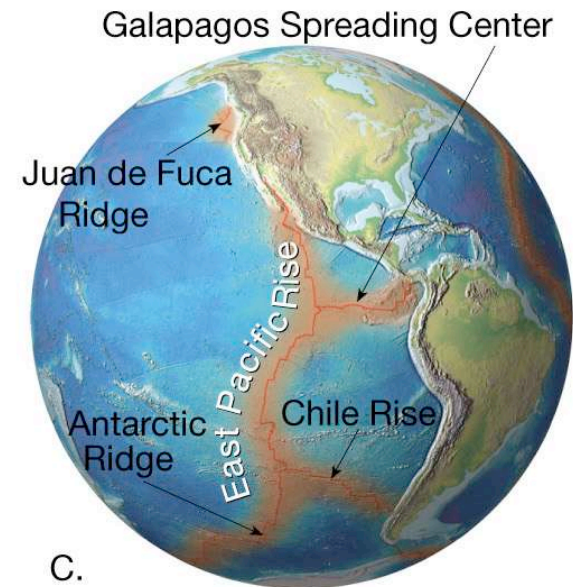
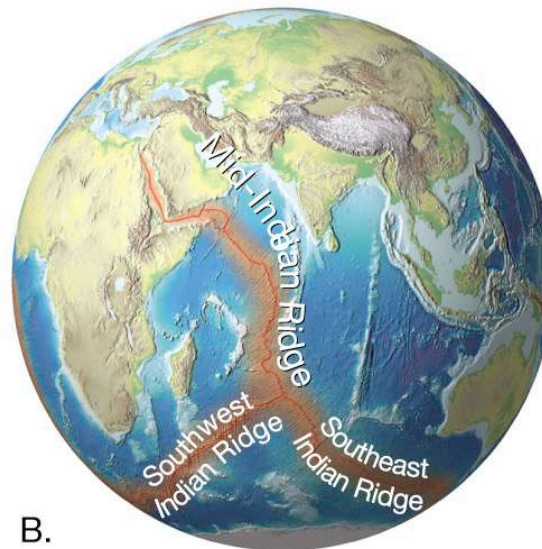
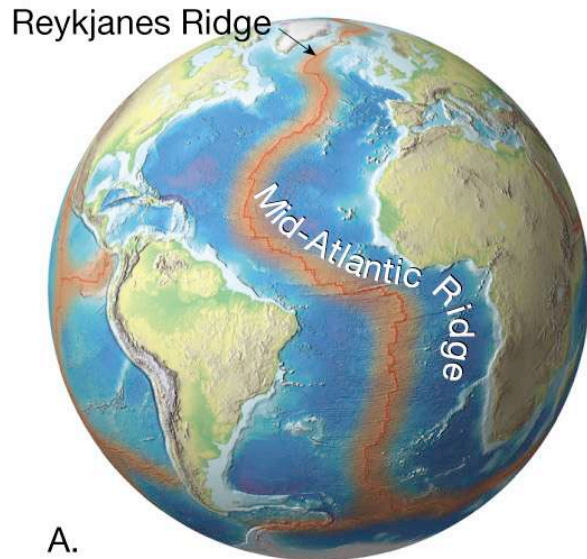


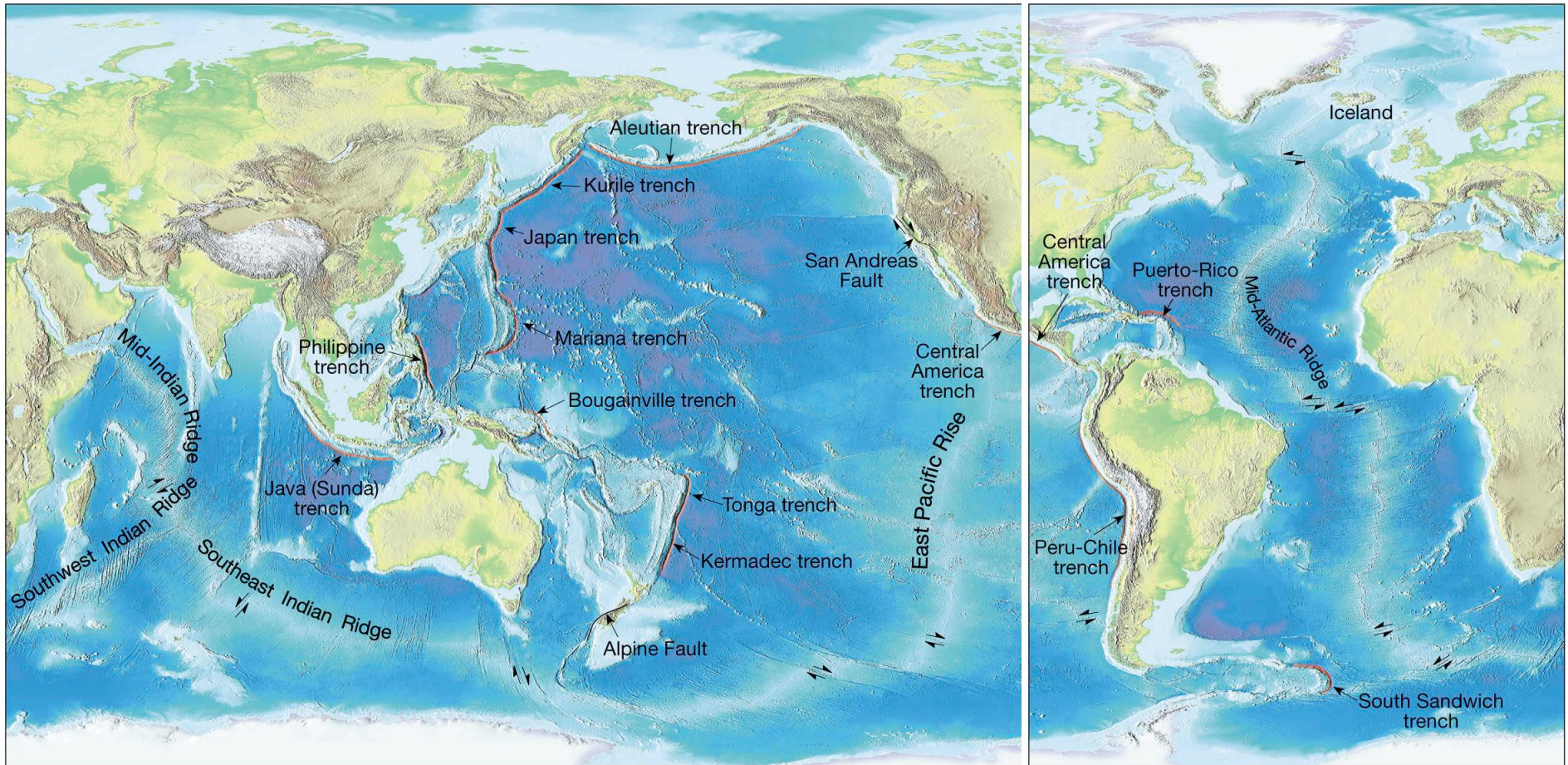
Ocean Ridges



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40,000 miles

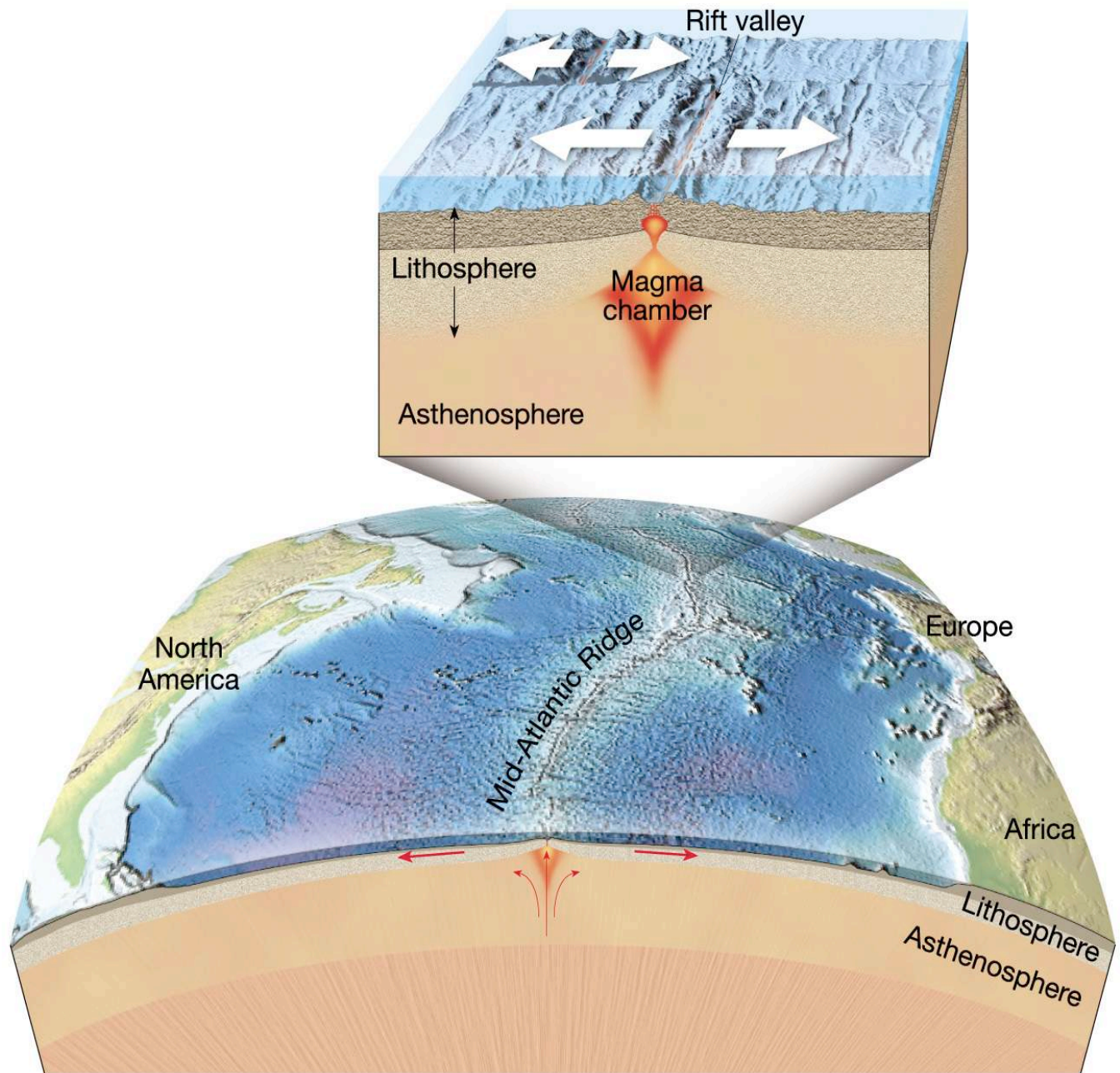
Trenches & Ridges



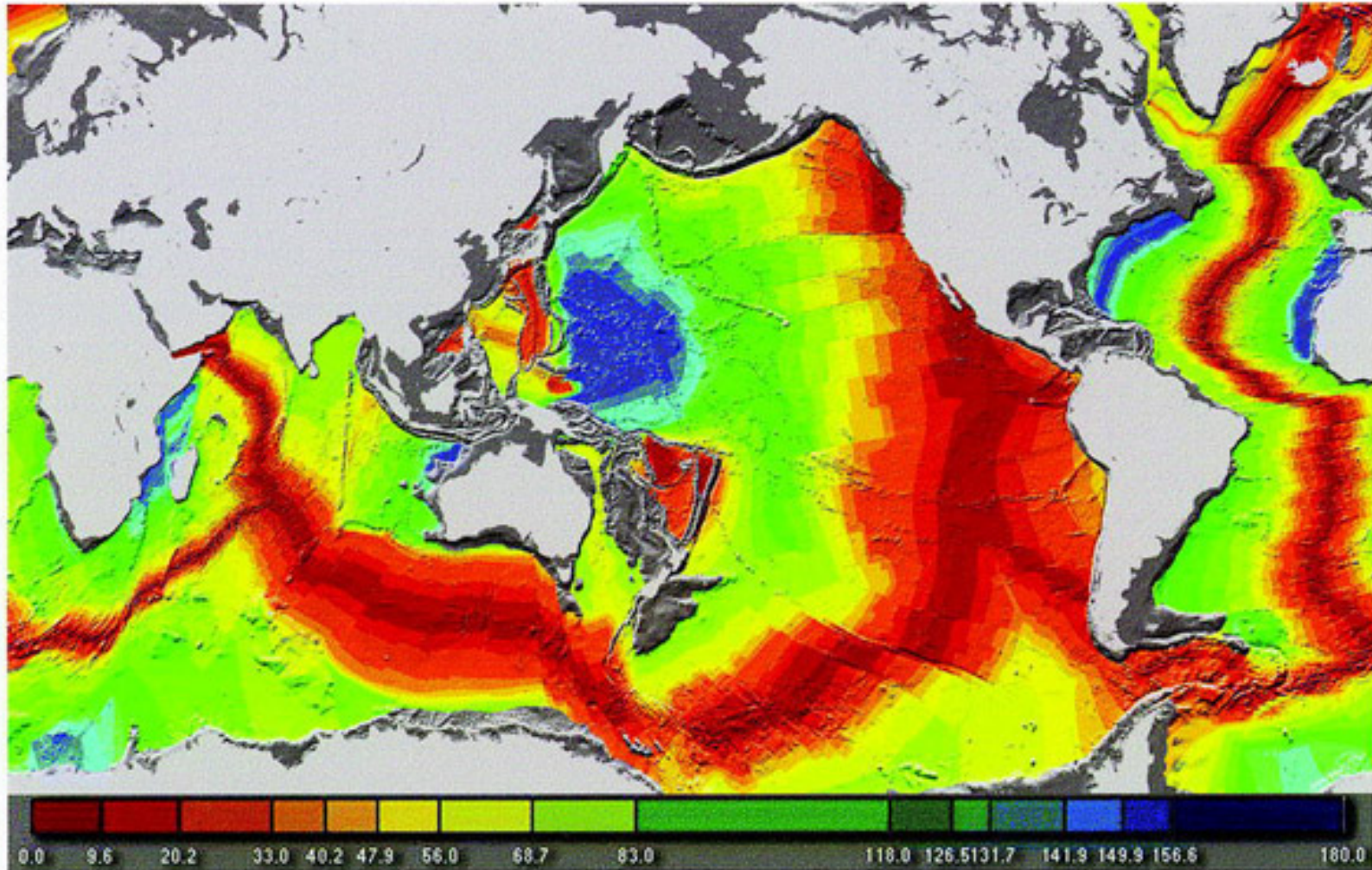
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Spreading Ridges

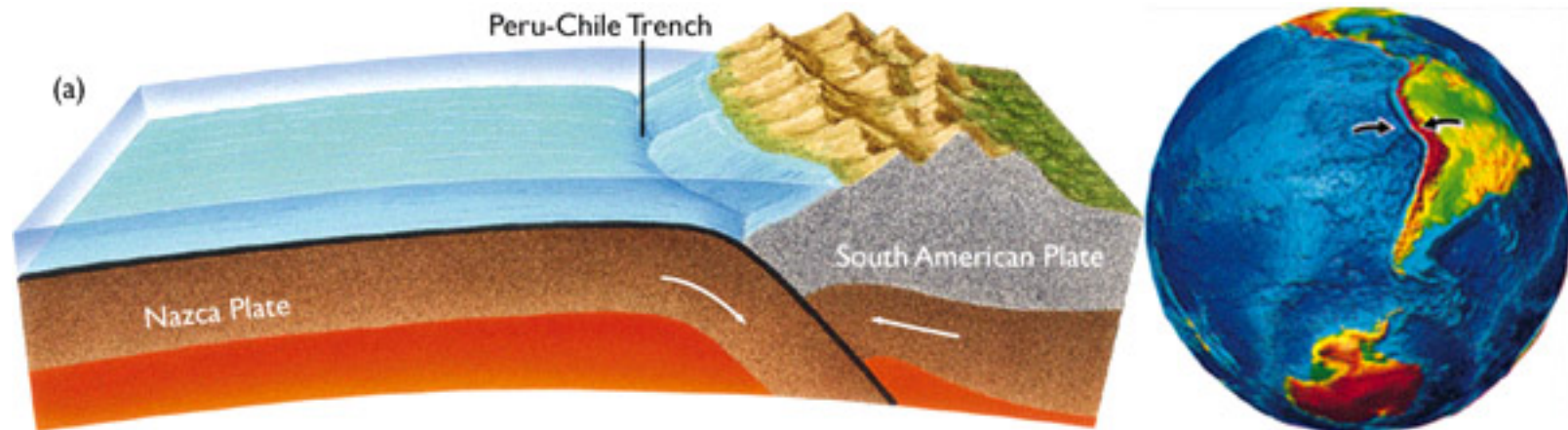


Magnetic Patterns

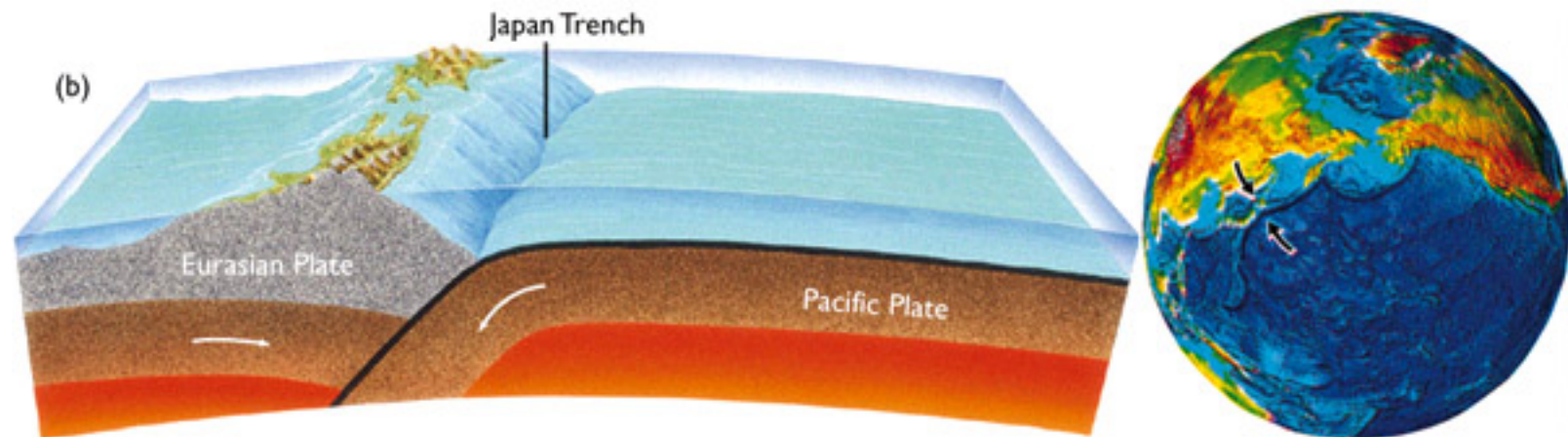


Modern ocean floors colour-coded by geological age. The crust either side of the spreading centres becomes progressively older. Note how the floor of the Pacific Ocean has been subducting eastwards under North and South America.

Trenches-Subduction Zones



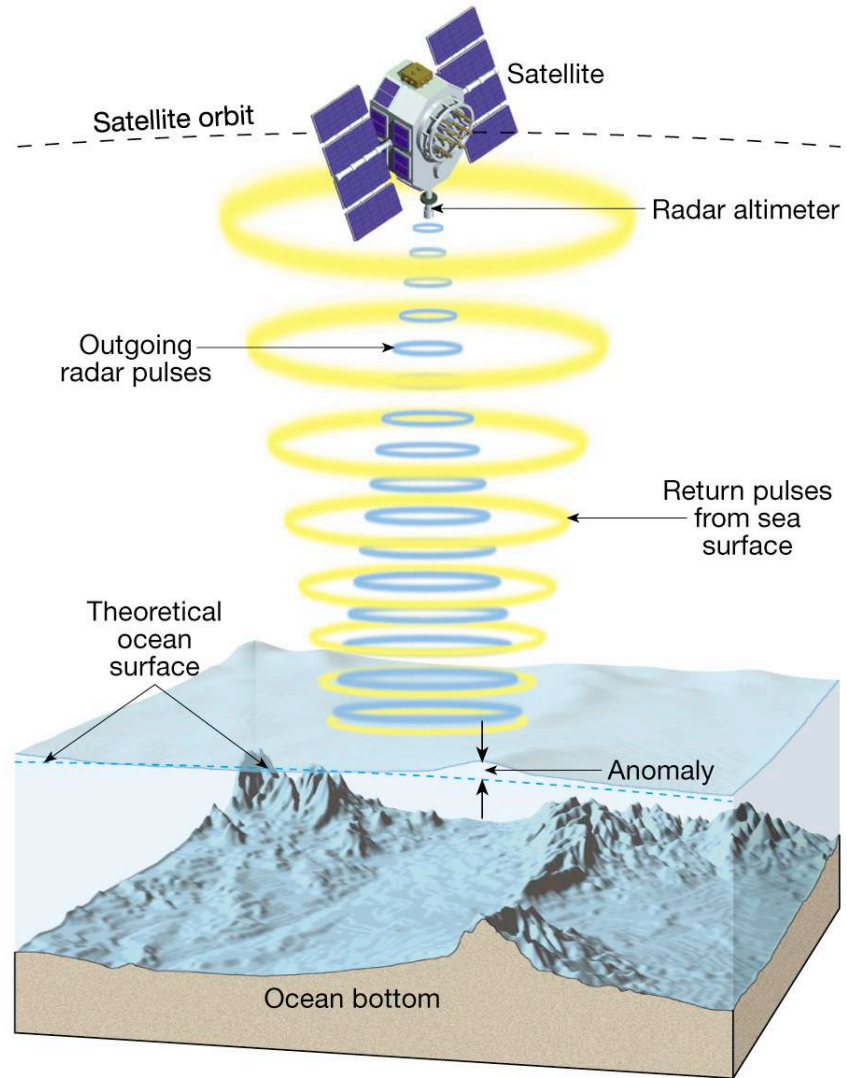
Subduction of an ocean plate beneath a continental margin forming a volcanic belt



Subduction of an ocean plate beneath another ocean plate forming a volcanic arc

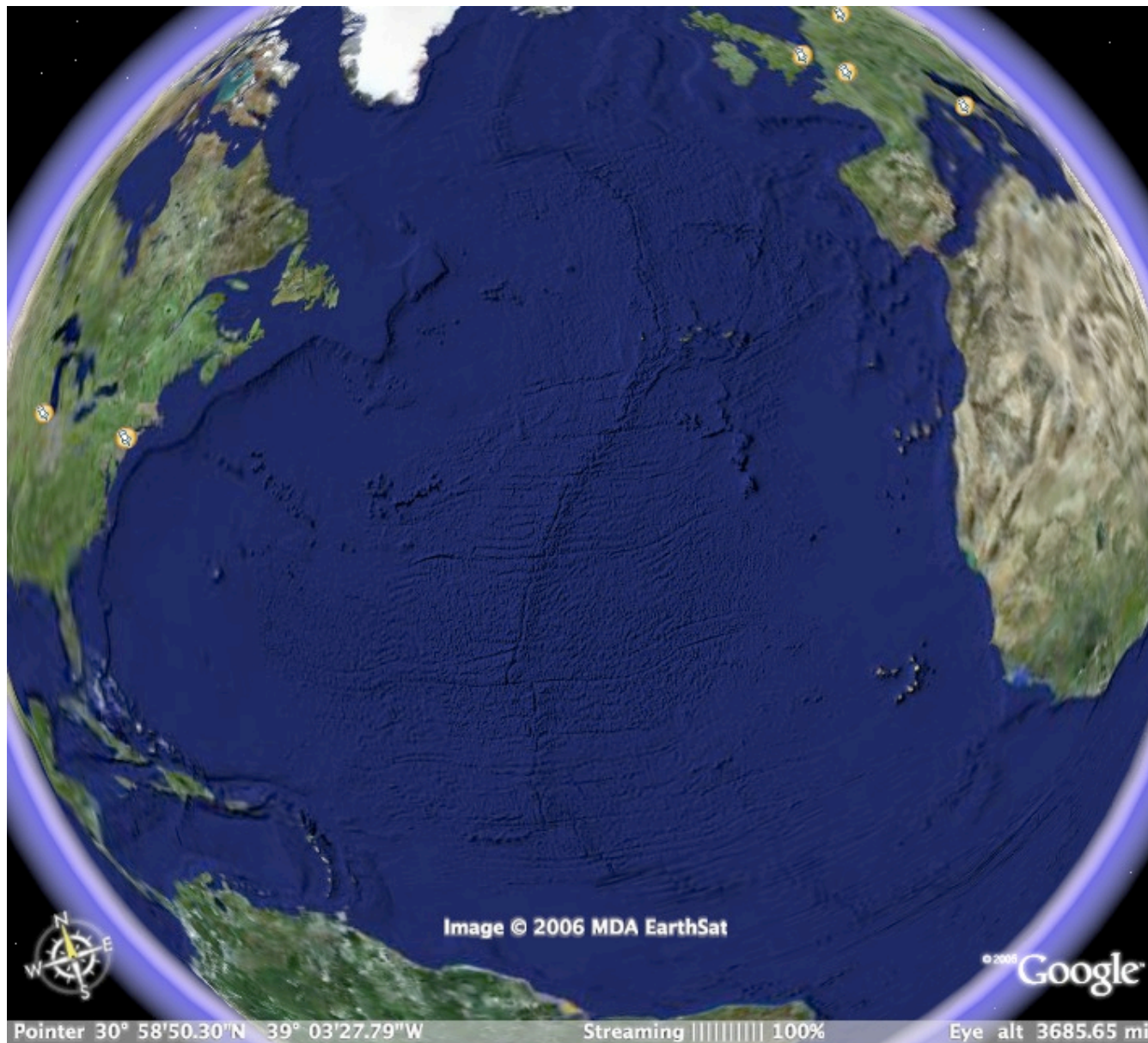
(Press and Siever, Understanding Earth, Freeman 1998)

Satellites

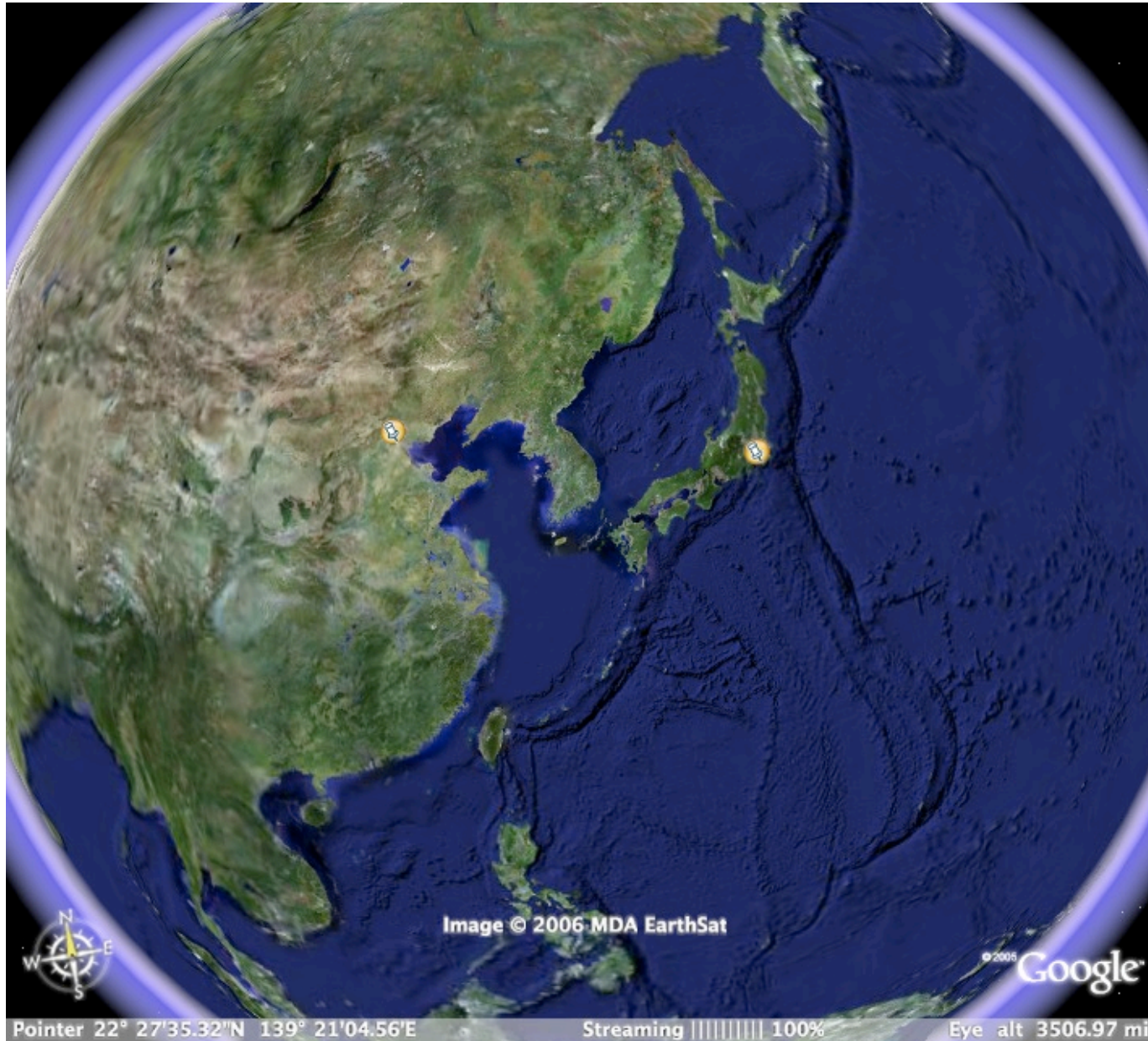


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Mid Ridge-Google Earth



Trenches



Ridges & Trenches

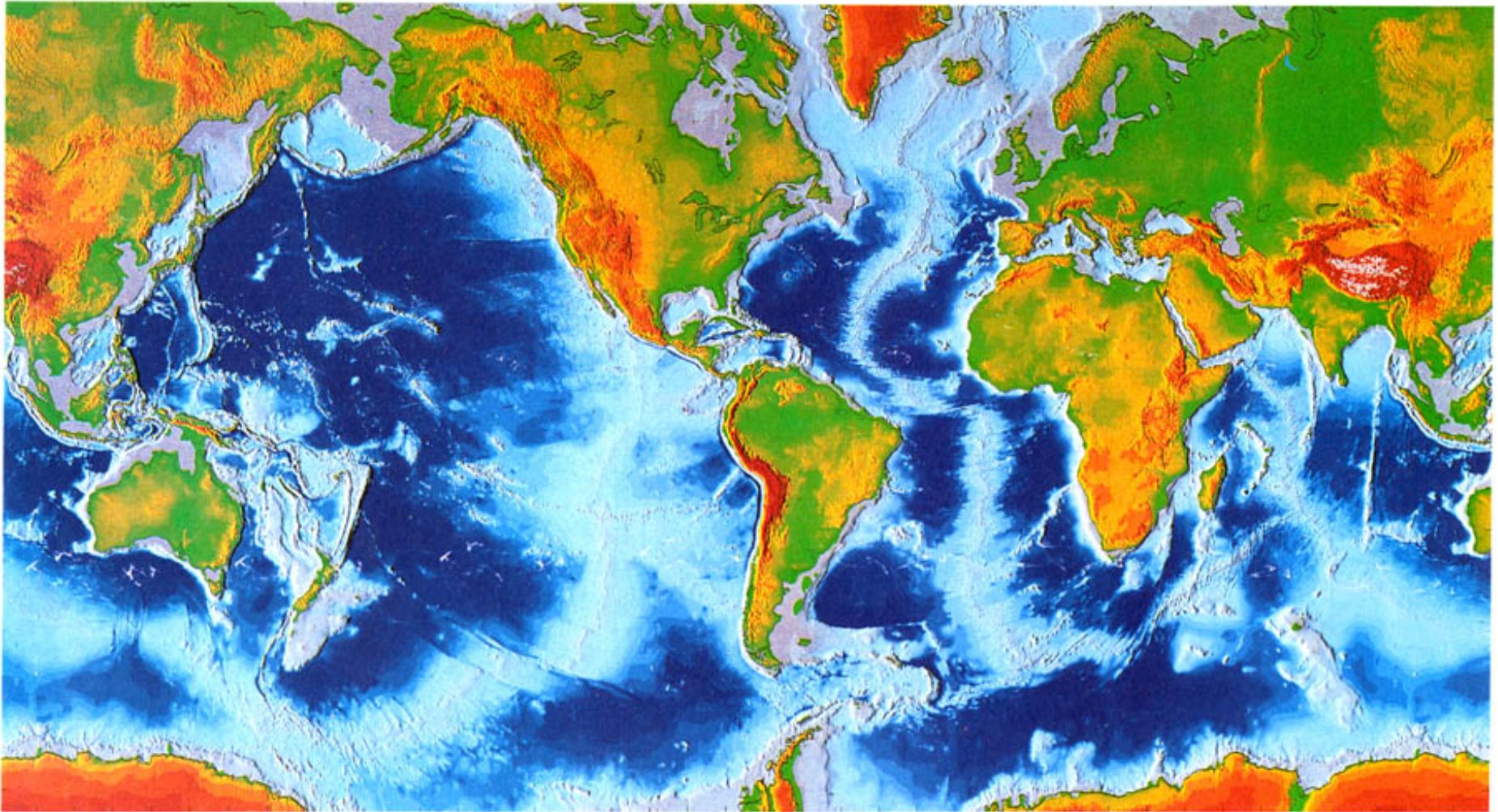


Figure 1.11 Shaded relief map of the Earth's solid surface. The Ninety-east Ridge is the linear ridge running almost north-south to the south-east of India near the right-hand edge of the map.

Plate Tectonics

Continental and Oceanic Plates

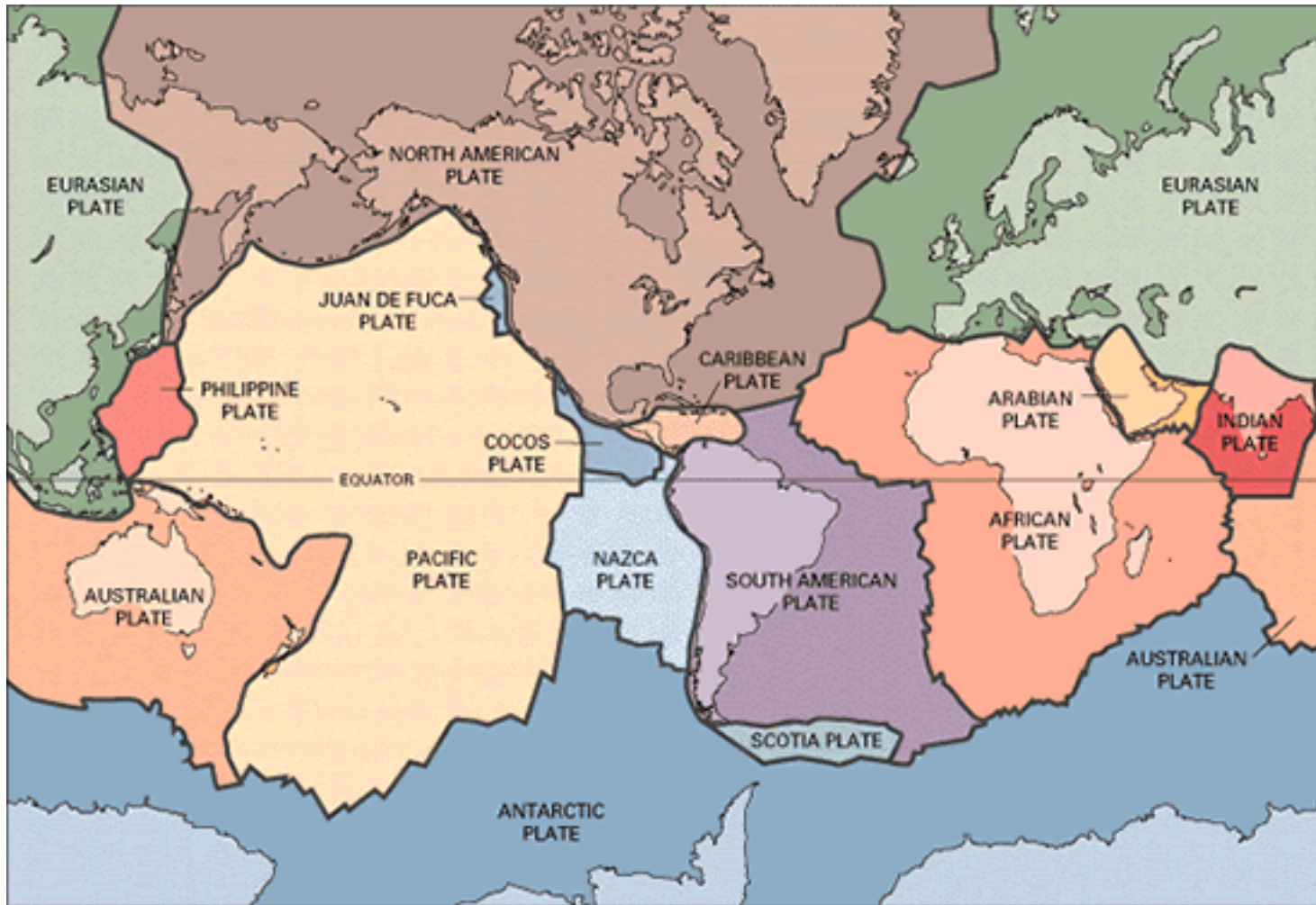
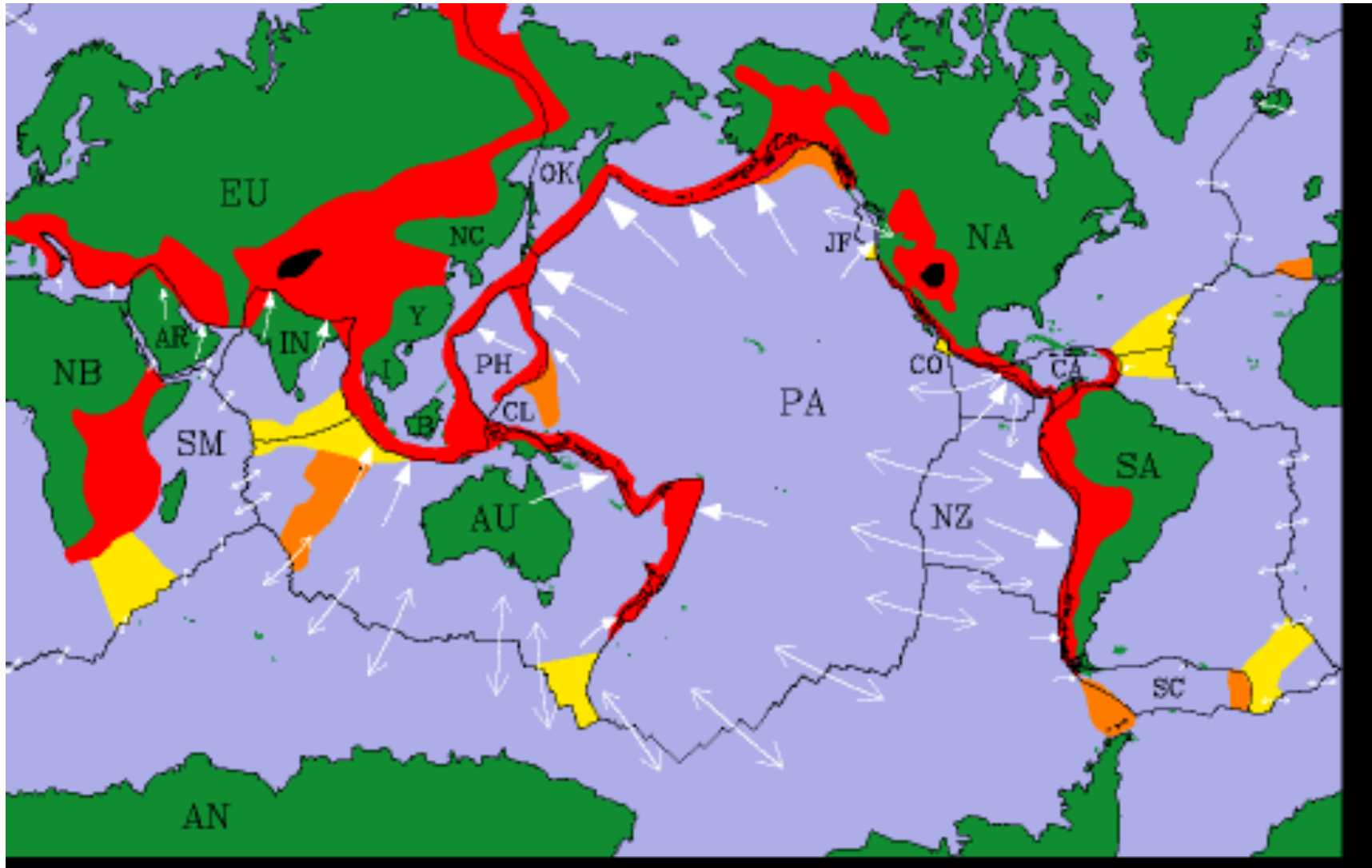
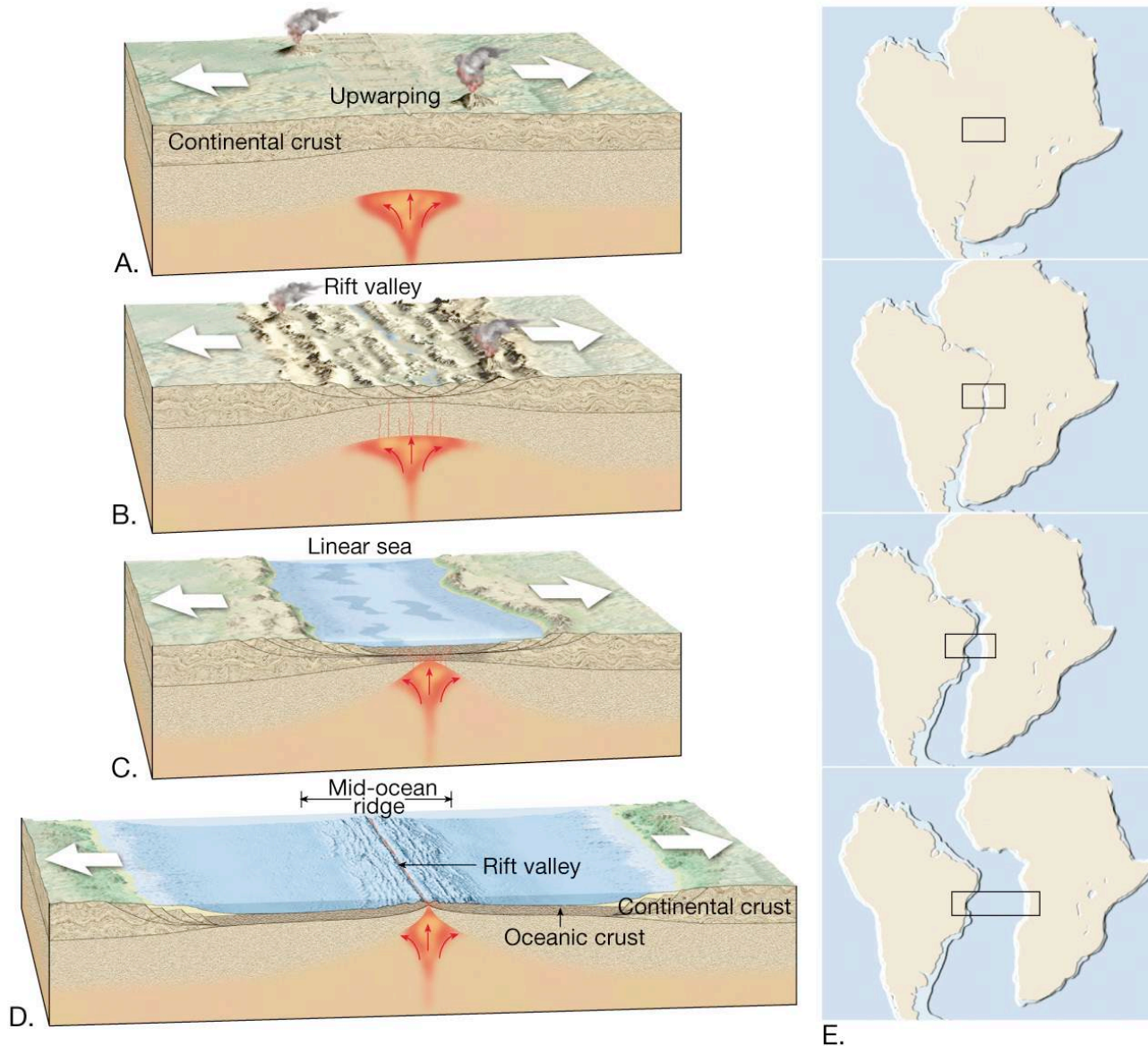


Plate Movement



Past Plate Separation



Modern Example--Africa

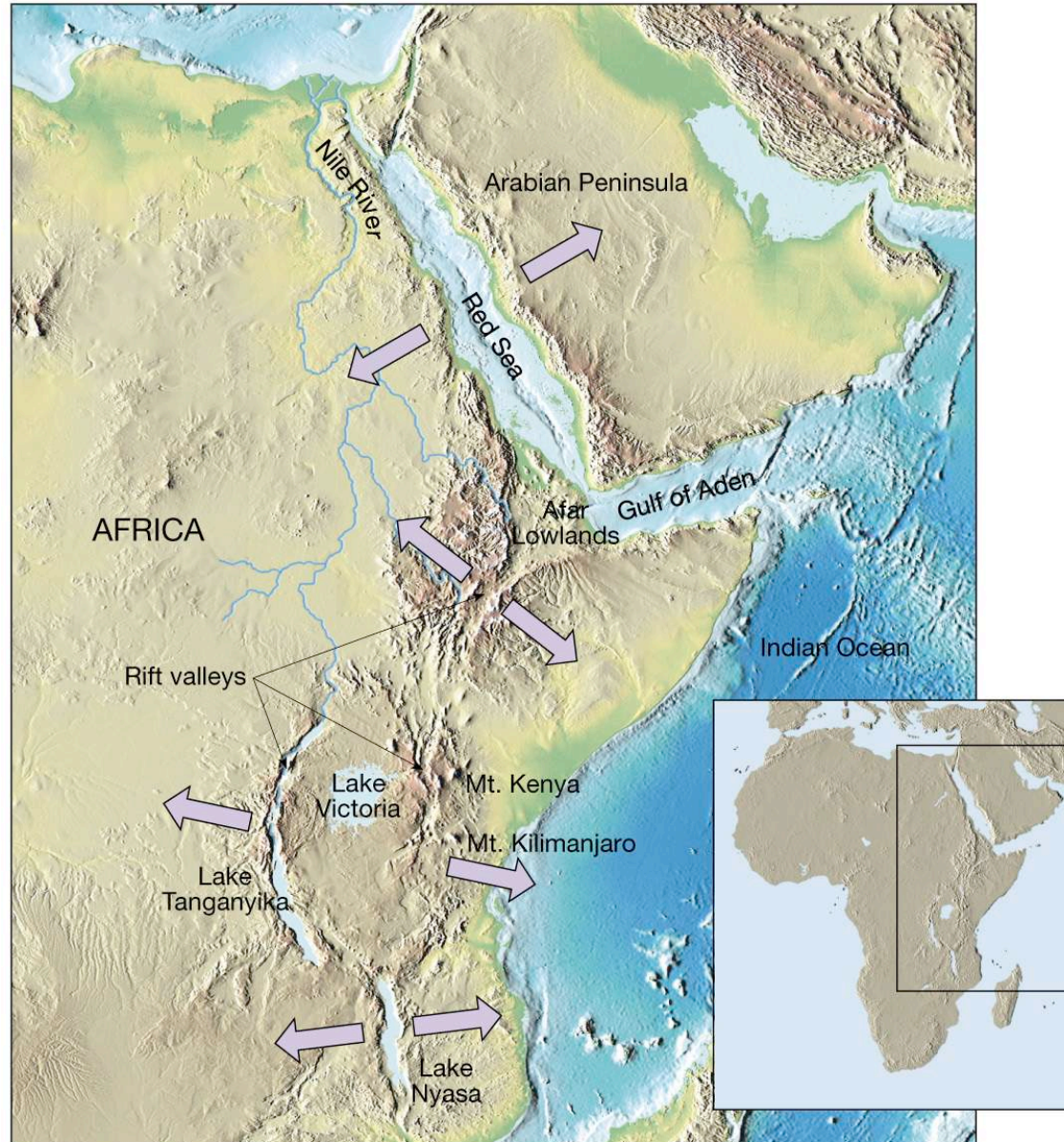
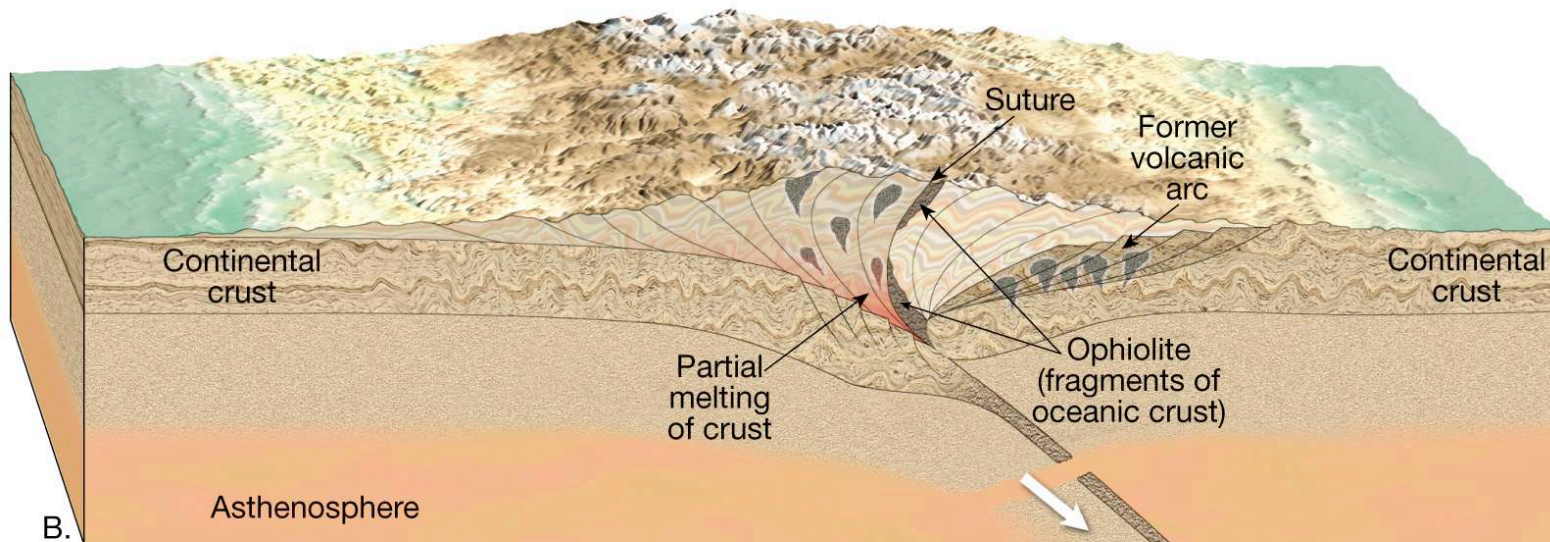
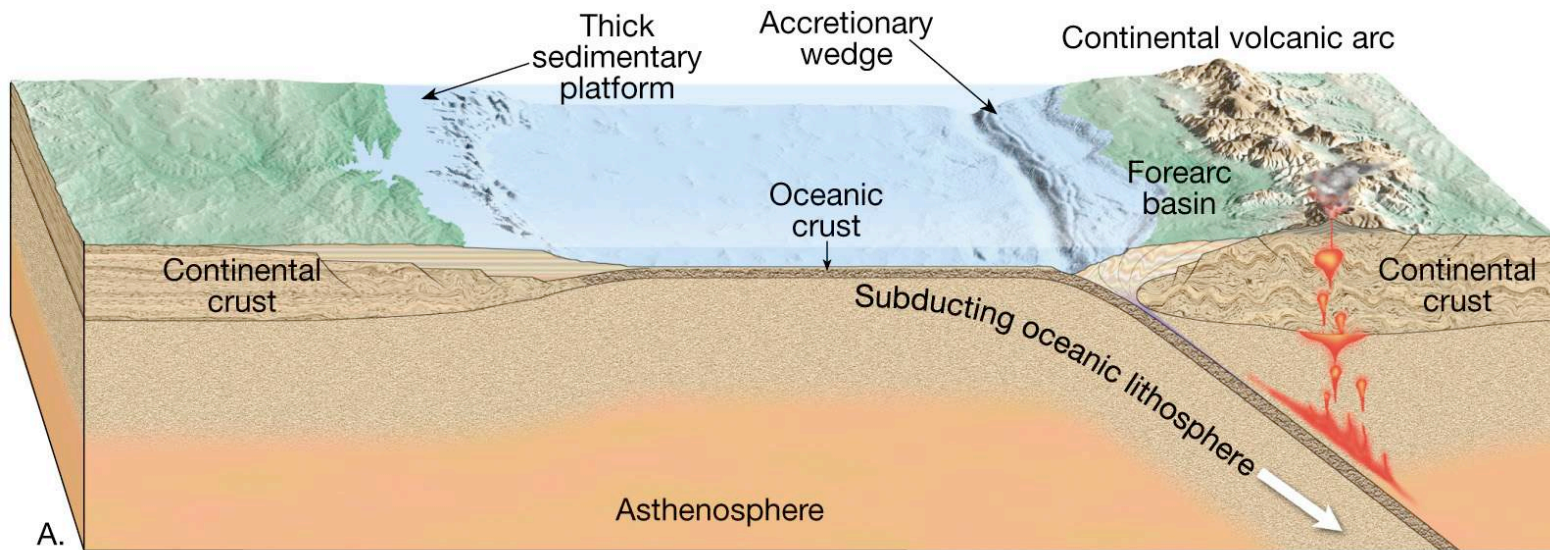


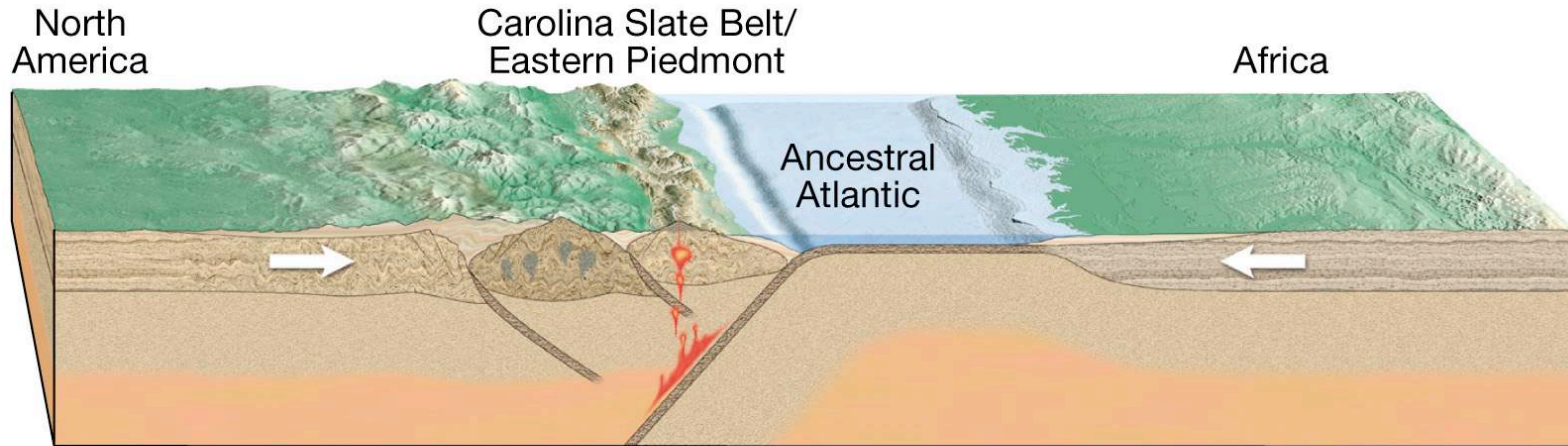
Plate Collisions

- Continent-Continent
- Continent-Ocean
- Ocean-Ocean

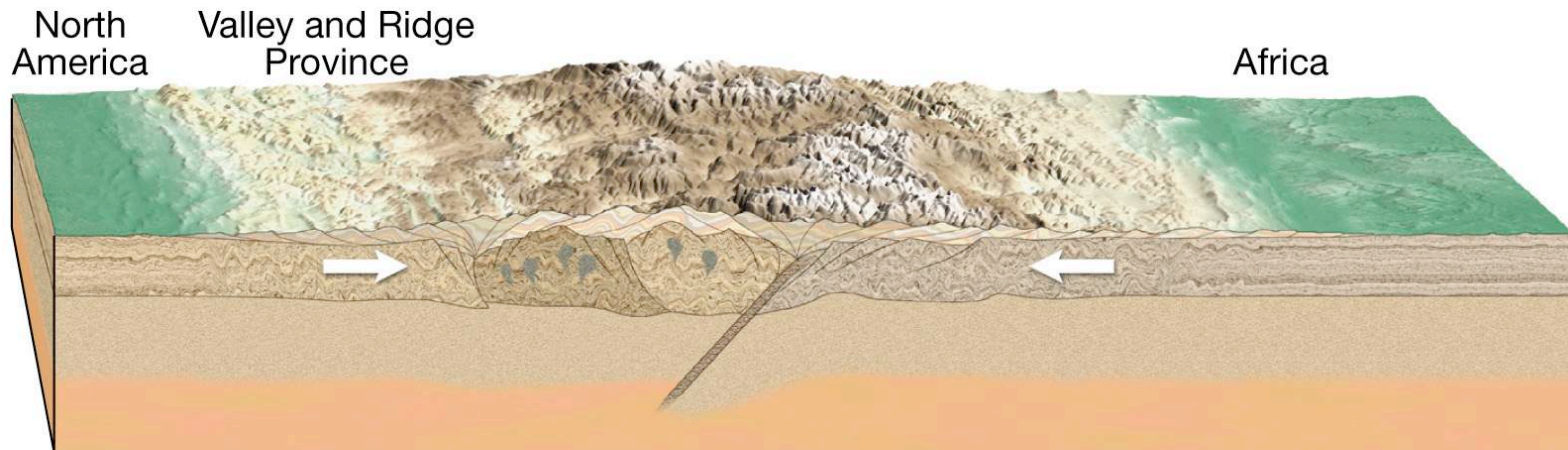
Continent-Continent



North America-Africa

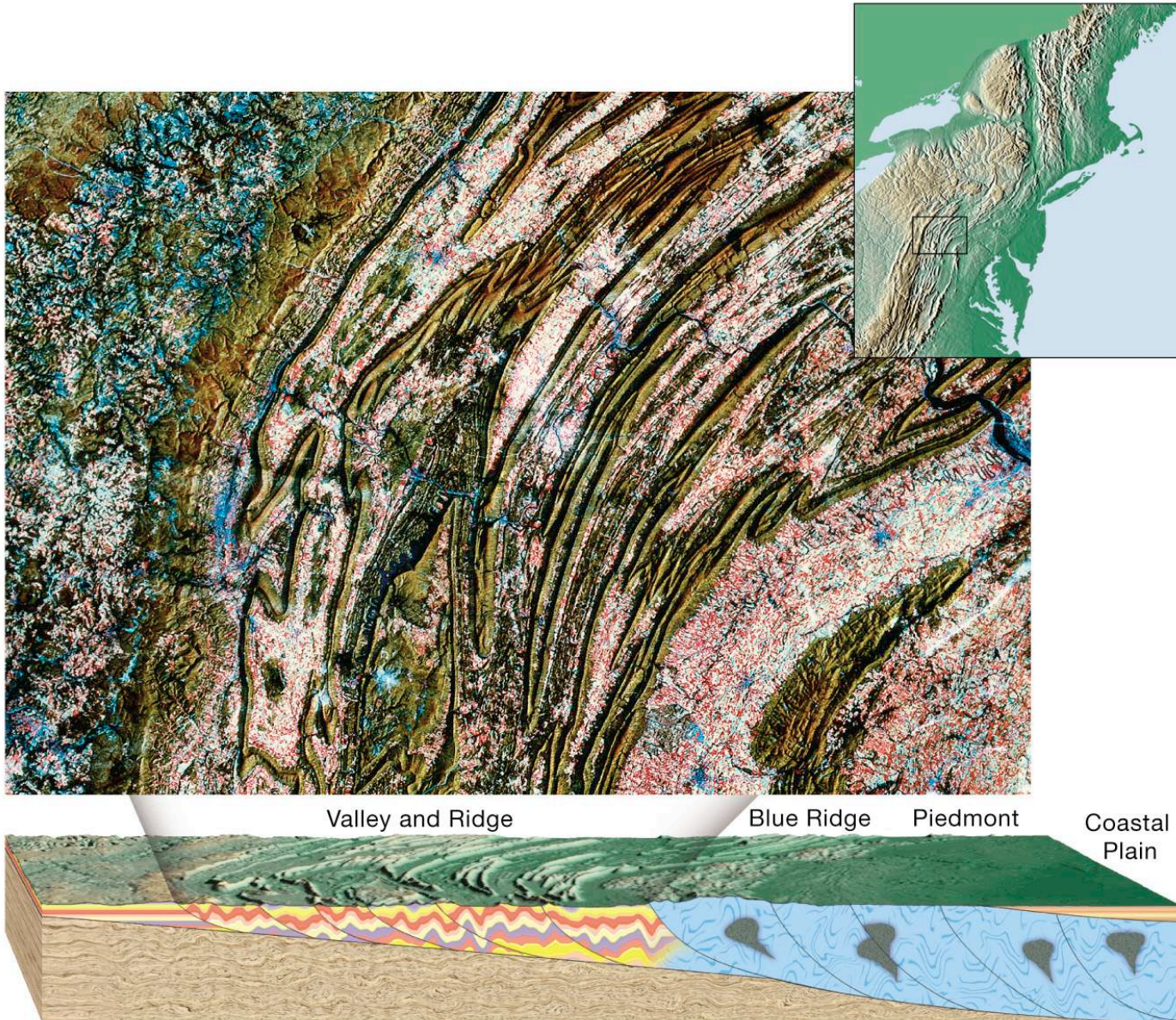


C. 400 million years ago

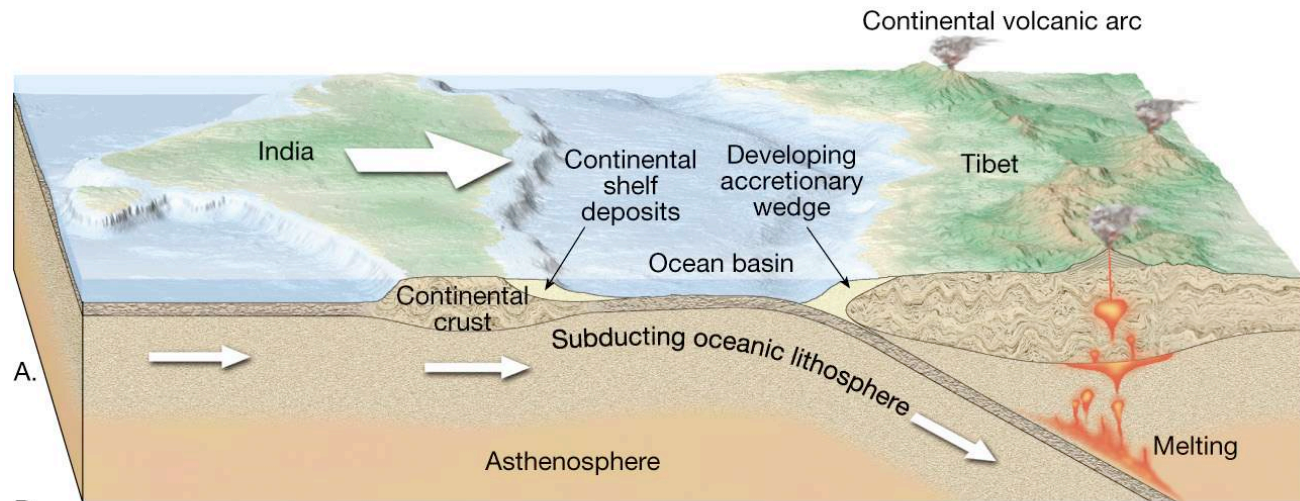


D. 250–300 million years ago

Appalachians



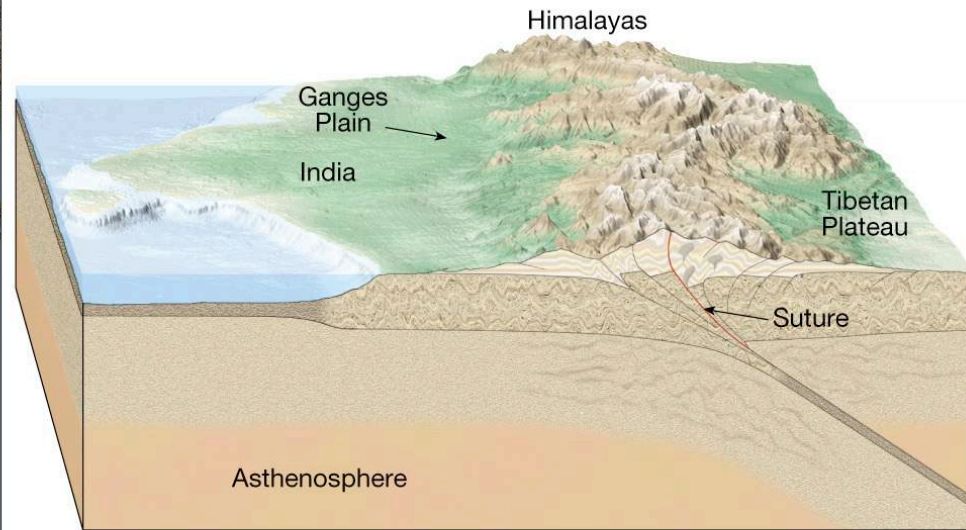
Modern Example-India



A.



B.

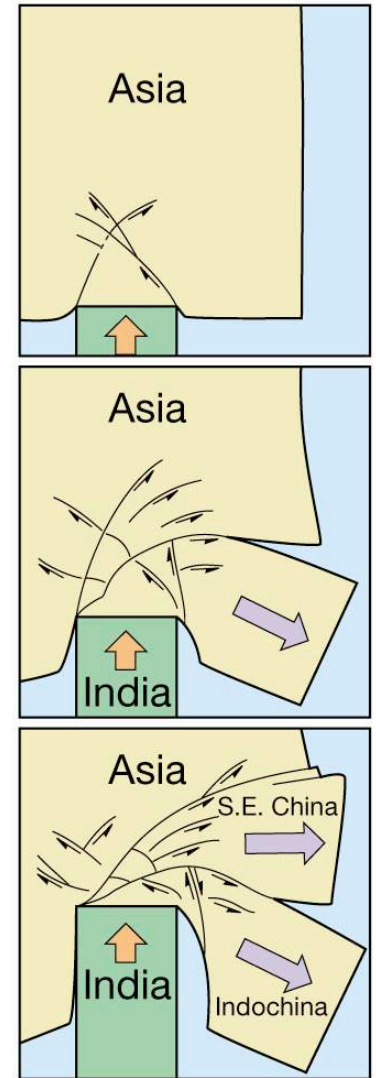


C.

Himalayans



A.

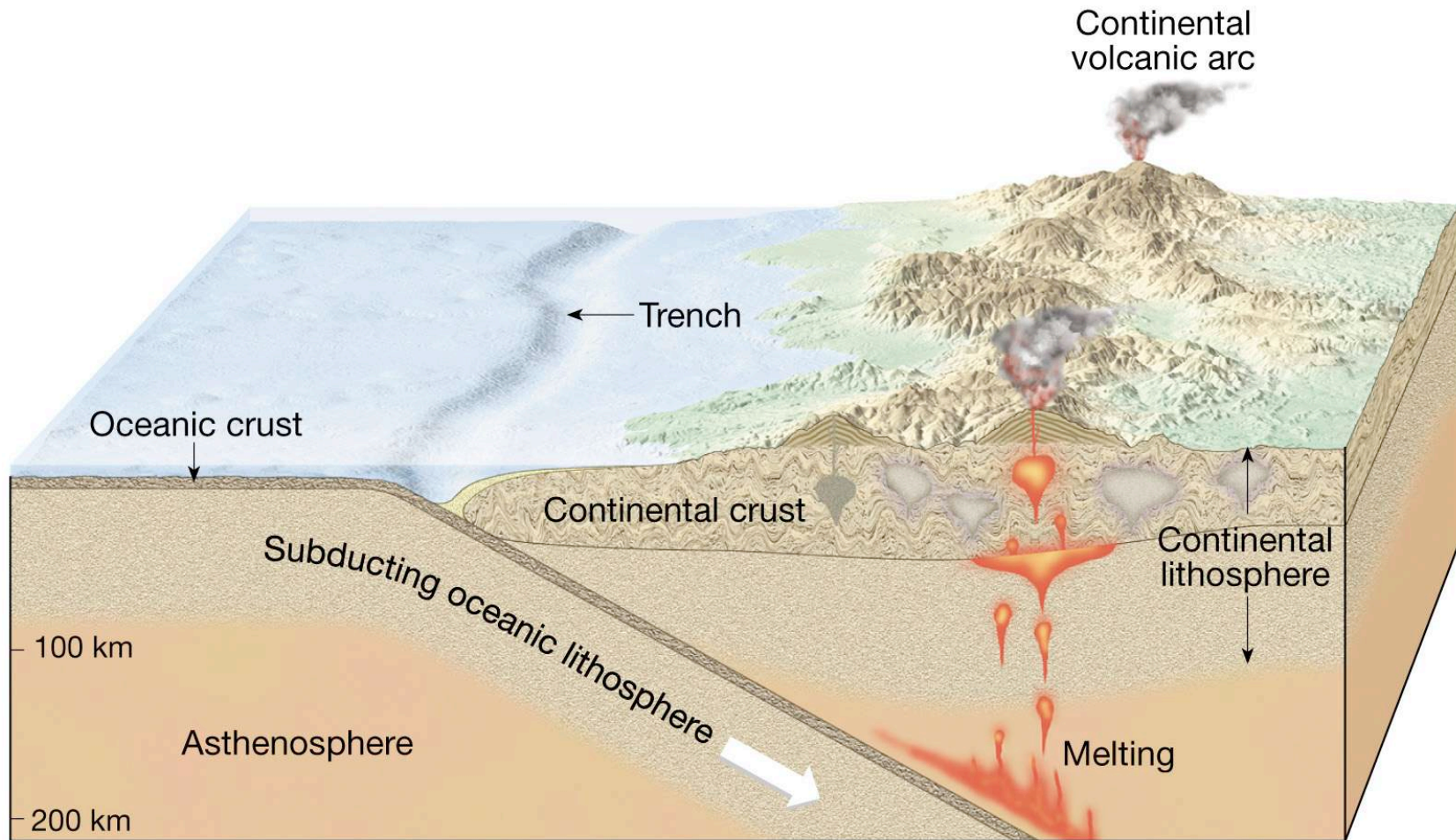


B.

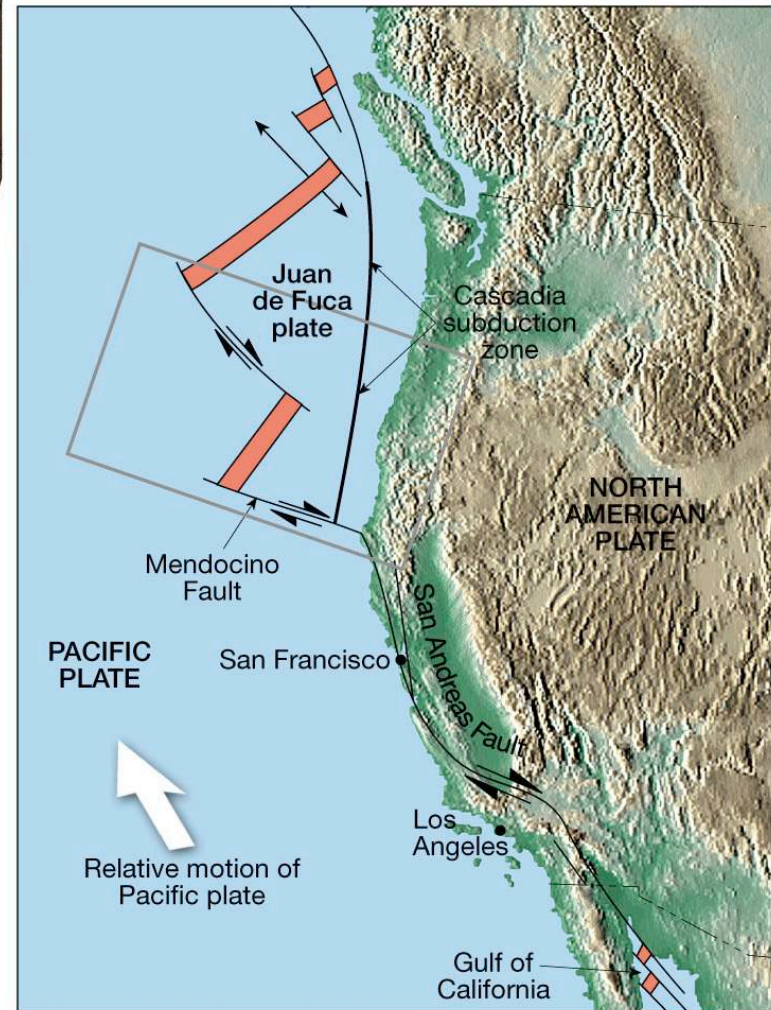
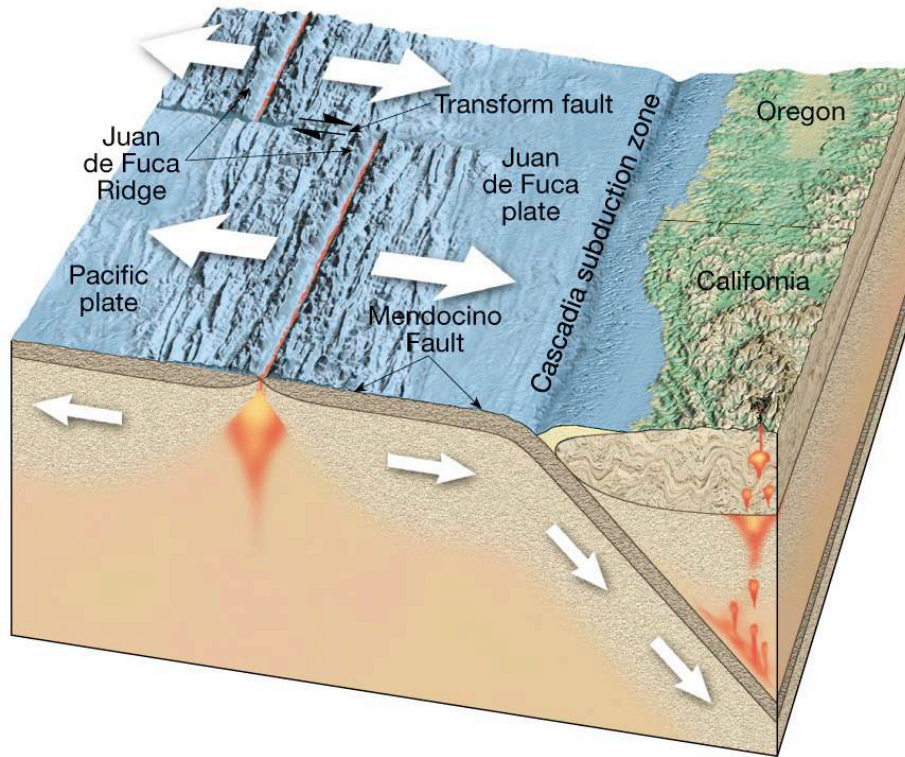
Mount Everest--29,000 ft



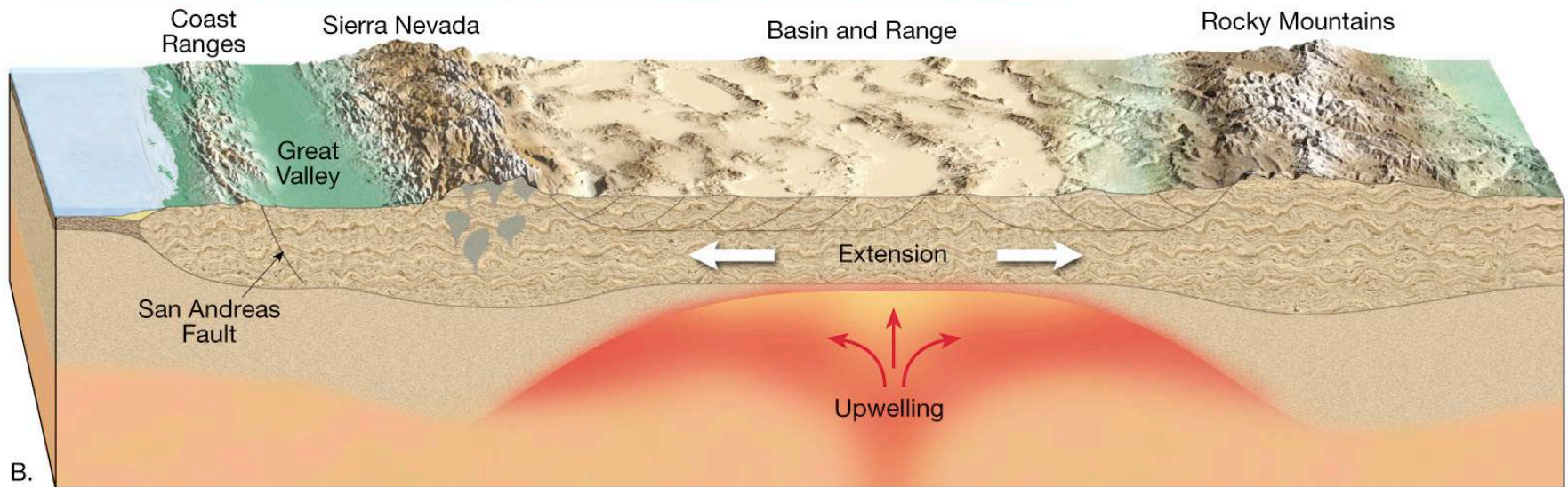
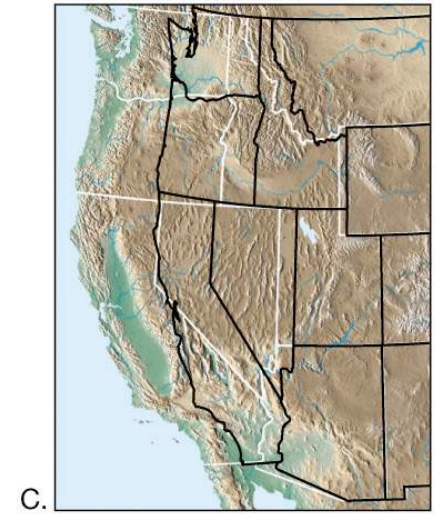
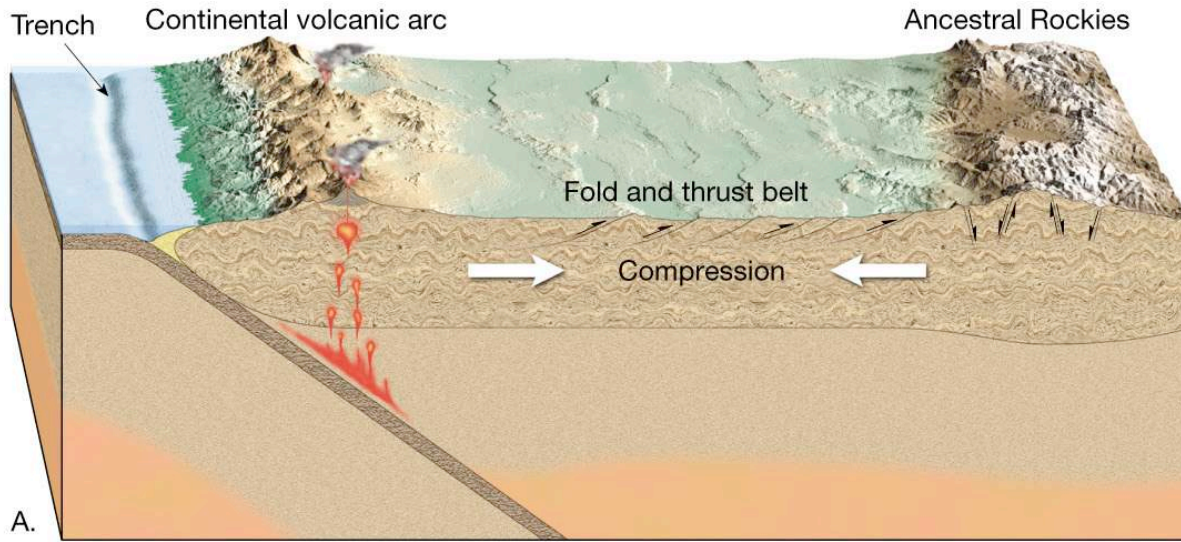
Continent-Ocean



West Coast



Rocky Mountains

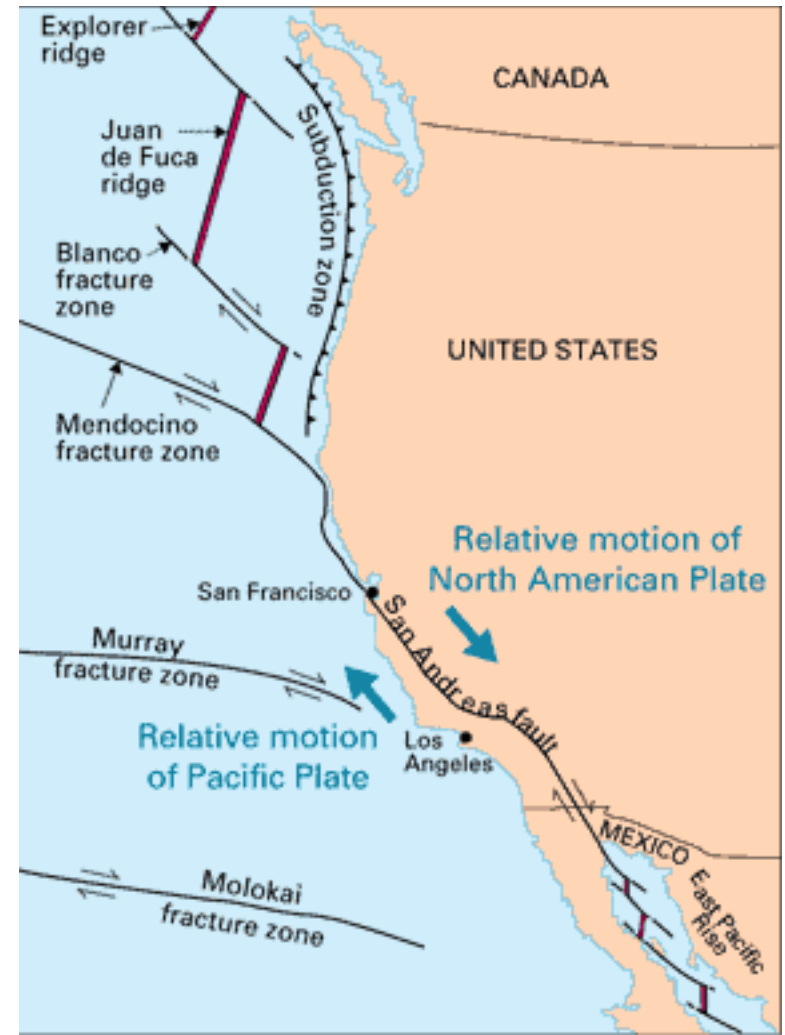


Rockies

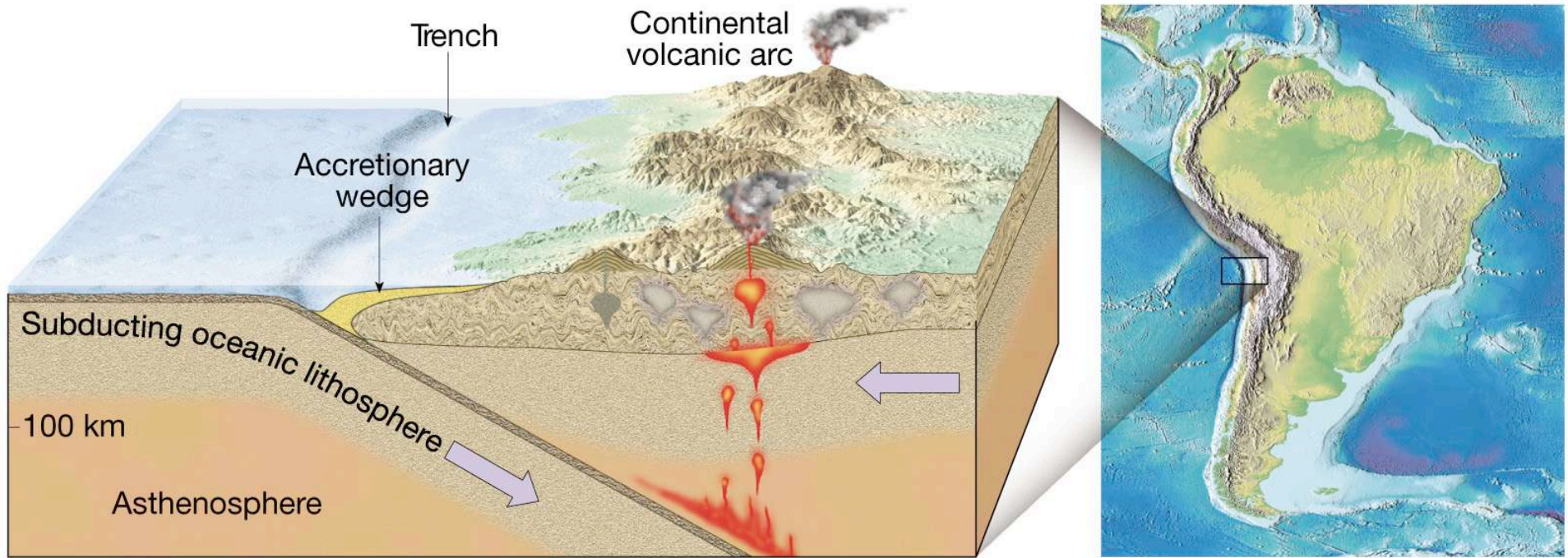


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San Andreas-Transform Fault

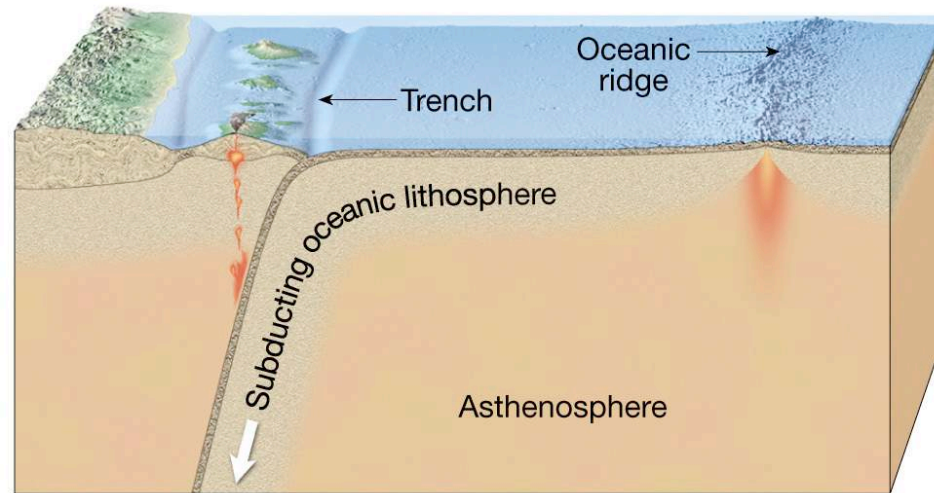


South America

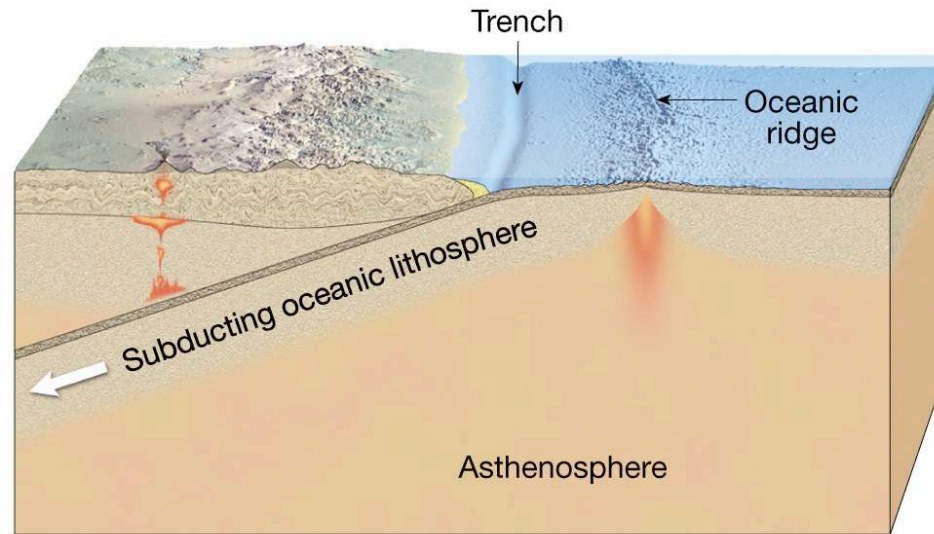


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Ocean-Ocean

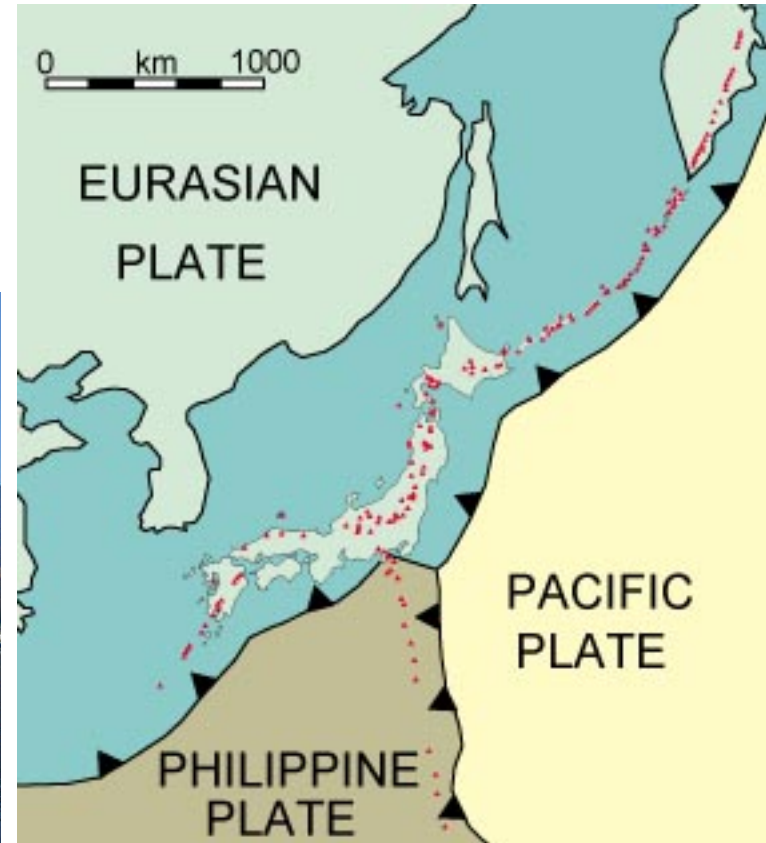


A.

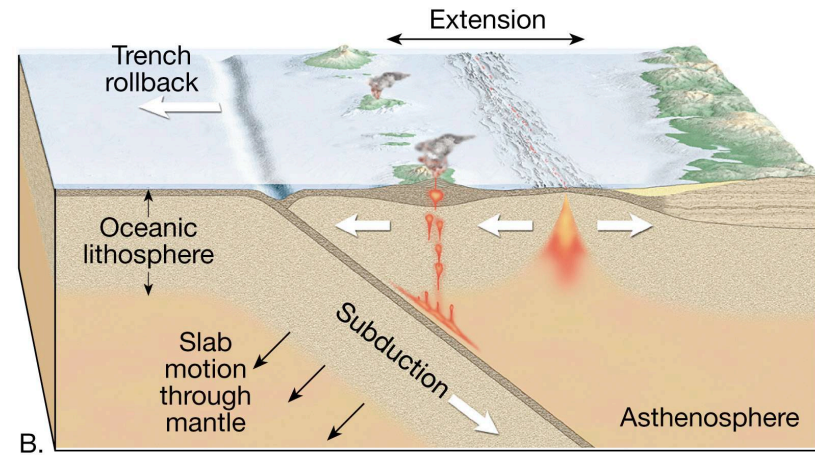


B.

Japan



Alleutians

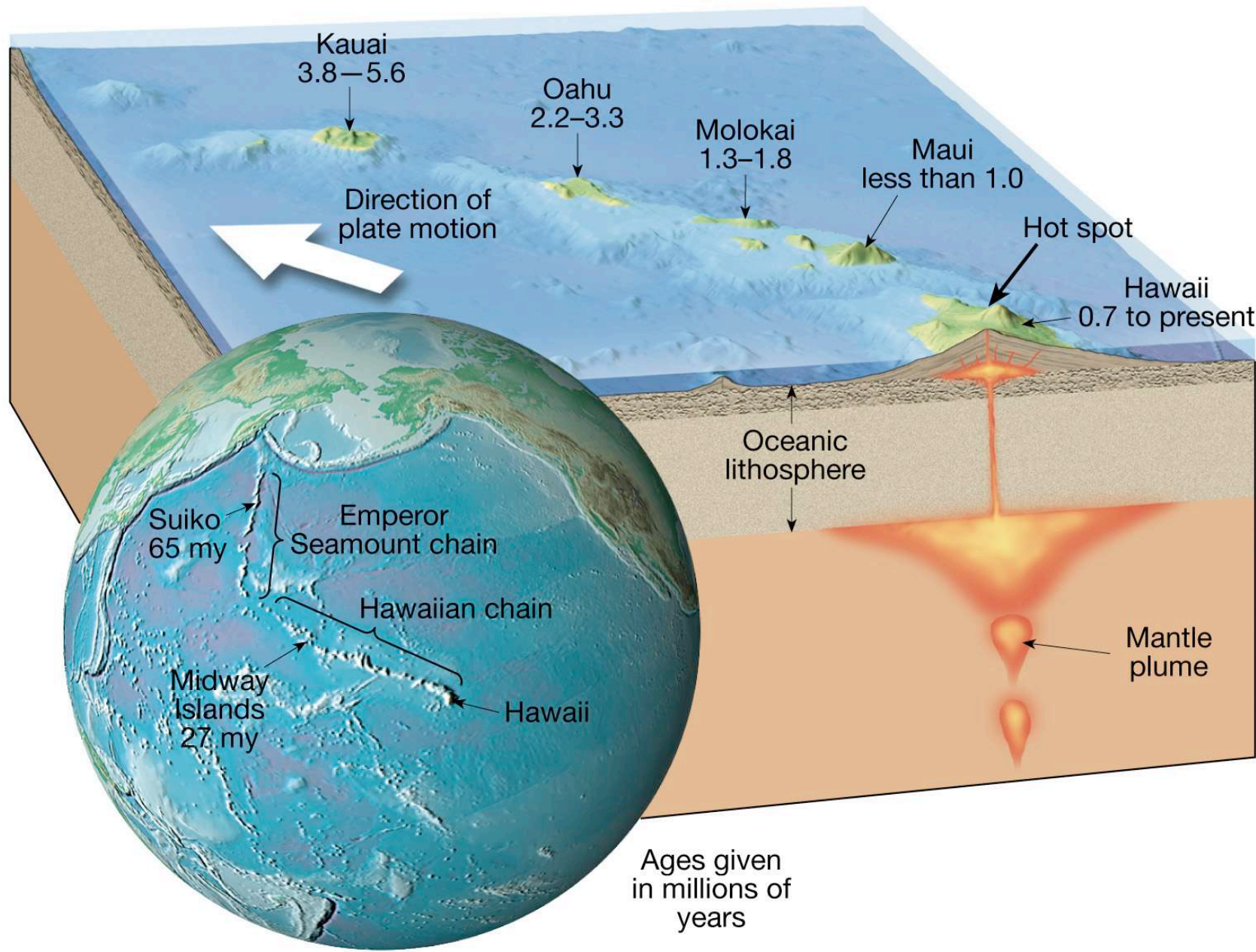


B.

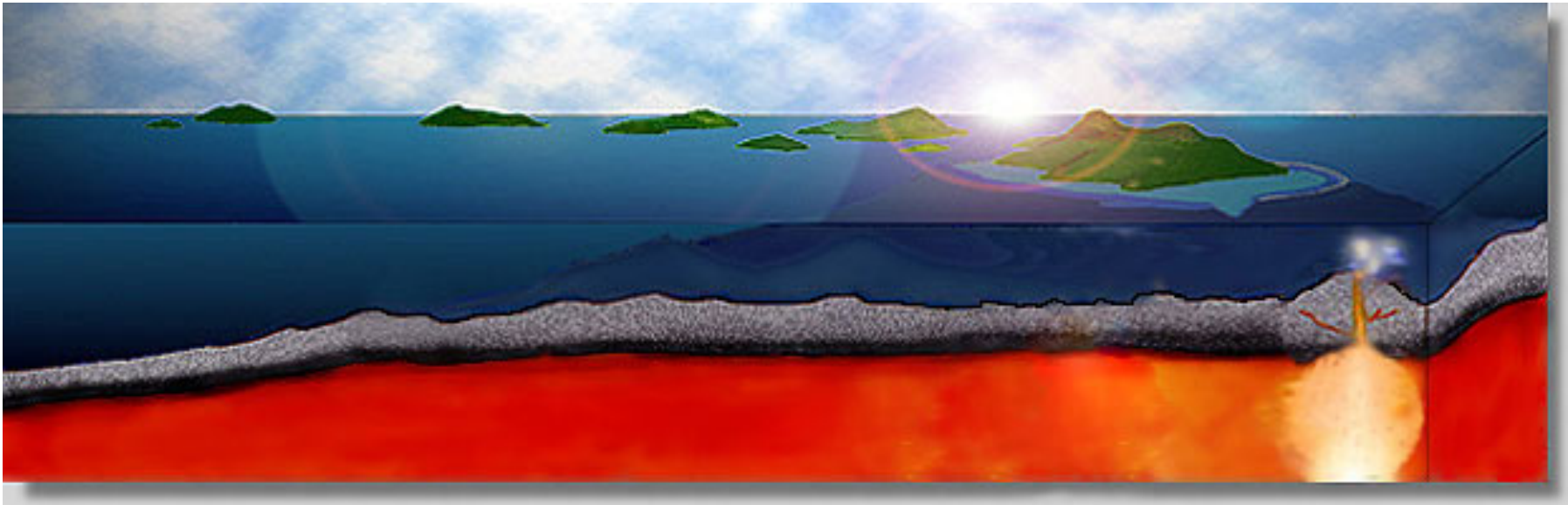
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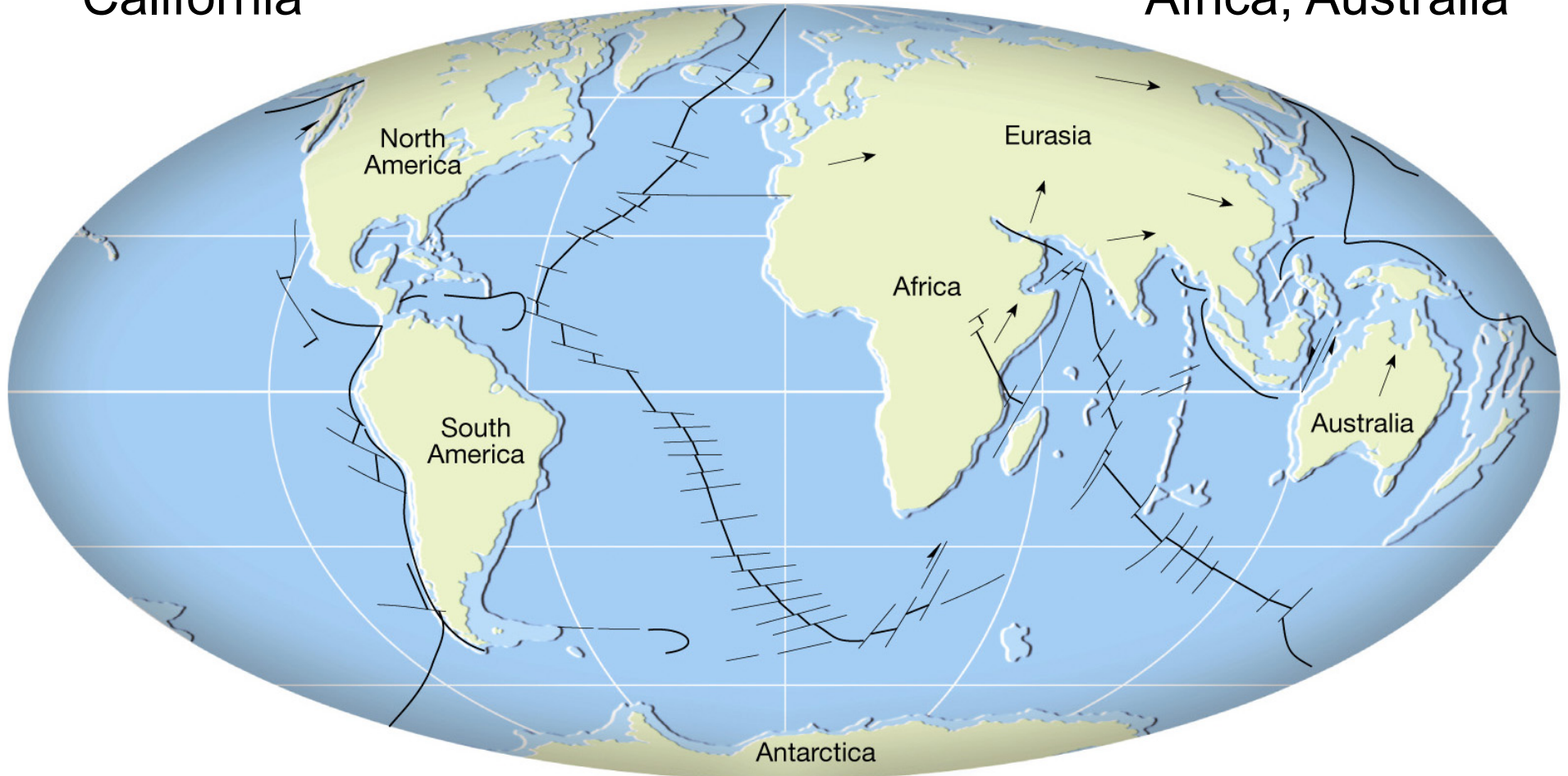
The New Island--Loihi



50 Million Years

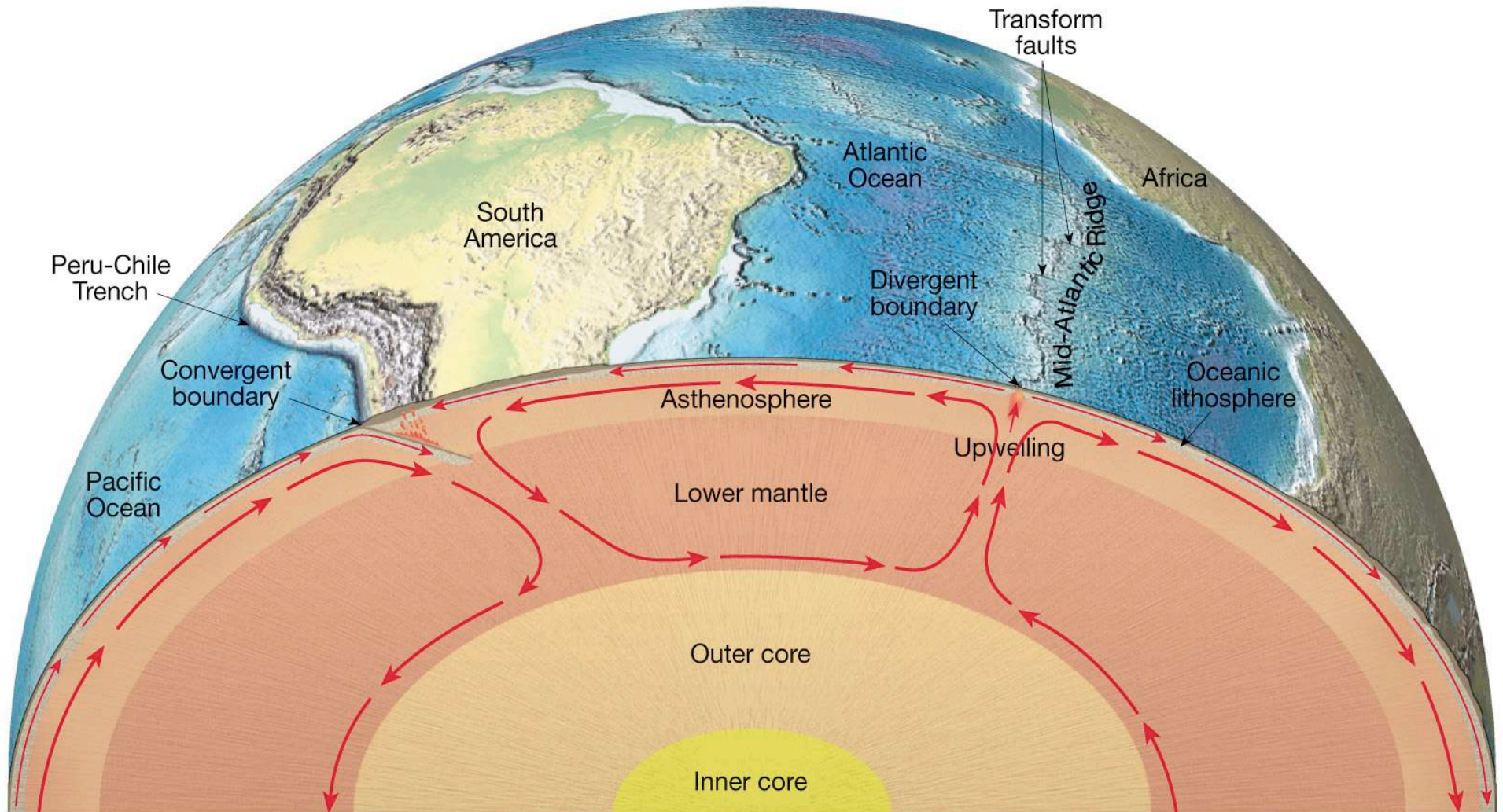
California

Africa, Australia

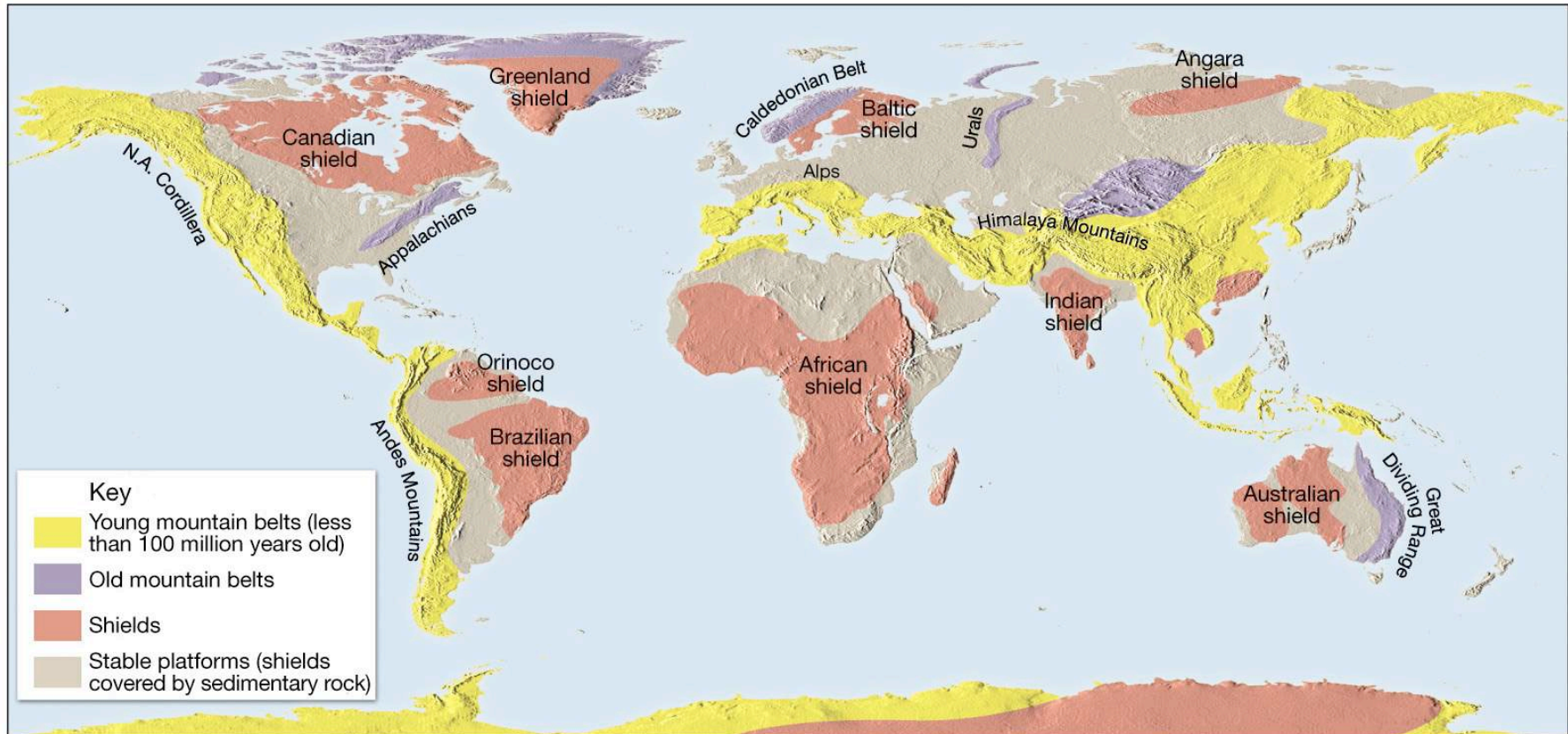


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Convection Cells “The Driving Force”



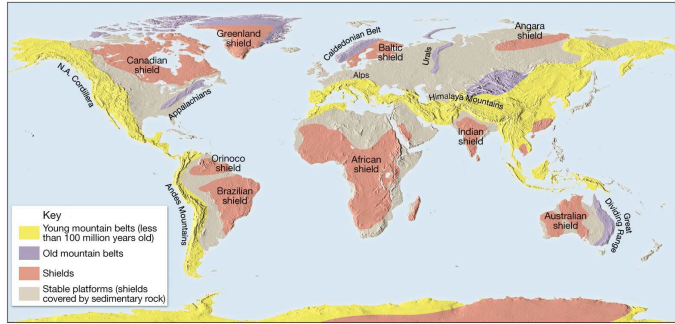
It all started with...Mountains



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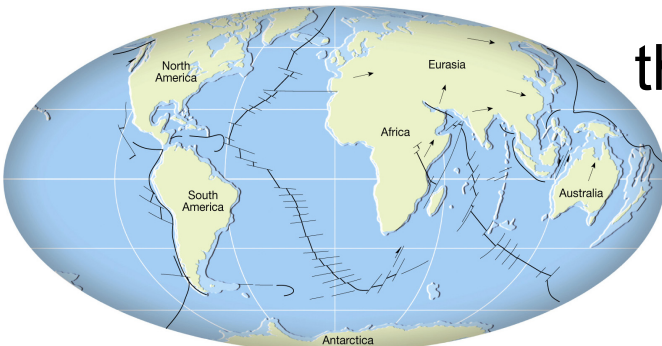
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A. 200 Million Years Ago (Early Jurassic Period)

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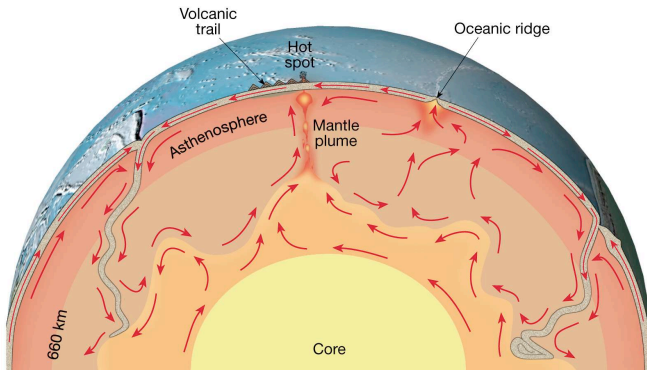
The Present is the Key to the Past...



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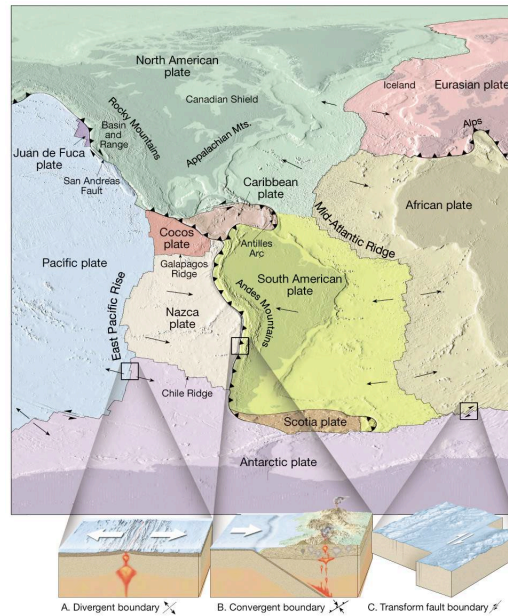


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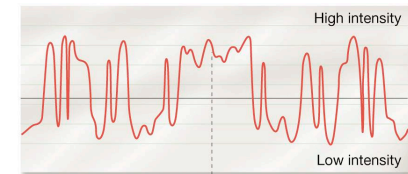
C. Deep-layer model

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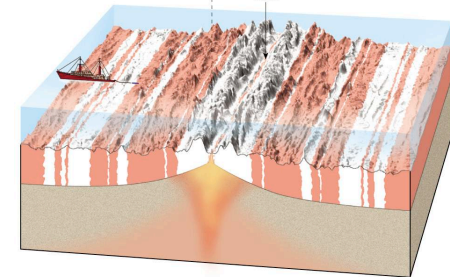


A. Divergent boundary B. Convergent boundary C. Transform fault boundary

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A. Magnetometer record showing symmetrical magnetic field across ridge

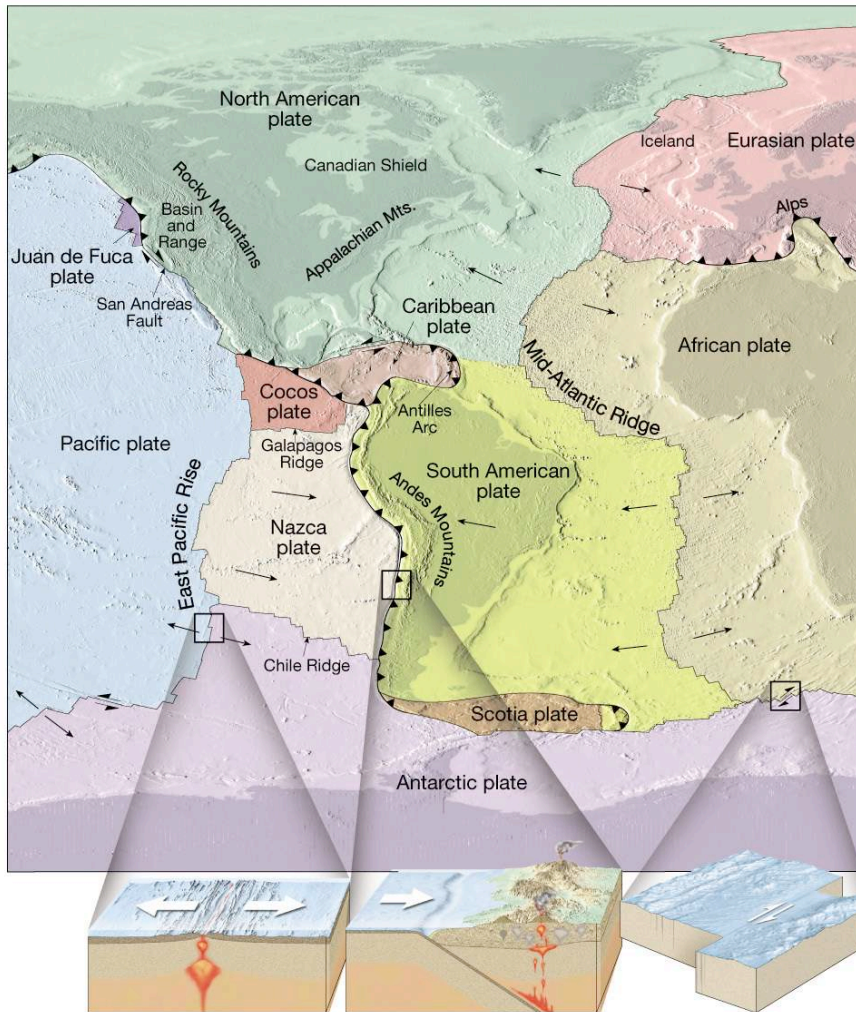





B. Research vessel towing magnetometer across ridge crest

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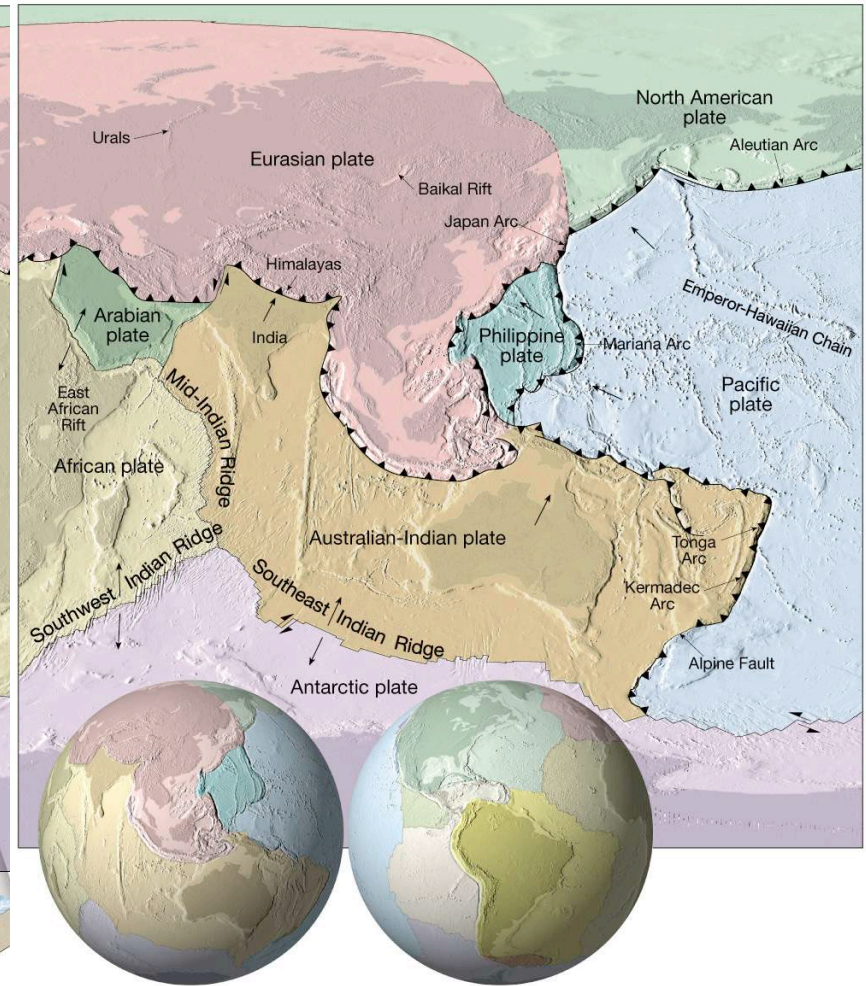
Calvin and Hobbs





A. Divergent boundary  B. Convergent boundary  C. Transform fault boundary 

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