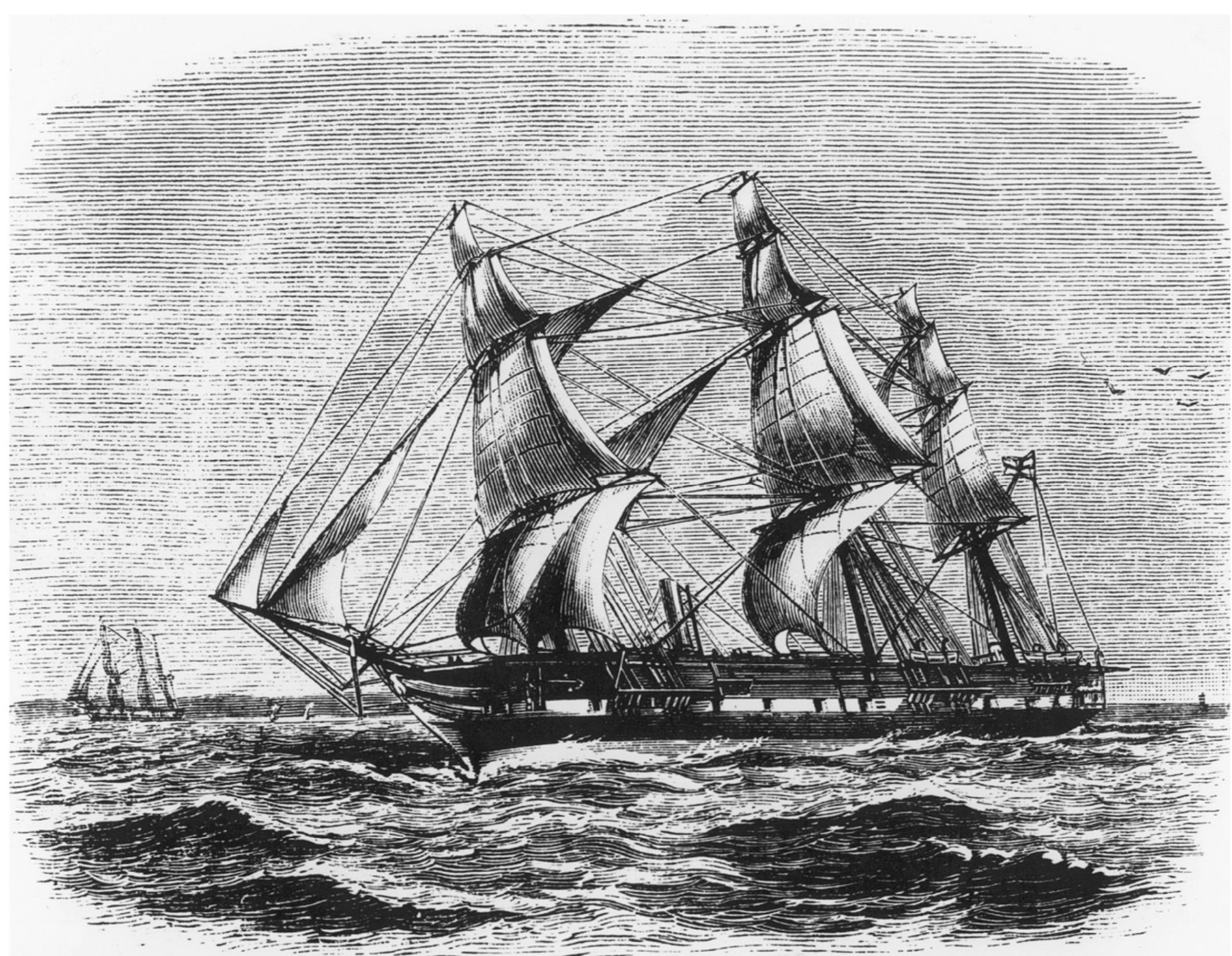


Oceanography

[click here for 9/page to print](#)

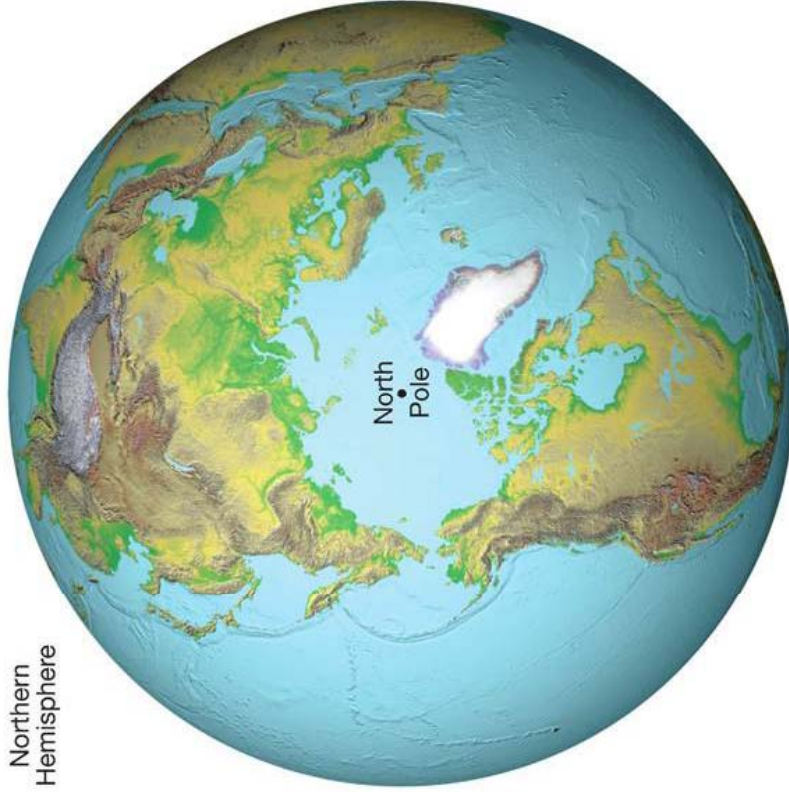




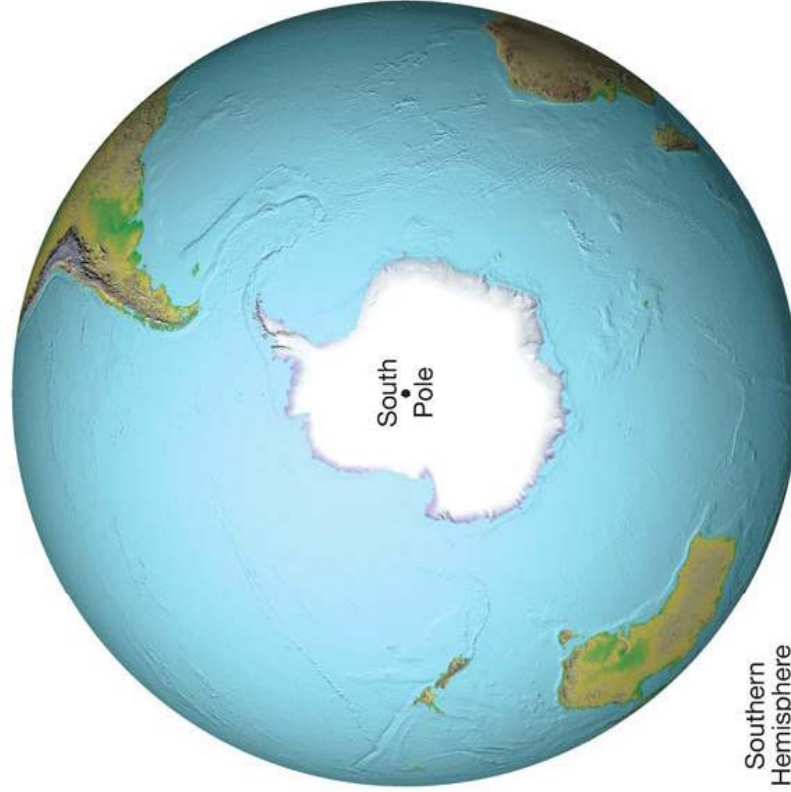
Thompson Research Vessel



Polar views of Earth

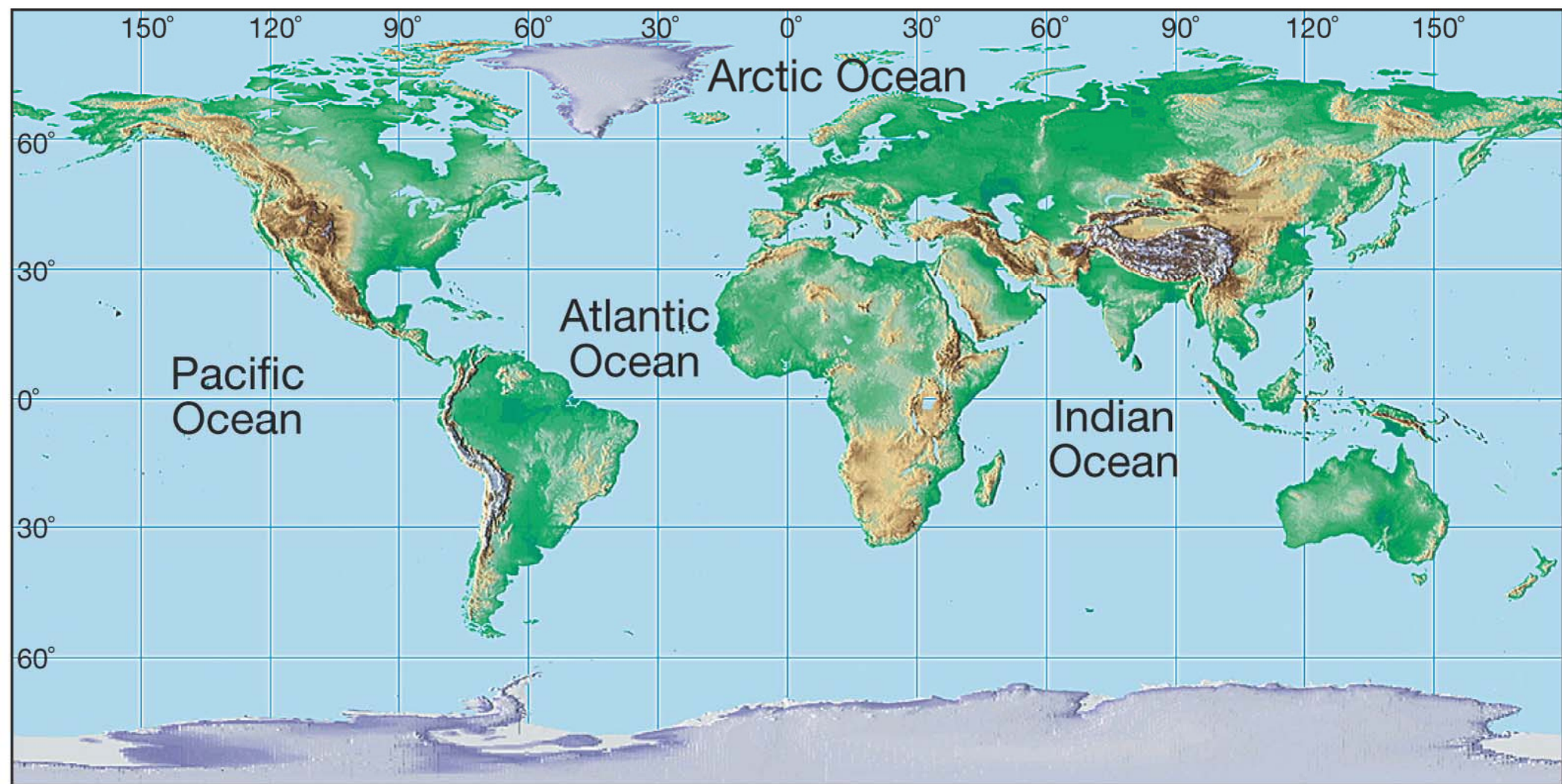


Northern Hemisphere

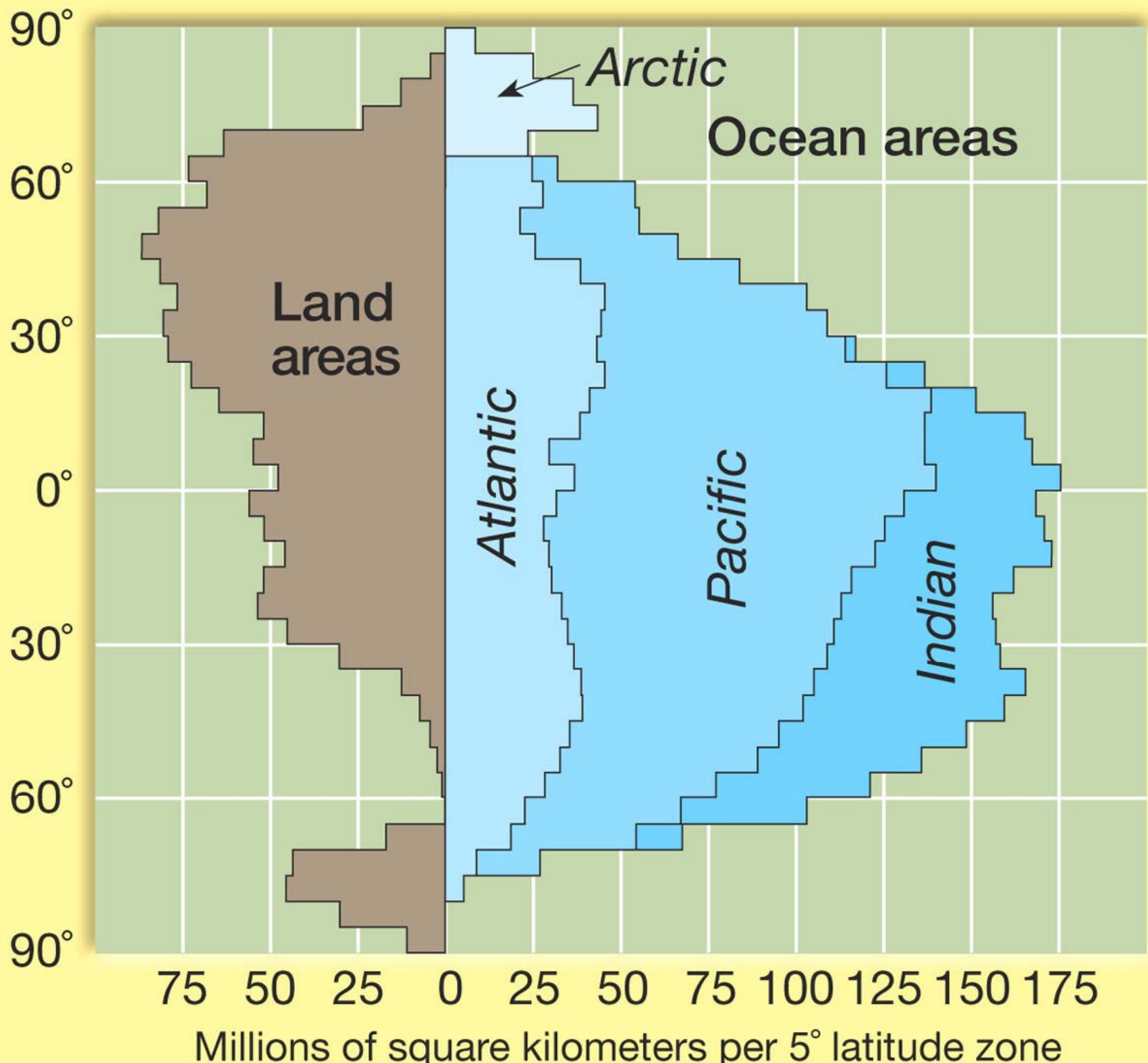


Southern Hemisphere

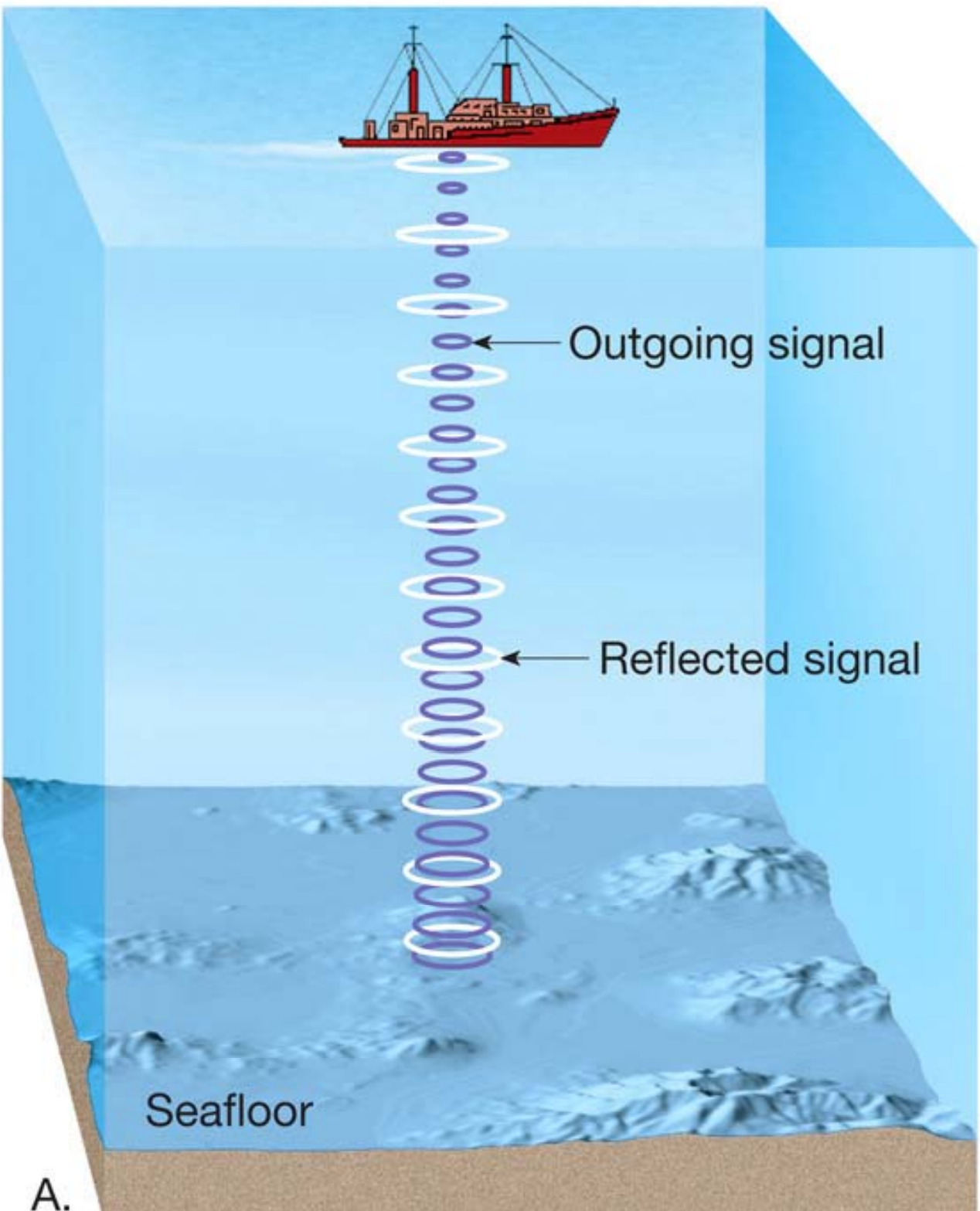
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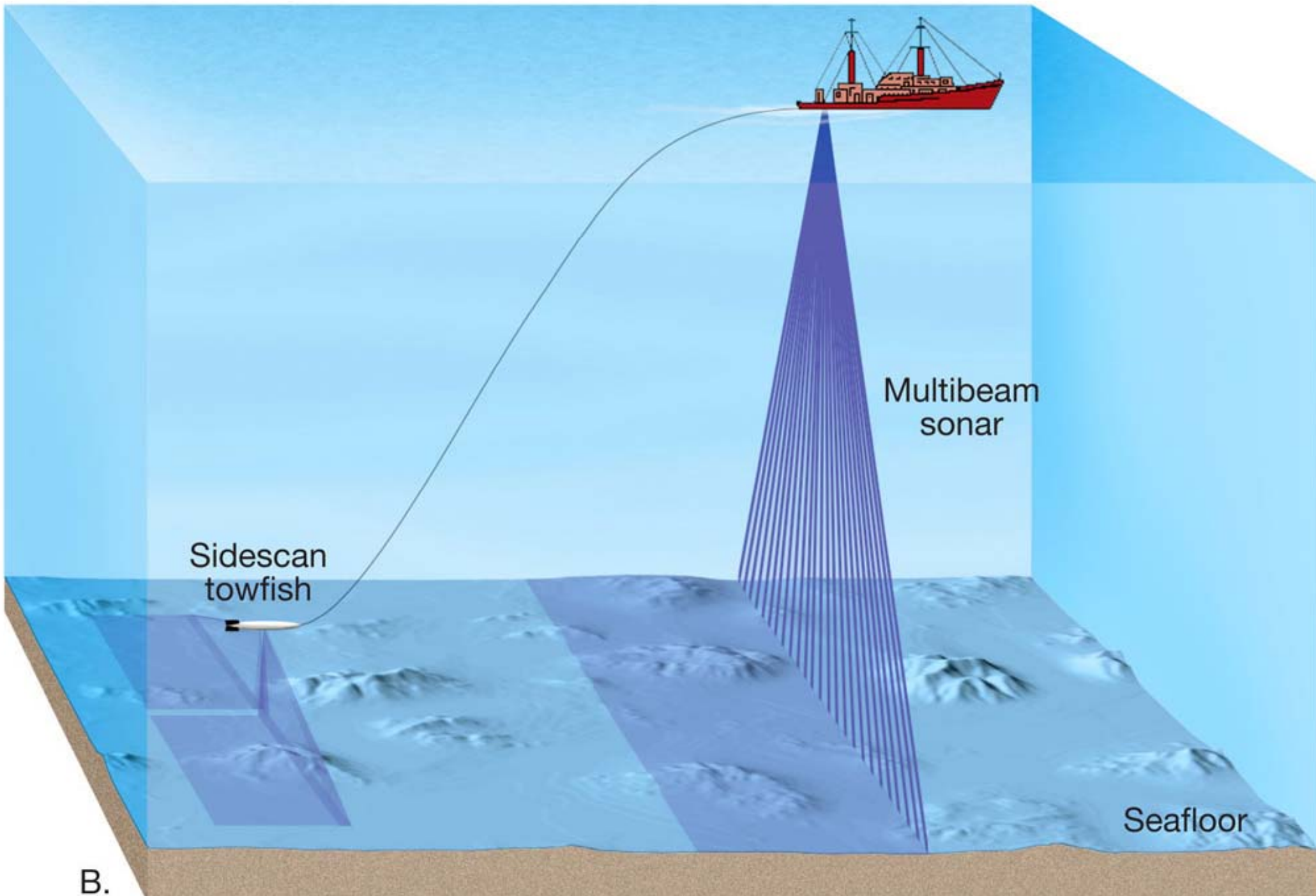
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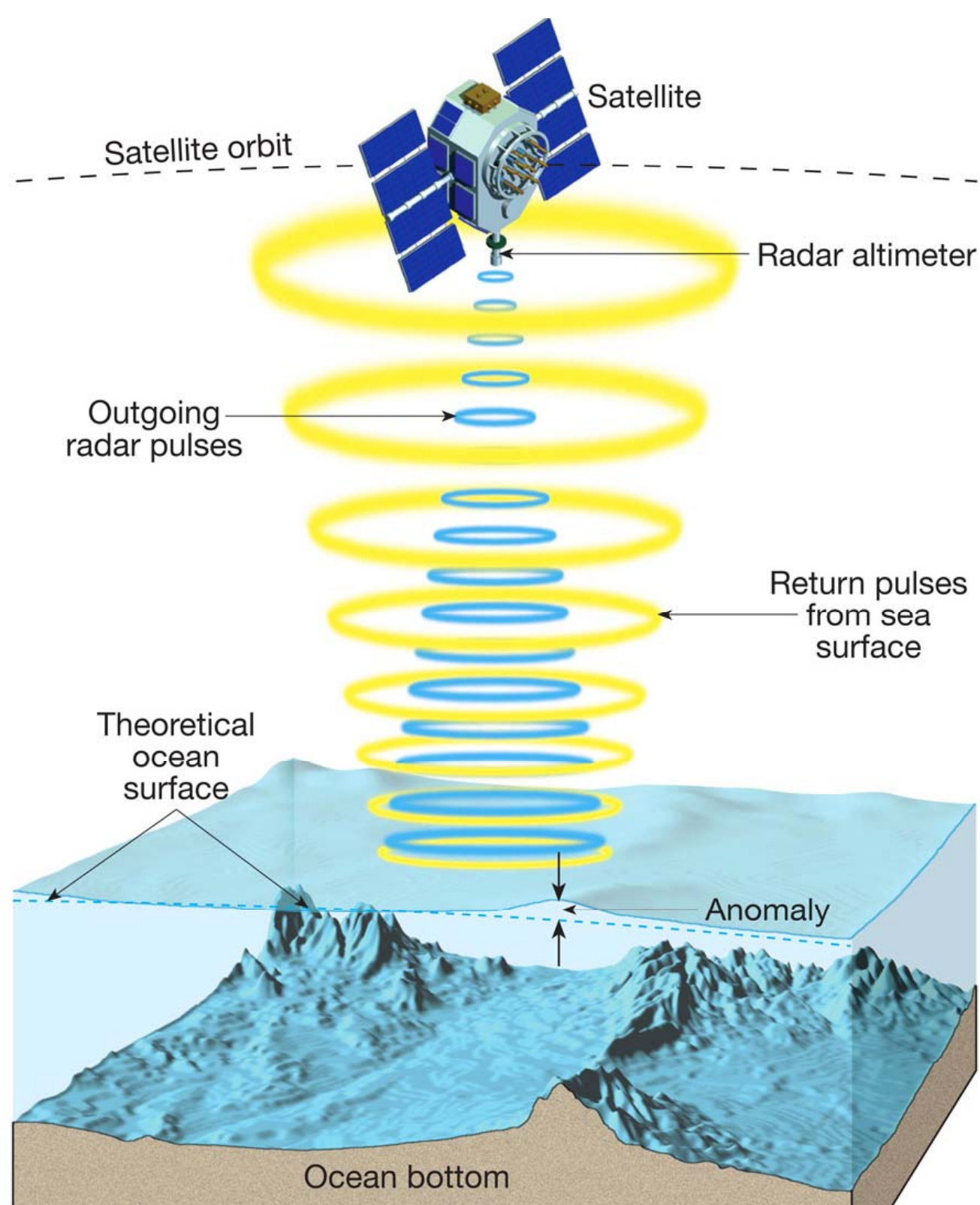
Millions of square kilometers per 5° latitude zone



A.

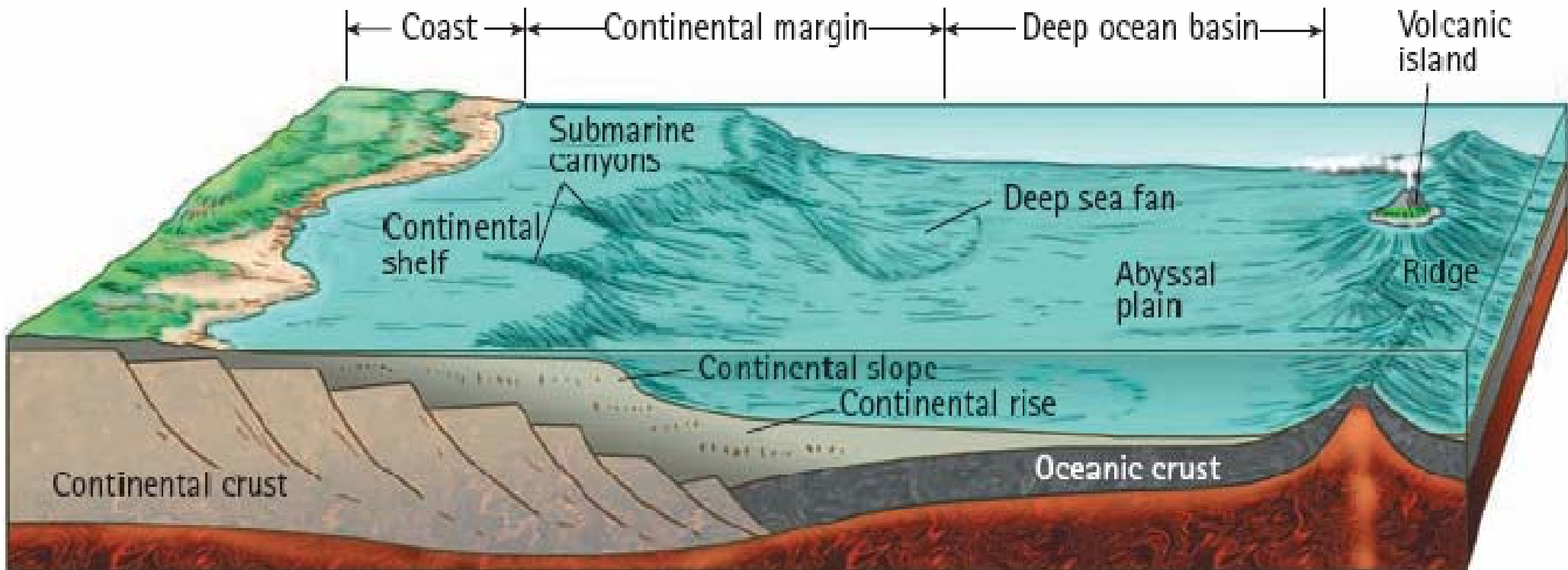


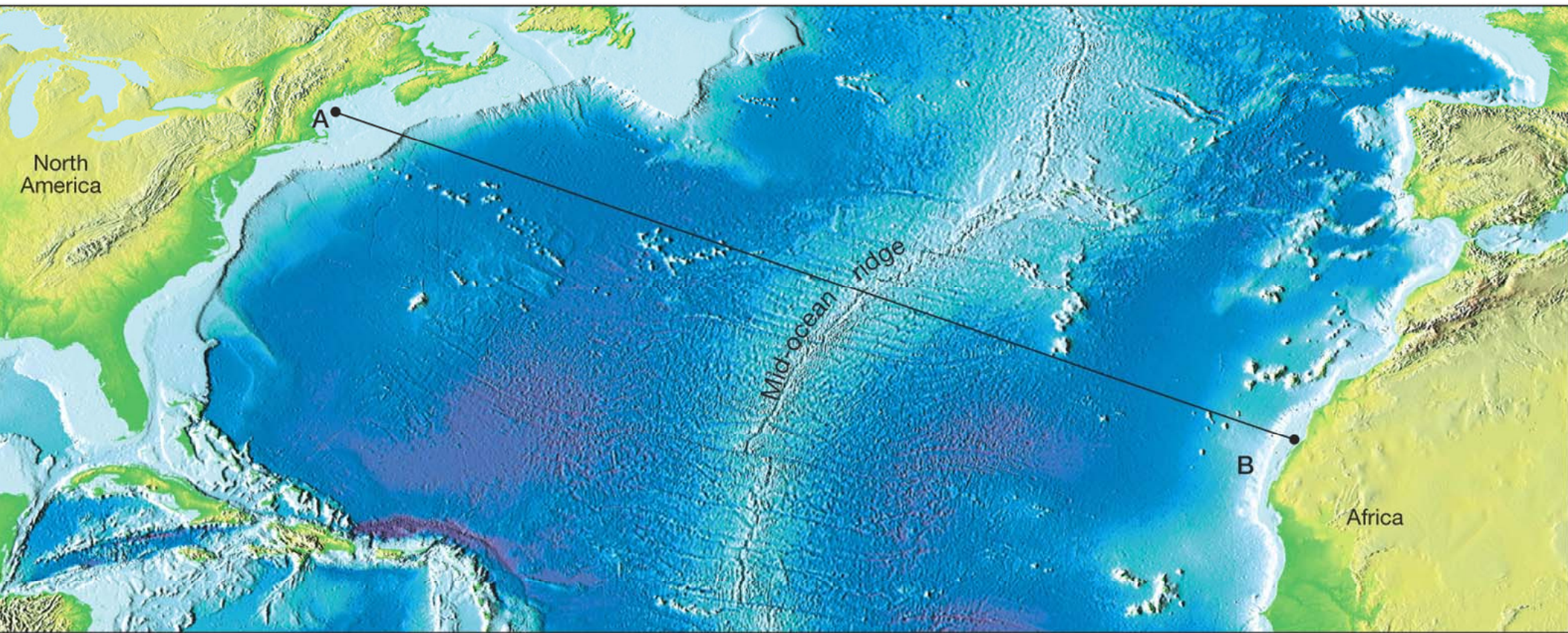
B.



Passive Continental Margin

- Continental shelf
- Continental slope
- Continental rise





Continental margin

Ocean basin floor

Mid-ocean ridge

Ocean basin floor

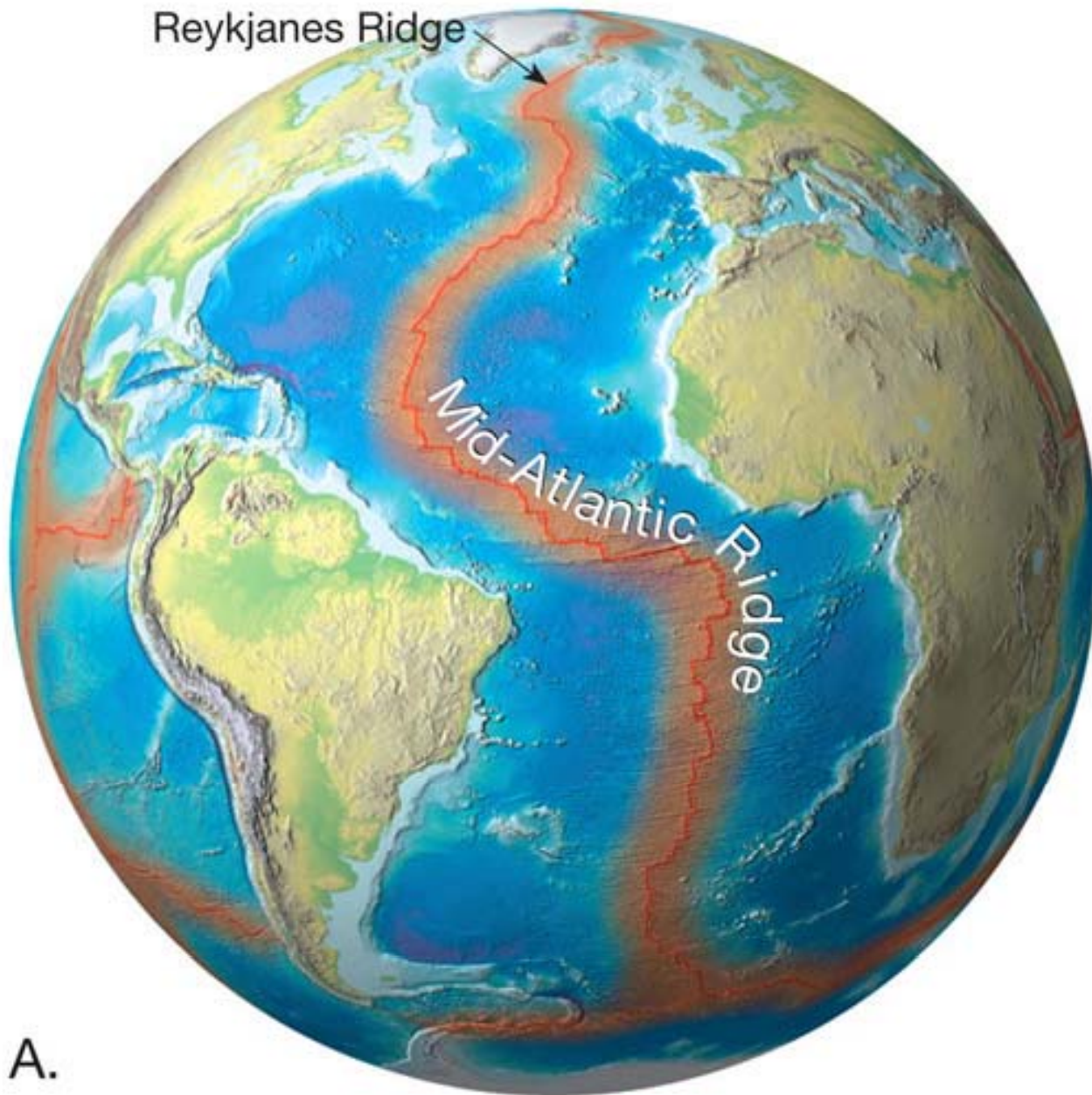
Continental margin

A

B

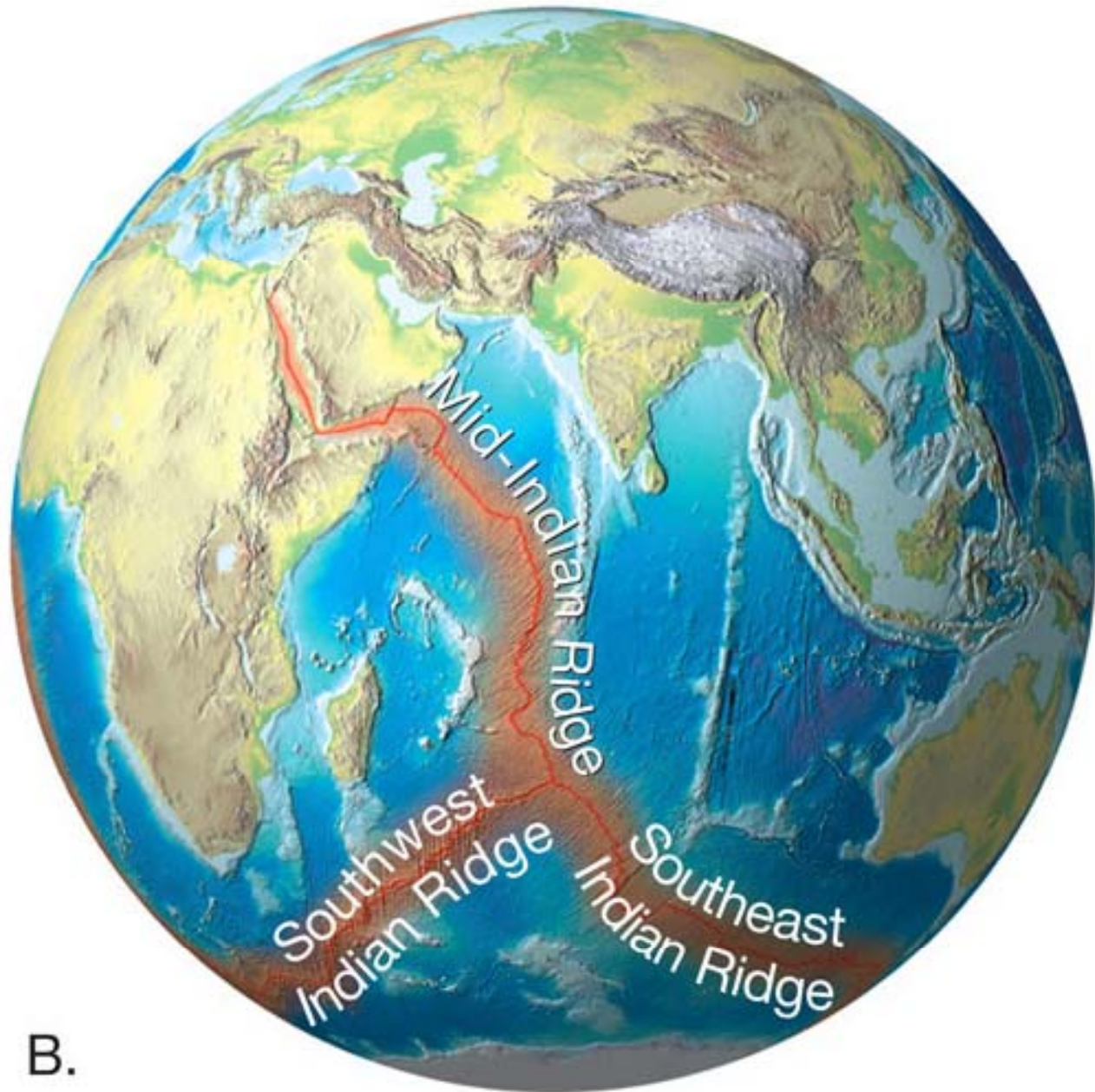
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Oceanic Ridge--Atlantic



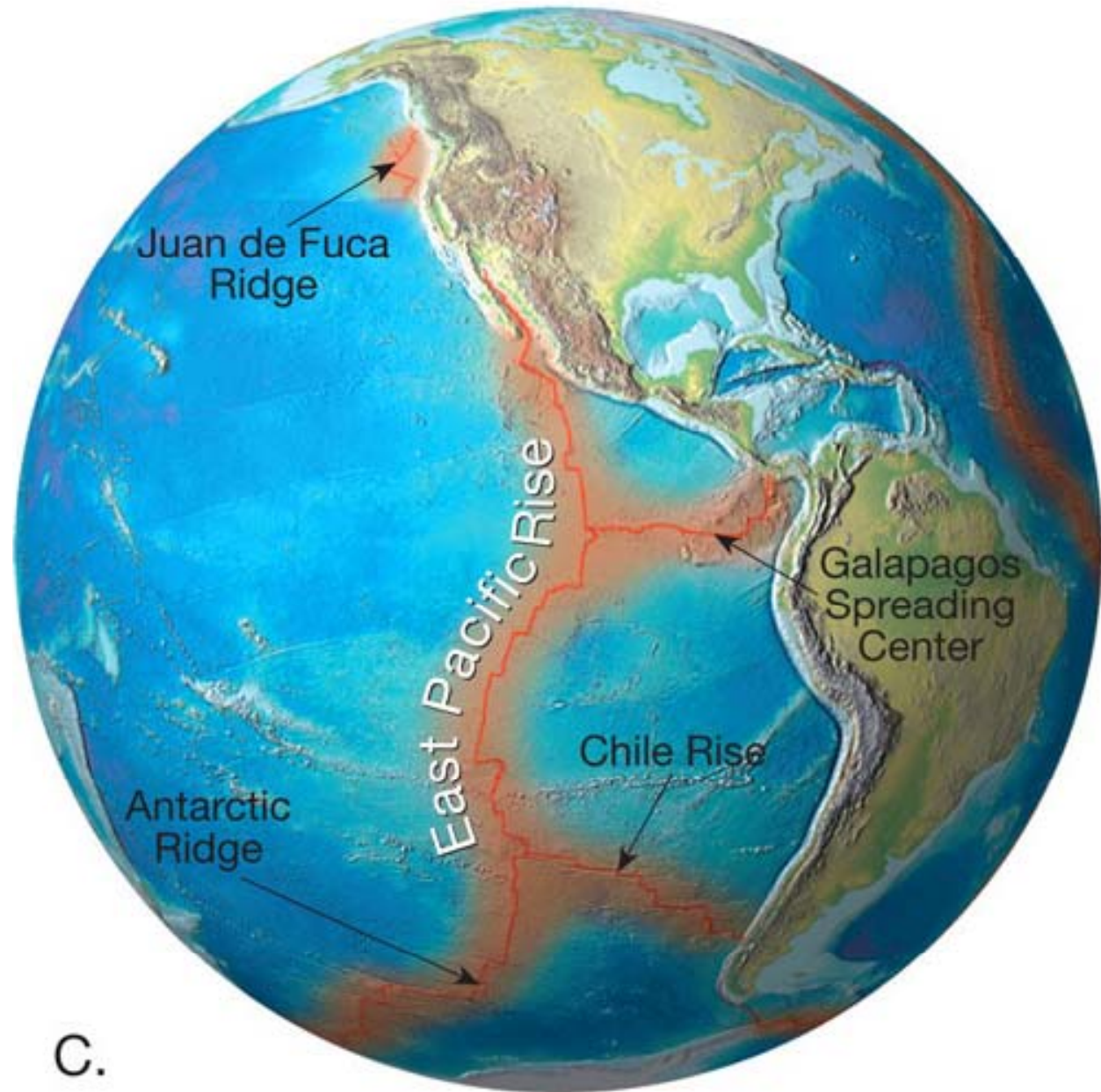
A.

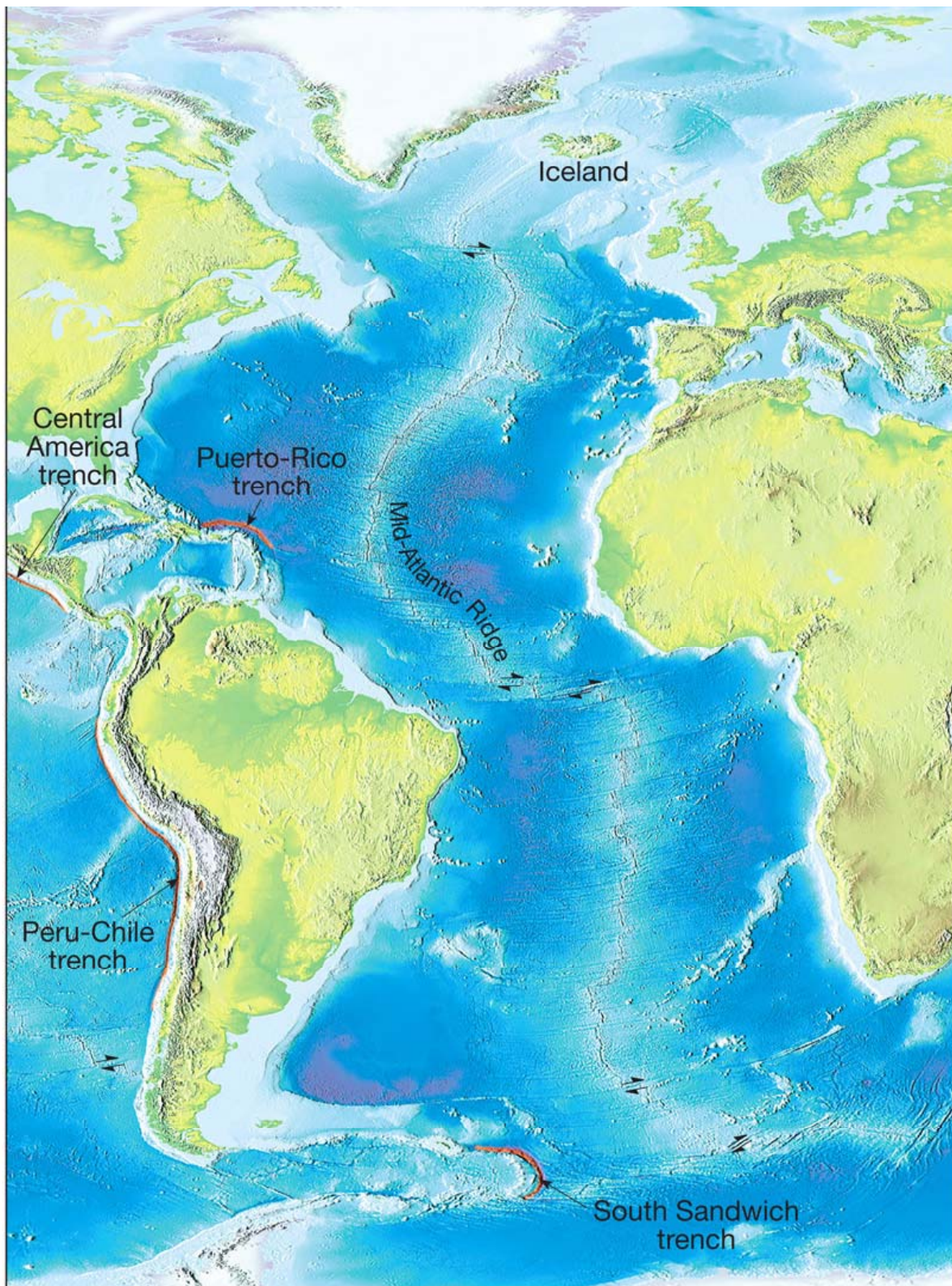
Oceanic Ridge—Indian

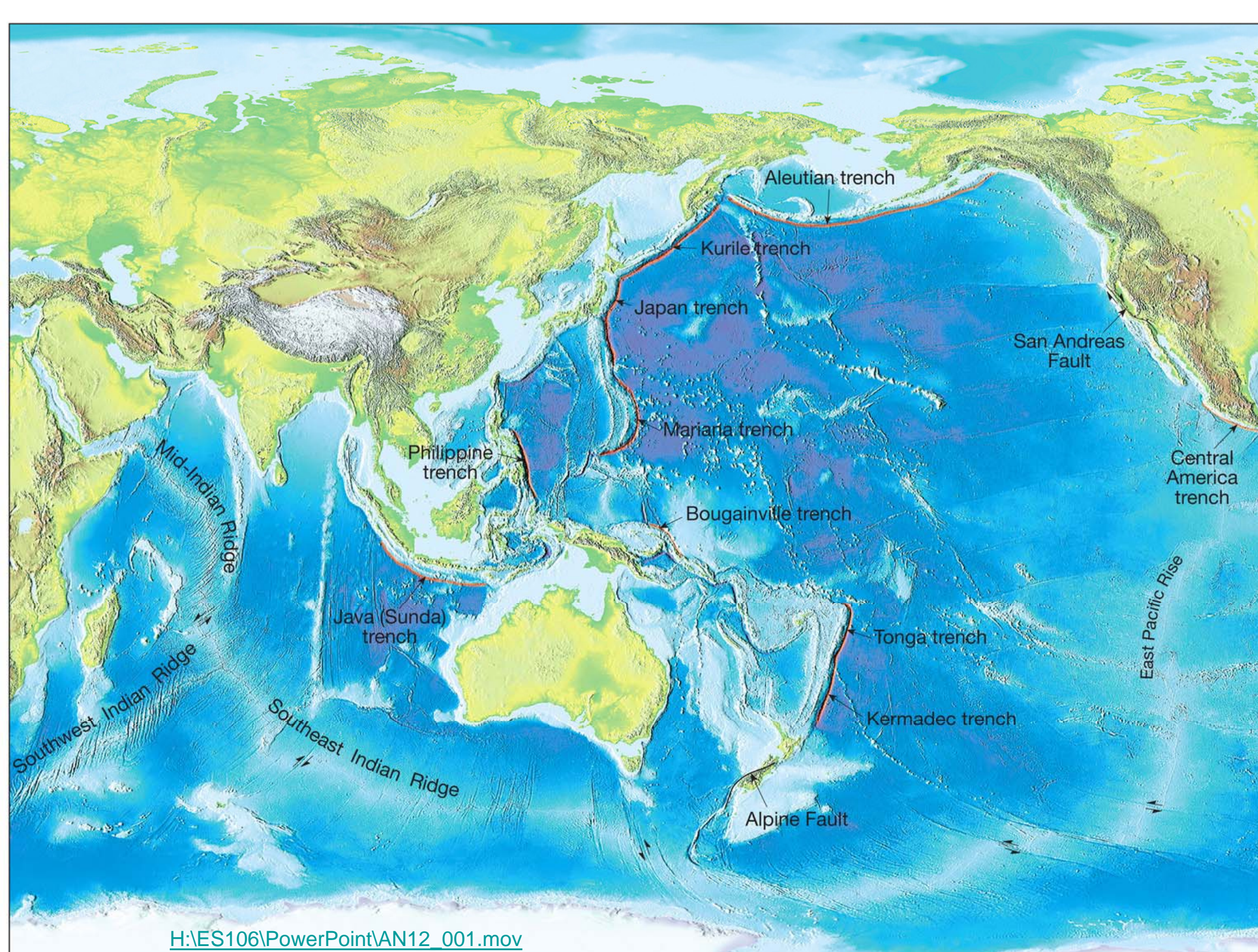


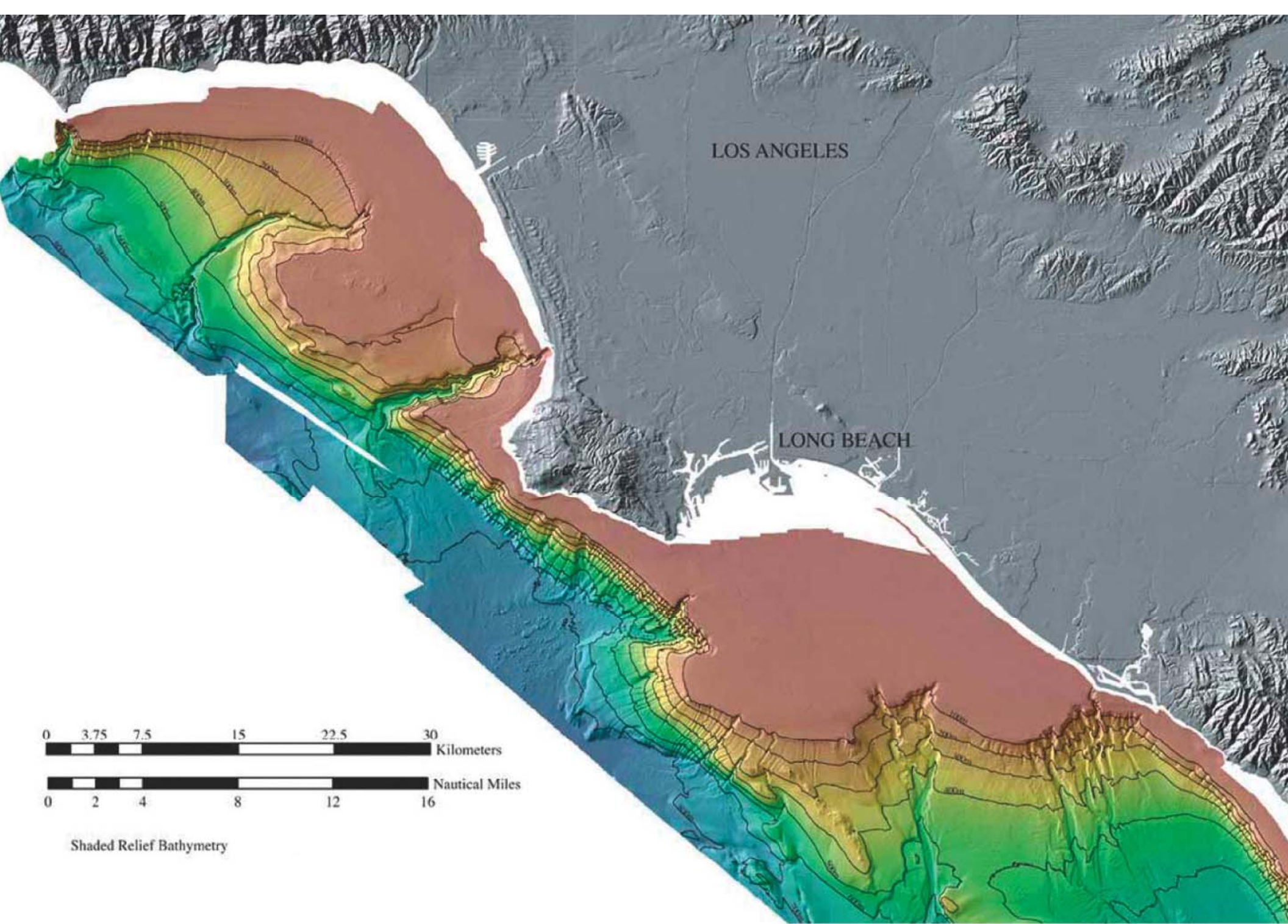
B.

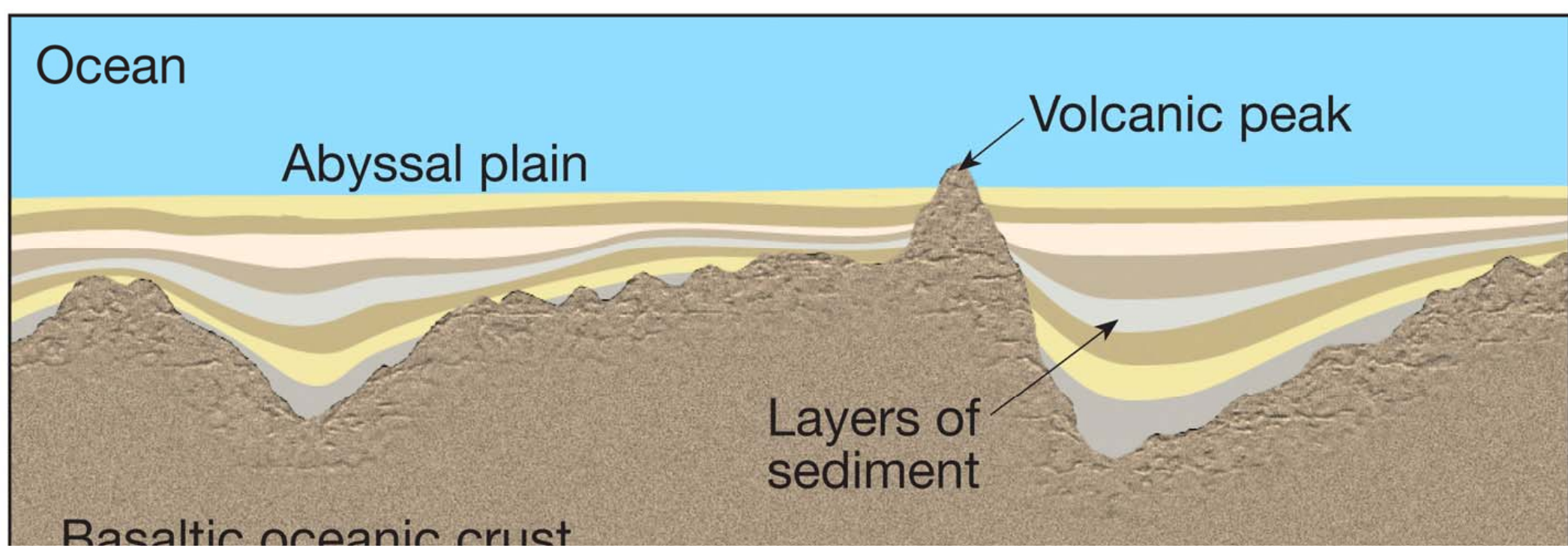
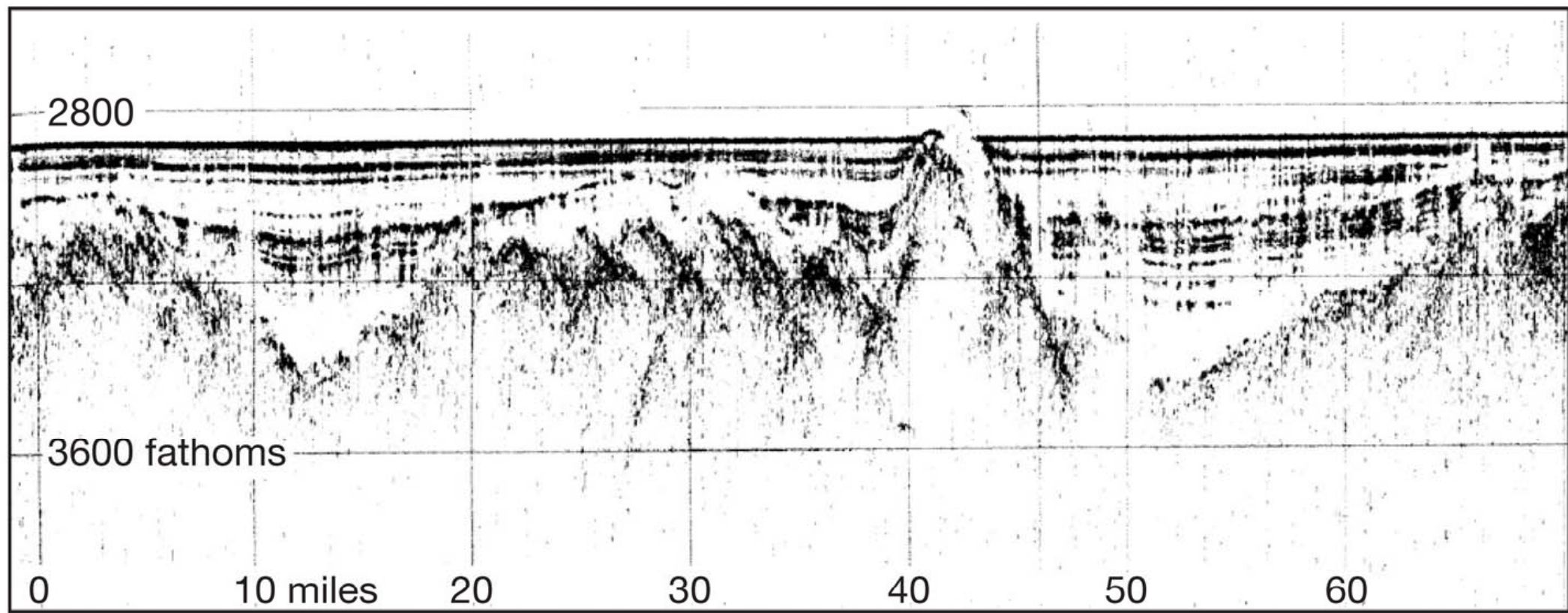
Oceanic Ridge—Pacific



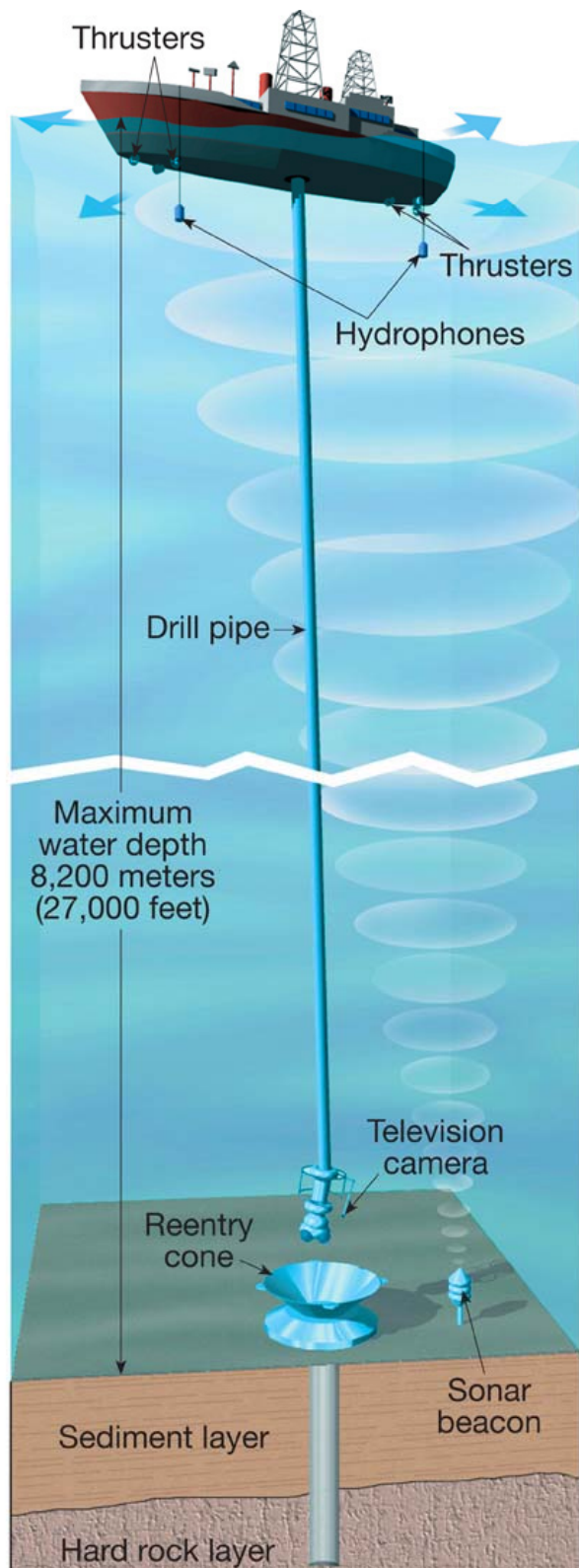






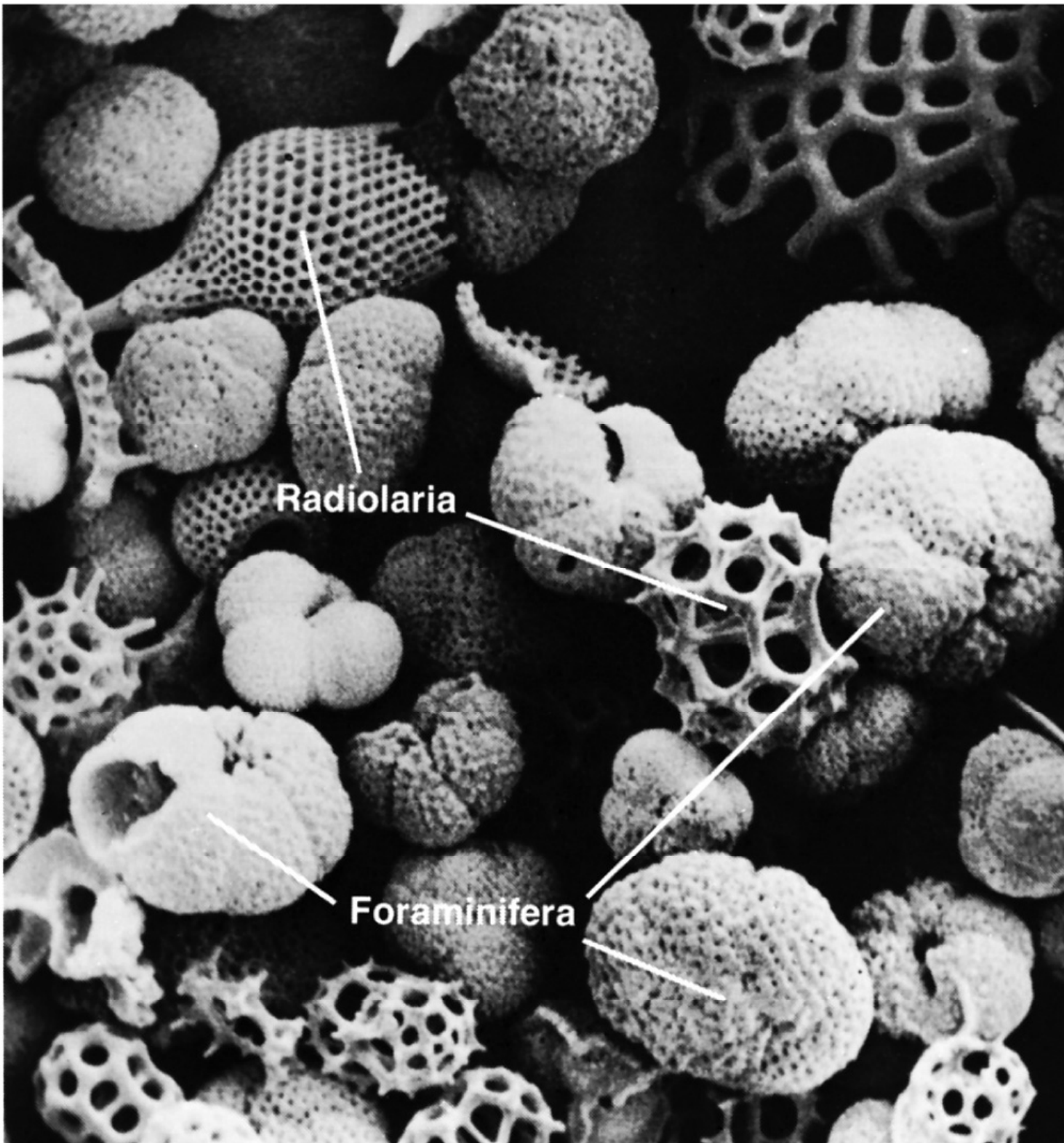


Collection of sea-floor sediment cores



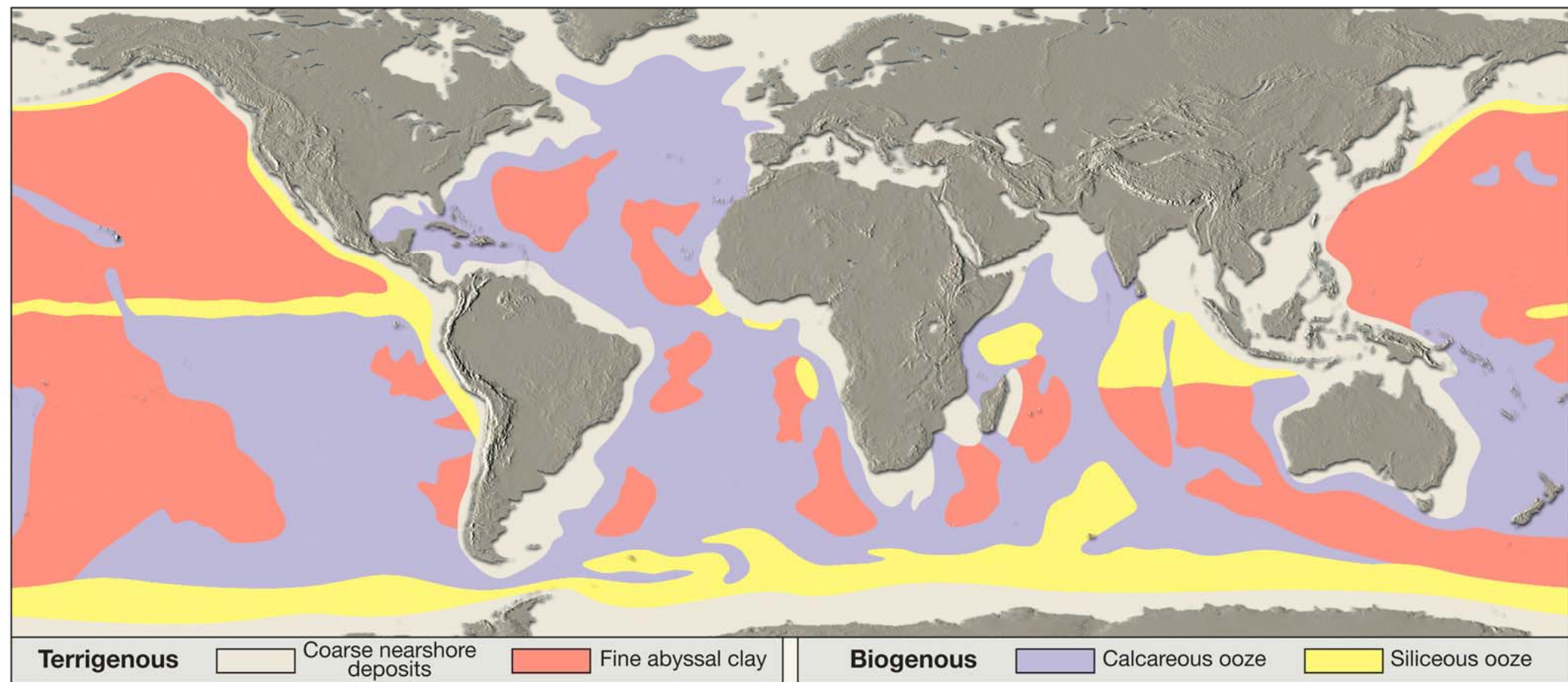
Sea floor sediment

- Derived from land: 'terra'
 - Terrigenous
 - Composed of sand, silt and clay
- Derived from organisms: 'biota'
 - Biogenous
 - Composed of shells and skeletons of marine animals and plants
- Direct precipitation from sea water: 'hydro'
 - Hydrogenous
 - Salts, calcium carbonate, metal oxides, metal sulfides (near sea-floor hot springs)



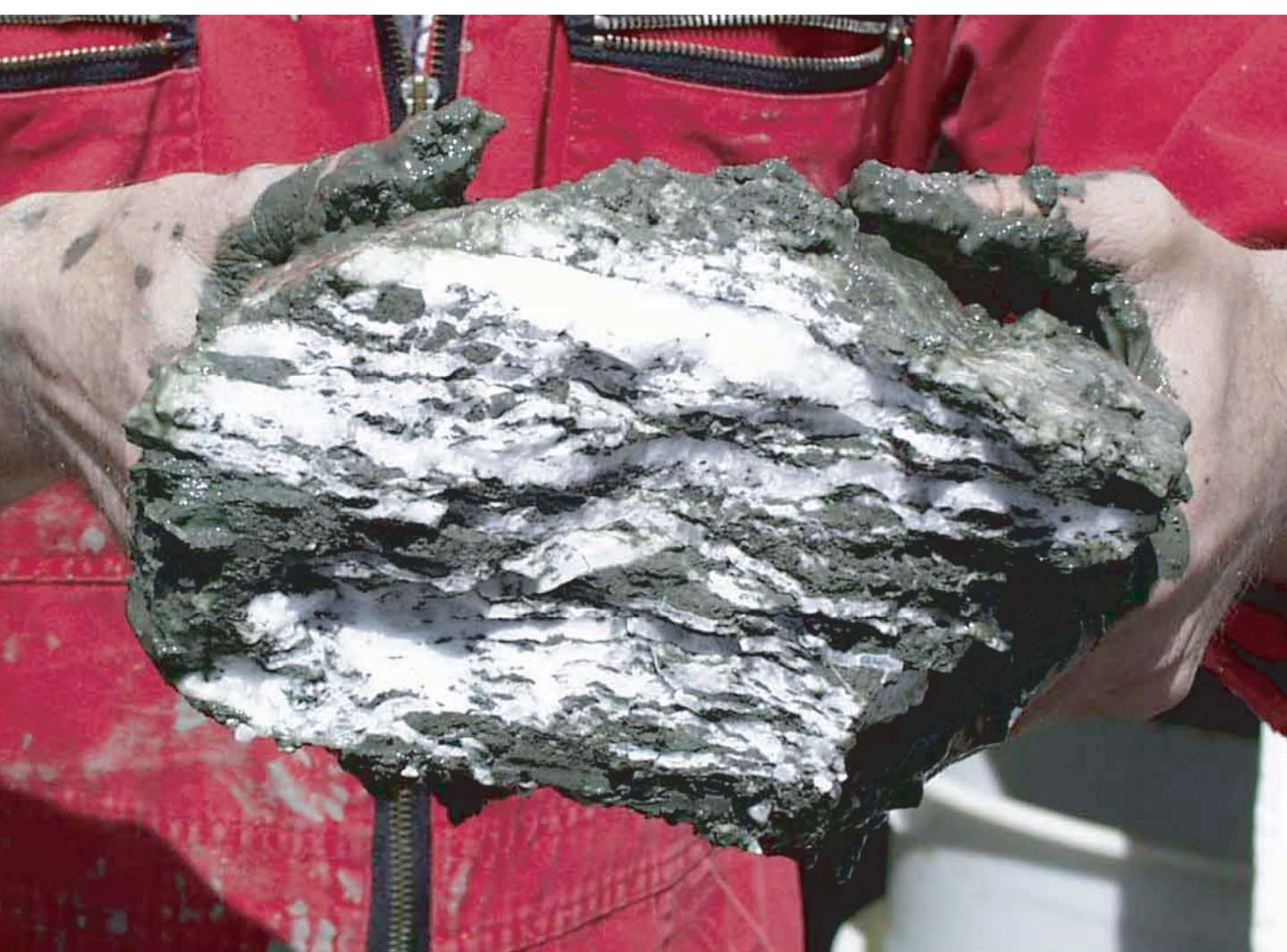
Radiolaria

Foraminifera



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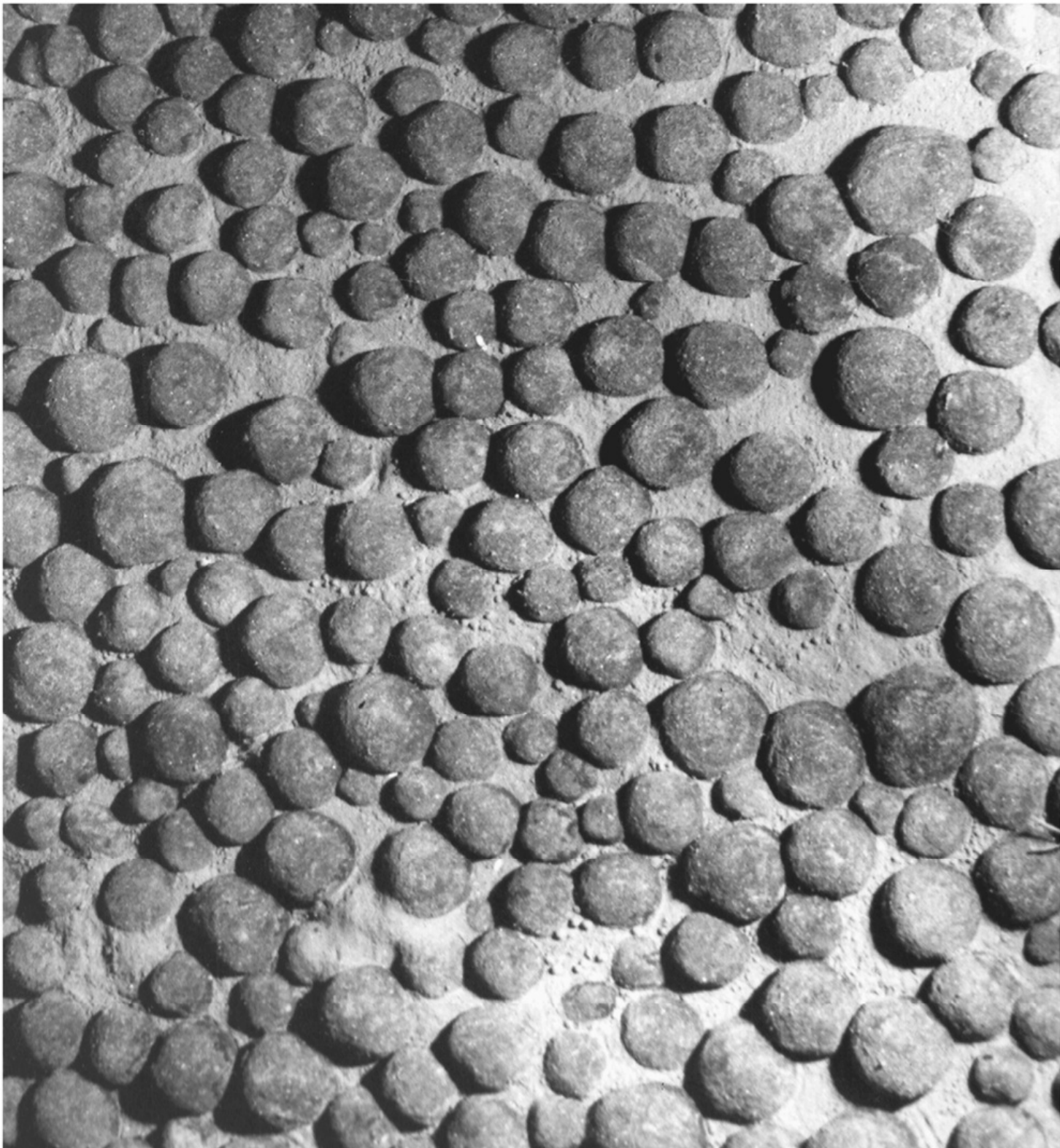


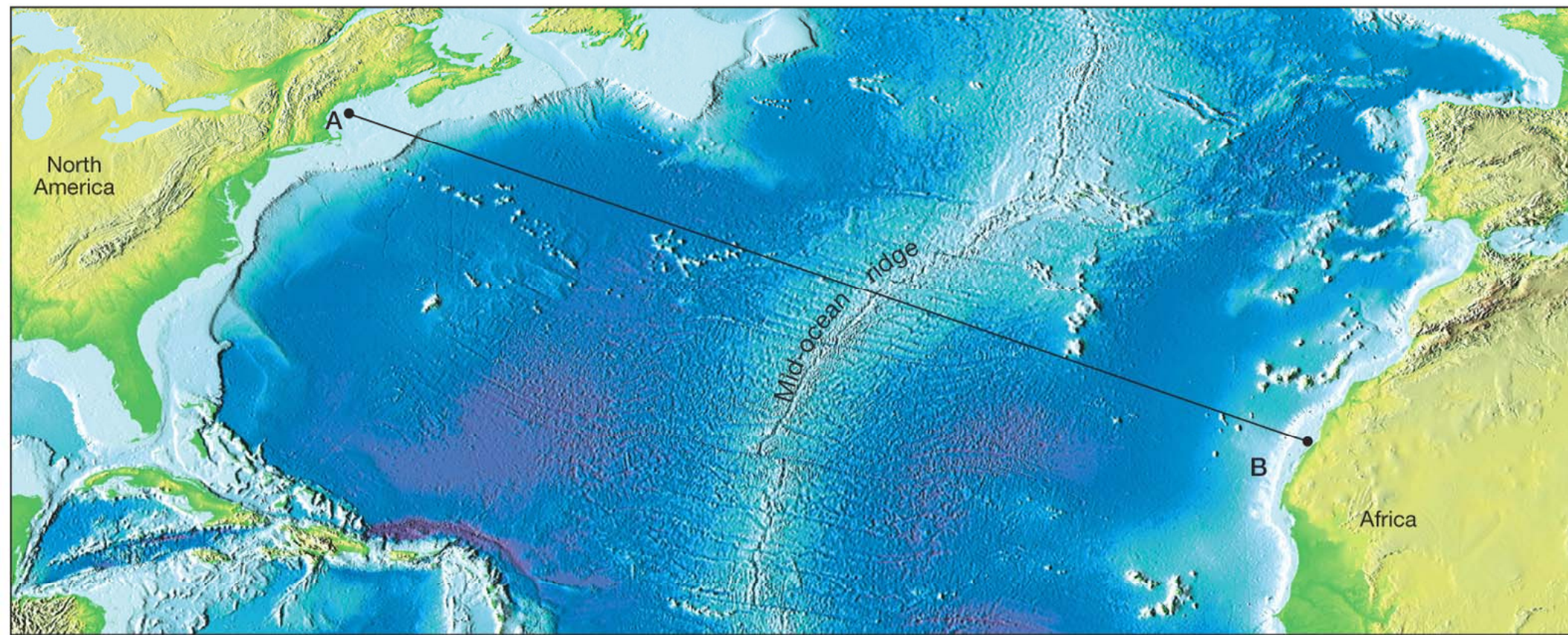


Methane Hydrate









Continental margin

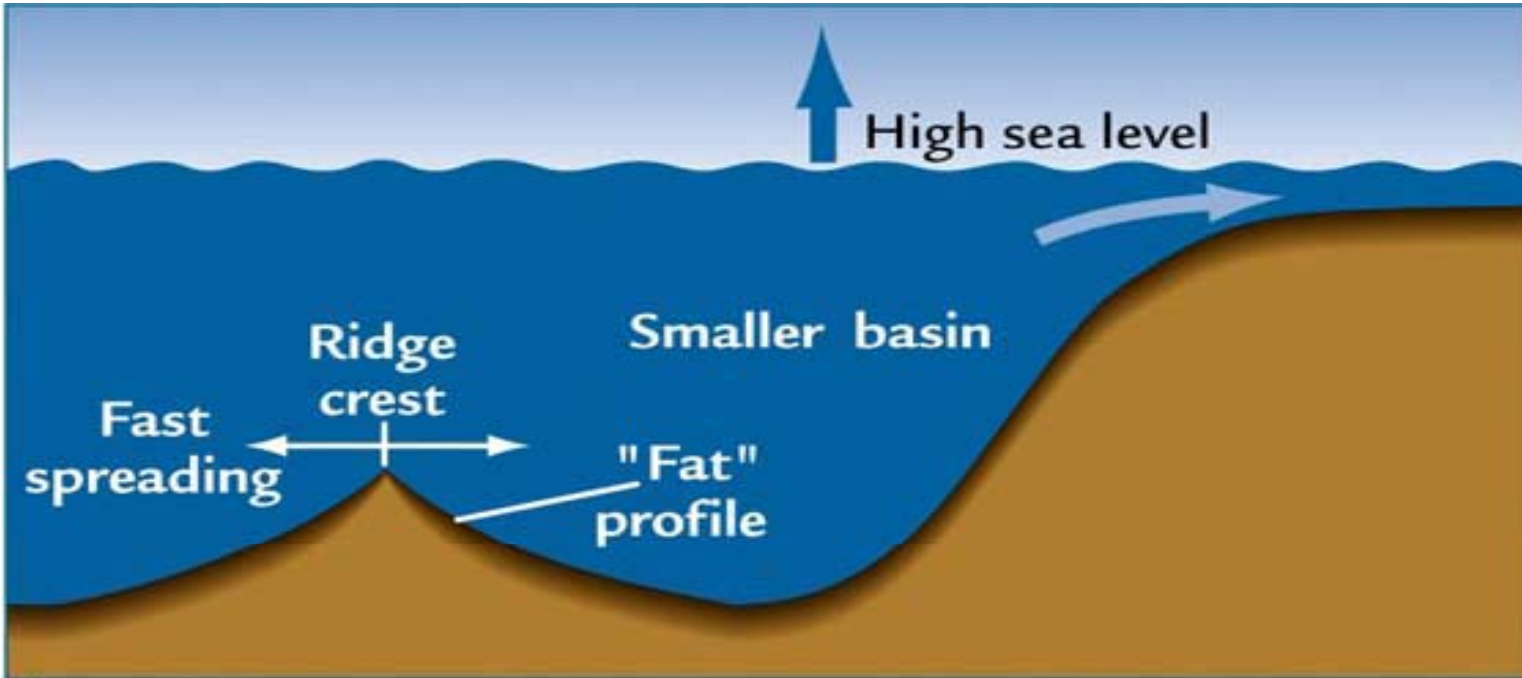
Ocean basin floor

Mid-ocean ridge

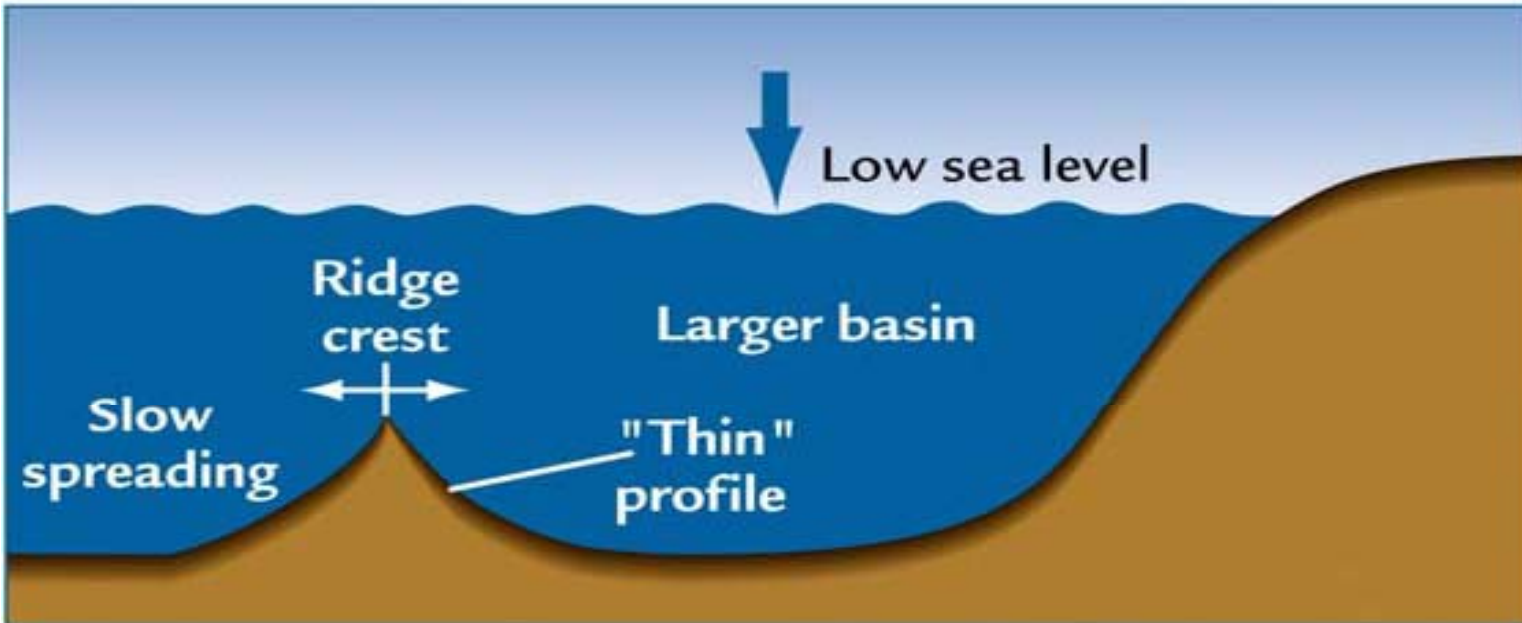
Ocean basin floor

Continental margin

- A
- Function of amount of water in the sea
 - And number and size of oceanic ridges

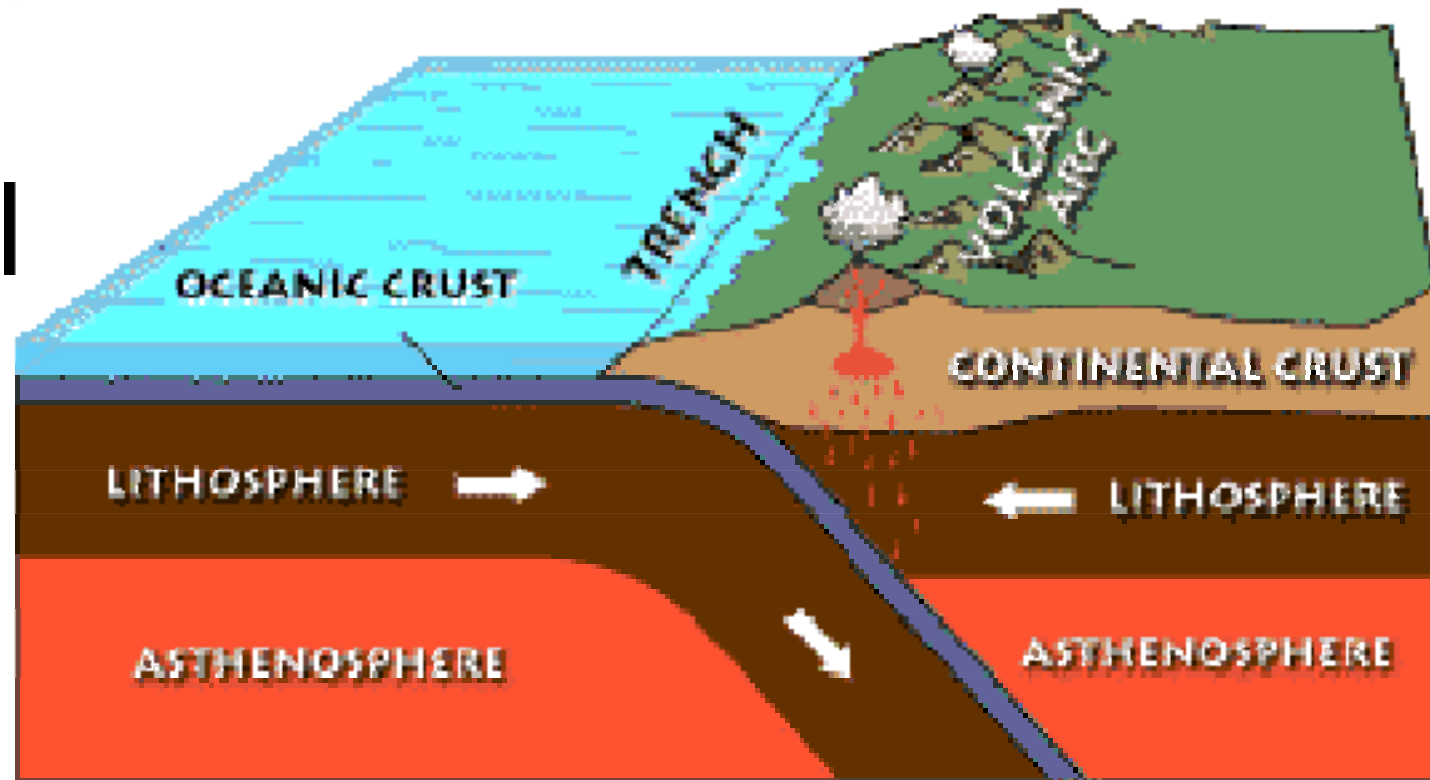


A



B

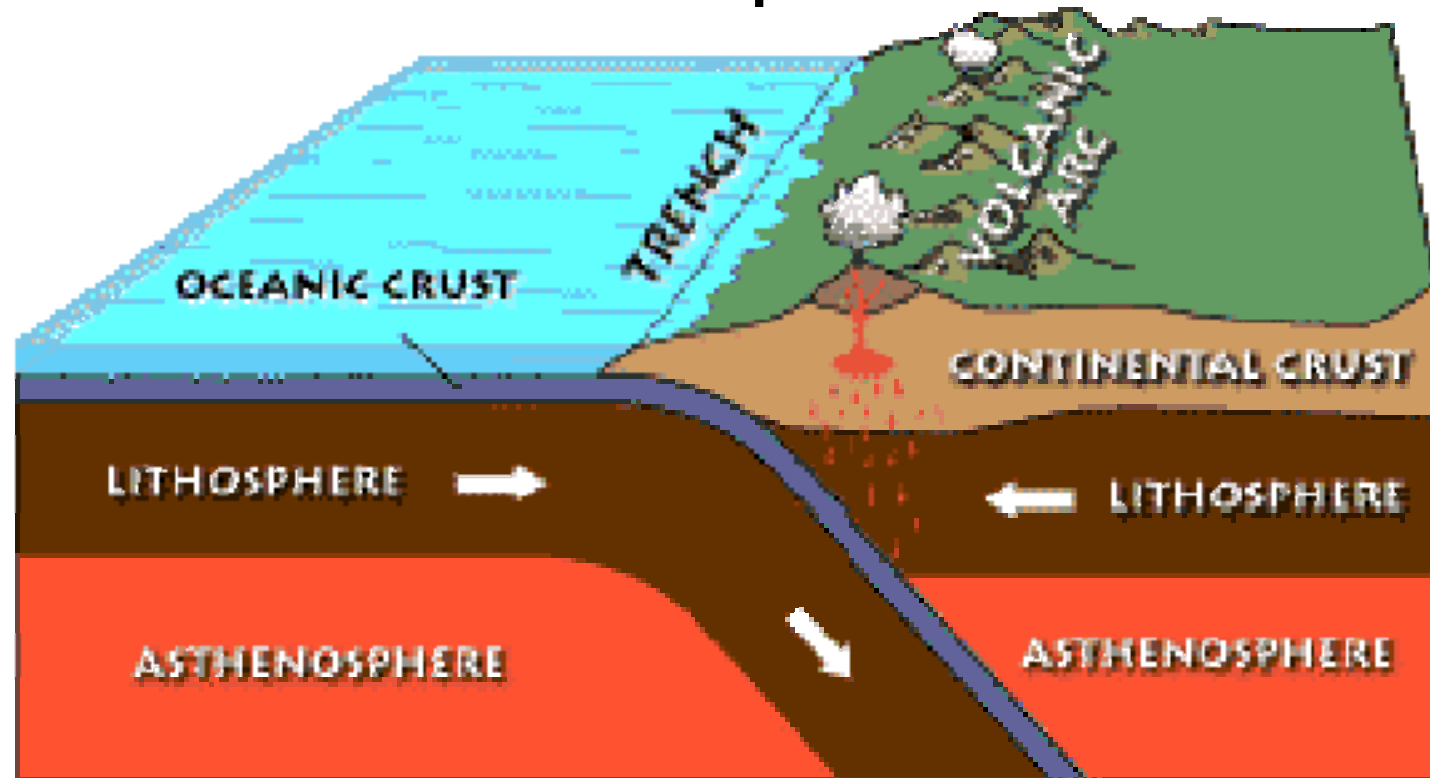
Active Continental Margins

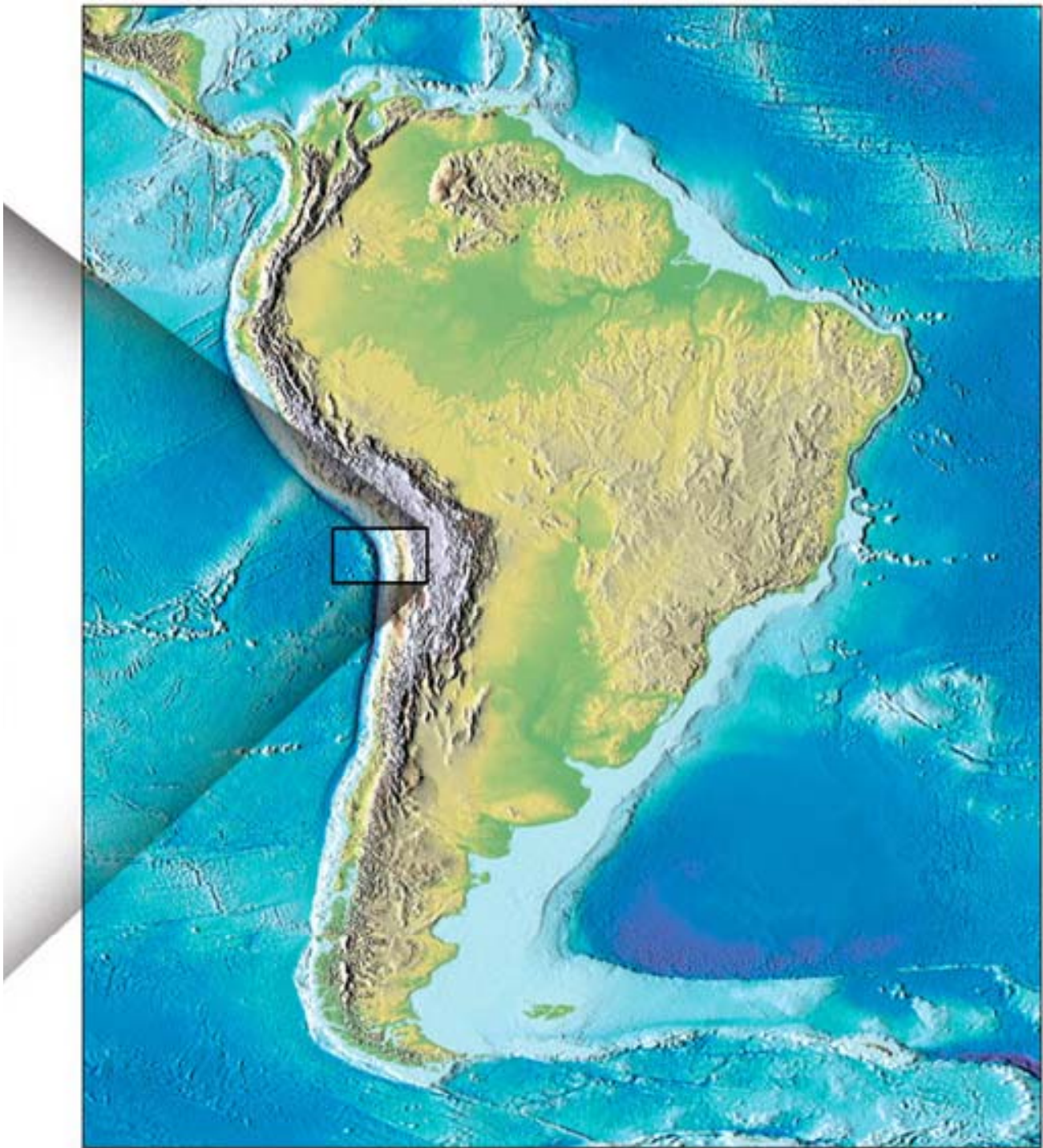


- Narrow continental shelf
- Deep sea trench catches terrigenous sediment
- 'Accretionary Wedge' of caught sediment
- At convergent boundary of plates

Convergent Lithospheric Plates

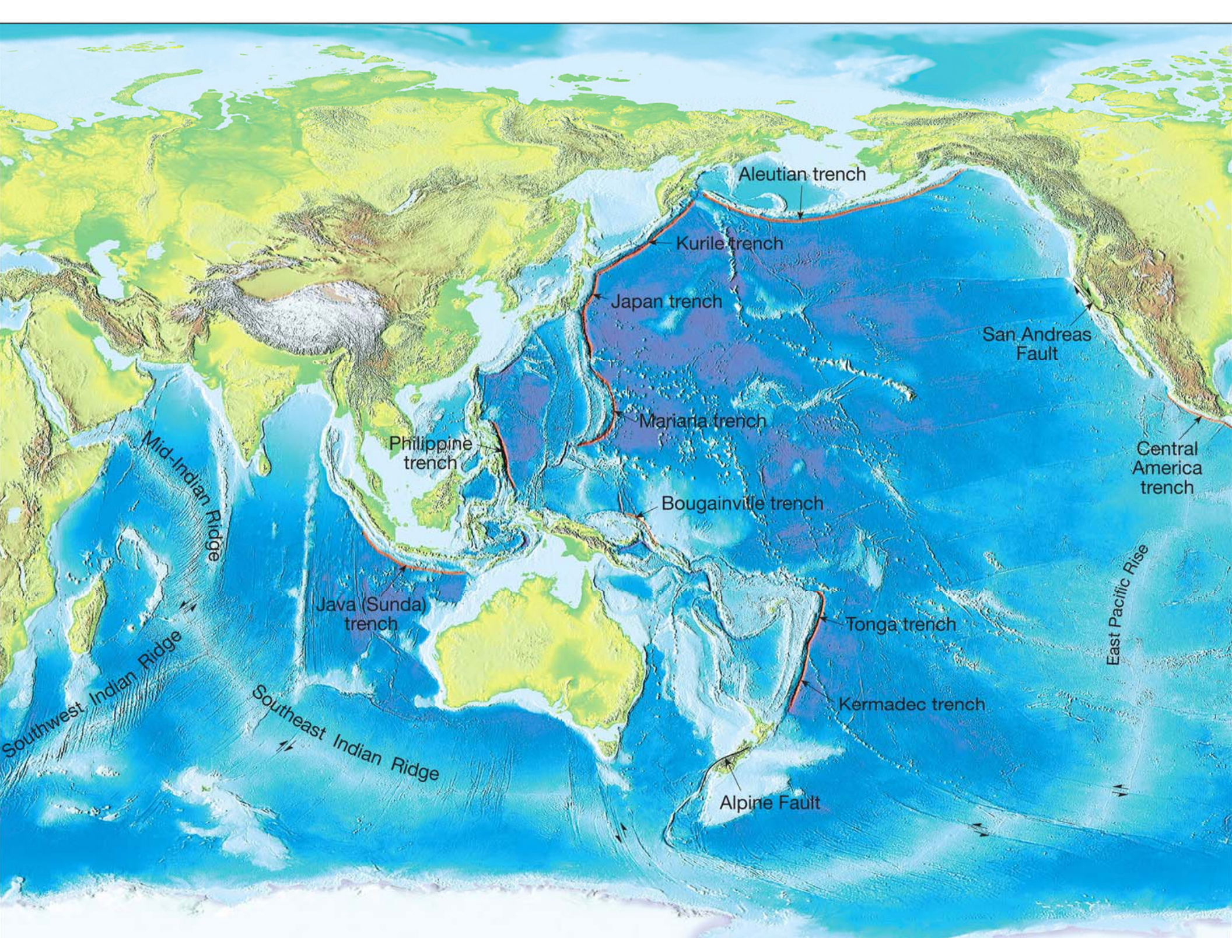
- Oceanic plate is subducted
- Deep-ocean trench is formed
- Volcanism above subducted plate





Deep-Ocean Trenches

- Active continental margins
- Other convergent plate locations
- Most are in the Pacific Ocean



Aleutian trench

Kurile trench

Japan trench

Mariana trench

Bougainville trench

Tonga trench

Kermadec trench

Alpine Fault

San Andreas Fault

Central America trench

Philippine trench

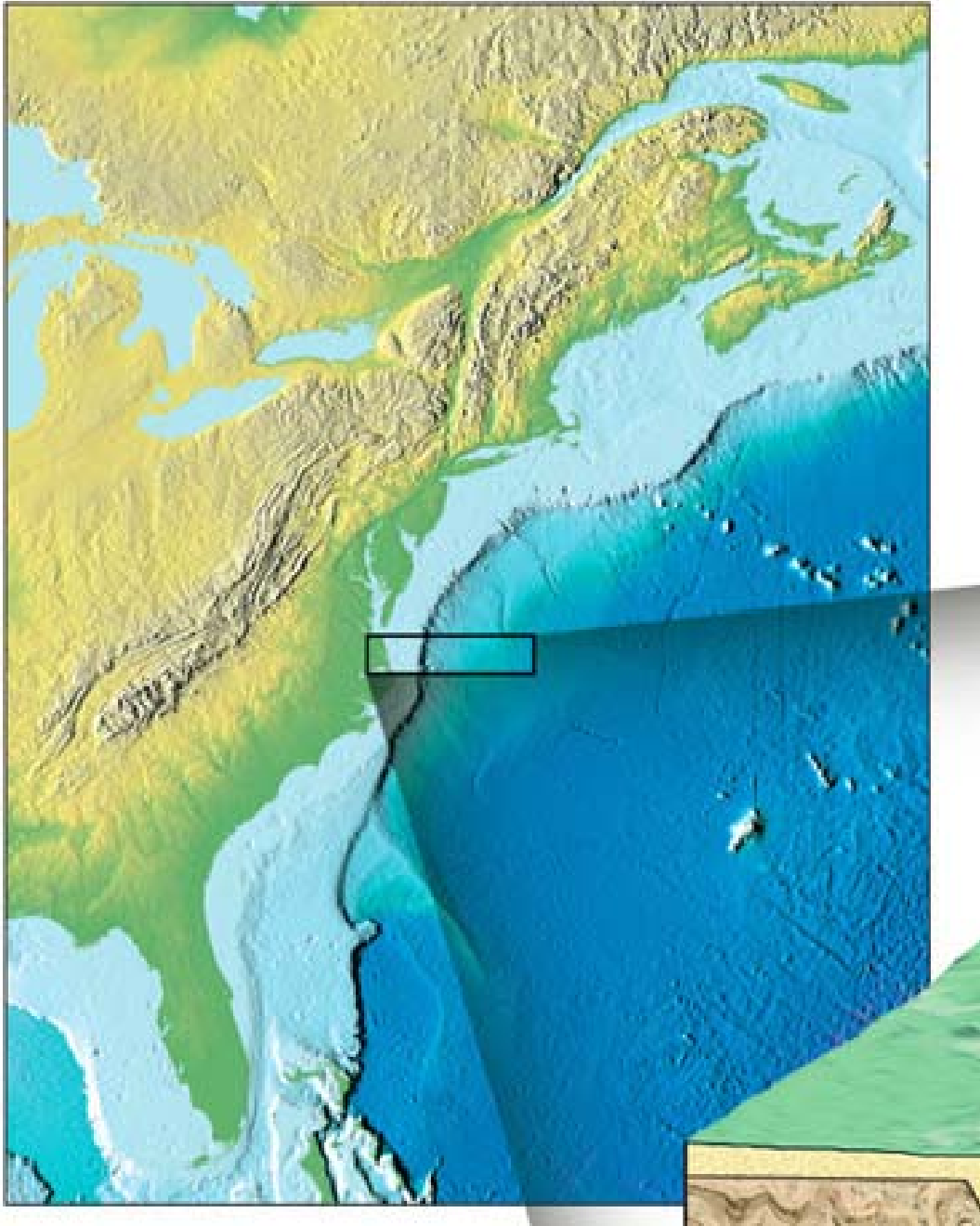
Java (Sunda) trench

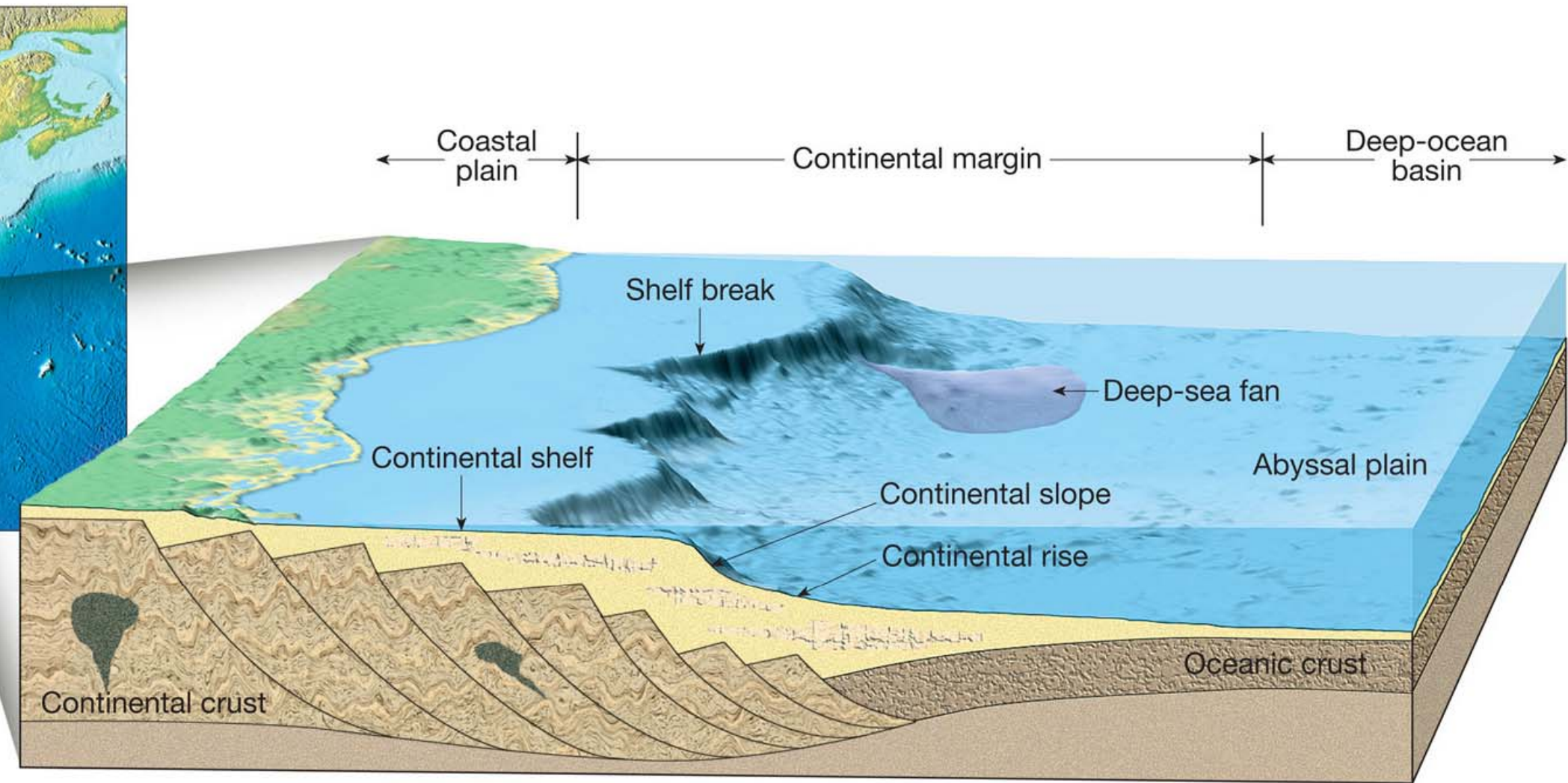
Mid-Indian Ridge

Southwest Indian Ridge

Southeast Indian Ridge

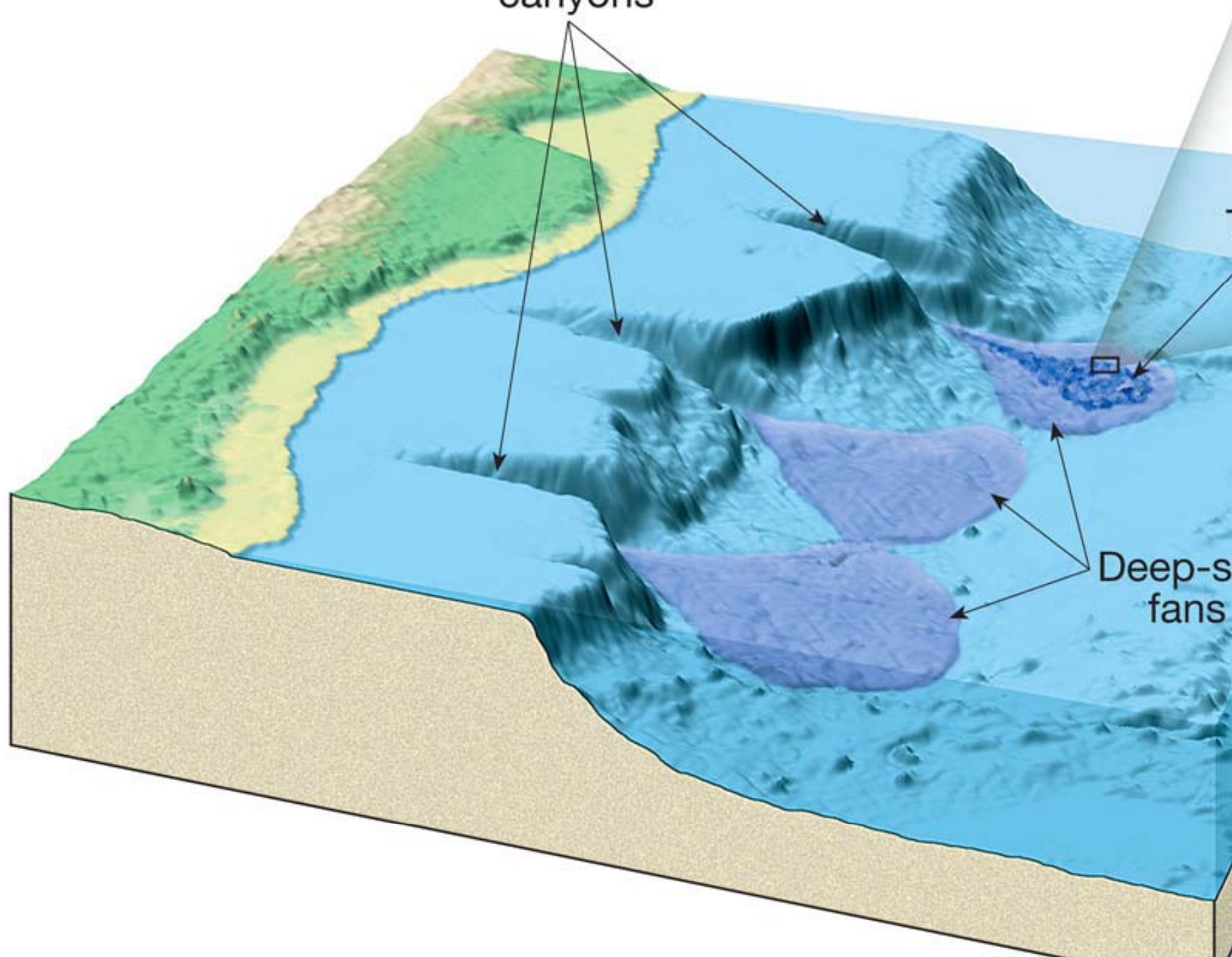
East Pacific Rise





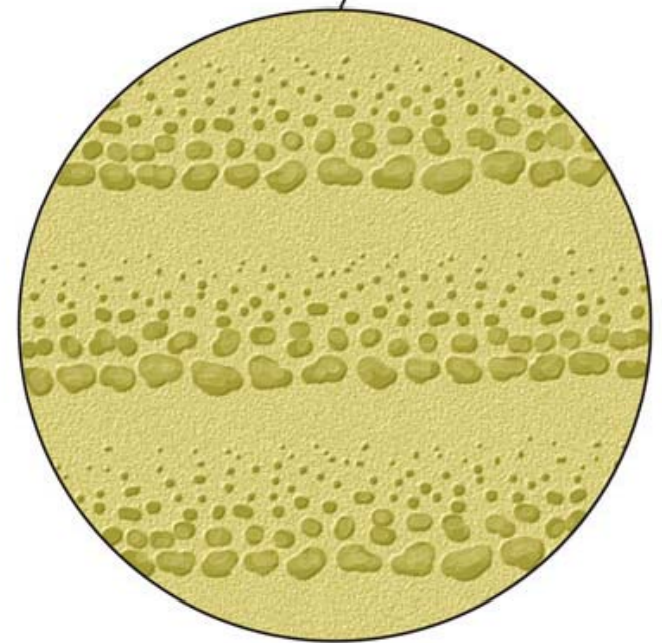
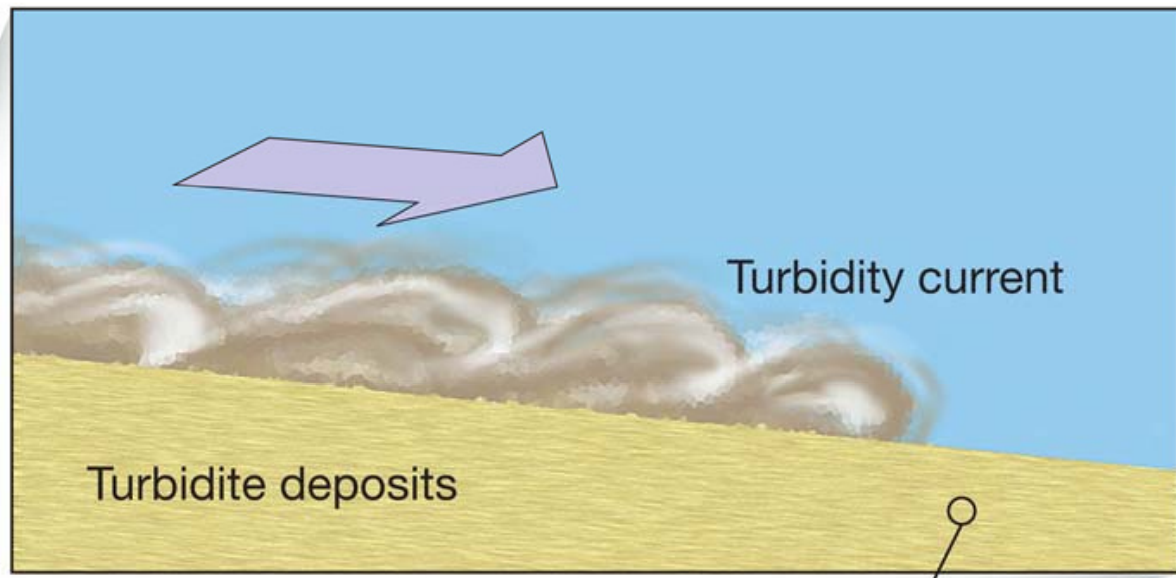
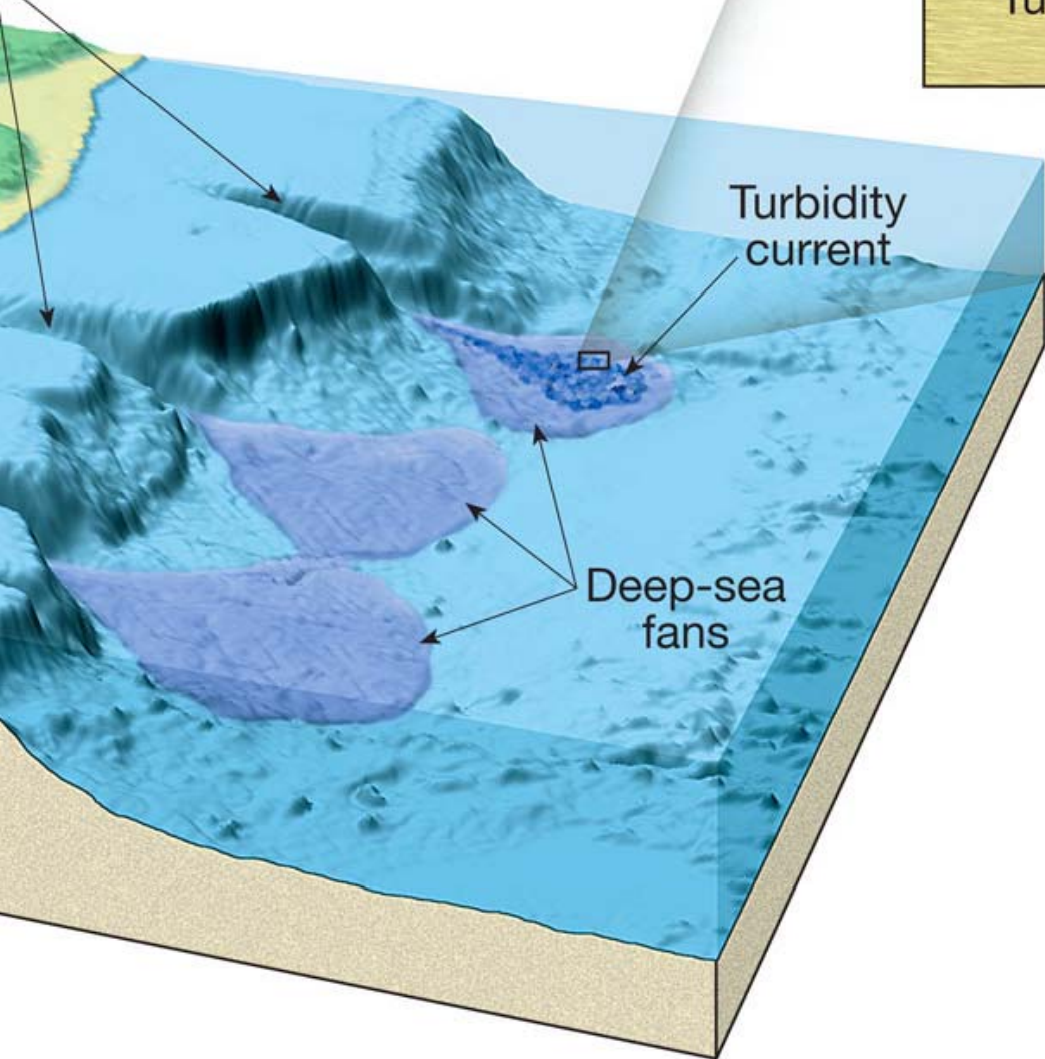
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Submarine
canyons

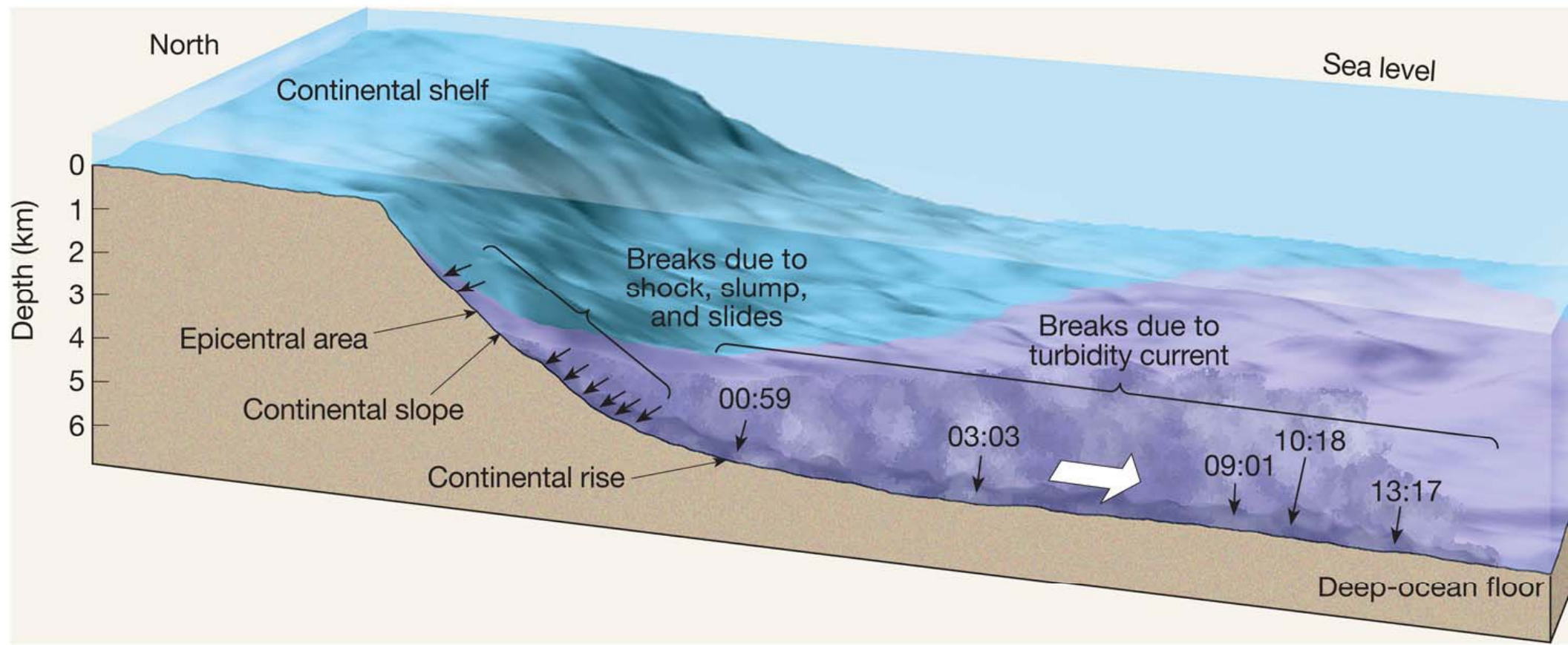


Deep-sea
fans

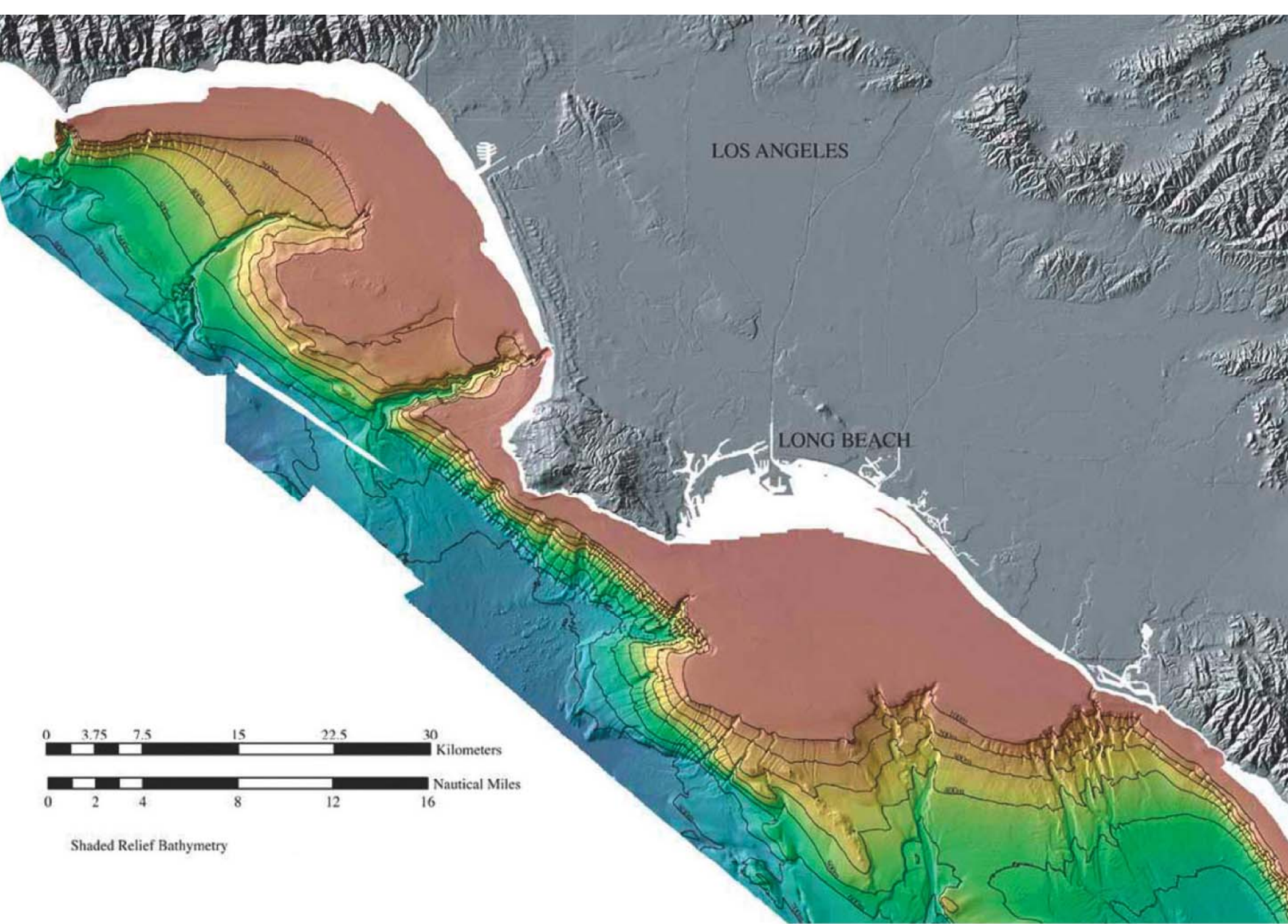
marine
fans

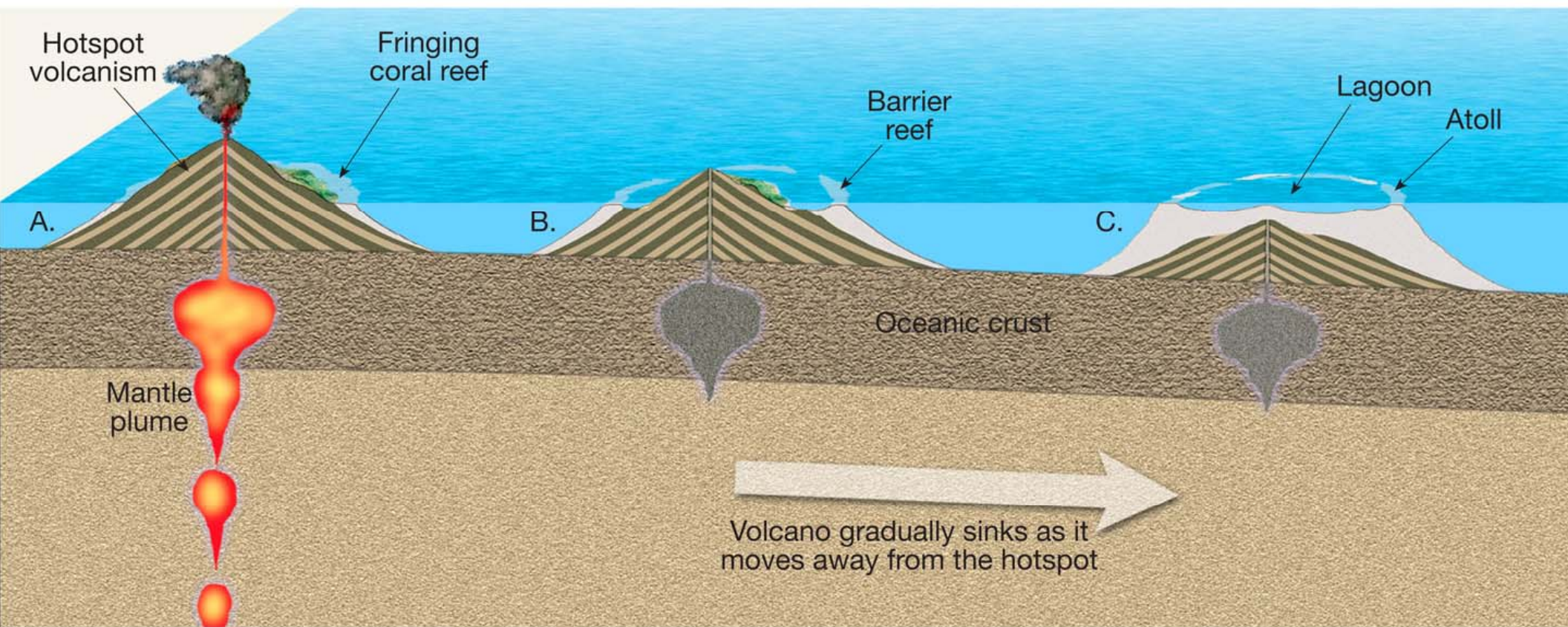


Graded bedding



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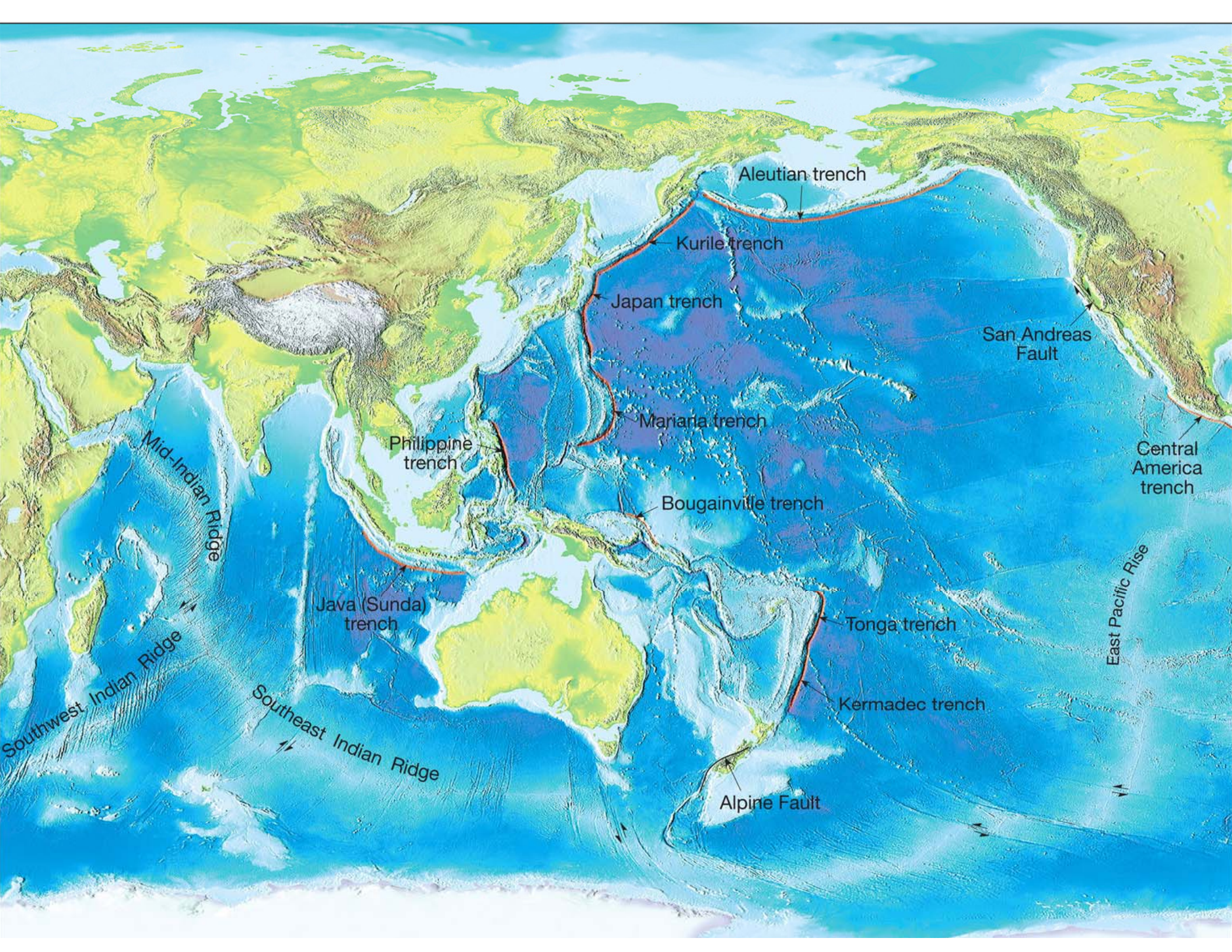


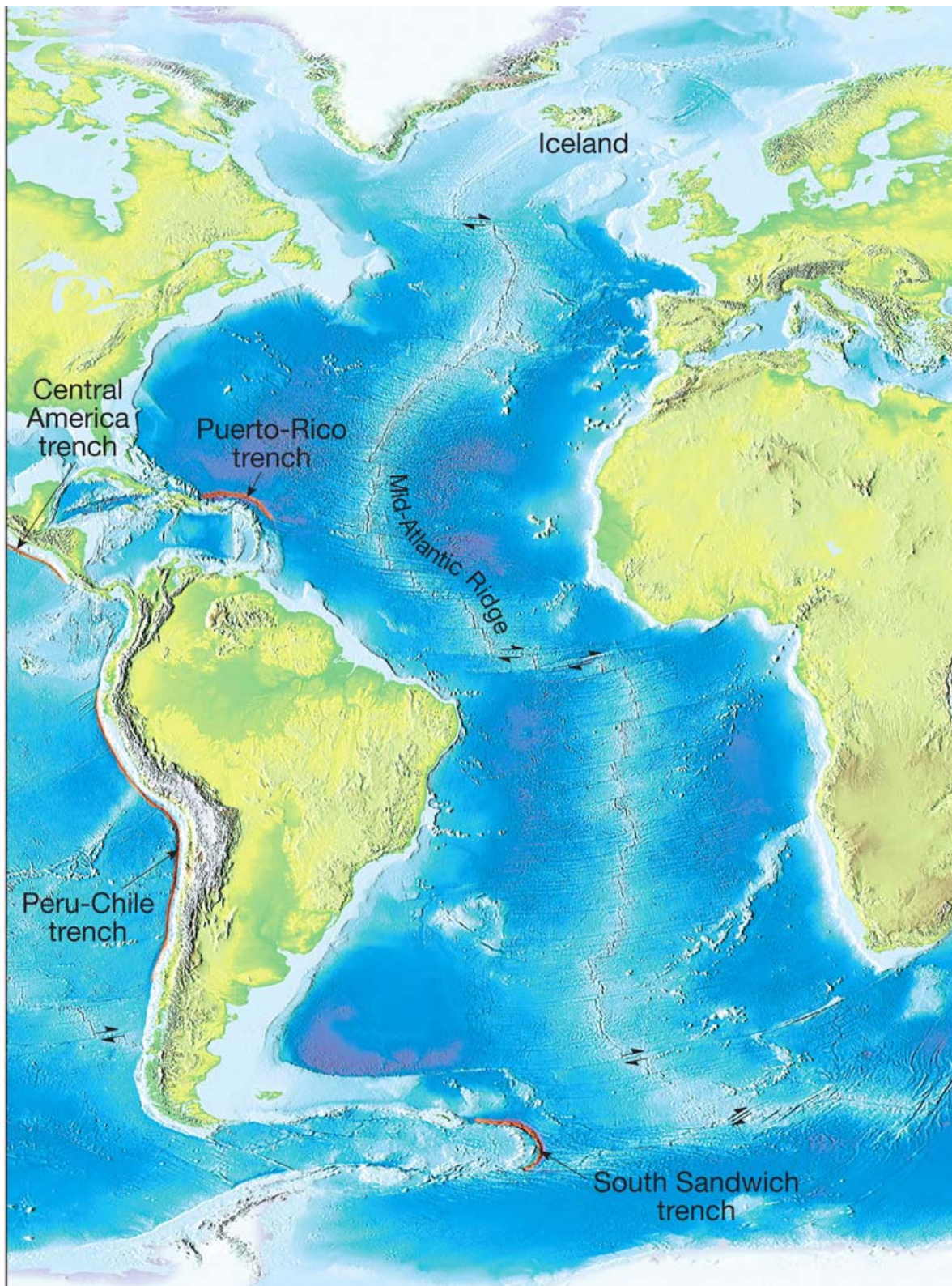


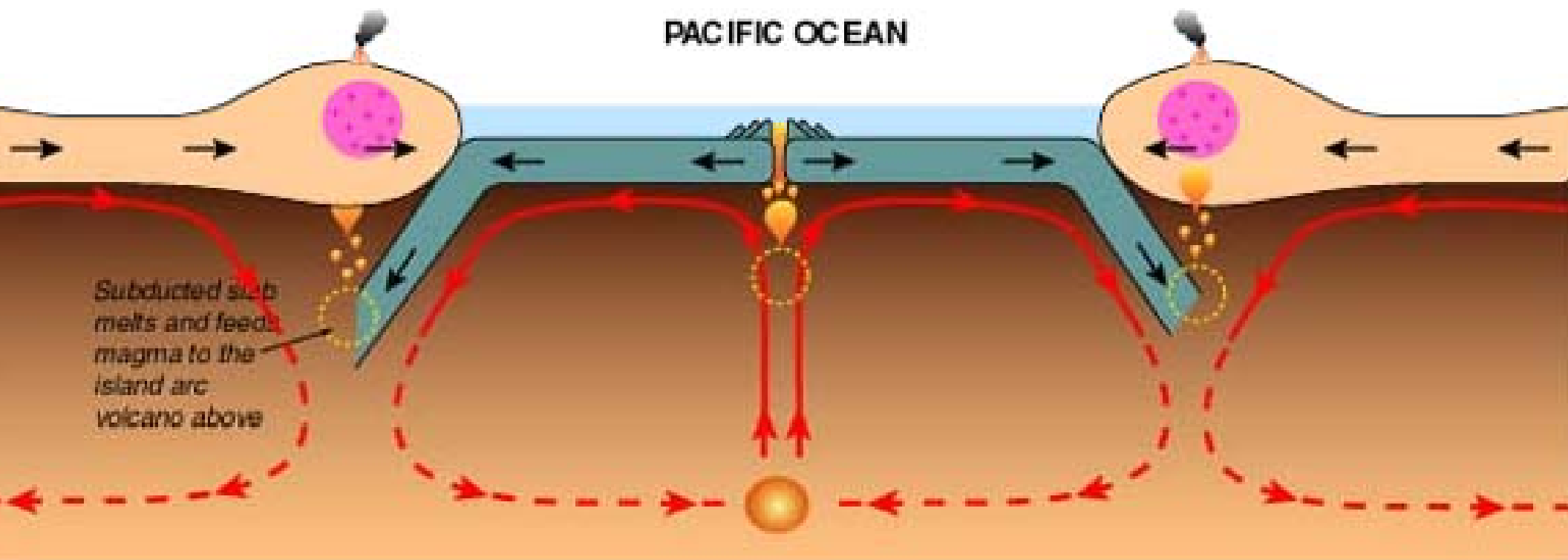
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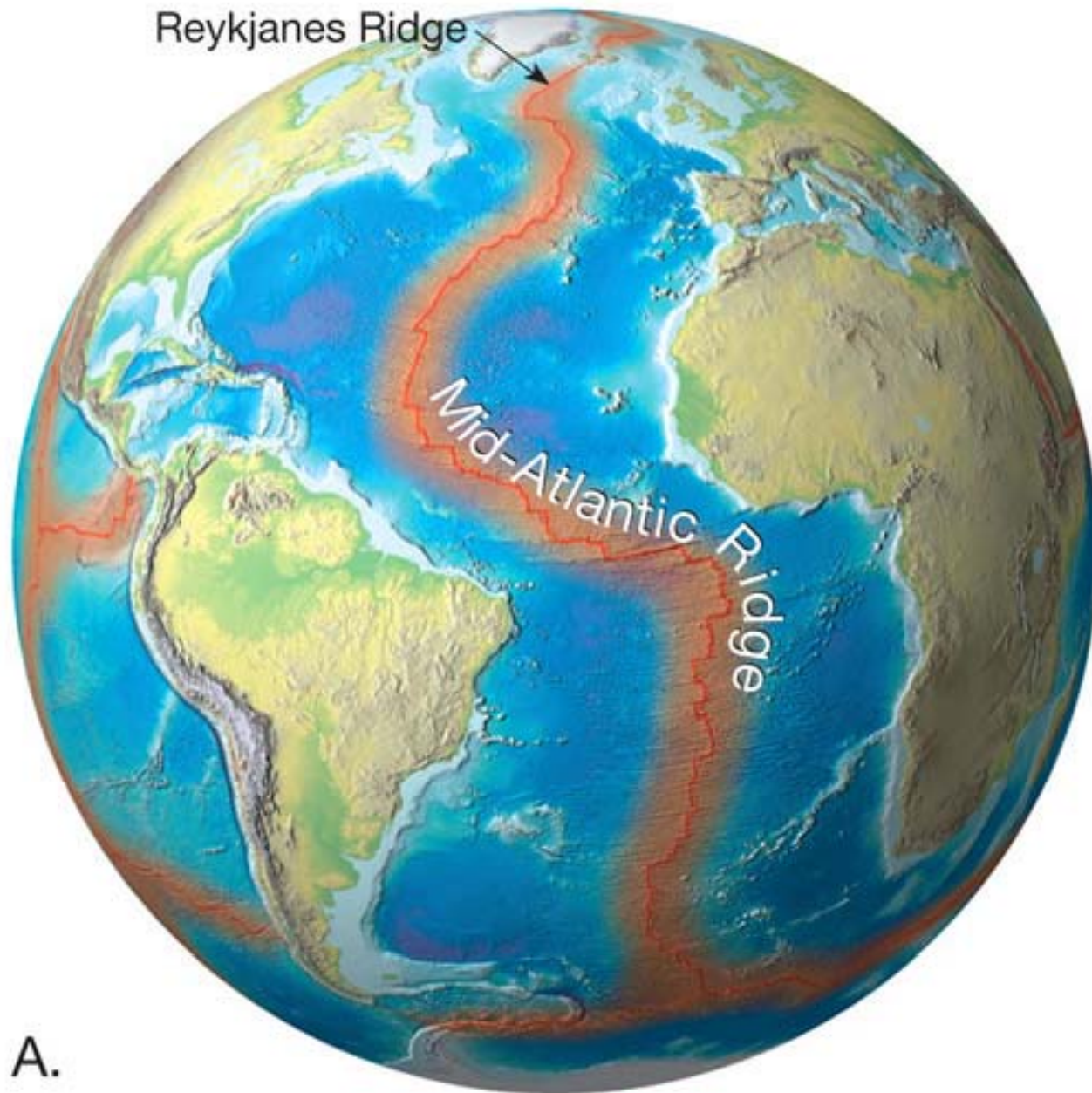






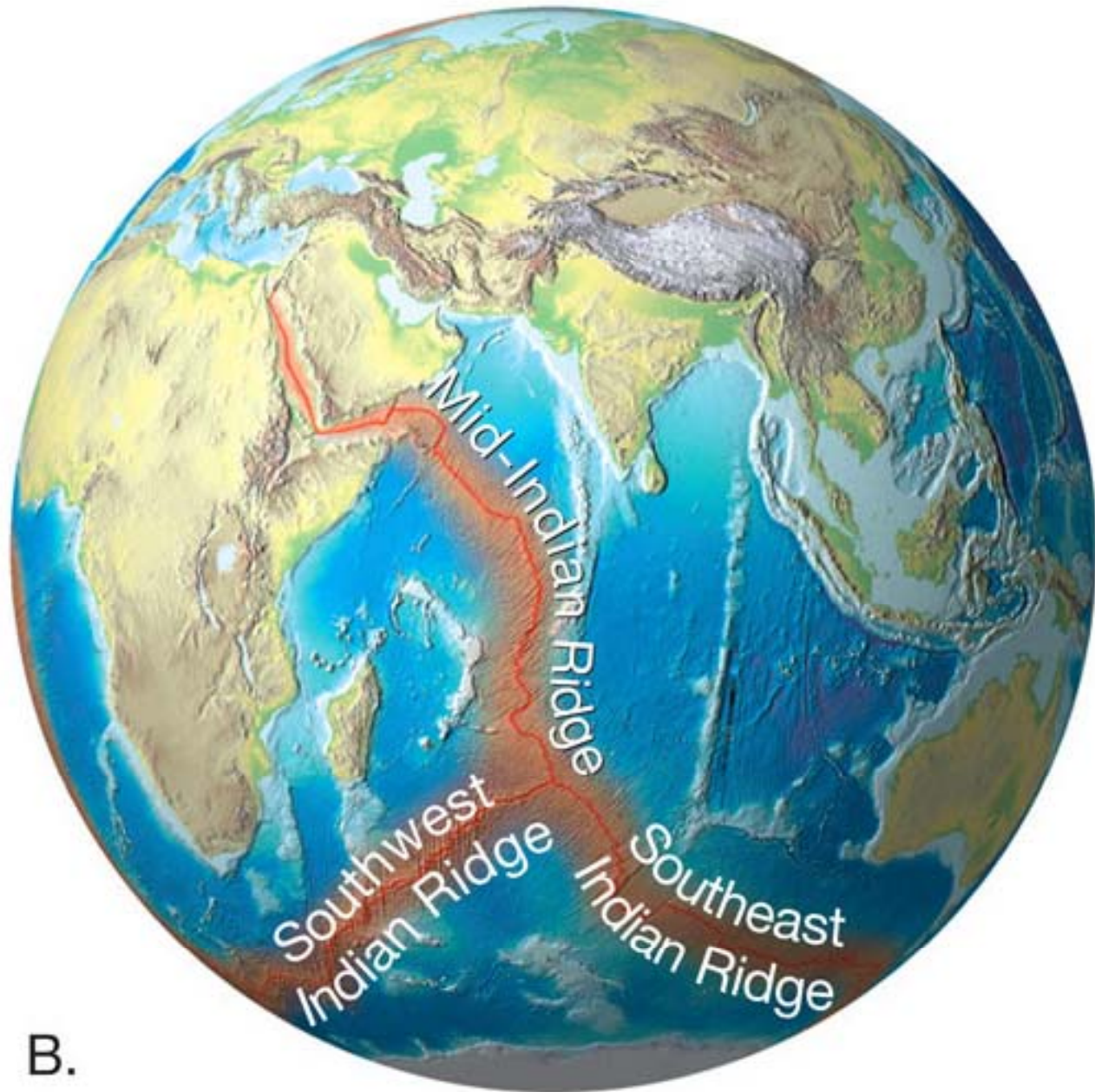
All around the edge of the Pacific, ocean crust is being subducted beneath continental crust. As a result, the Pacific is surrounded by a chain of volcanoes - known as the Ring of Fire

Oceanic Ridge--Atlantic



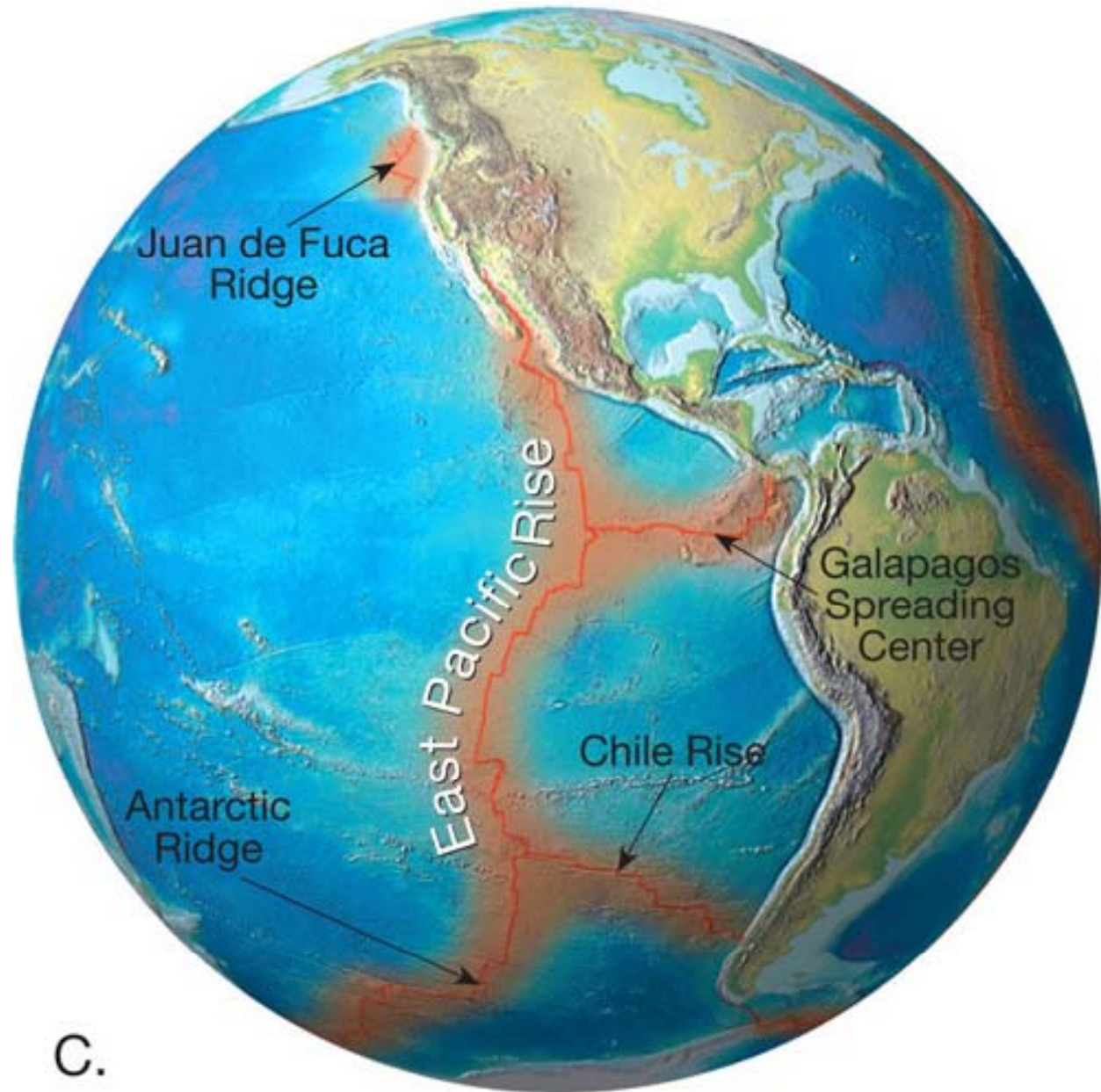
A.

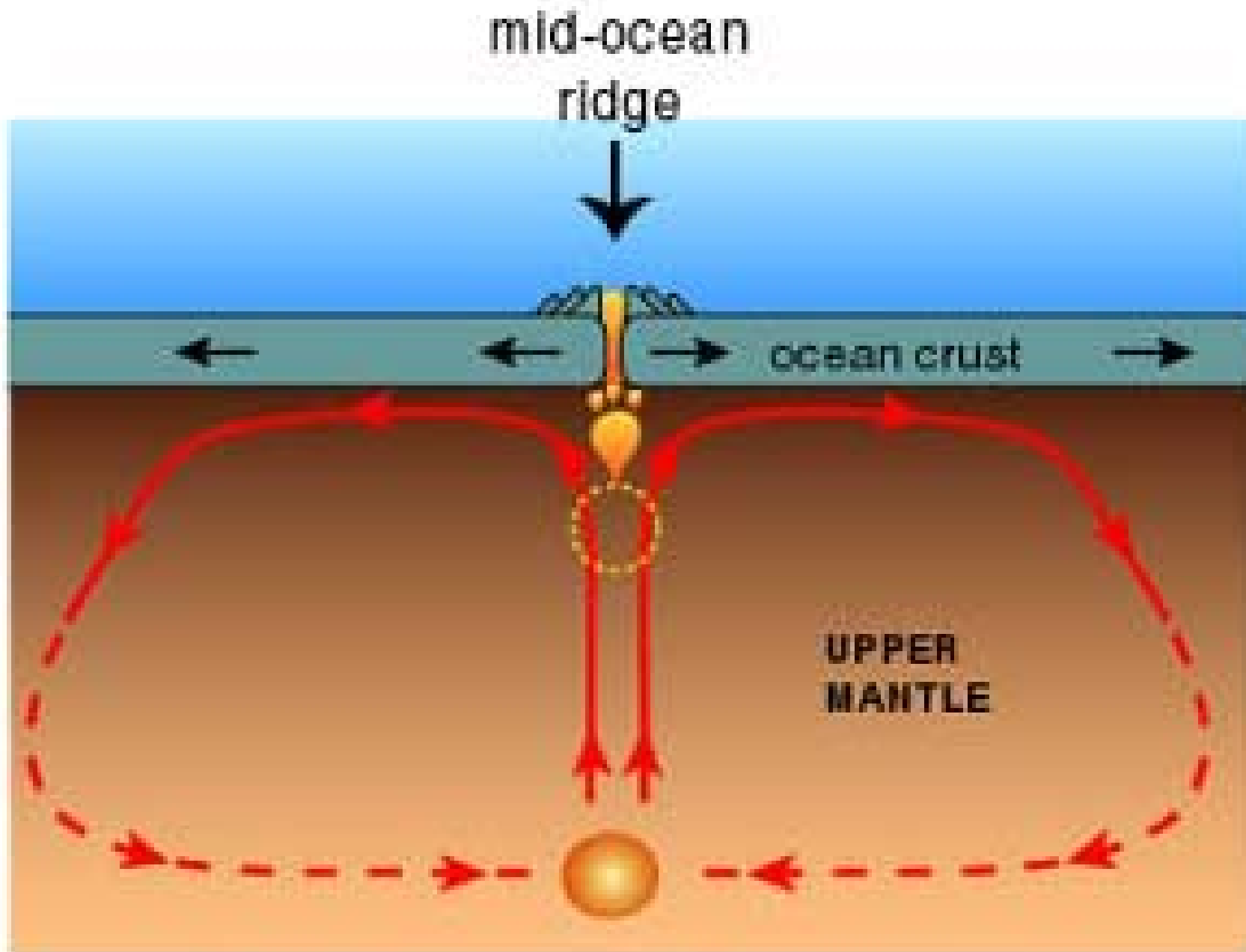
Oceanic Ridge—Indian



B.

Oceanic Ridge—Pacific





Rising and diverging mantle convection currents drag plates apart, allowing magma to well up in the crack, creating a mid-ocean ridge

