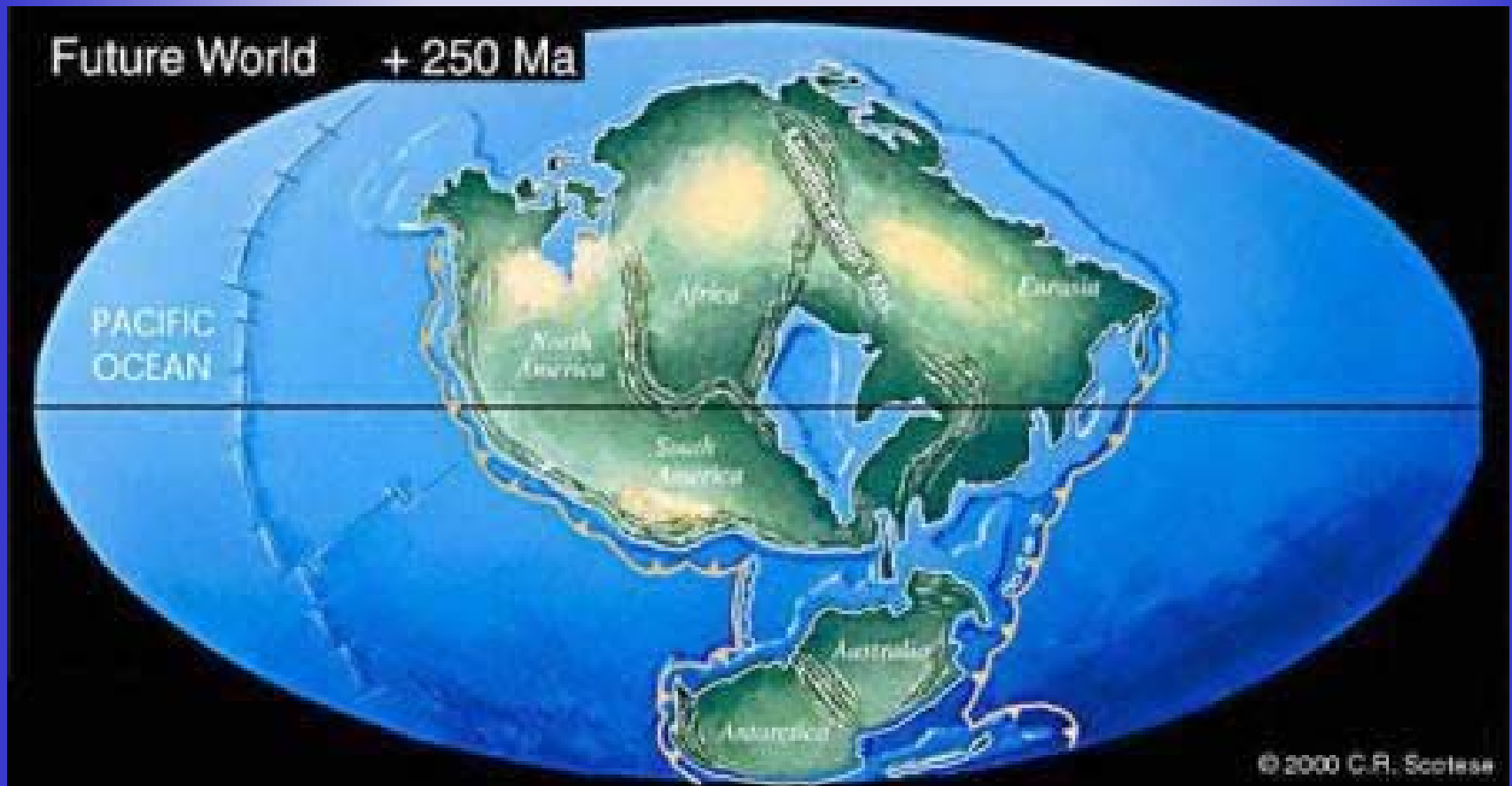
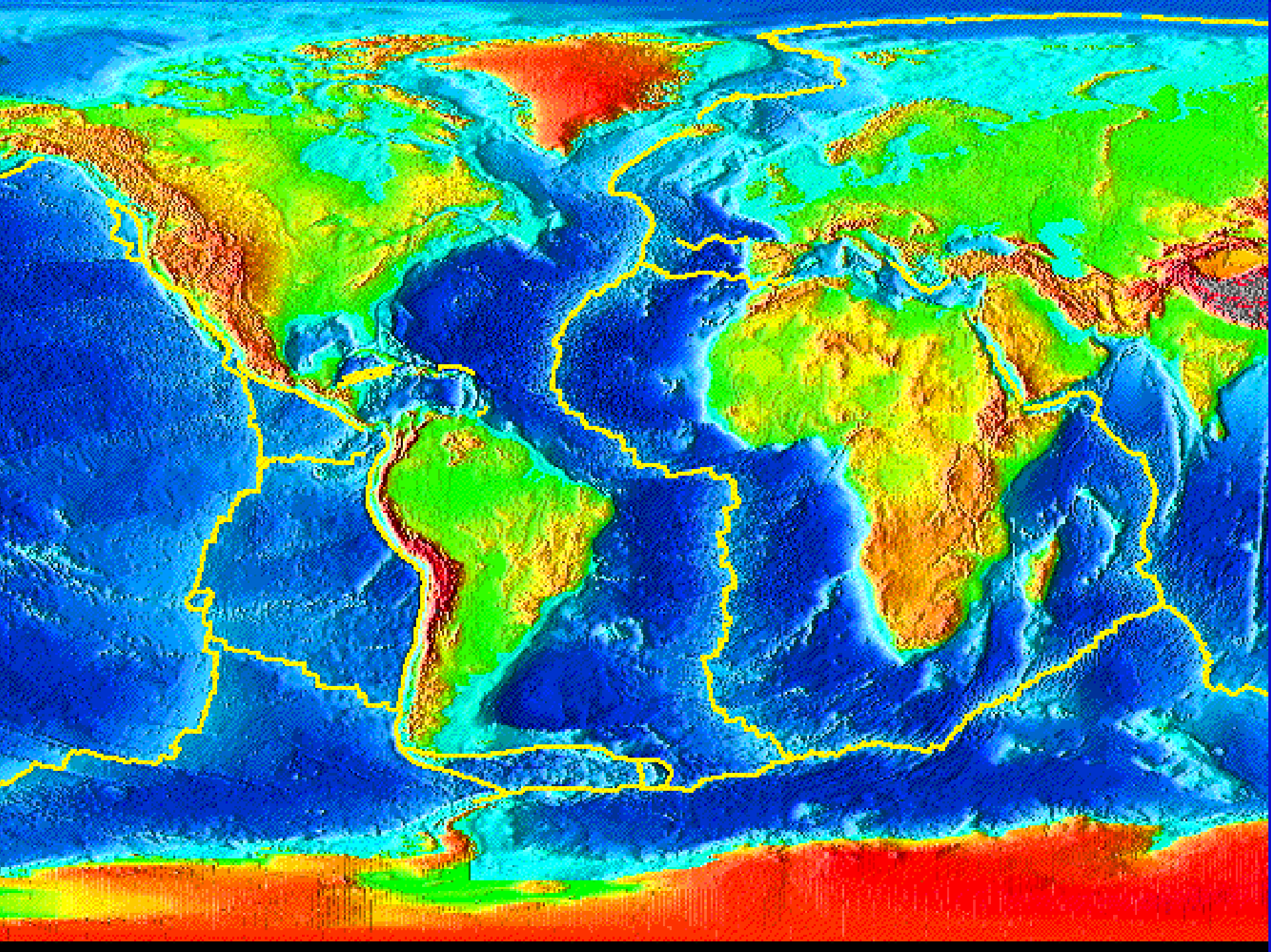


Continental drift







UNIS



Alfred Wegener 1880-1930

Wegener found that large-scale geological features on separated continents often matched very closely when the continents were brought together. For example, the Appalachian mountains of eastern North America matched with the Scottish Highlands, and the distinctive rock strata of the Karroo system of South Africa were identical to those of the Santa Catarina system in Brazil. Wegener also found that the fossils found in a certain place often indicated a climate utterly different from the climate of today: for example, fossils of tropical plants, such as ferns and cycads, are found today on the Arctic island of Spitsbergen. All of these facts supported Wegener's theory of **“continental drift”**. In 1915 the first edition of *The Origin of Continents and Oceans*, a book outlining Wegener's theory, was published; expanded editions were published in 1920, 1922, and 1929.



Reaction to Wegener's theory was almost uniformly hostile, and often exceptionally harsh and scathing;

Dr. Rollin T. Chamberlin of the University of Chicago said, "*Wegener's hypothesis in general is of the footloose type, in that it takes considerable liberty with our globe, and is less bound by restrictions or tied down by awkward, ugly facts than most of its rival theories.*"

Part of the problem was that Wegener had no convincing mechanism for how the continents might move.

Another problem was that flaws in Wegener's original data caused him to make some incorrect and outlandish predictions: he suggested that North America and Europe were moving apart at over 250 cm per year (about ten times the fastest rates seen today, and about a hundred times faster than the measured rate for North America and Europe).



Light Cruiser SMS Emden.

German light cruiser Emden served in both Chinese and Pacific waters and was at the German colony of Tsingtao when war broke out in 1914.

Emden was ordered to start raiding and disrupting commercial vessels in the Indian Ocean until she was cornered by HMAS Sydney and beached after the battle on 9th November 1914

Displacement: 3,650 tons.

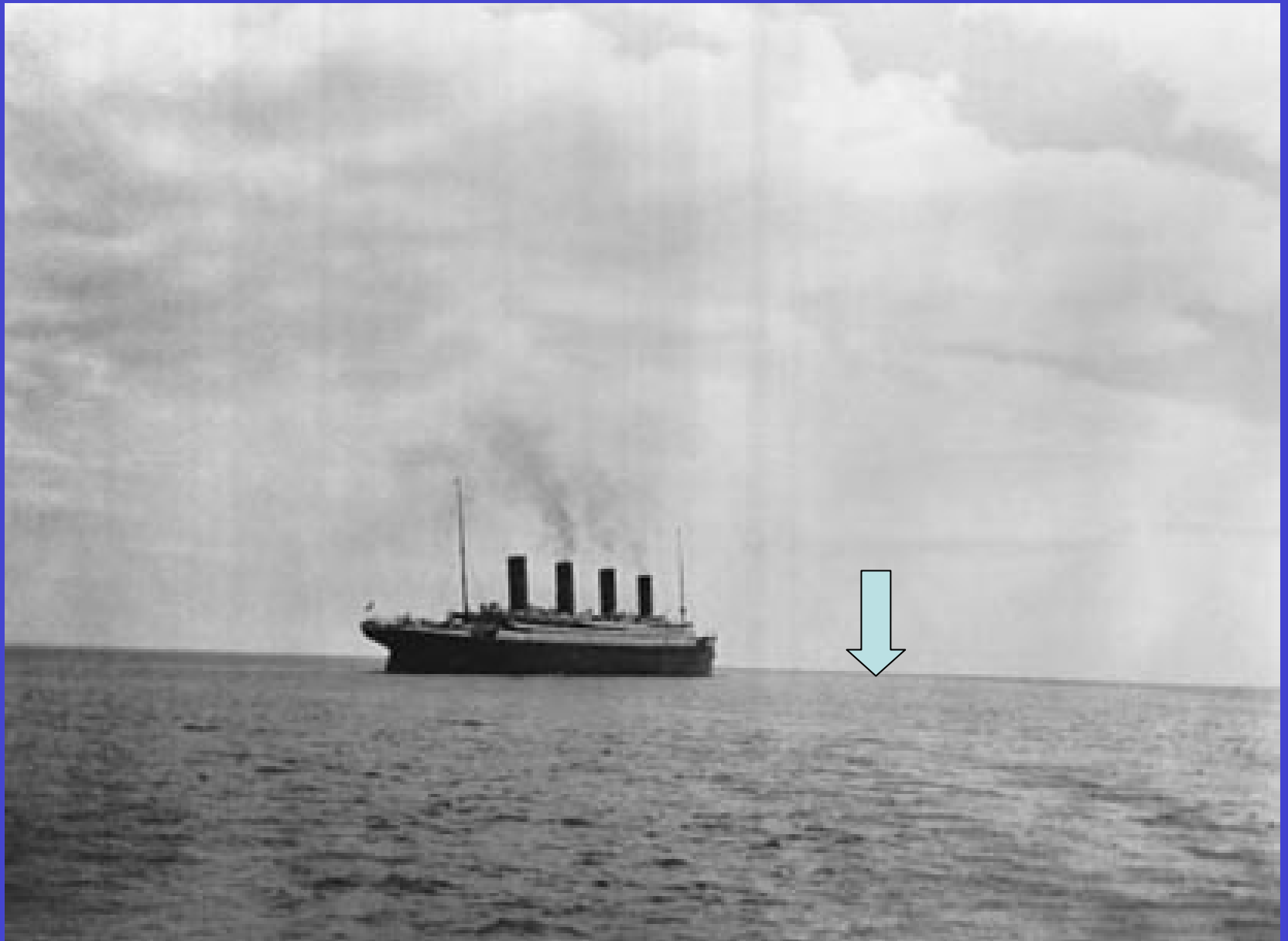
Speed: 25 knots.

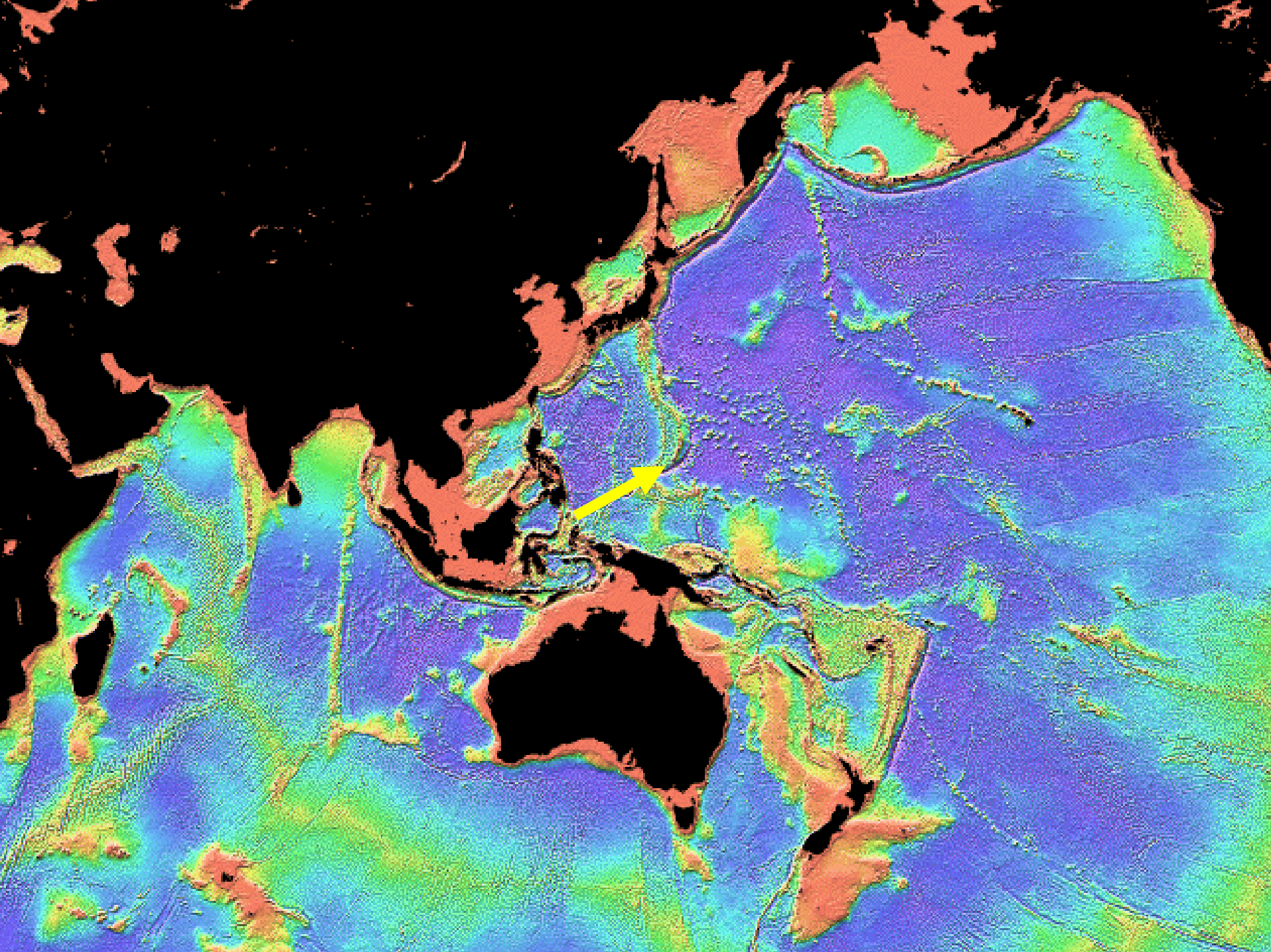
Crew: 361.

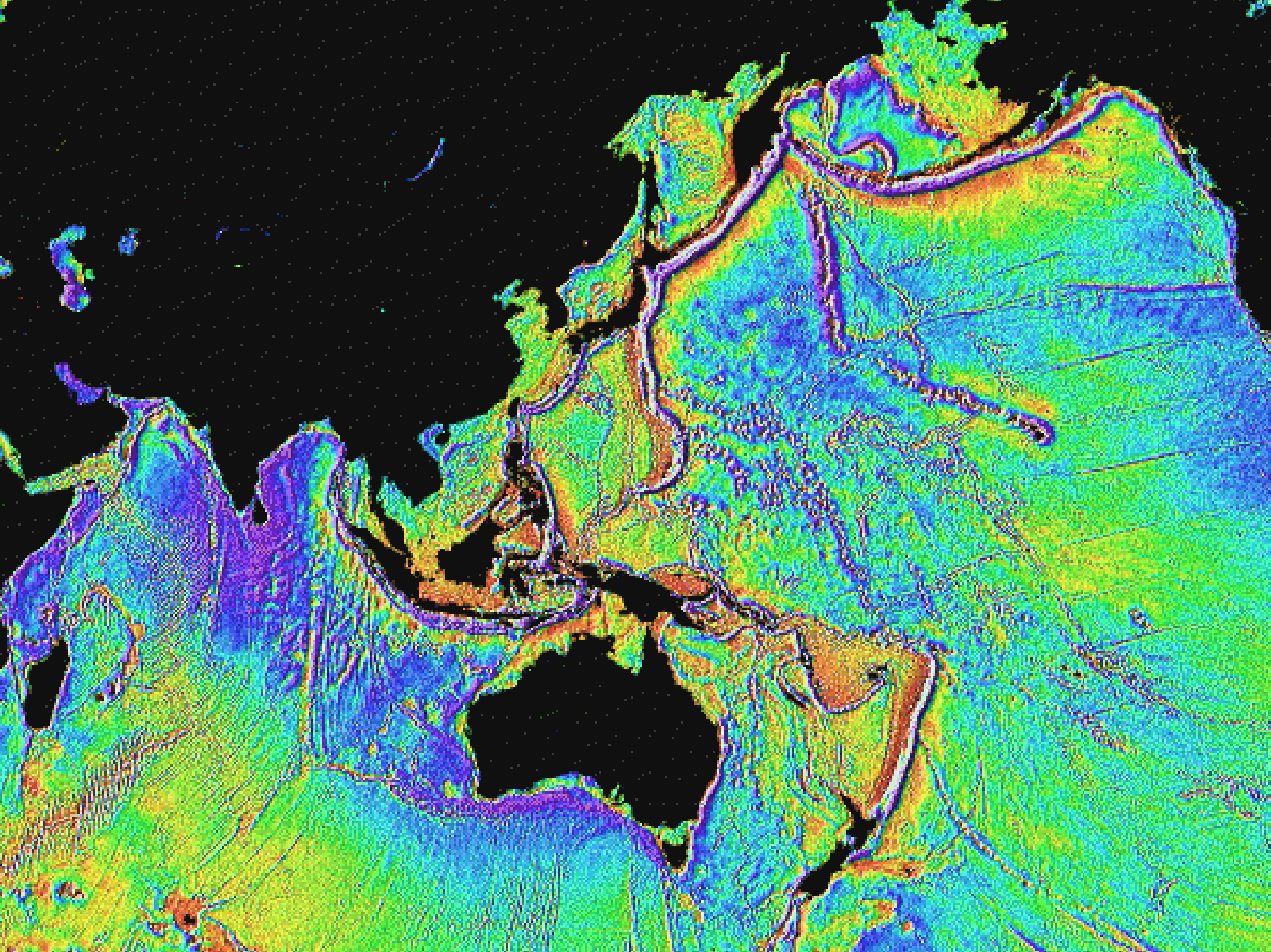
Armament: 10 4.1 inch guns in single turrets, two 18 inch torpedo tubes.

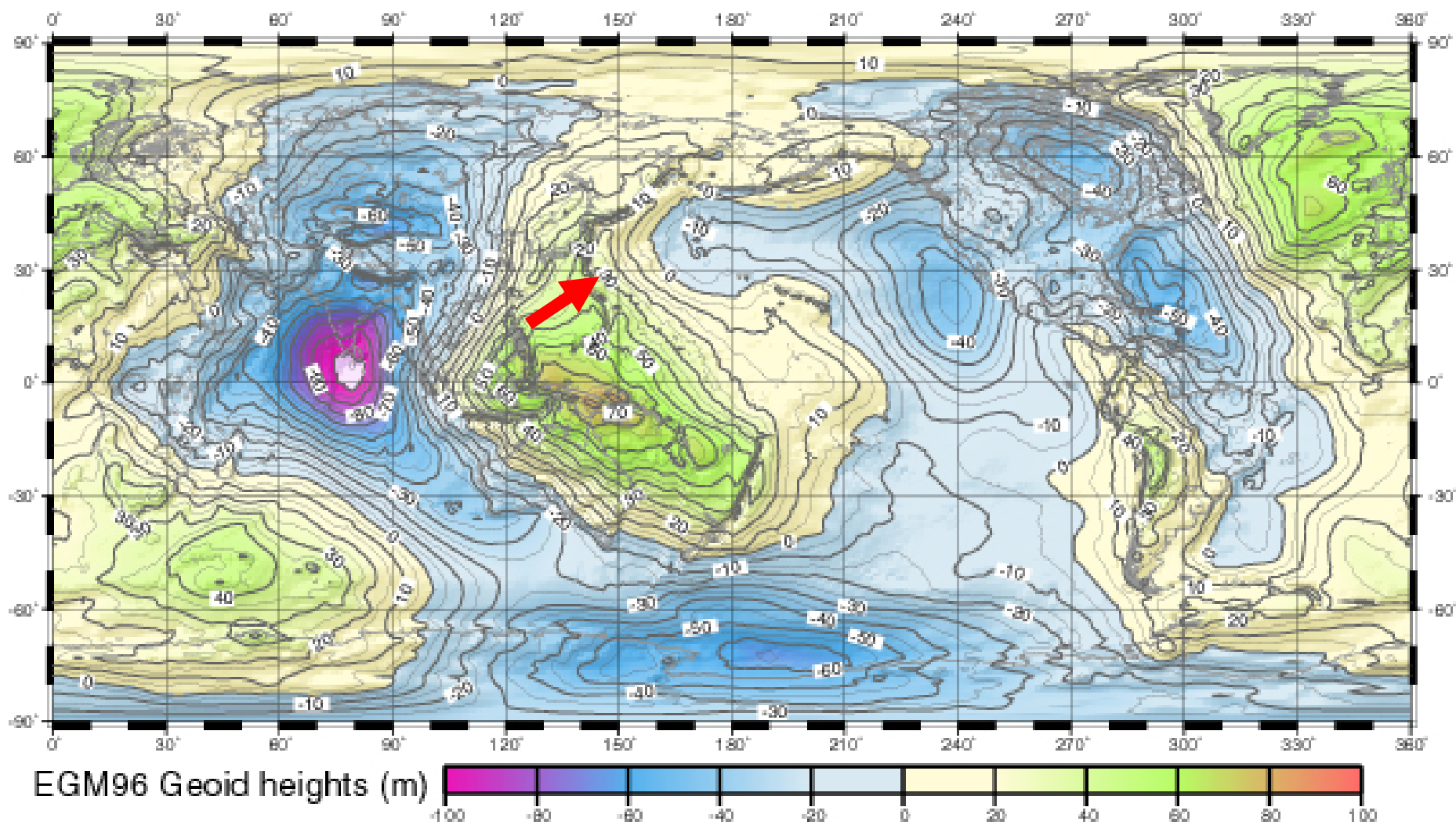


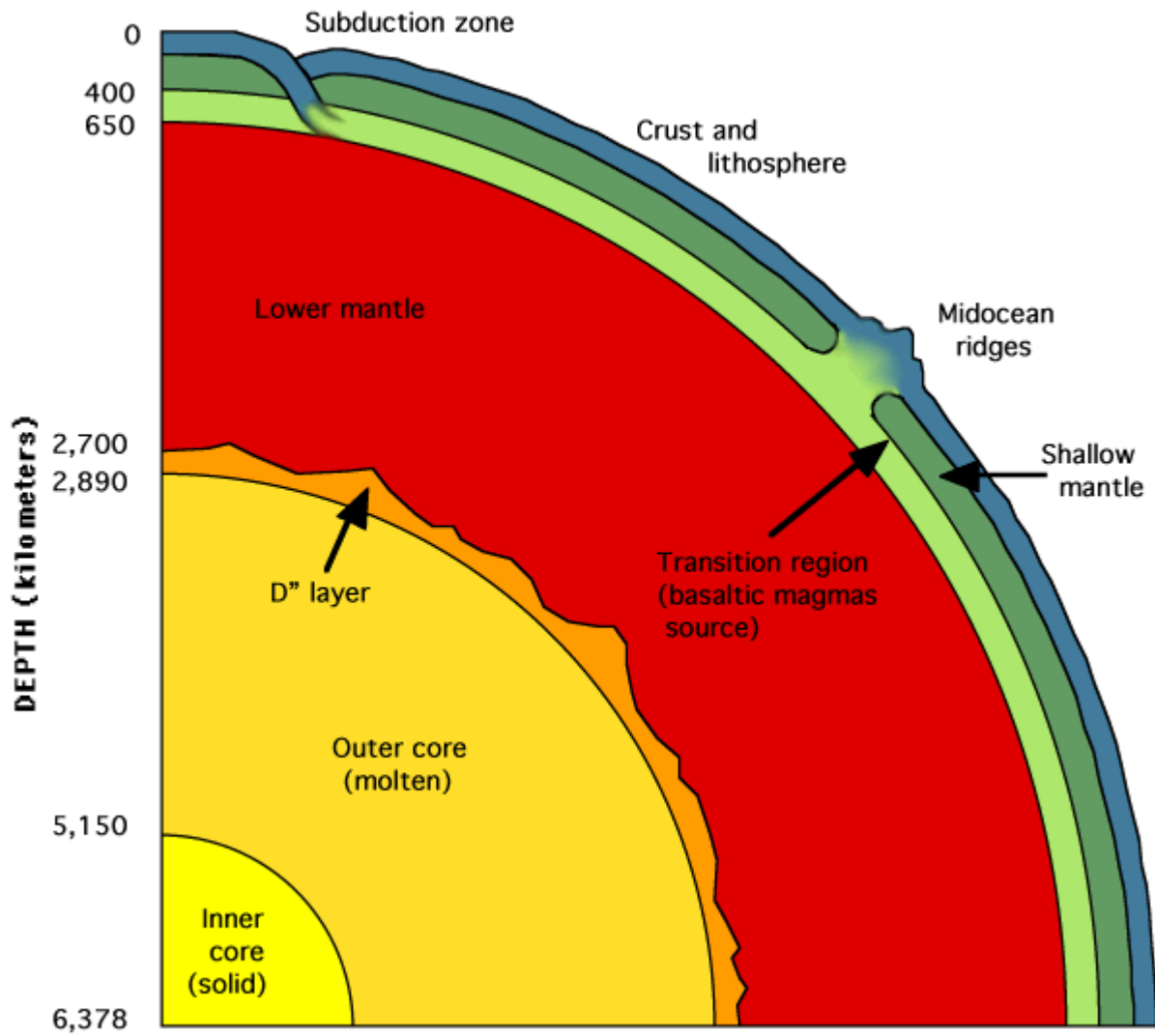
Emden's Captain, Fregattenkapitan V. Müller

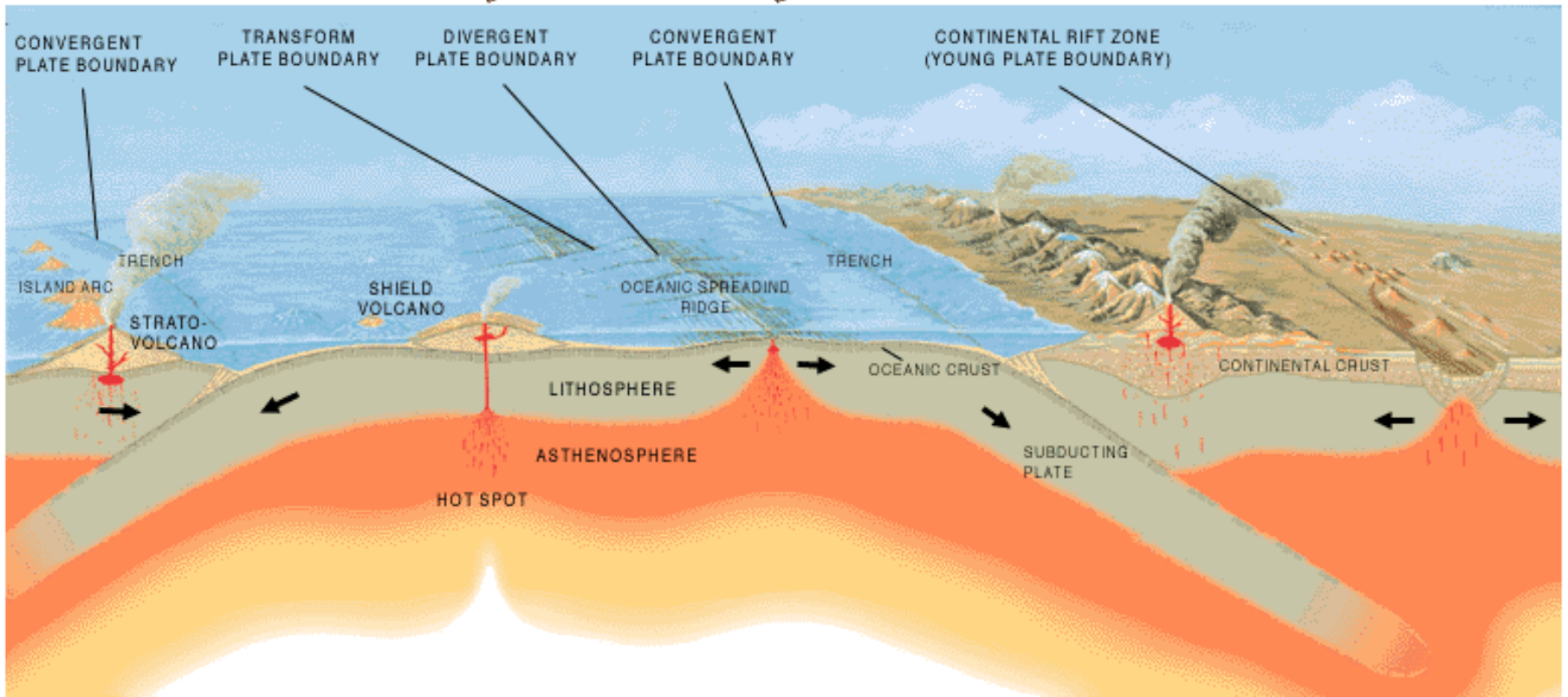
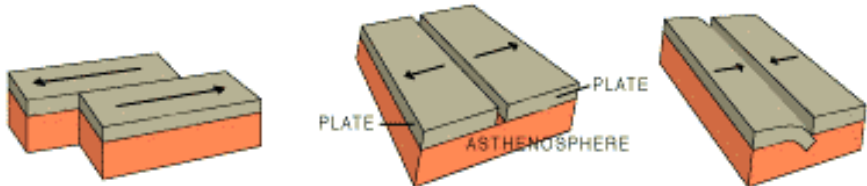


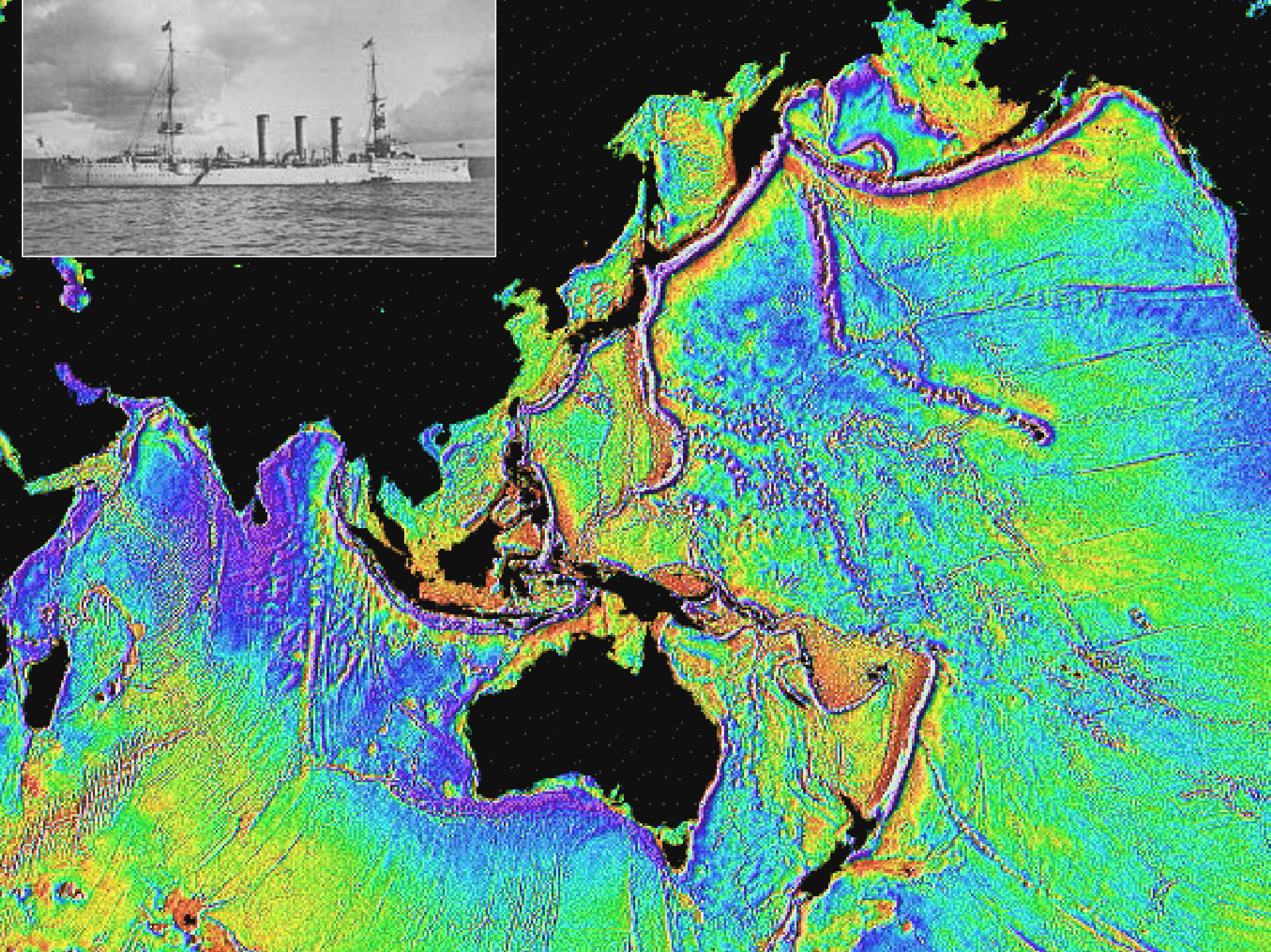


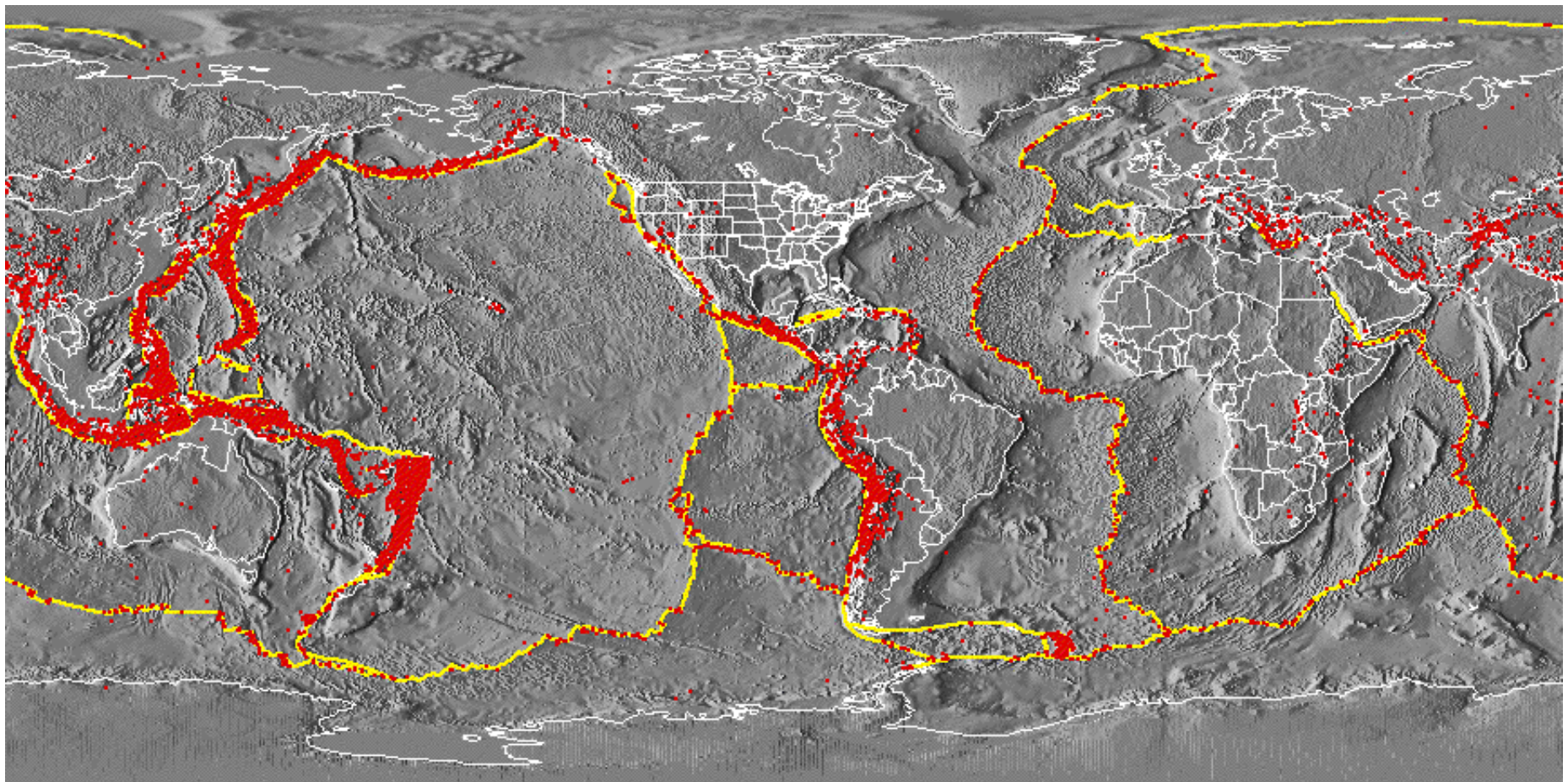




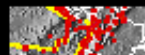








Crustal Plate Boundaries



Earthquake Epicenters, $M > 5$, 1980-1990
Coastlines, Political Boundaries

06:14:57.933 06/01/2004 006

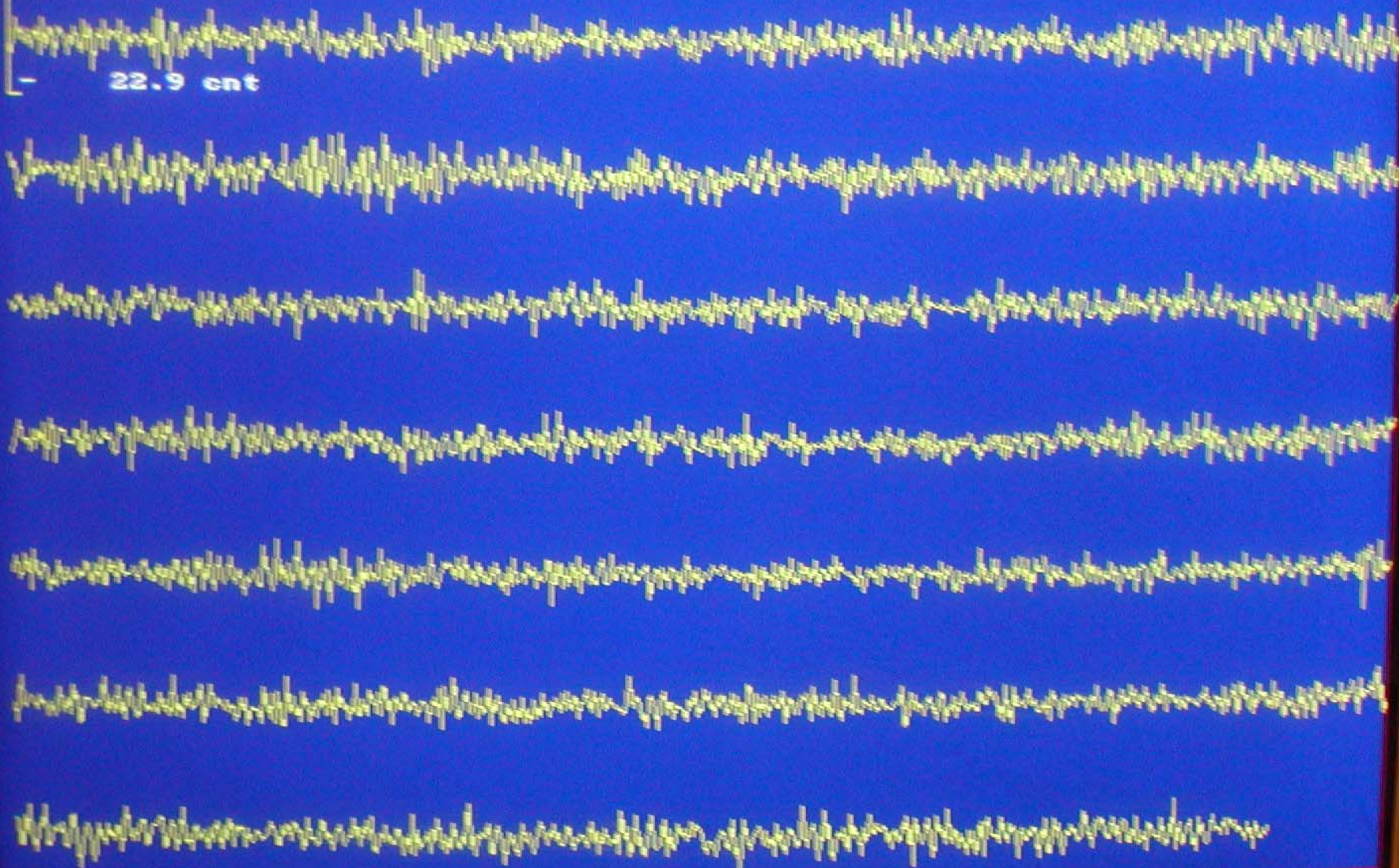
Channel: 1 Station: OSL Compone

DC offset: 95

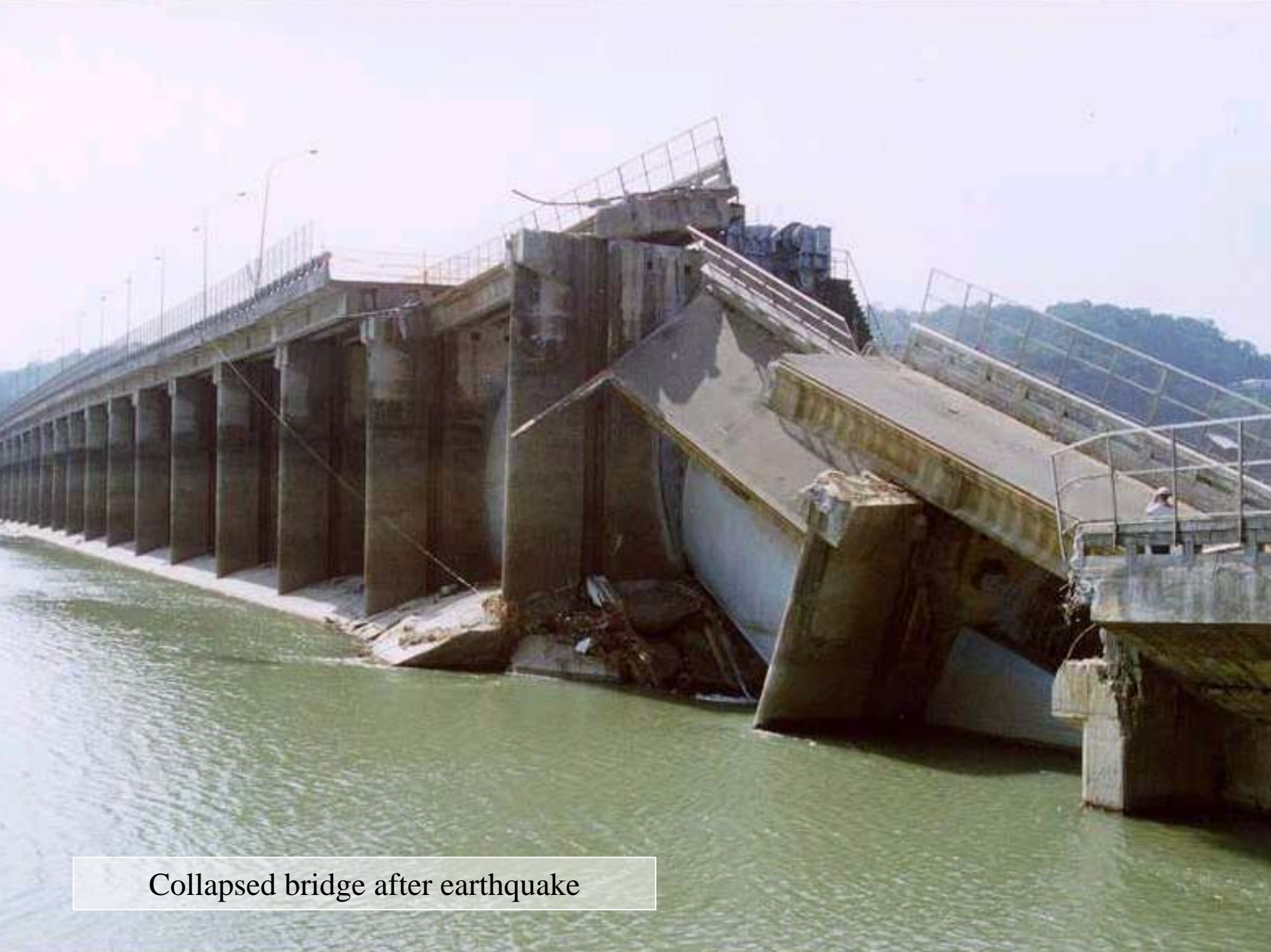
2.0 seconds

+ 22.9 cnt

- 22.9 cnt



PRESS ANY KEY TO STOP PROGRAM



Collapsed bridge after earthquake



Alaska Earthquake 20021102 Fault Trace Near Chistochina Glacier

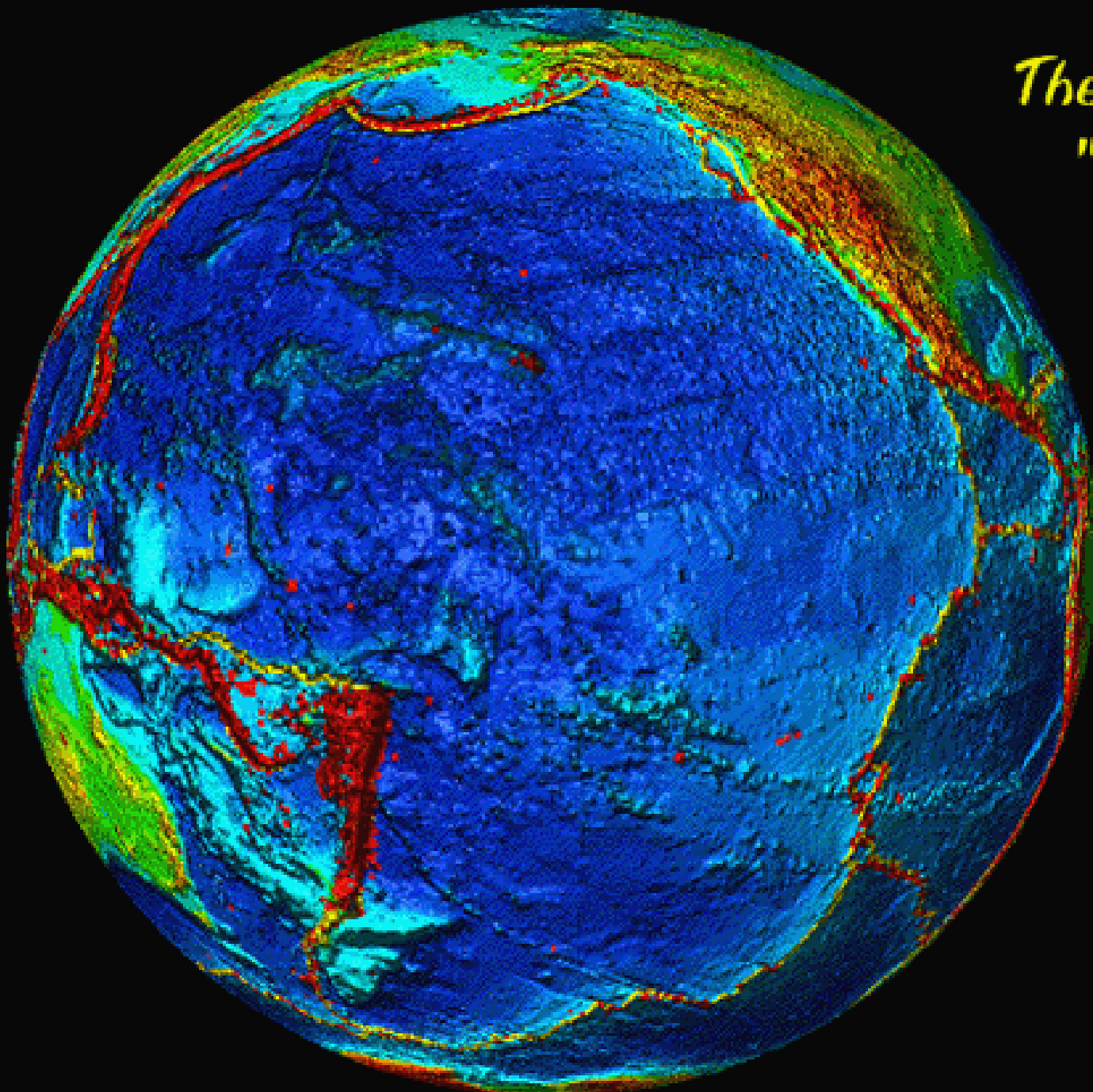


Alaska Earthquake 20021102 Richardson Highway road offset

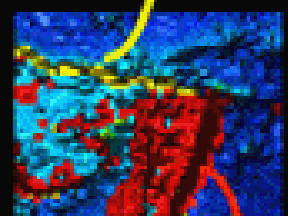


Explosive Eruption Mt St Helens

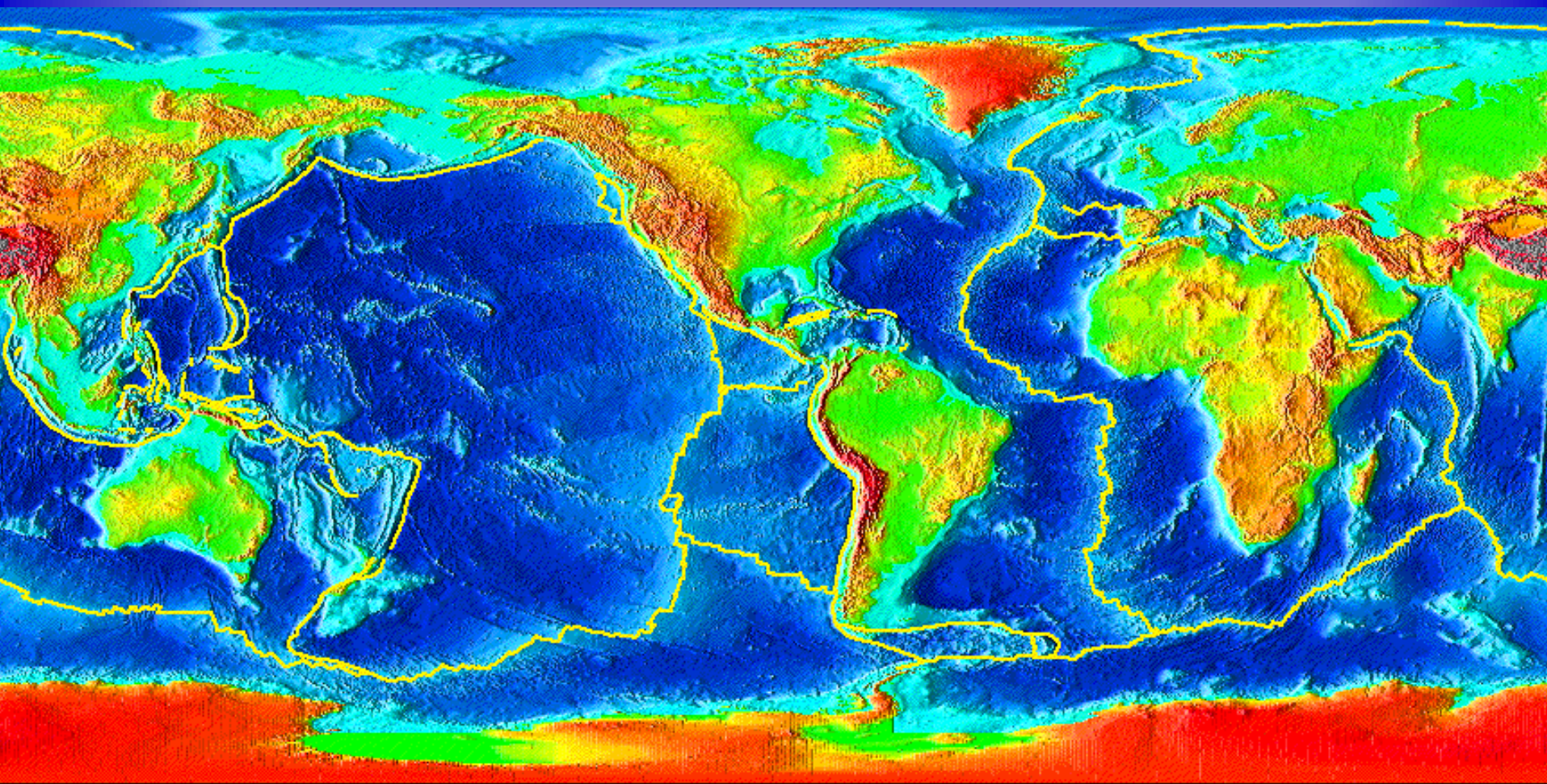
The Pacific "Ring of Fire"



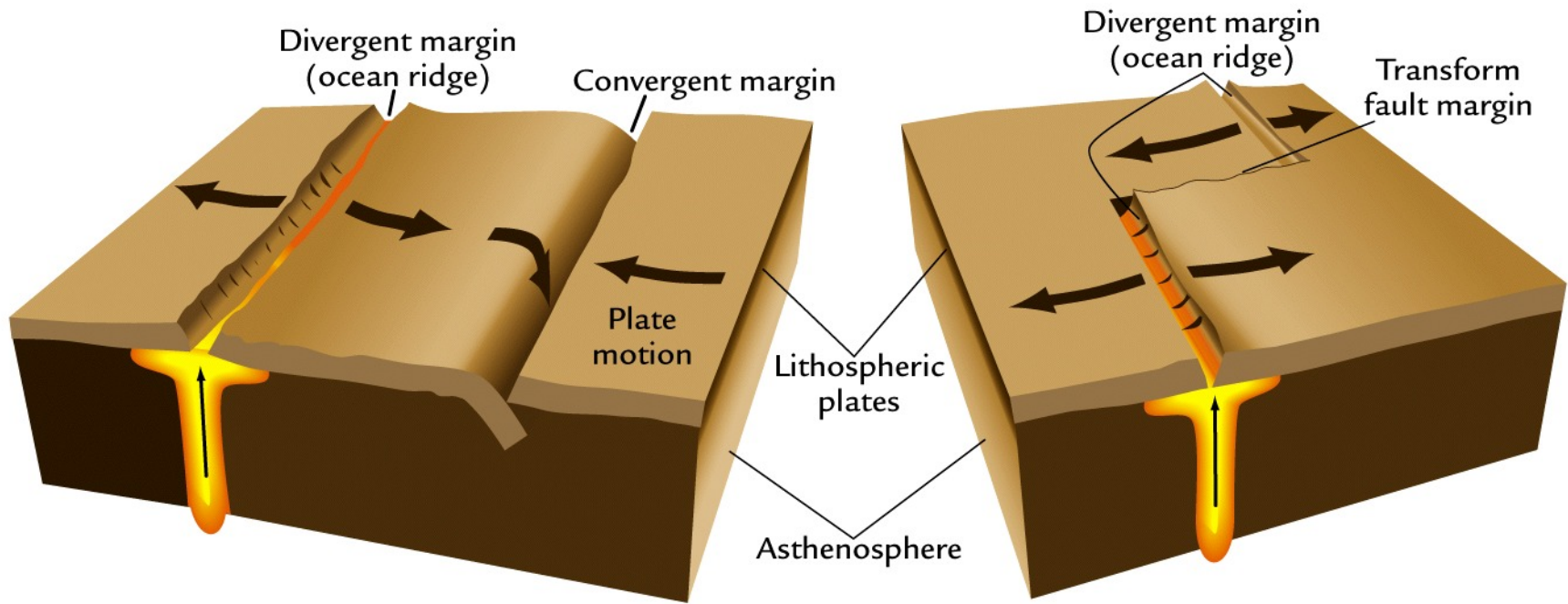
Crustal Plate
Boundary

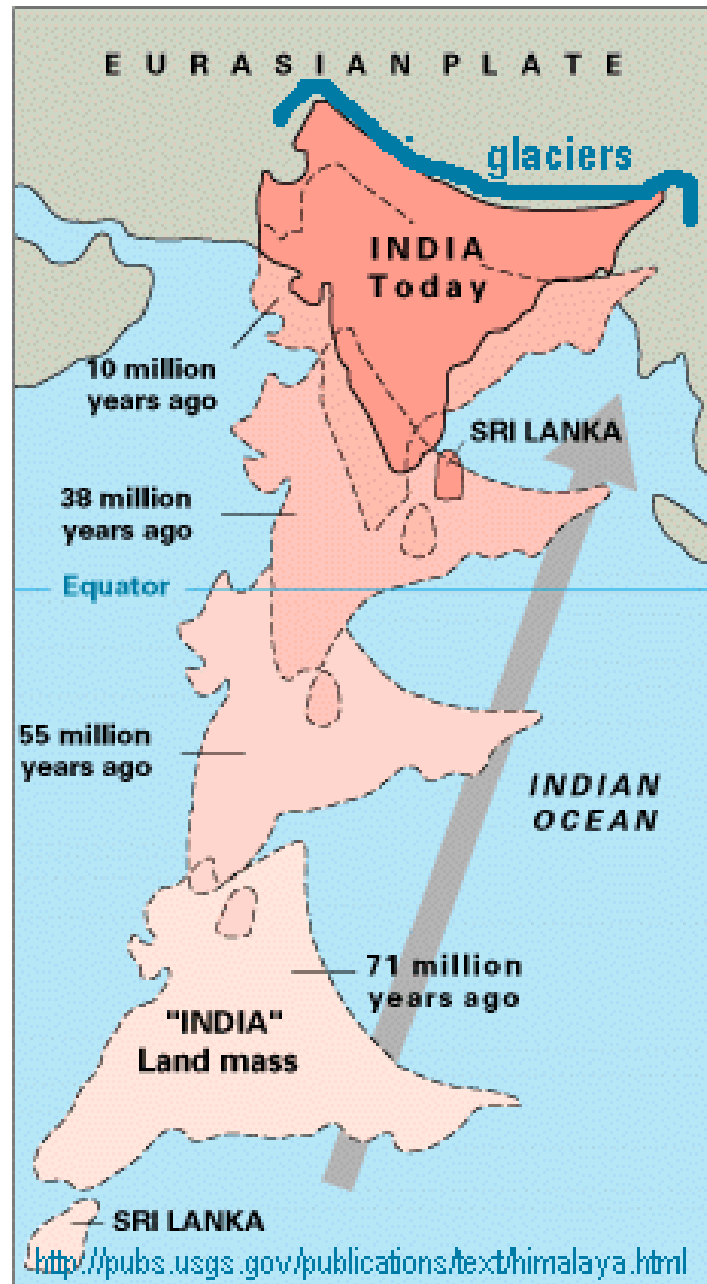


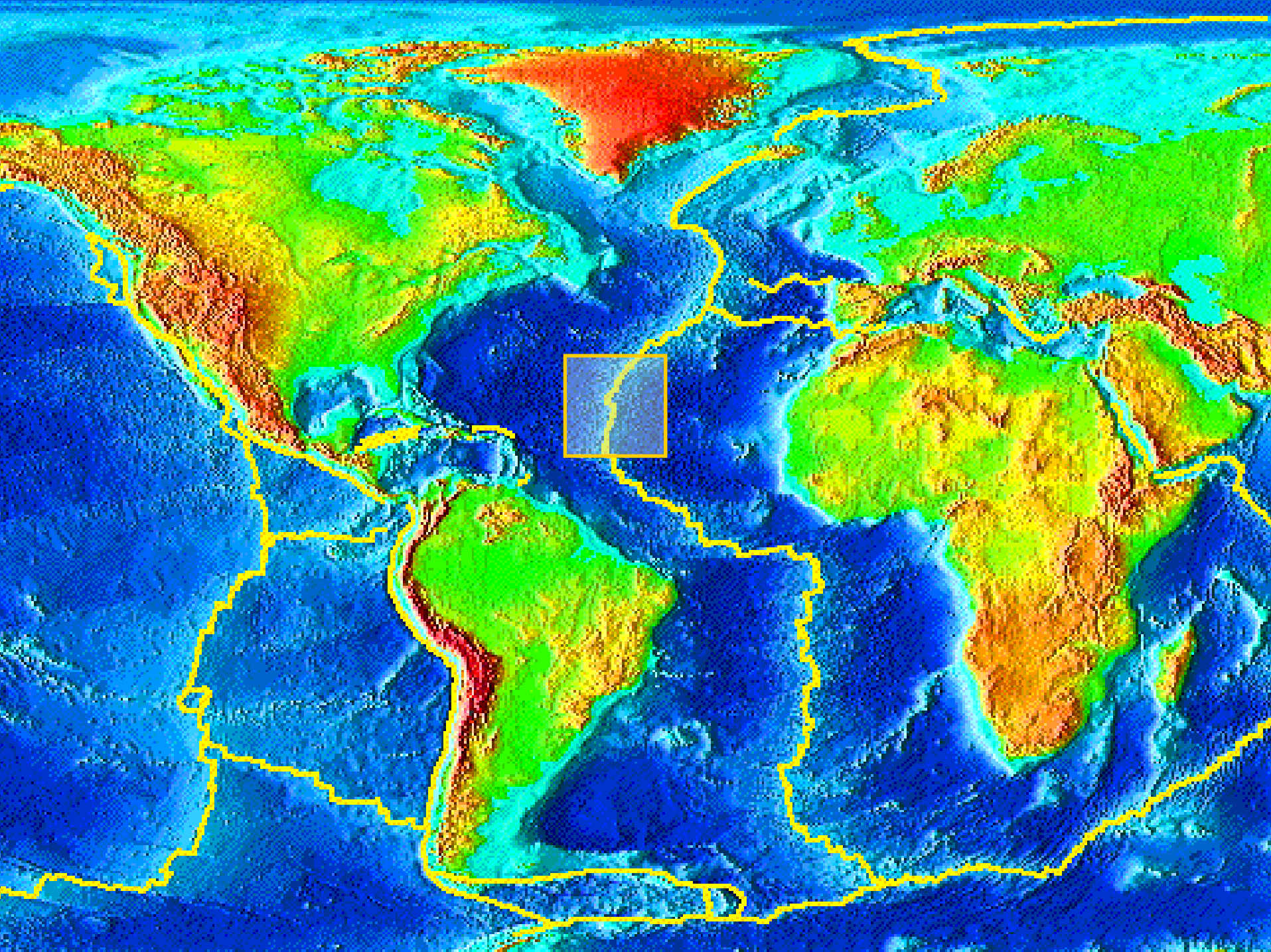
Epicenters of
Earthquakes,
Magnitude ≥ 5
since 1980



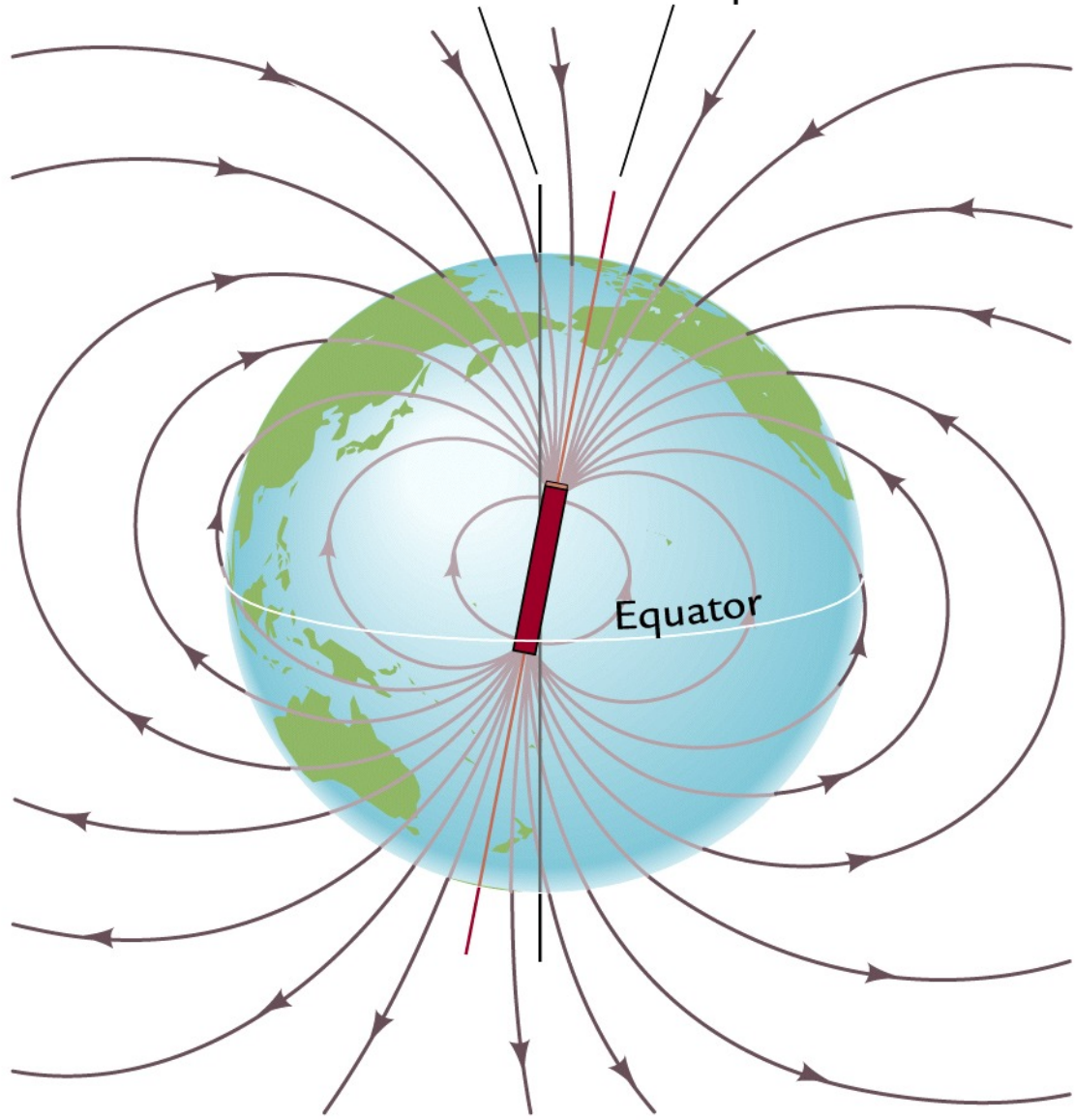
Crustal Plate Boundaries

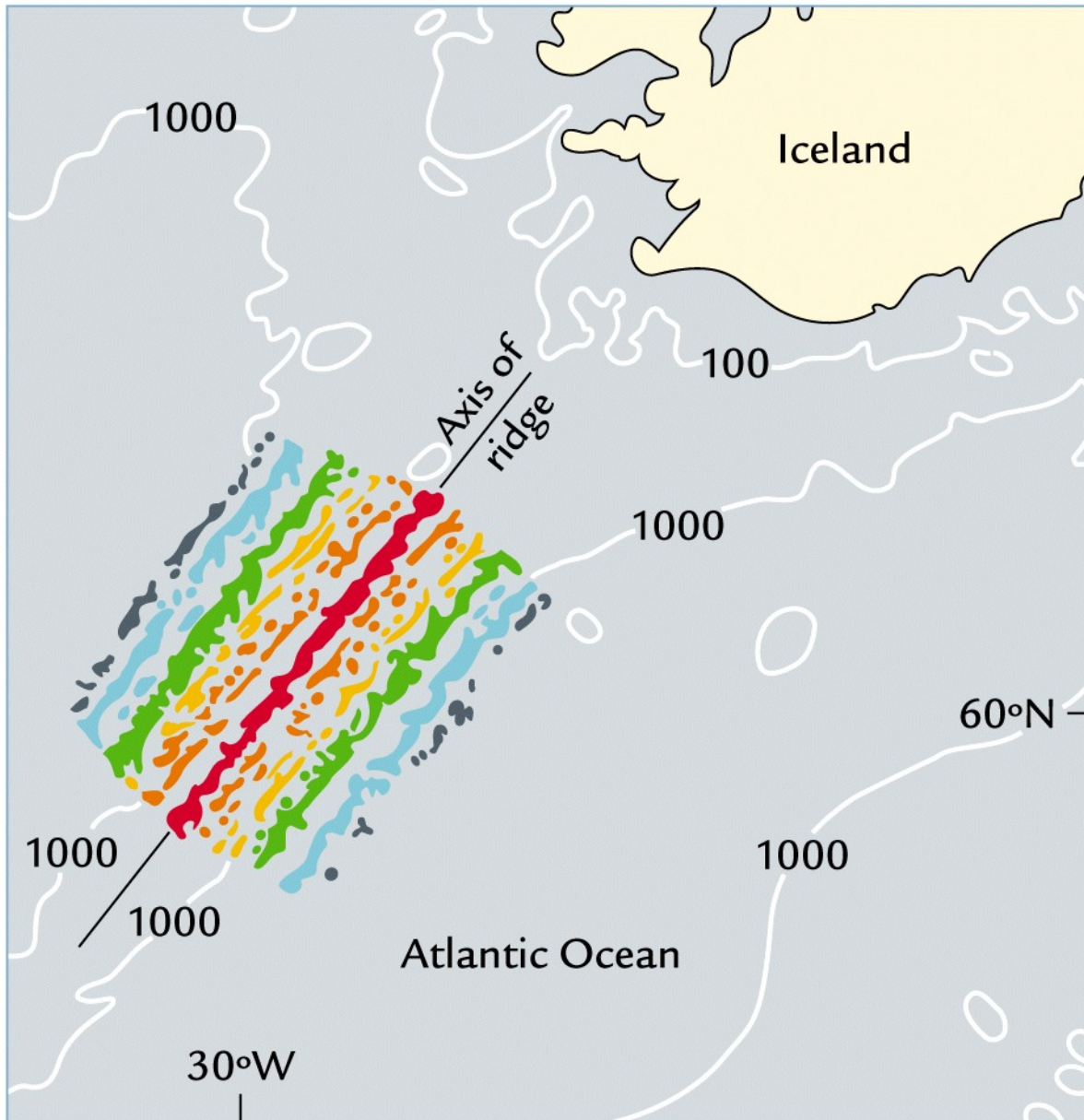


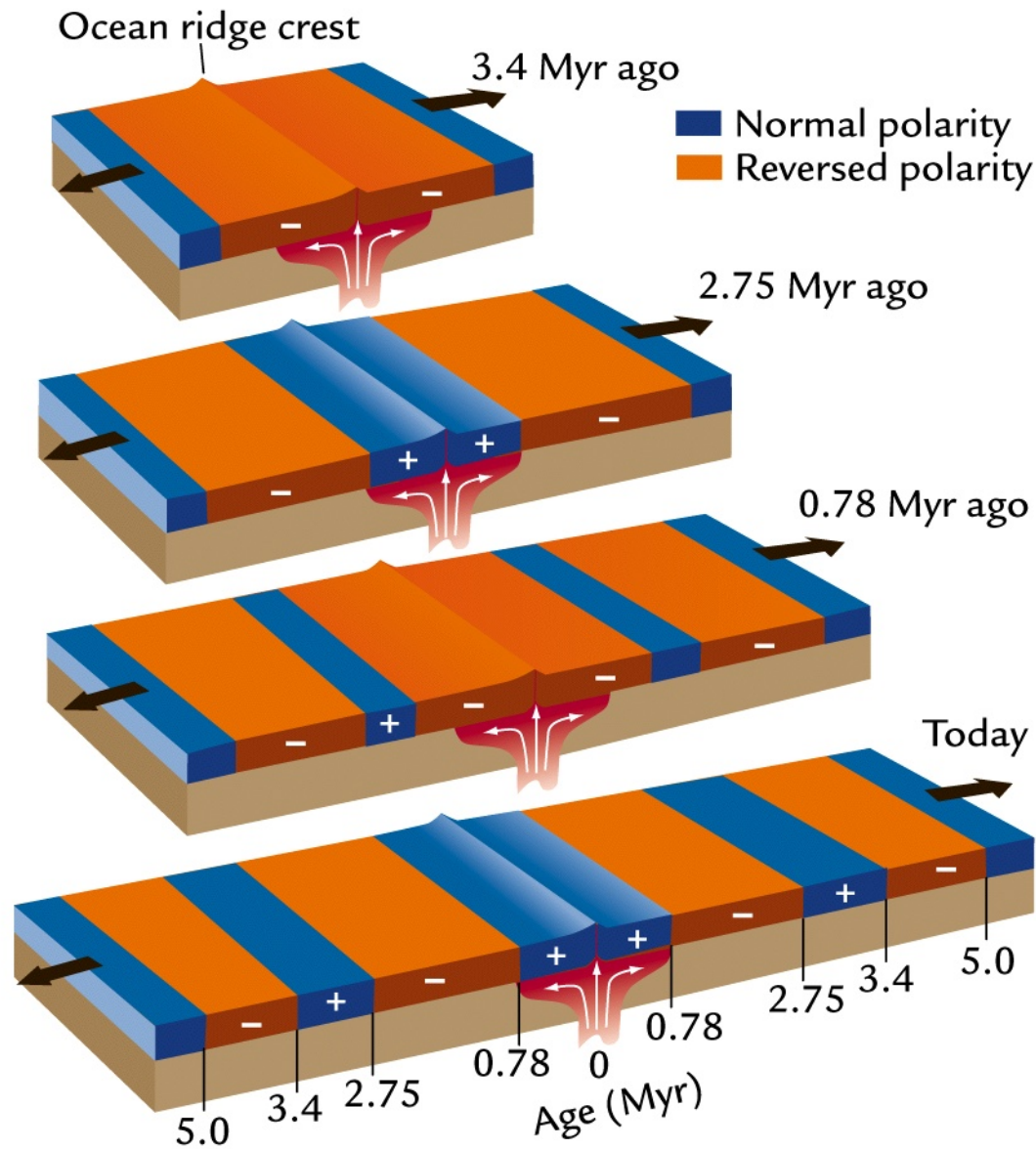


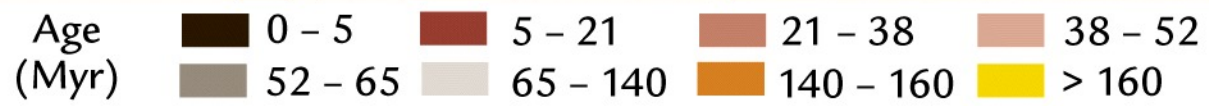
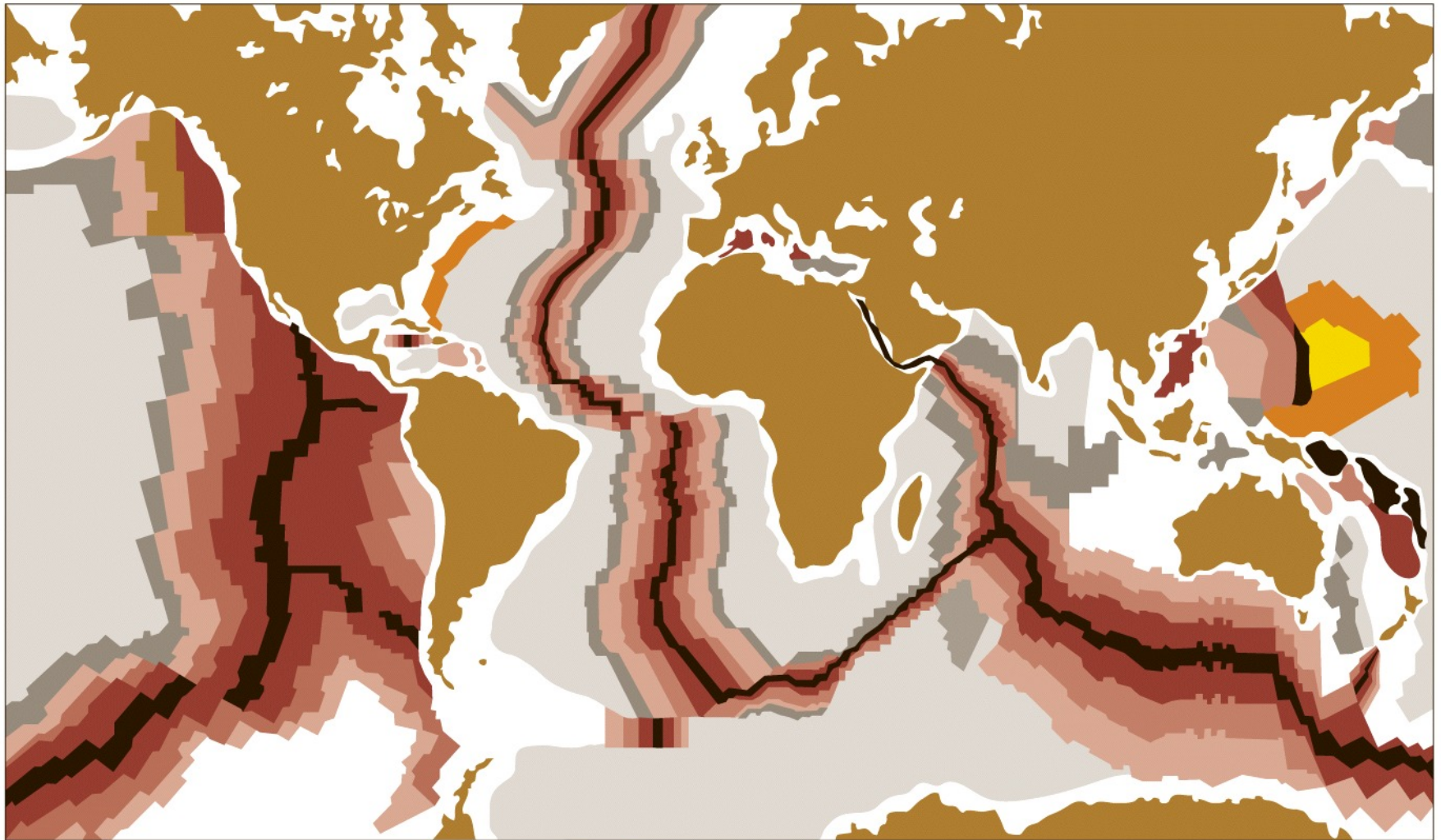


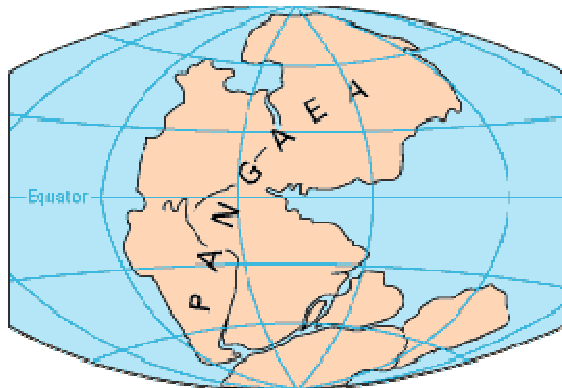
Geographic North Pole Magnetic north pole







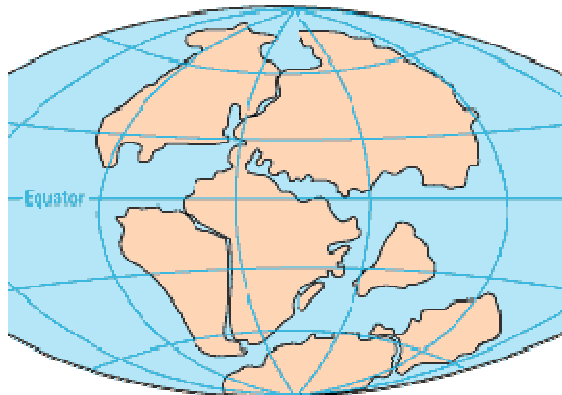




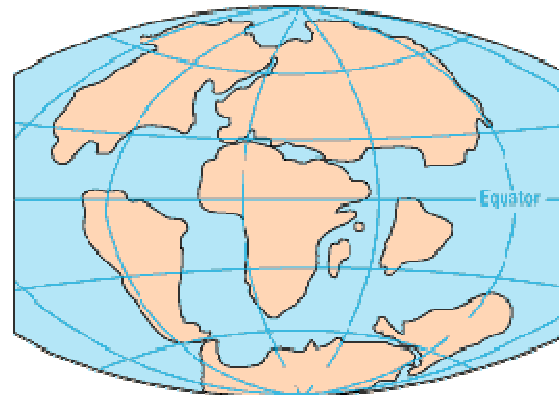
PERMIAN
225 million years ago



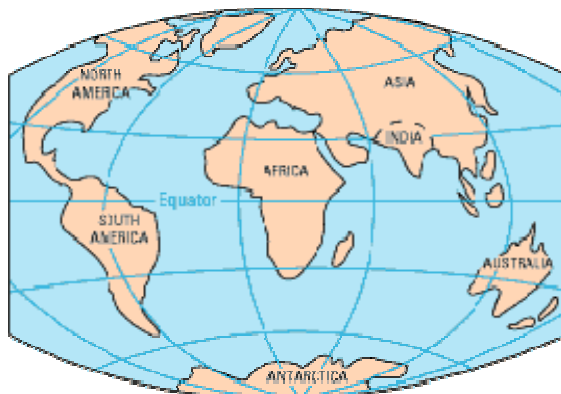
TRIASSIC
200 million years ago



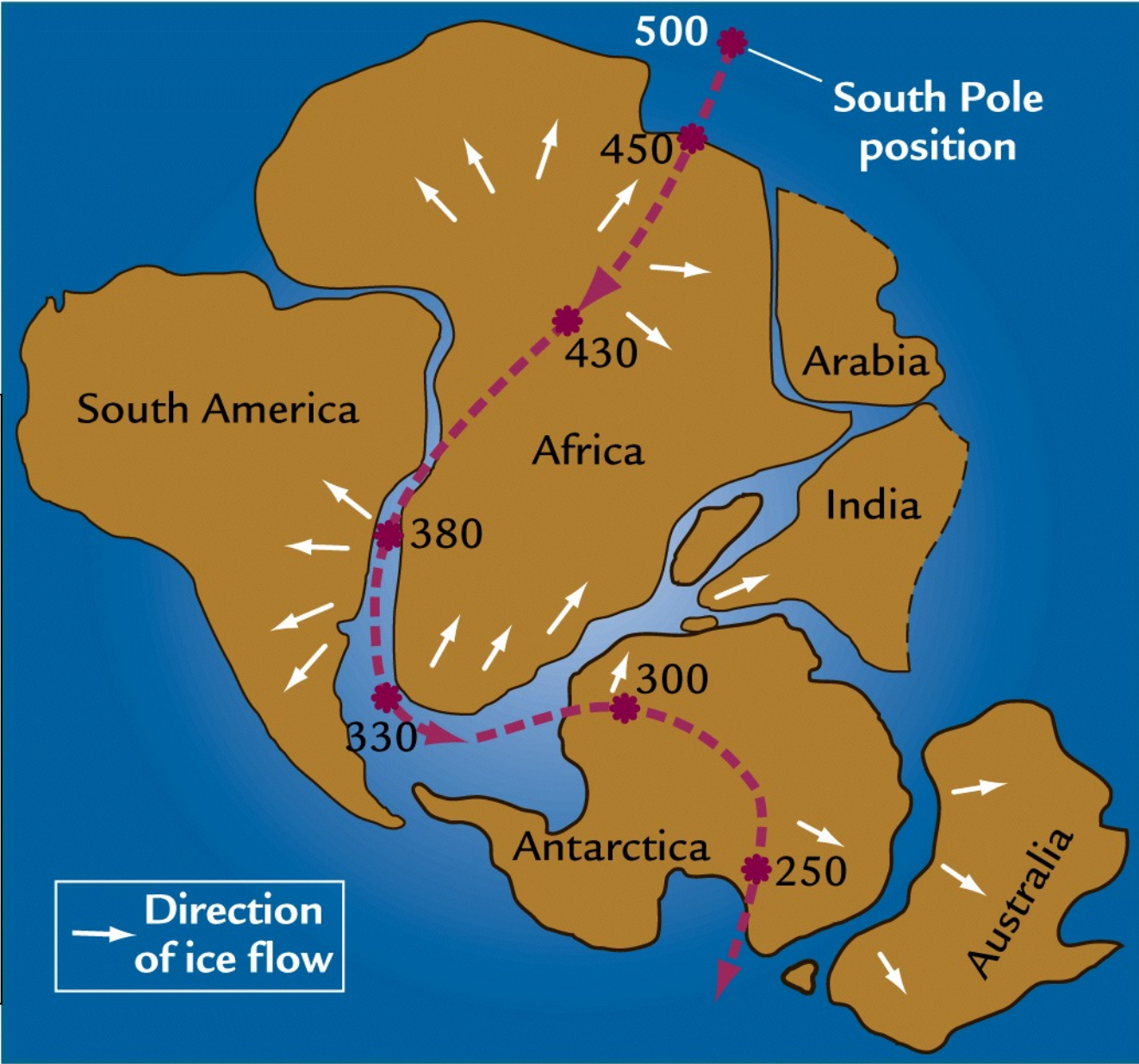
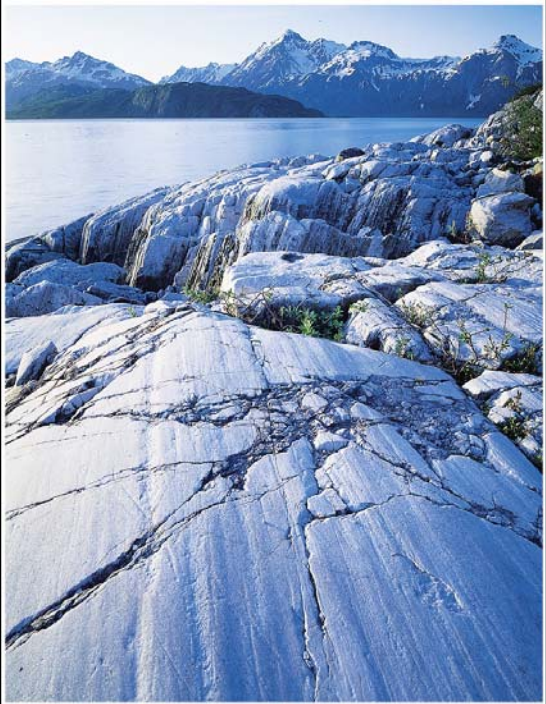
JURASSIC
135 million years ago



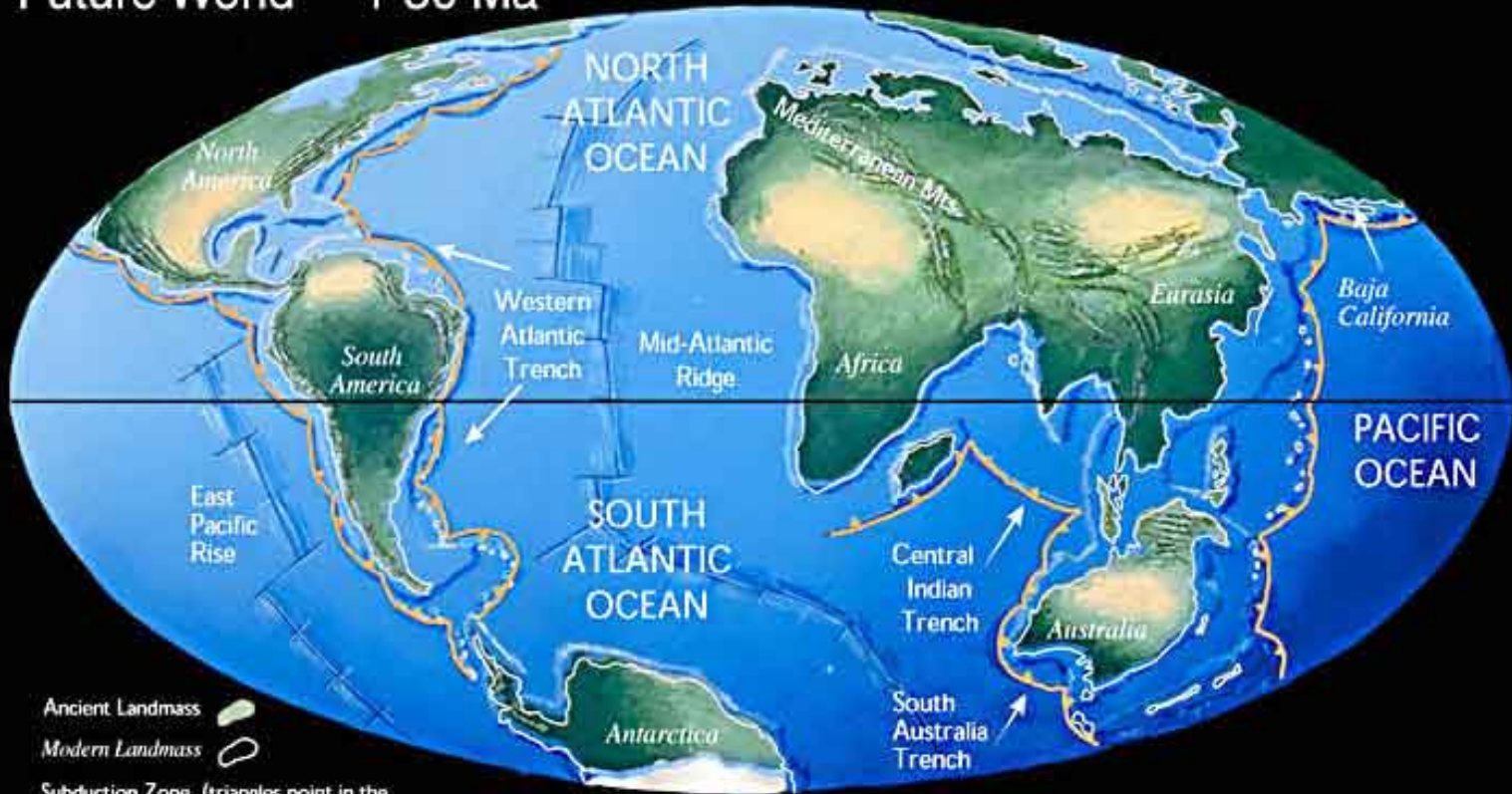
CRETACEOUS
65 million years ago







PRESENT DAY



Future World + 50 Ma

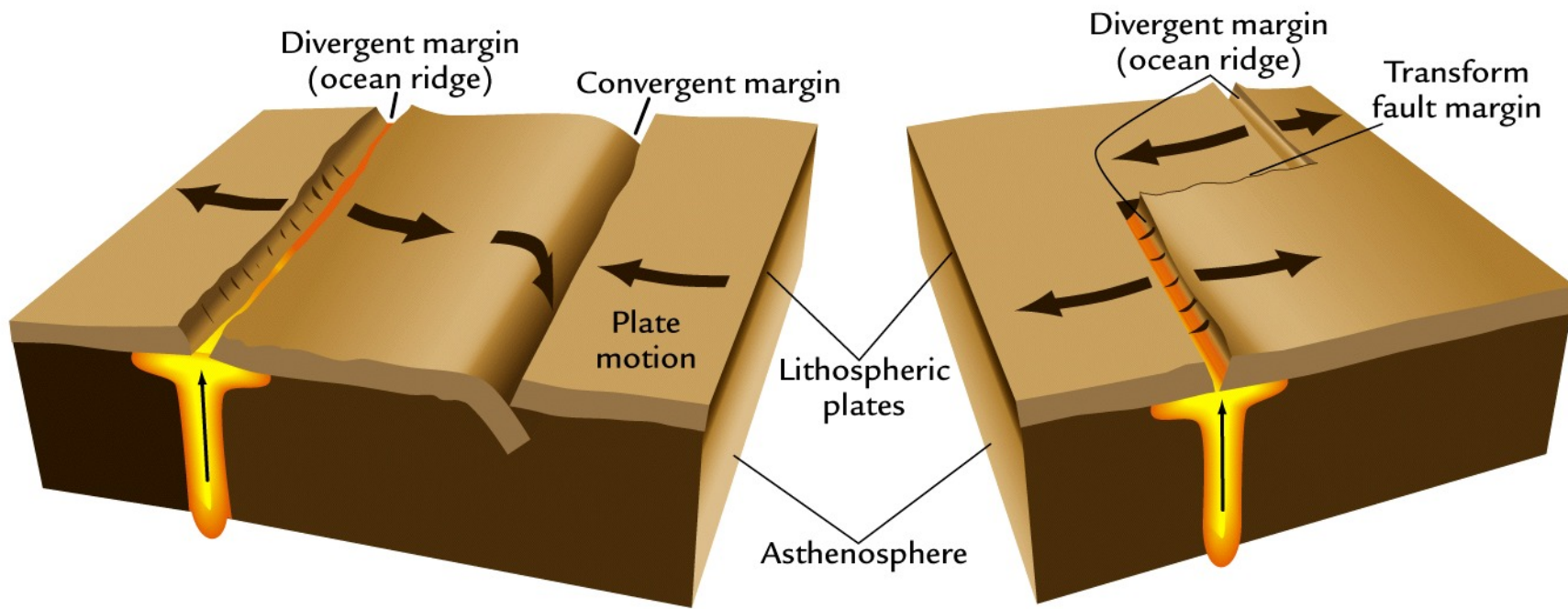


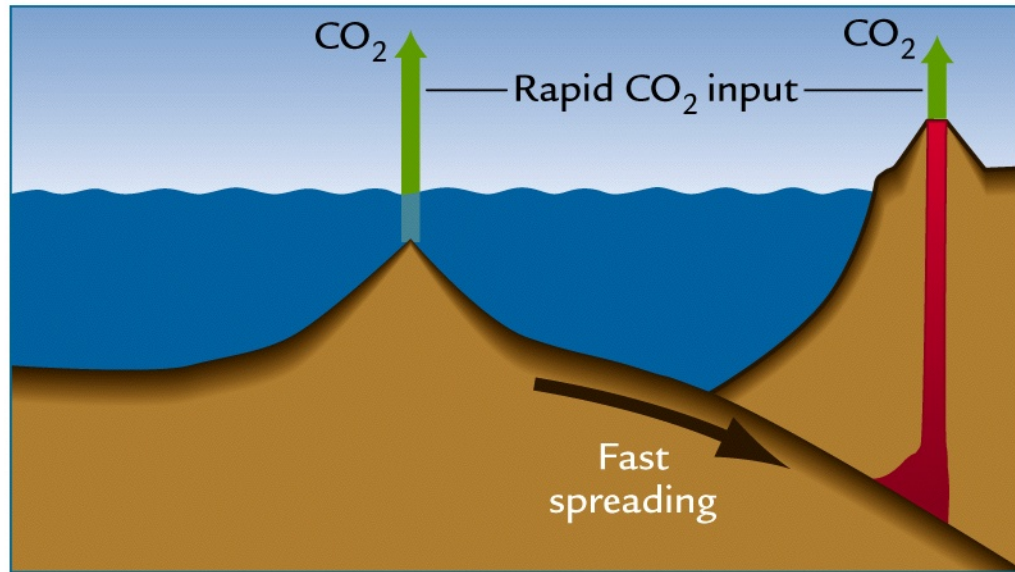
- Ancient Landmass 
- Modern Landmass 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

Future World + 250 Ma

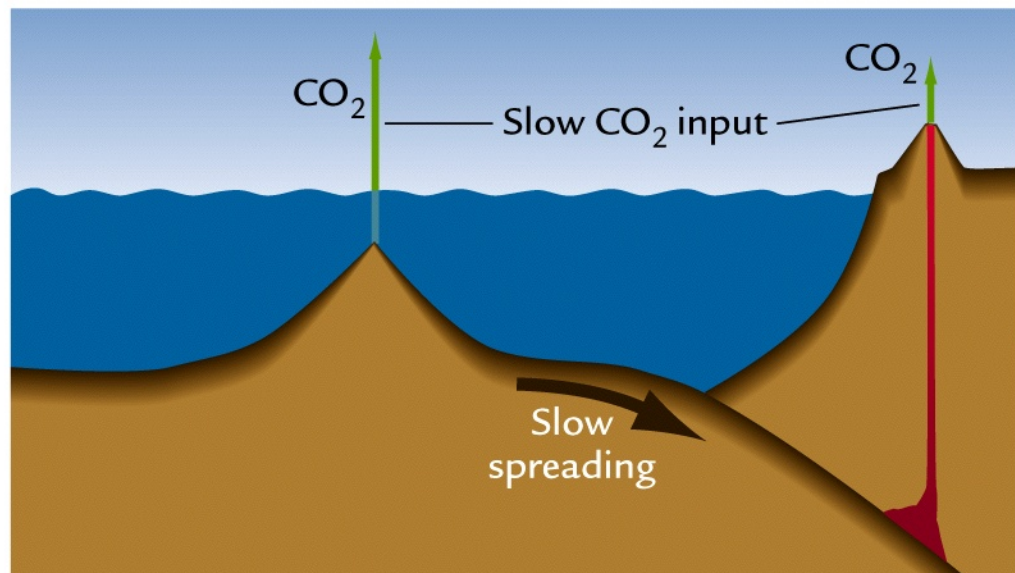


© 2000 C.R. Scotese

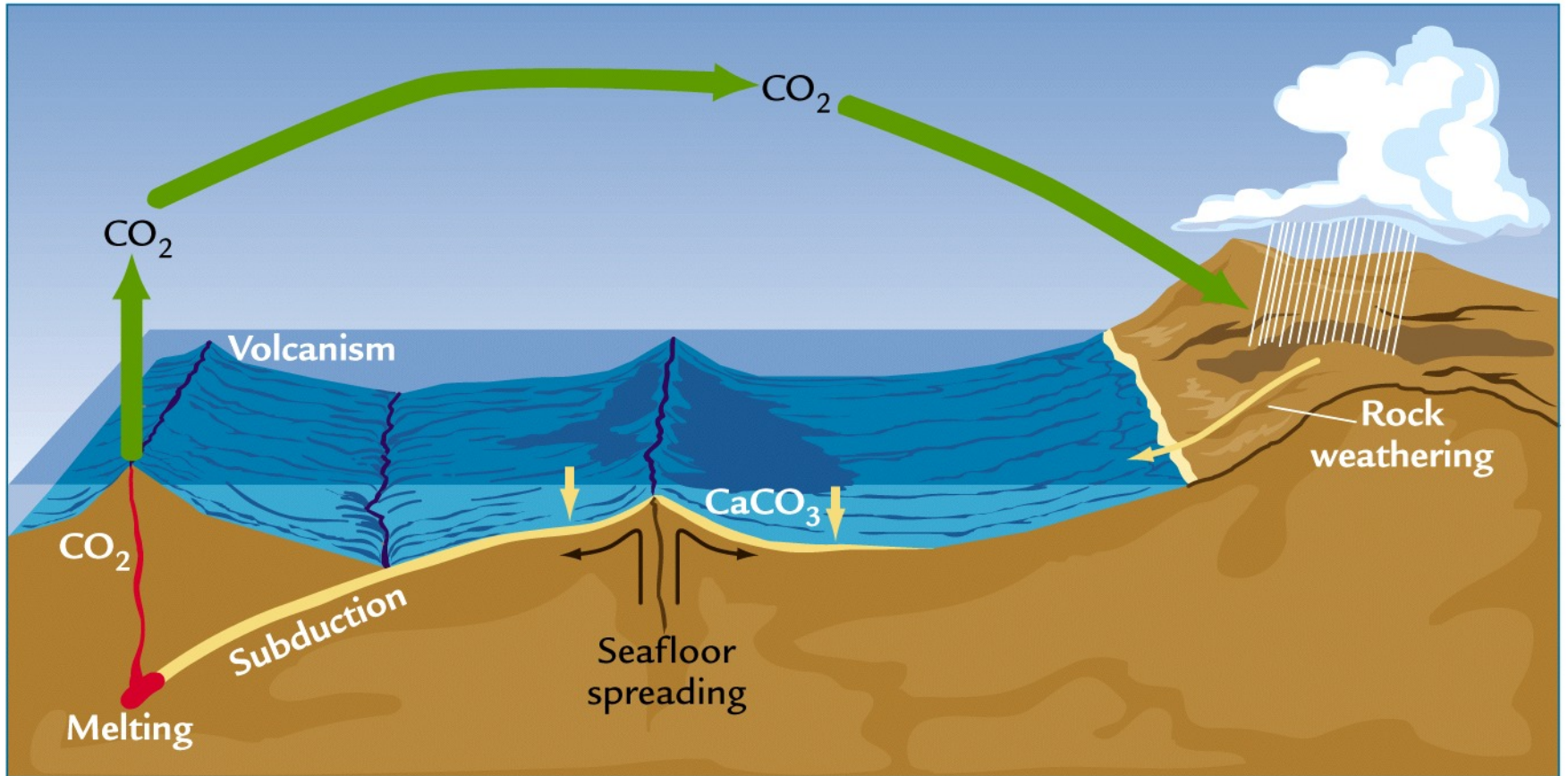


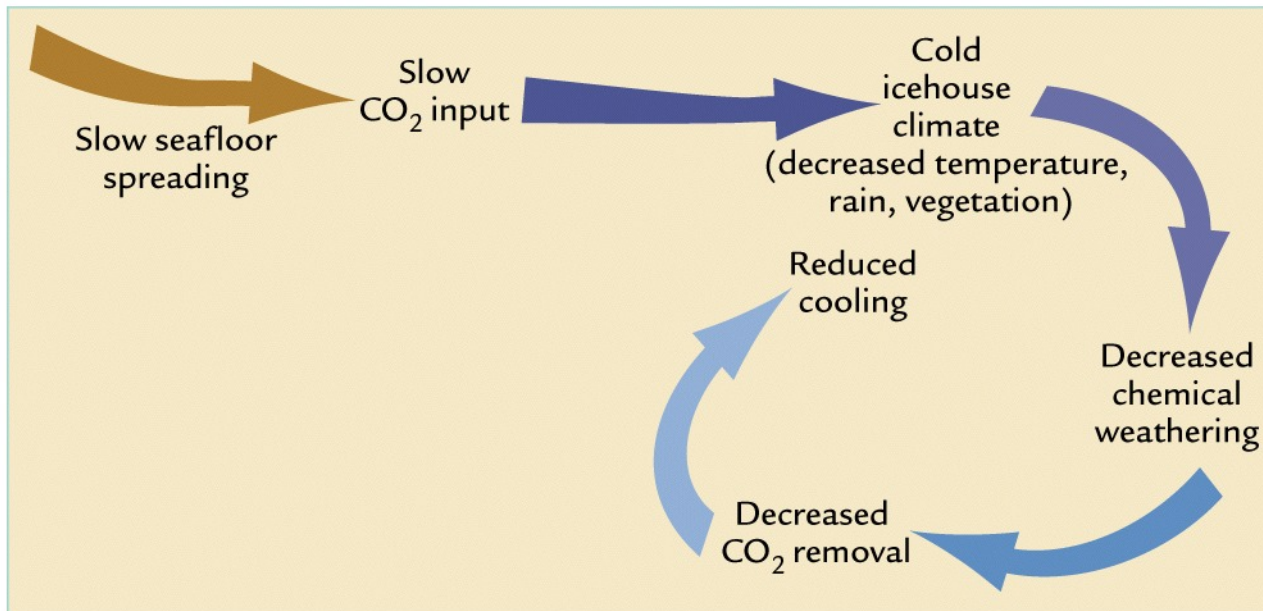
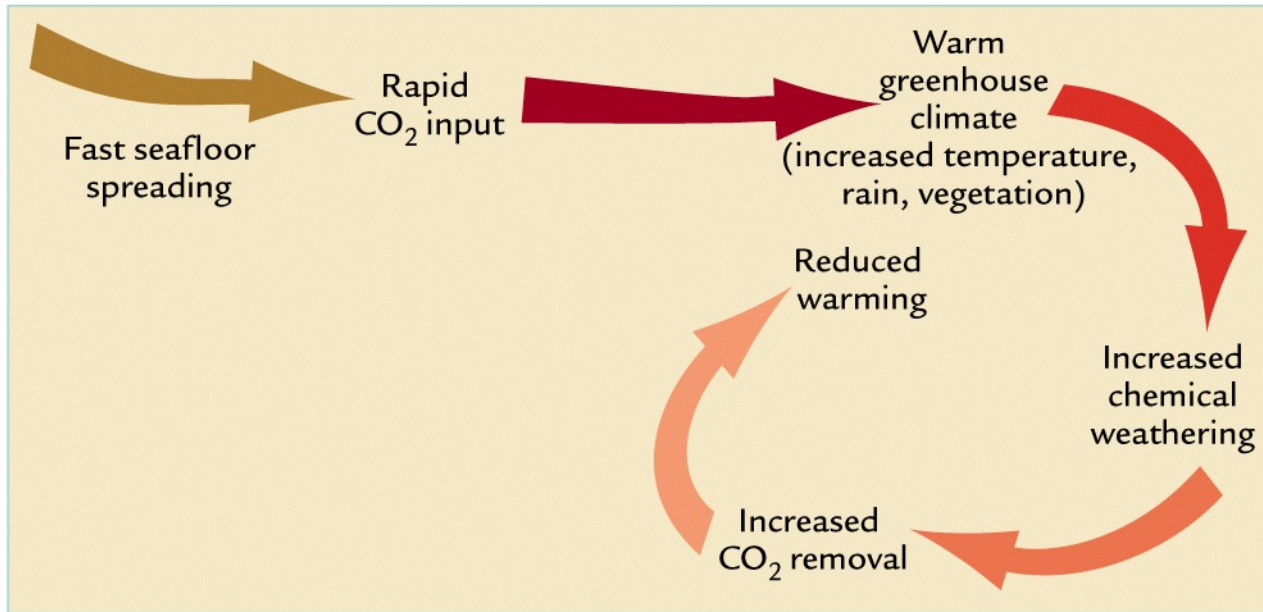


A



B





Periods of relative high continental drift velocity

