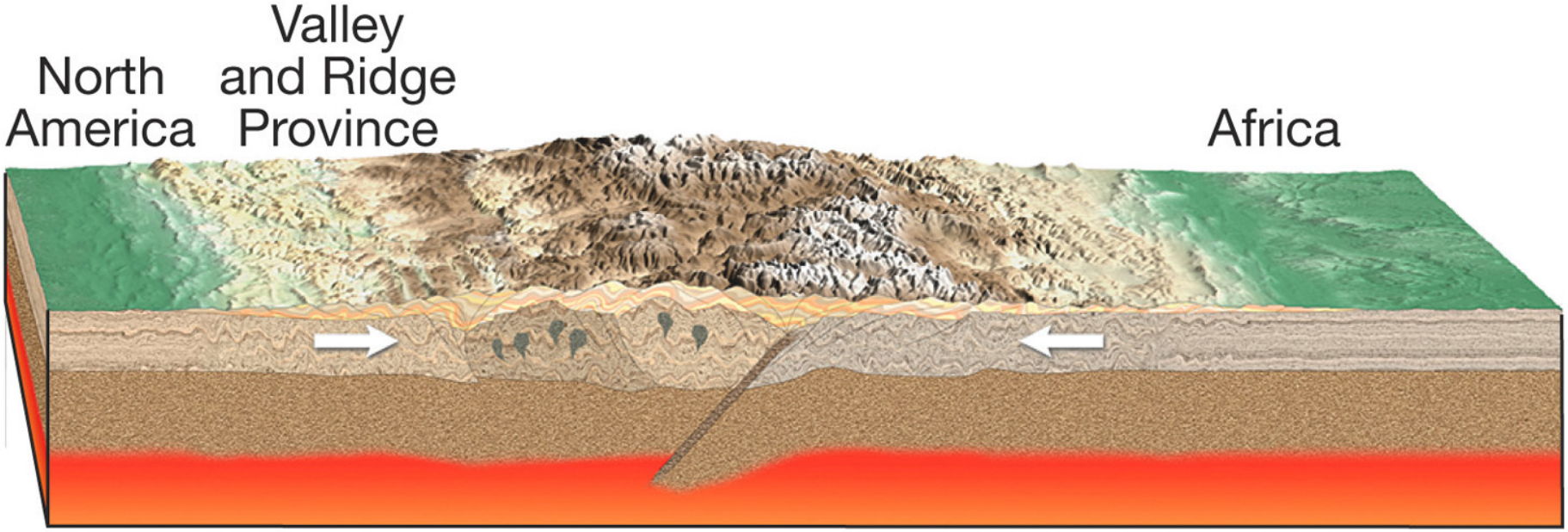
A. 600 million years ago



B. 450–500 million years ago



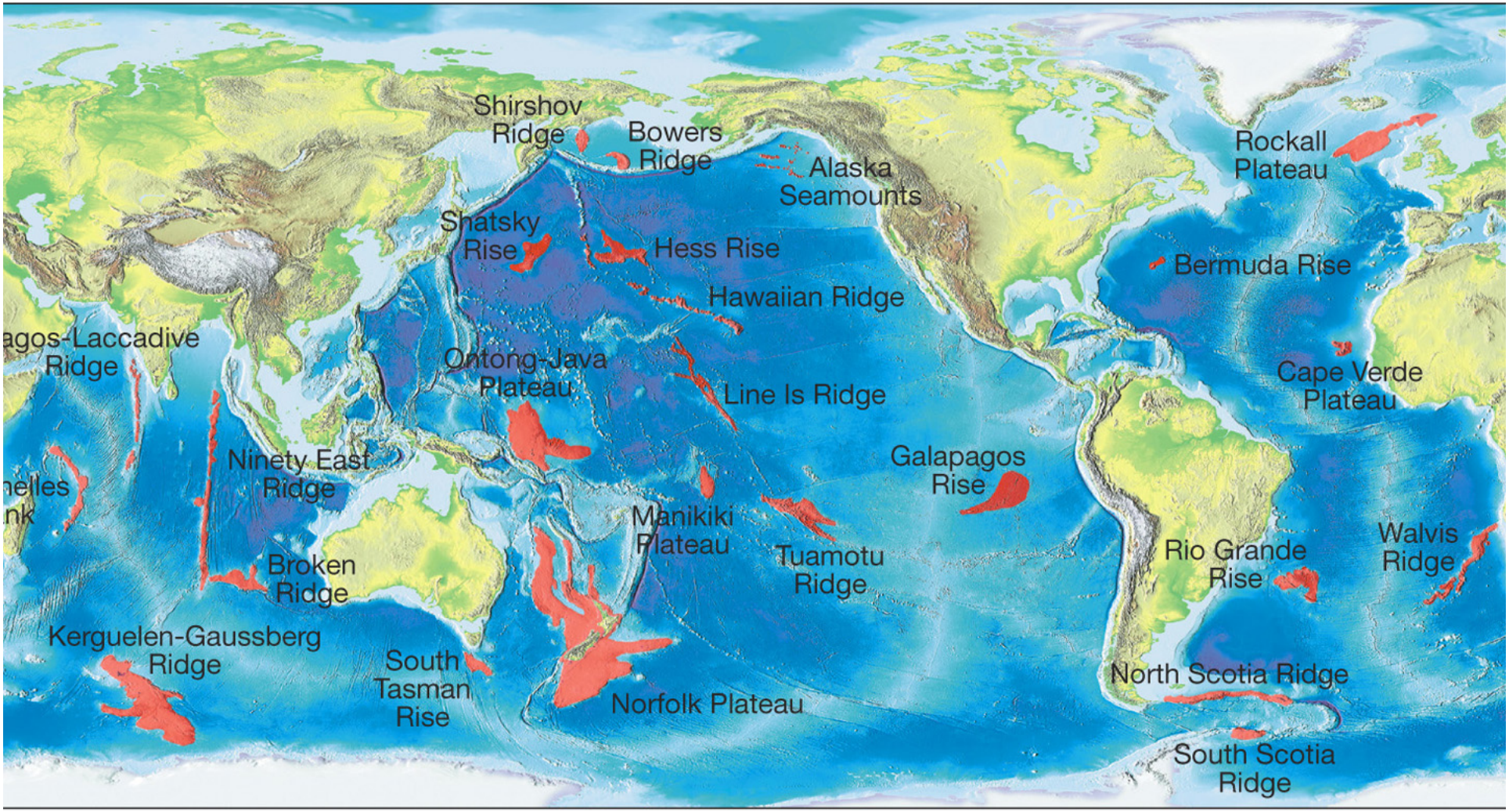
C. 400 million years ago



D. 250–300 million years ago

http://www.pbs.org/wgbh/nova/gamma/cosm_plan.html

http://astroa.physics.metu.edu.tr/Astronom/IEARTH.HTM



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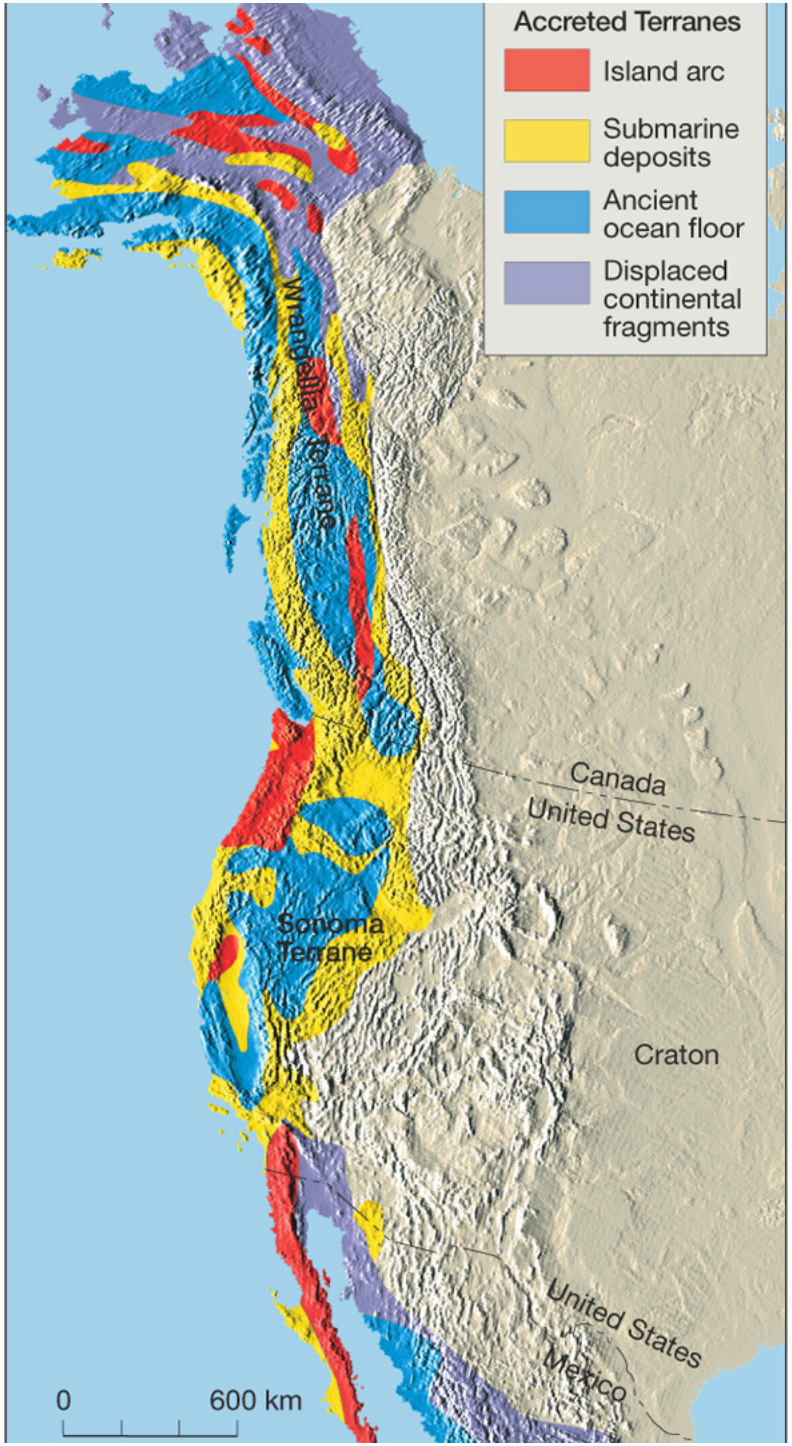
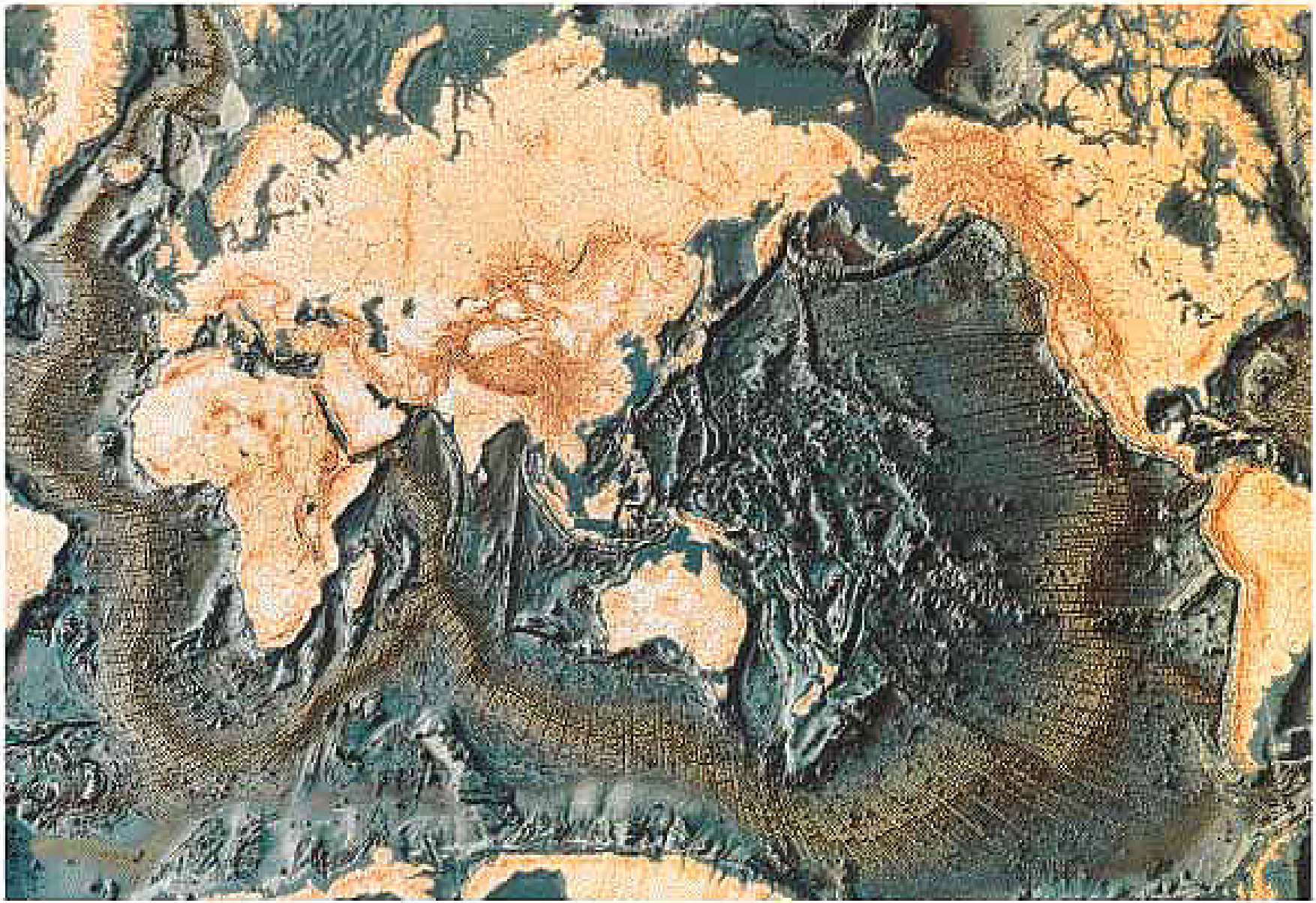
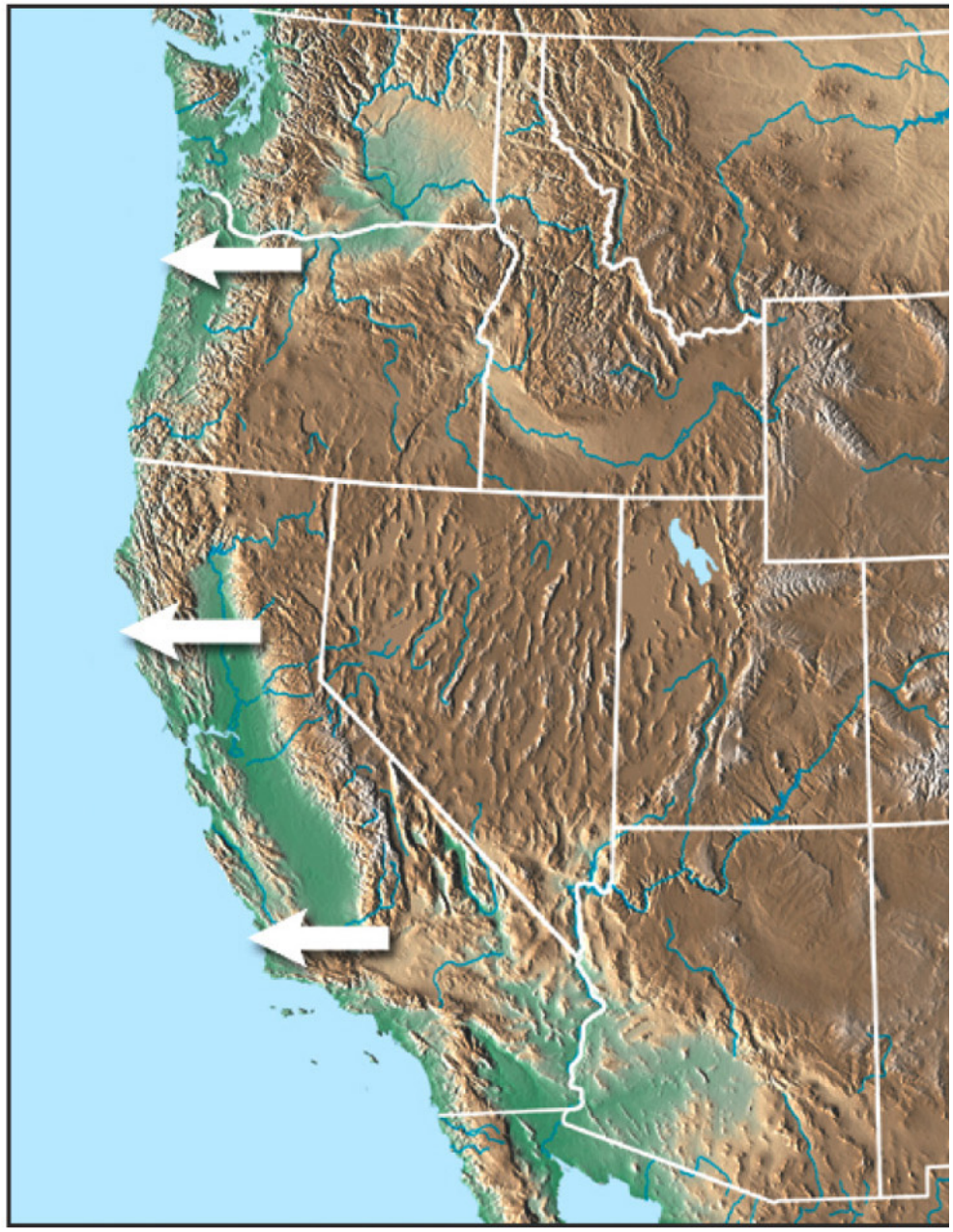
Western North America

- Accreted terranes





http://piru.alexandria.ucsb.edu/collections/geography3b/dar/WEEK3/week3.html



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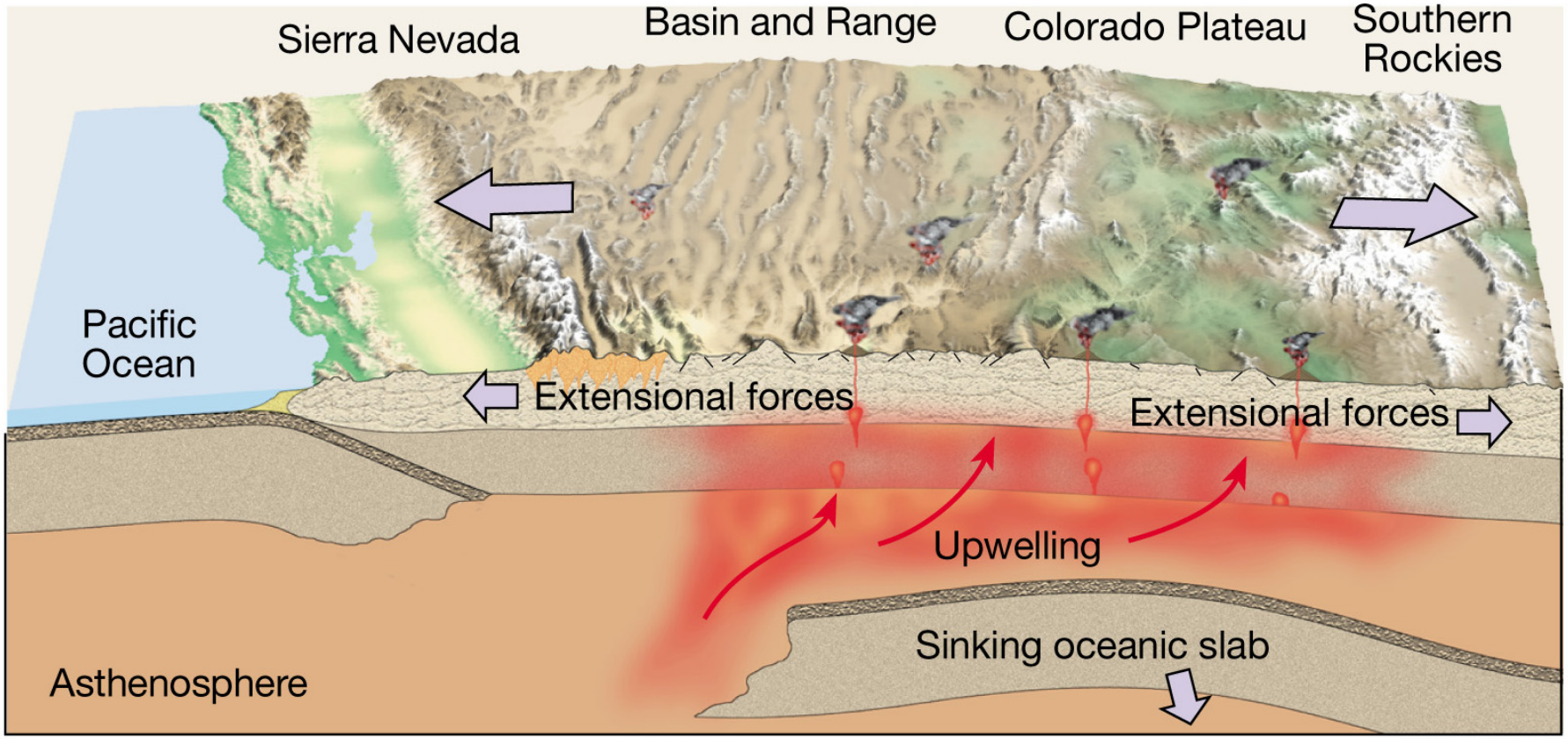
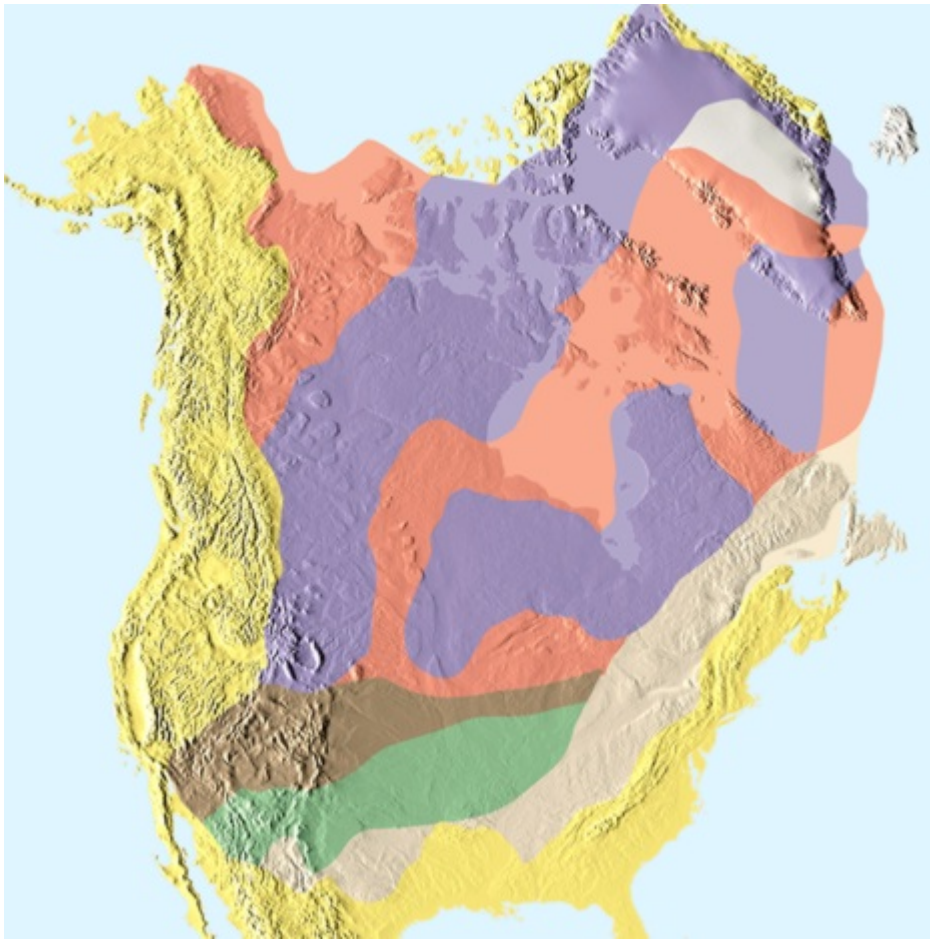
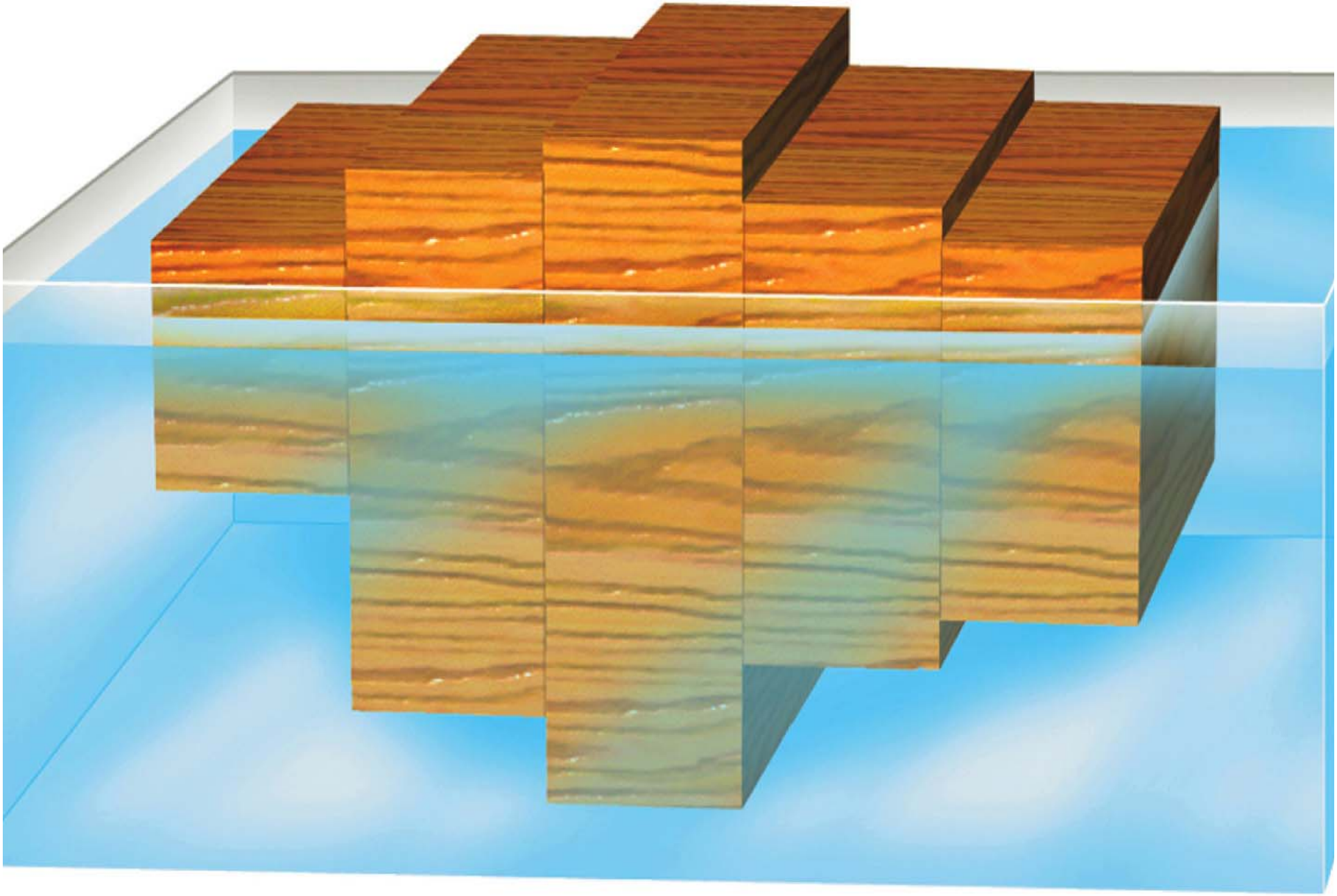
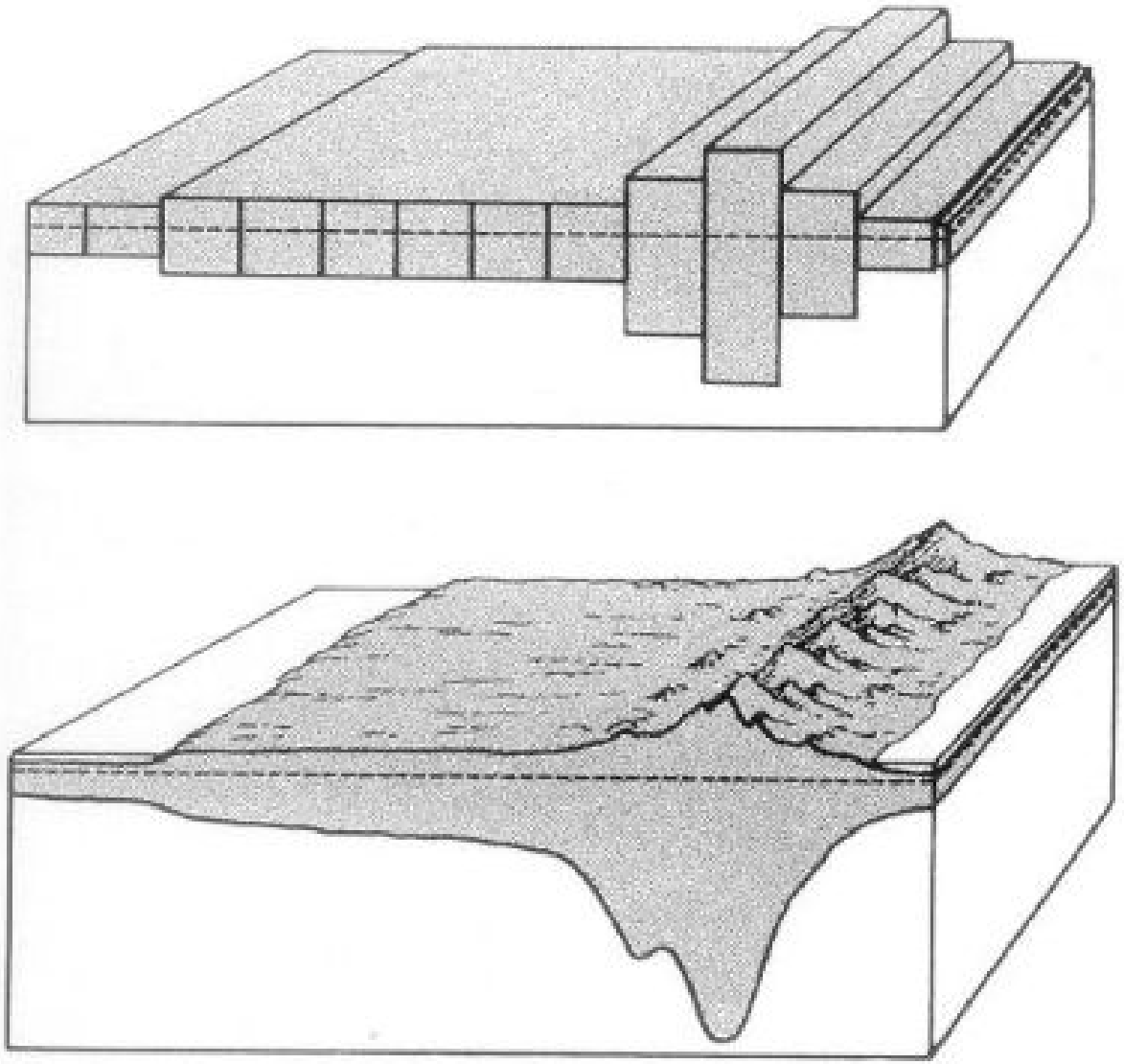

Sierra Nevada
Basin and Range
Colorado Plateau
Southern Rockies
Pacific Ocean
Extensional forces
Extensional forces
Upwelling
Sinking oceanic slab
Asthenosphere

North American mountain belts







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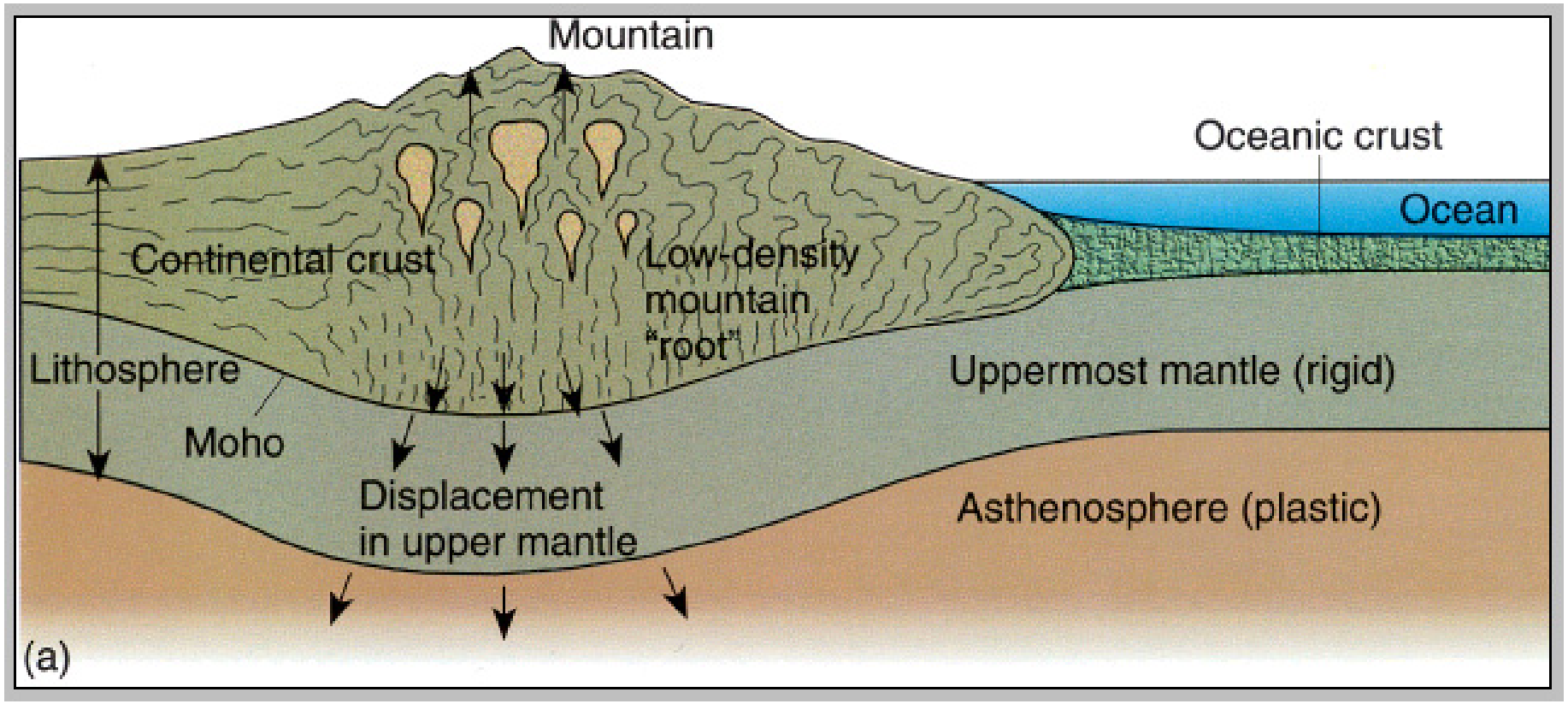
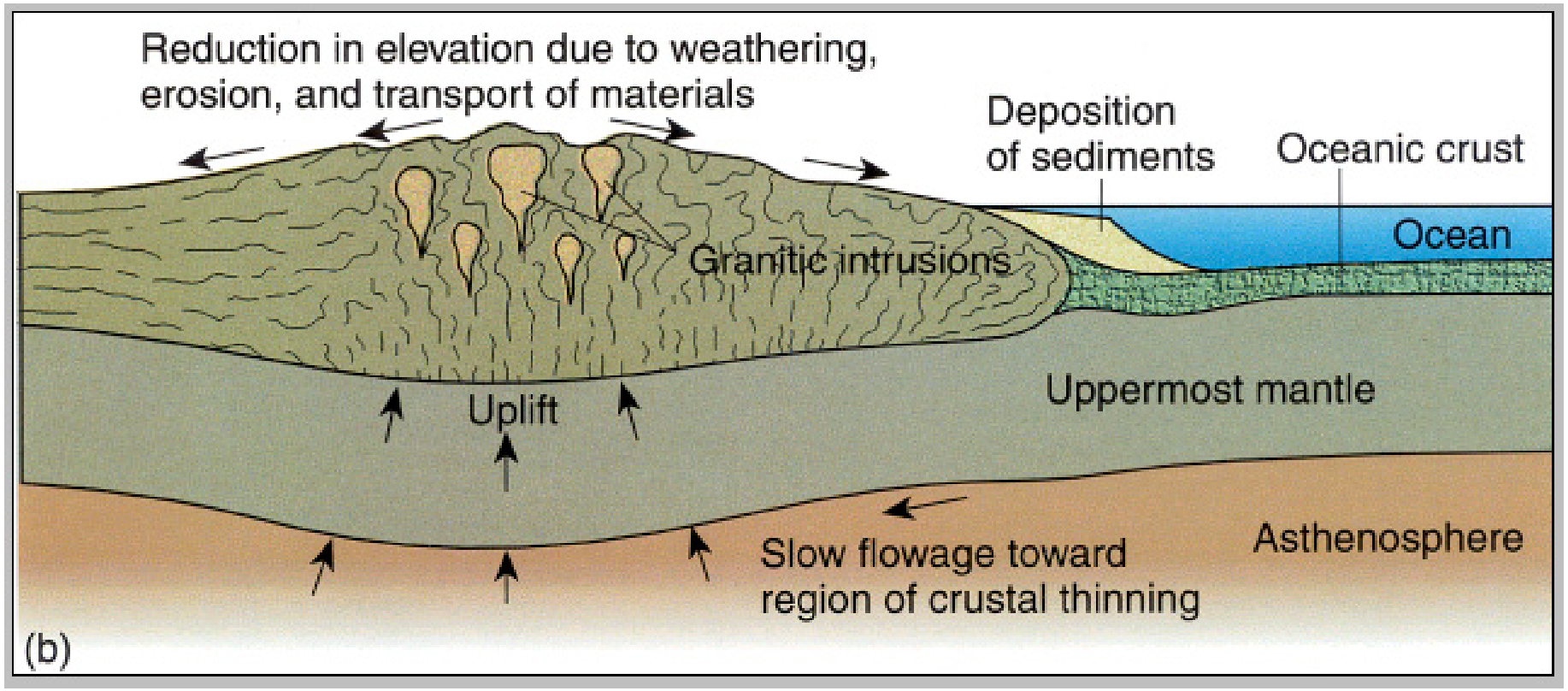
Crustal subsidence due to mountain building



http://piru.alexandria.ucsb.edu/collections/geography3b/dar/WEEK3/week3.html

Unloading by erosion allows isostatic rebound



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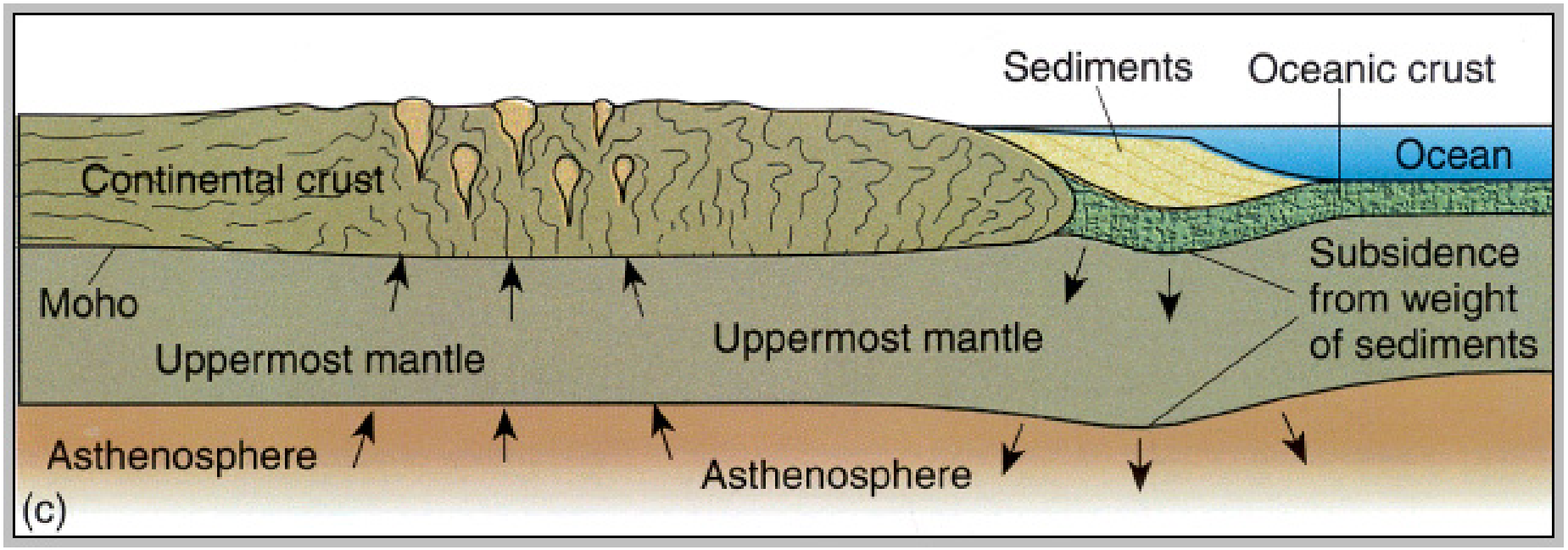
Deposited sediments locally loads margin



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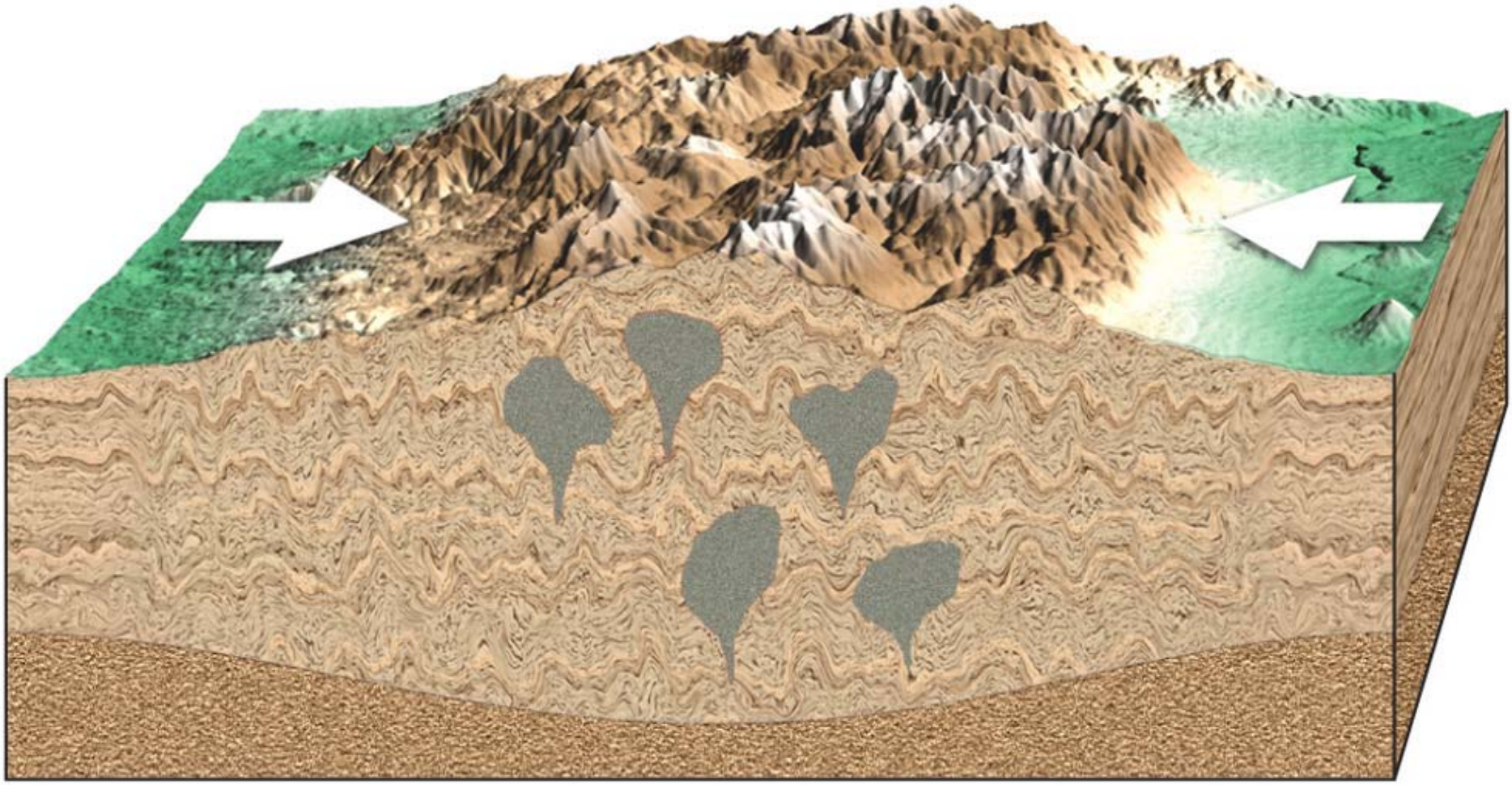
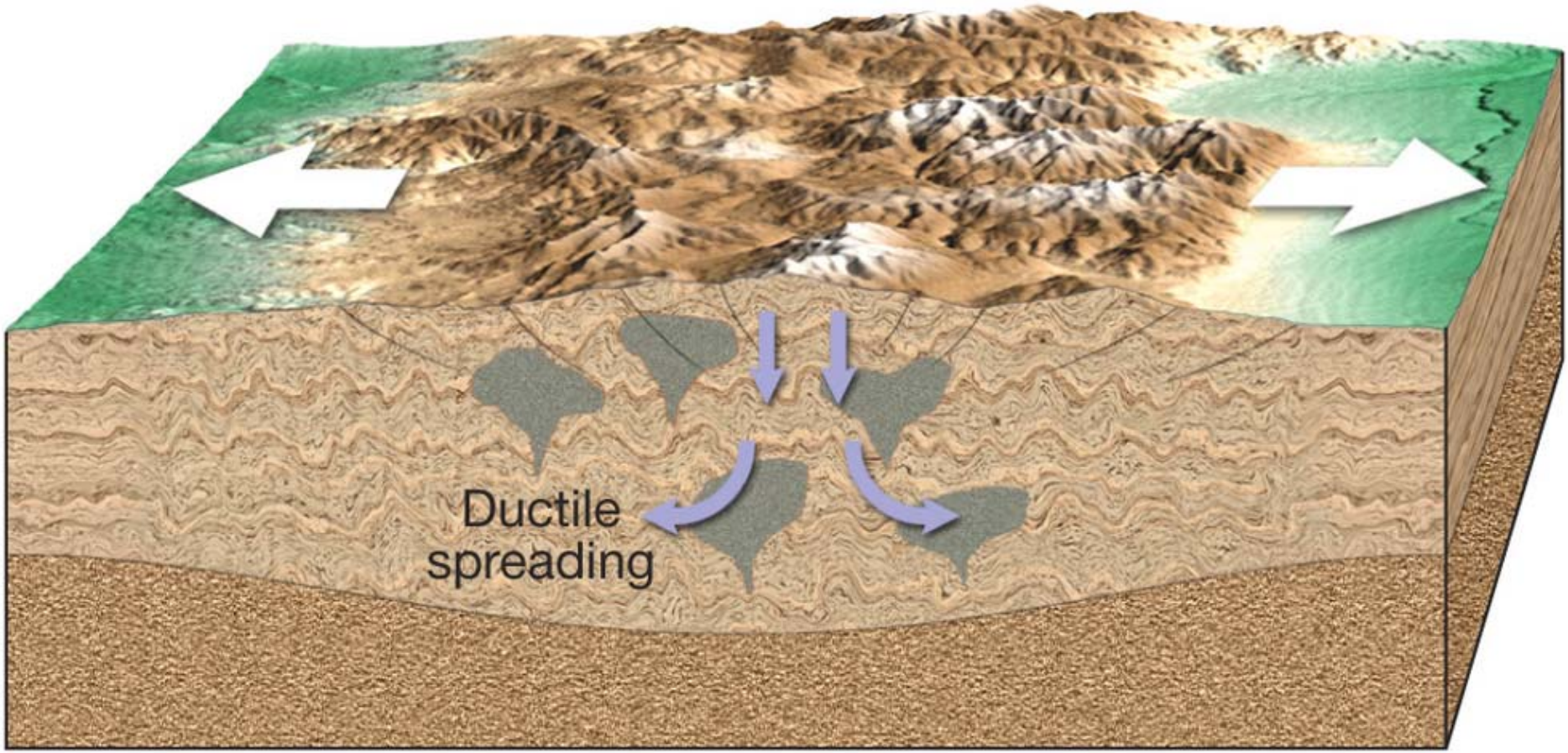
Extreme uplift due to compression



A. Horizontal compressional forces dominate causing shortening and thickening of the crust

Ductile spreading after uplift



B. Gravitational forces dominate resulting in stretching and thinning of the crust

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