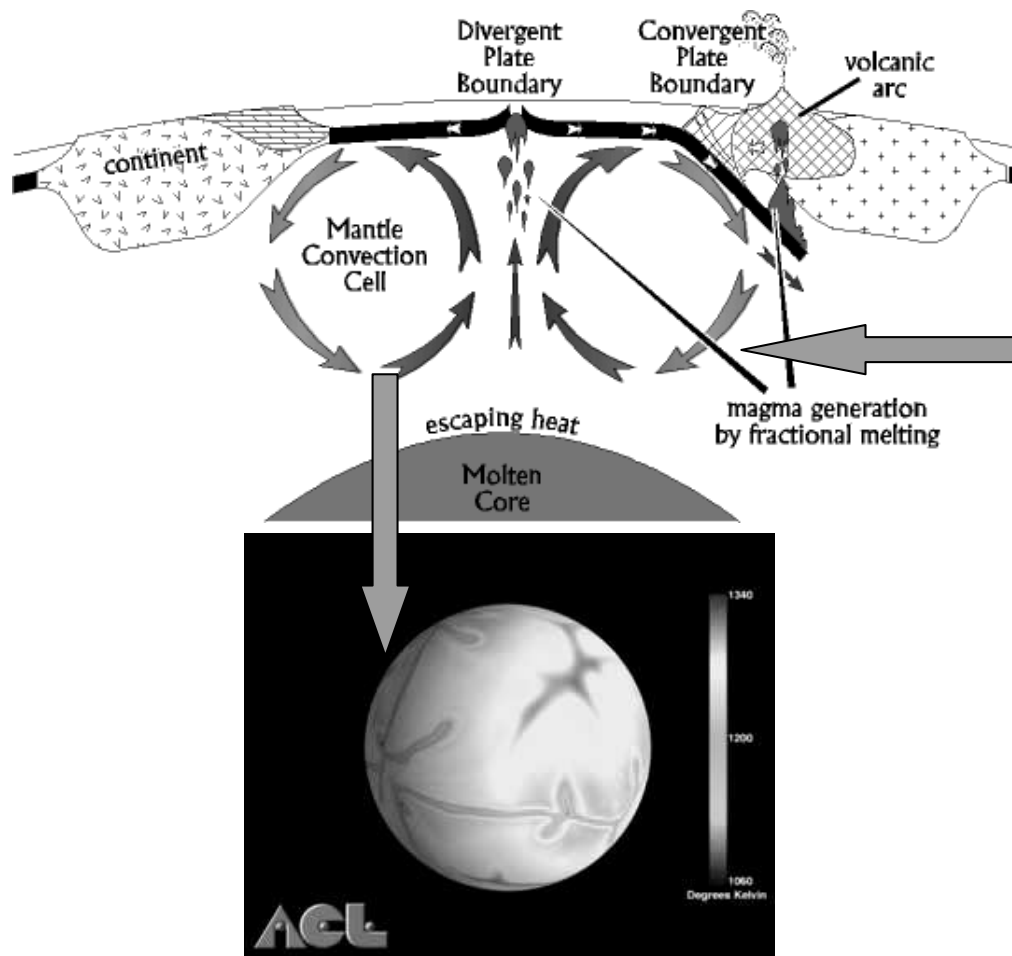
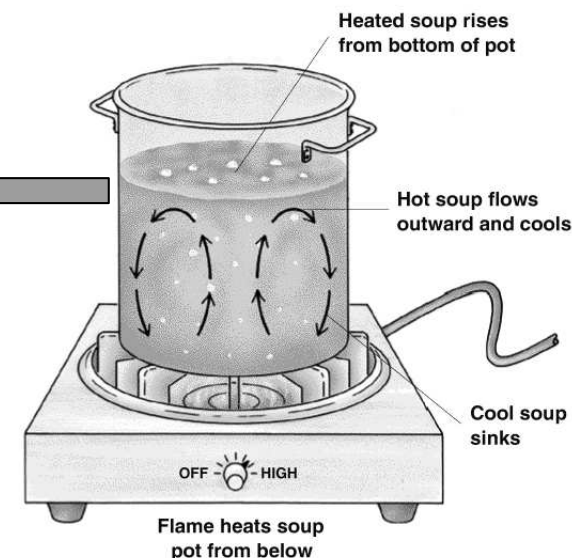


Geologie na konci 20. století přešla od fixistických statických interpretací k dynamickému pojetí vývoje Země. Dnes dominující paradigma geologie – tektonika litosferických desek - zdůrazňuje výrazné horizontální přesuny kontinentálních bloků. Za jejich hnací motor je považována tepelná konvekce v plášti Země, která je určována tepelnou výměnou mezi žhavotekutým jádrem Země a poměrně chladným povrchem.

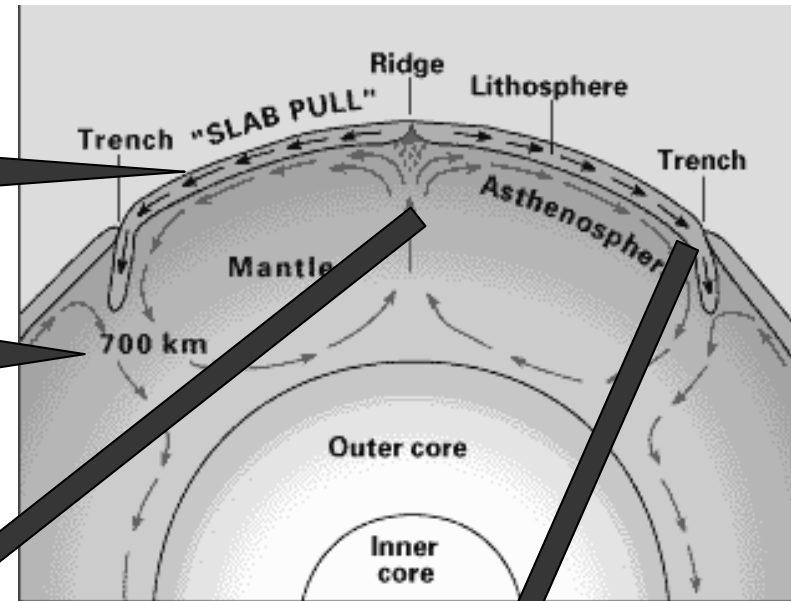
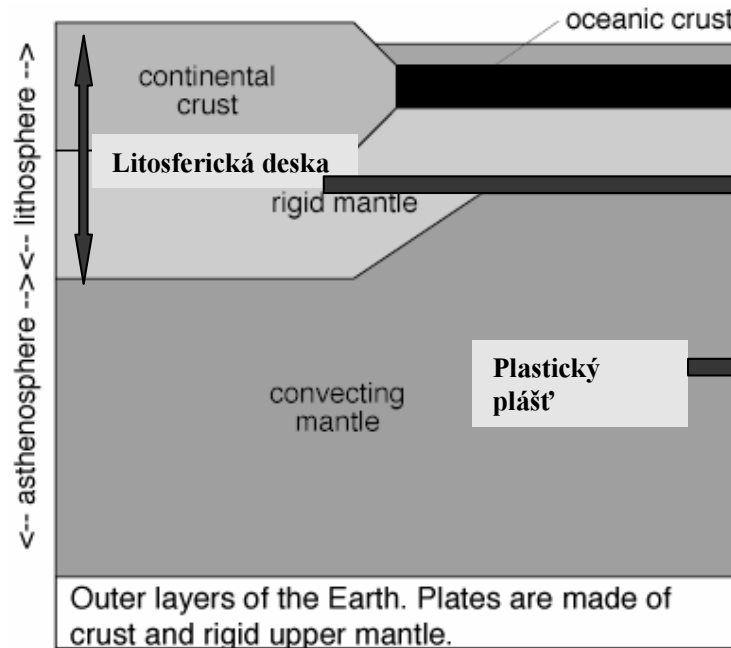


Thompson and Turk: Earth Science and the Environment, 2/e
Figure 5.11

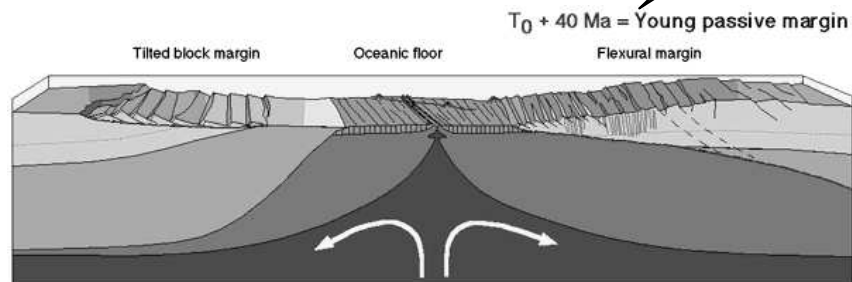


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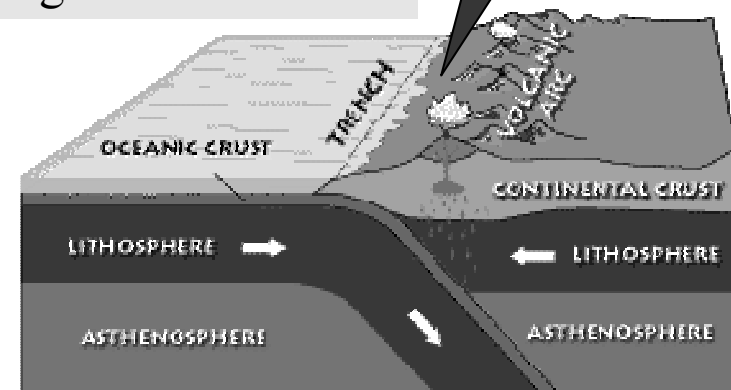
Teorie litosferických desek předpokládá, že konvekční tepelné proudy v plastické části zemského pláště vedou v místech vzestupných tepelných proudů ke vzniku divergentních rozhraní a v místech sestupných tepelných proudů ke vzniku konvergentních rozhraní litosferických desek



Divergentní rozhraní

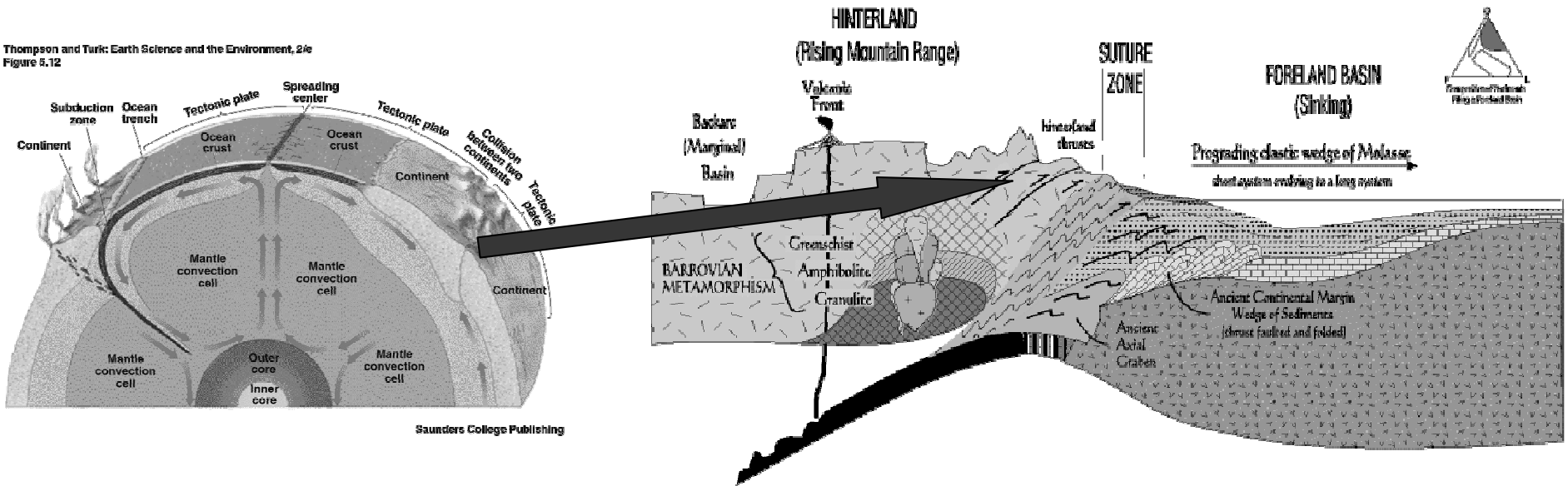


Konvergentní rozhraní

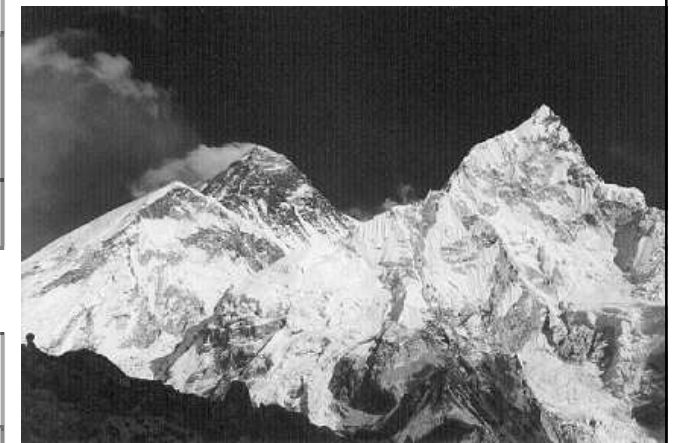
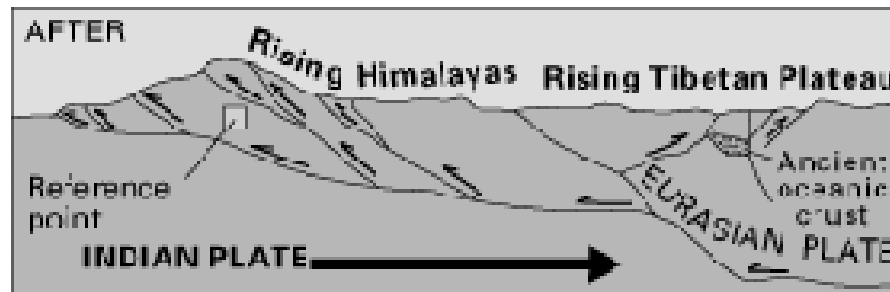
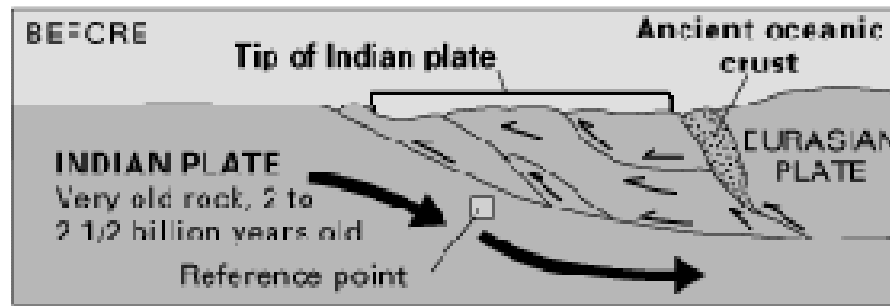
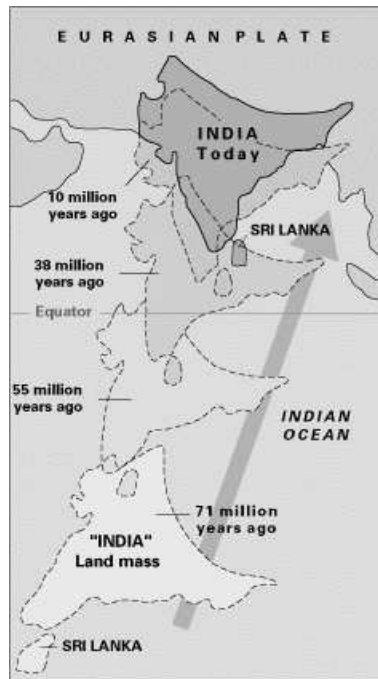


Konvergentní rozhraní představují místa vrásnění, vulkanické činnosti, vzniku pohoří a kolize kontinentů

Thompson and Turk: Earth Science and the Environment, 2/e
Figure 5.12



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Hlavní etapy vrásnění v prvohorách - čtvrtohorách

Časová škála

Vrásnění

Paleogeografie

245 Ma

mladší
perm
karbon

Prvohory

starší

silur
devon
ordovik
kambrium

545 Ma

Prekambrium

Variské
vrásnění

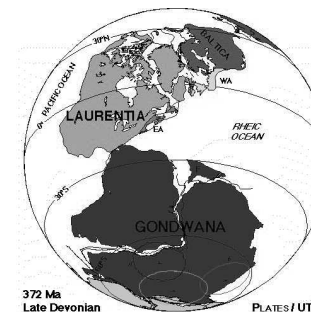
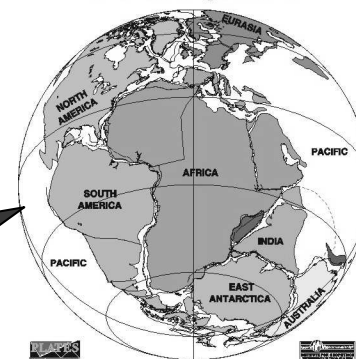


420 Ma

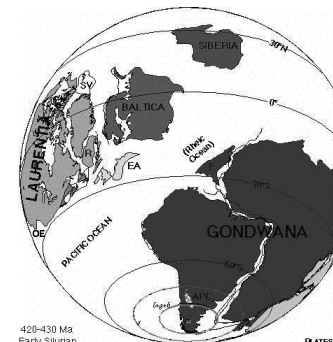
Vznik Pangei

Kaledonské
vrásnění

PANGEA



372 Ma
Late Devonian
PLATES / UTIG



420-430 Ma
Early Silurian
PLATES / UTIG

Fig. 17
Cebal, 1957, GSA Bulletin

Časová škála

Vrásnění

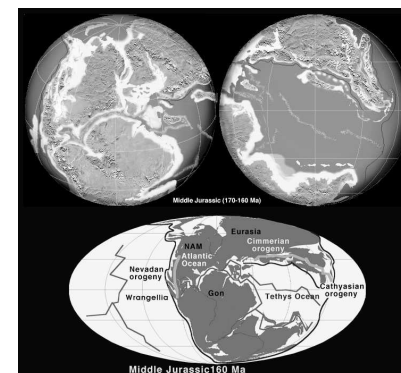
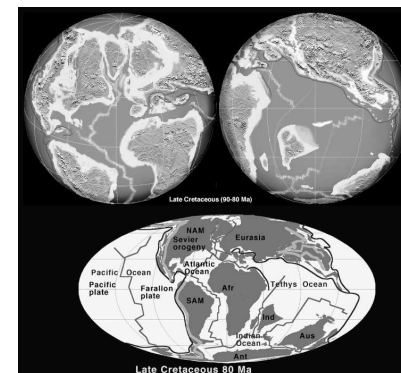
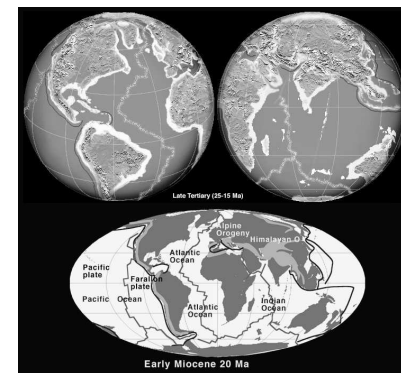
Paleogeografie

	Čtvrtohory	
1,8 Ma	Třetihory	Neogén
		Paleogén
65 Ma	Druhohory	Křída
		Jura
		Trias
245 Ma		



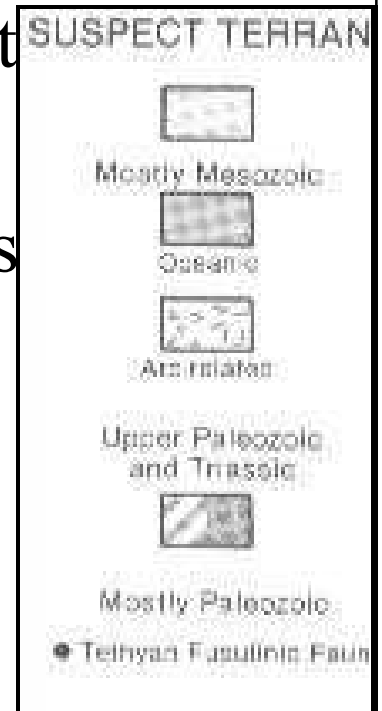
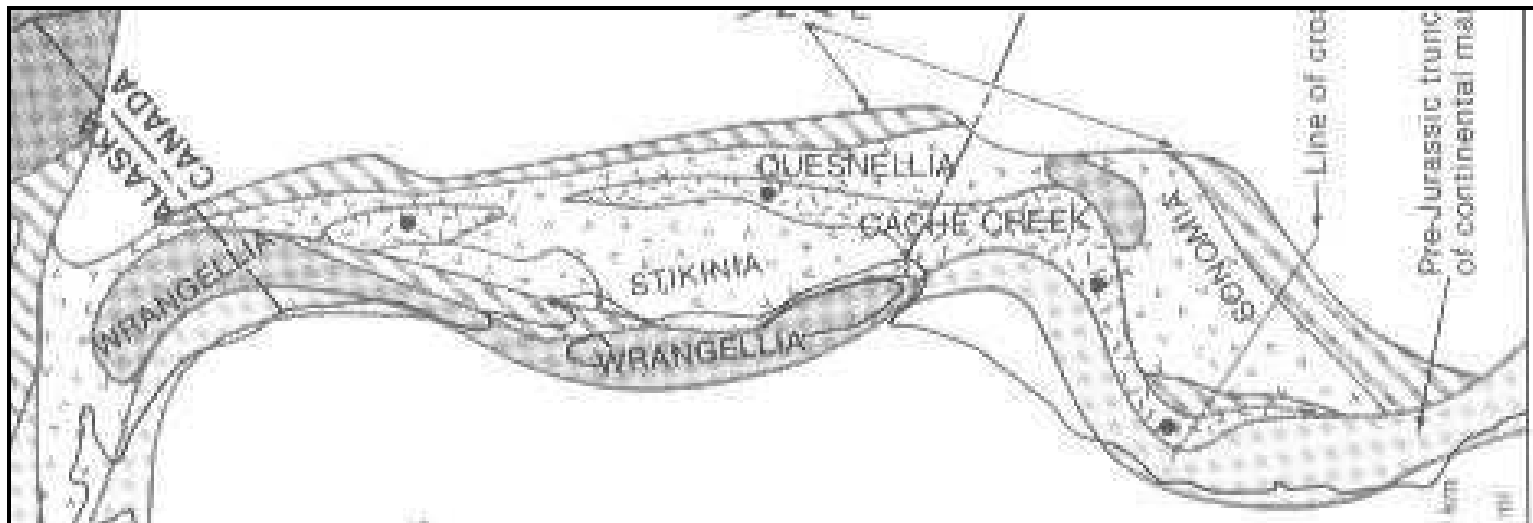
Alpinské vrásnění

Kimerské vrásnění



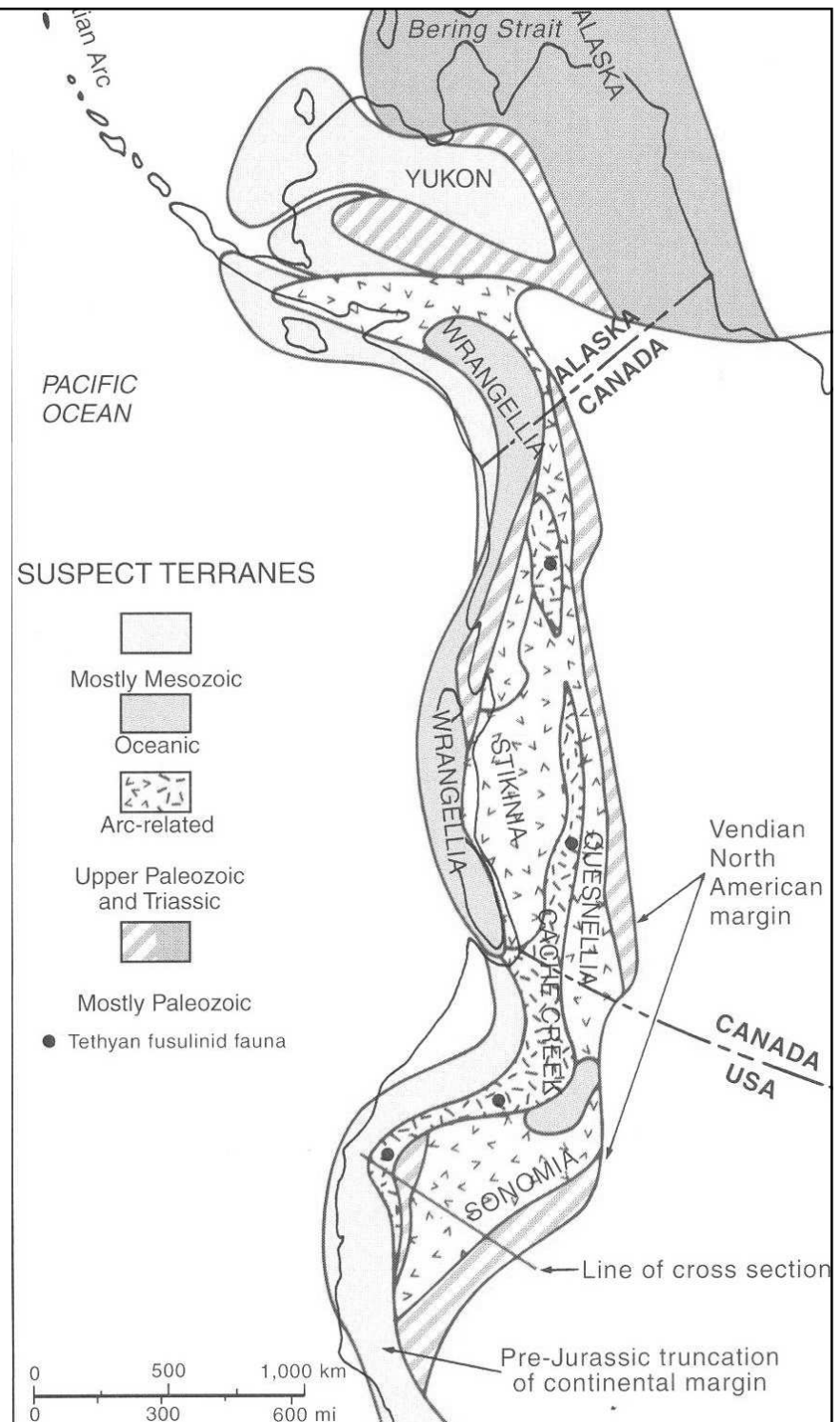
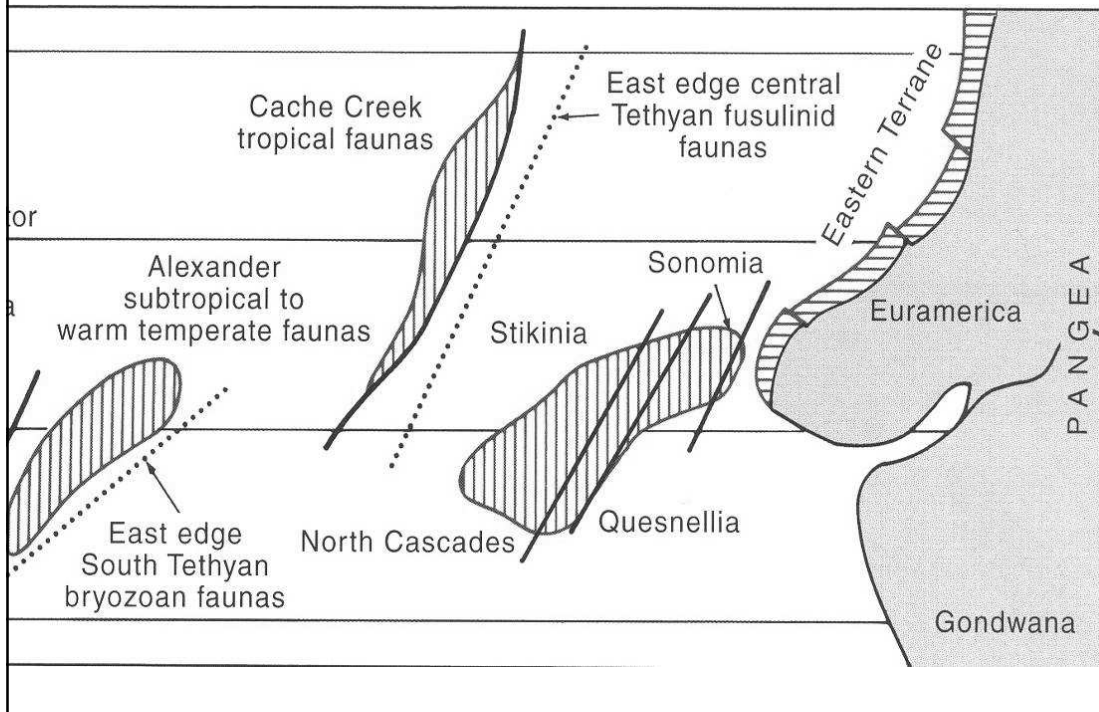
The Western Collage

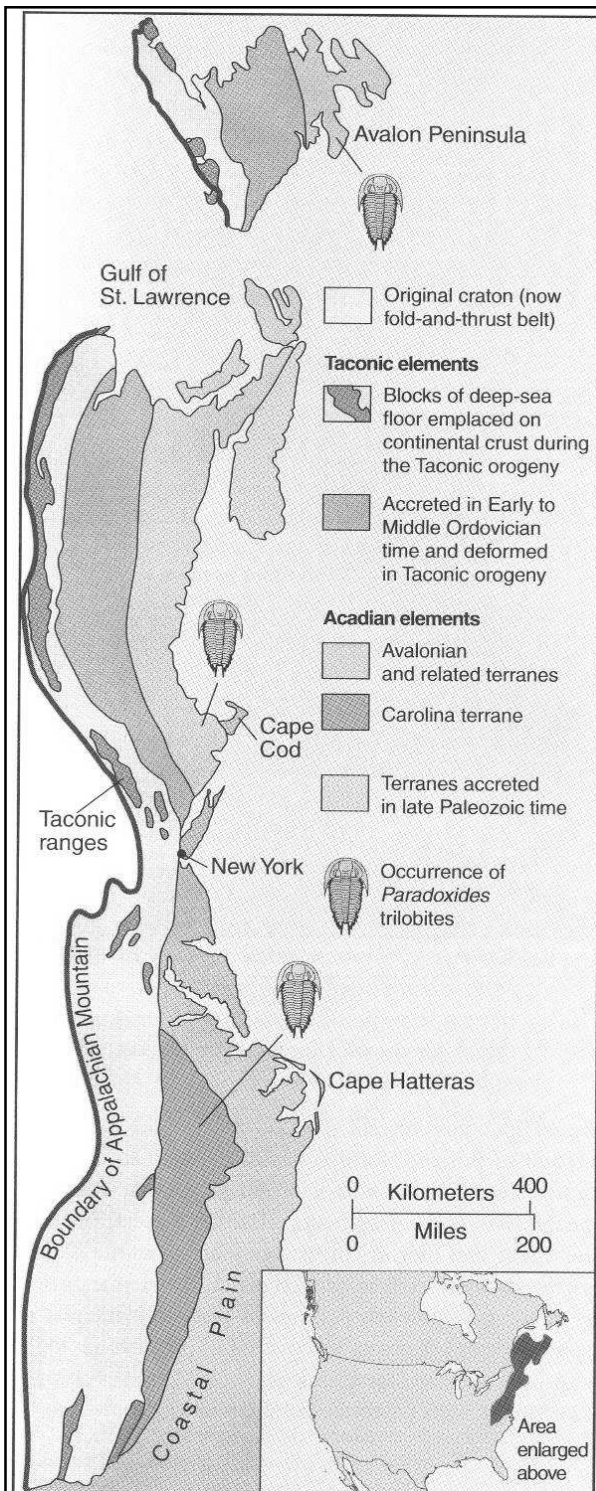
- Cordillera an collage of microplates and arcs
 - accreted during the Paleozoic and Mesozoic
 - terrains have different rock types and fossil assemblages that cannot be correlated
 - suspect terrains--fault-bounded regions that be correlated



The Canadian Cordillera west of the Rockies is largely composed of displaced terranes, as are the easternmost sections of Siberia.

Origins of these terranes are best Determined by the biogeographic affinities of the fossils in their sedimentary rocks.

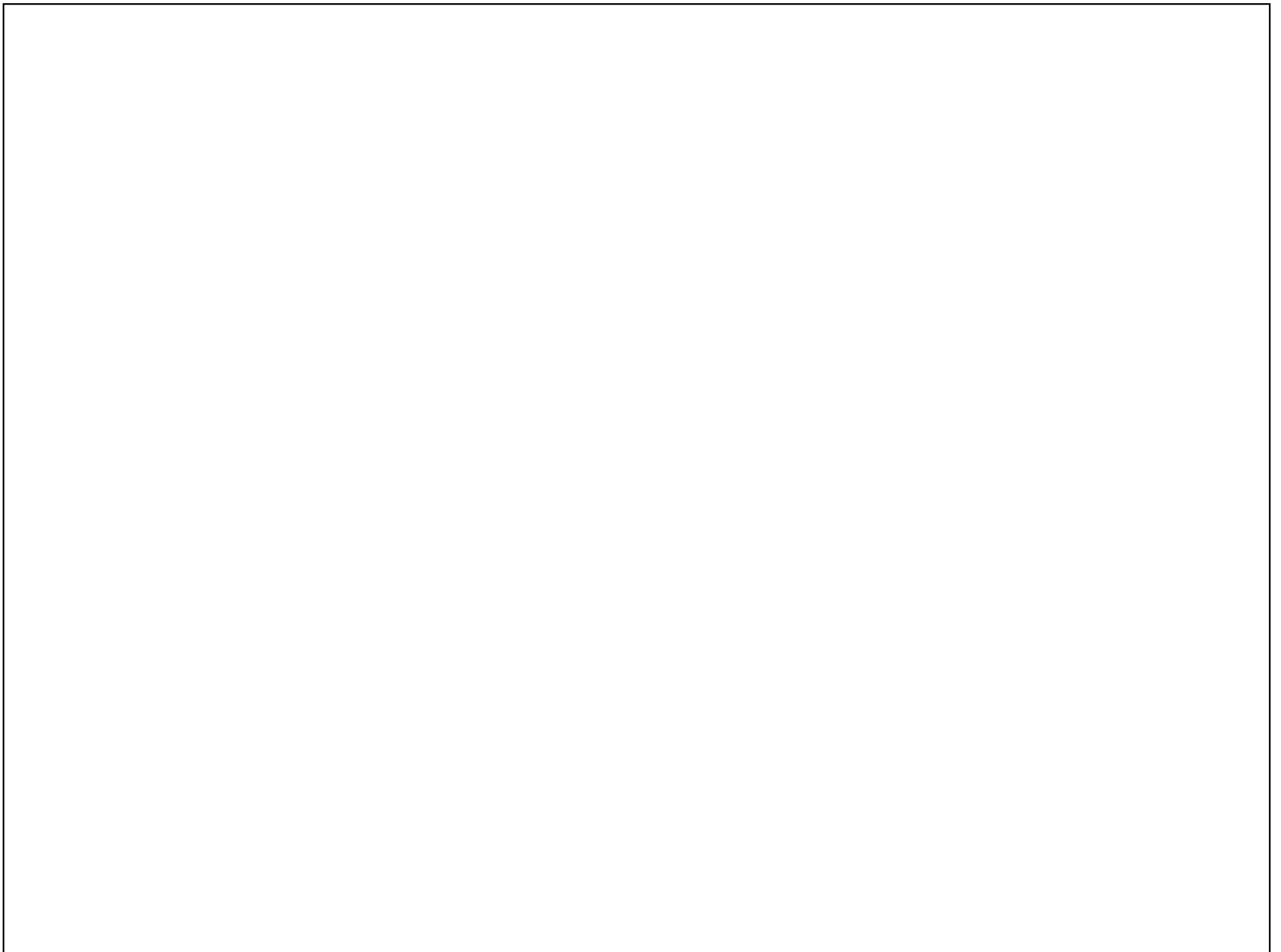




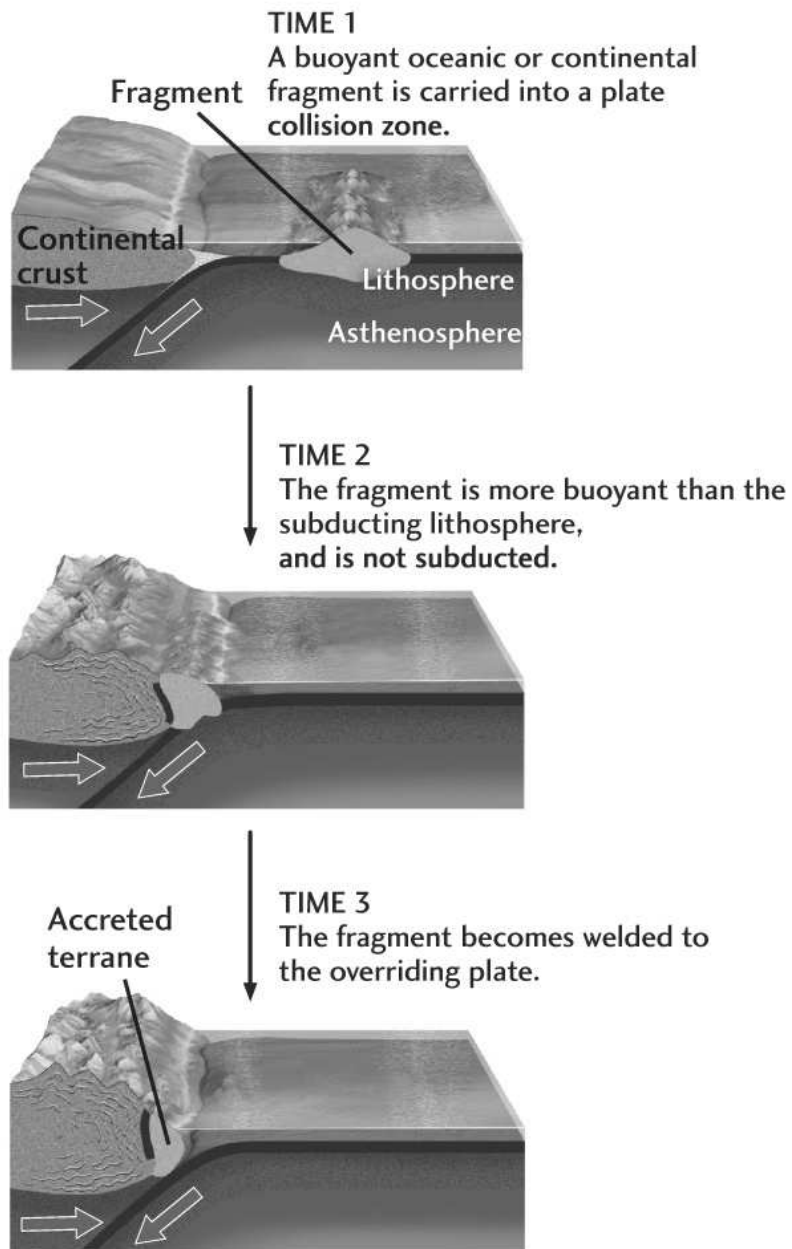
Displaced terranes are island arcs or continent fragments that have been moved from one part of the world to another. The continental margins of E, W North America are largely composed of displaced terranes.

Avalon Peninsula is part of a displaced terrane called Avalonia. *Paradoxites* and other Manuels River trilobites are European in their biogeographic affinities.

"Viking Funeral Ship"
paleobiogeographic pattern



Accretion of a buoyant fragment to a continent

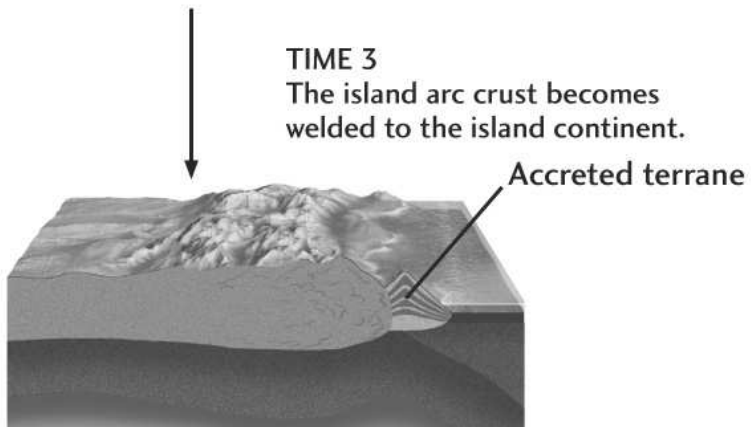
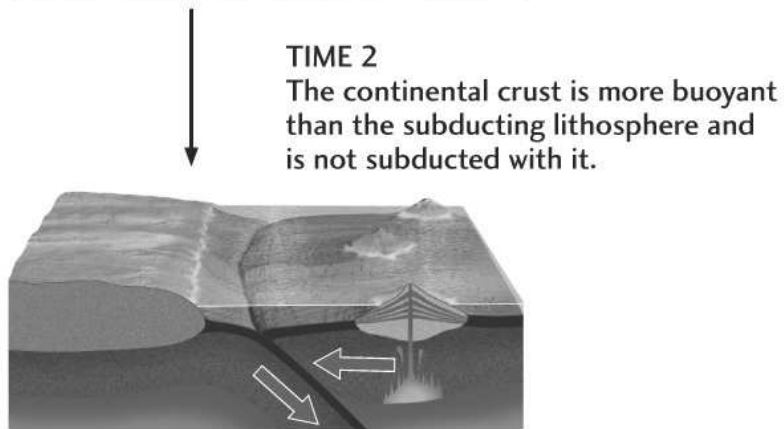
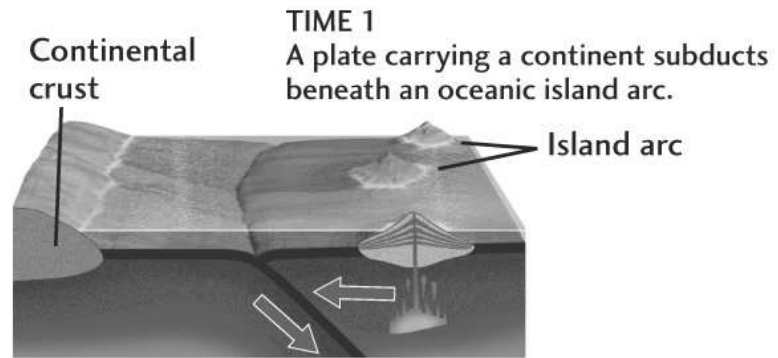


How Continents Grow:

Accretion of continental fragments

Fig. 20.12a

Accretion of an island arc to a continent

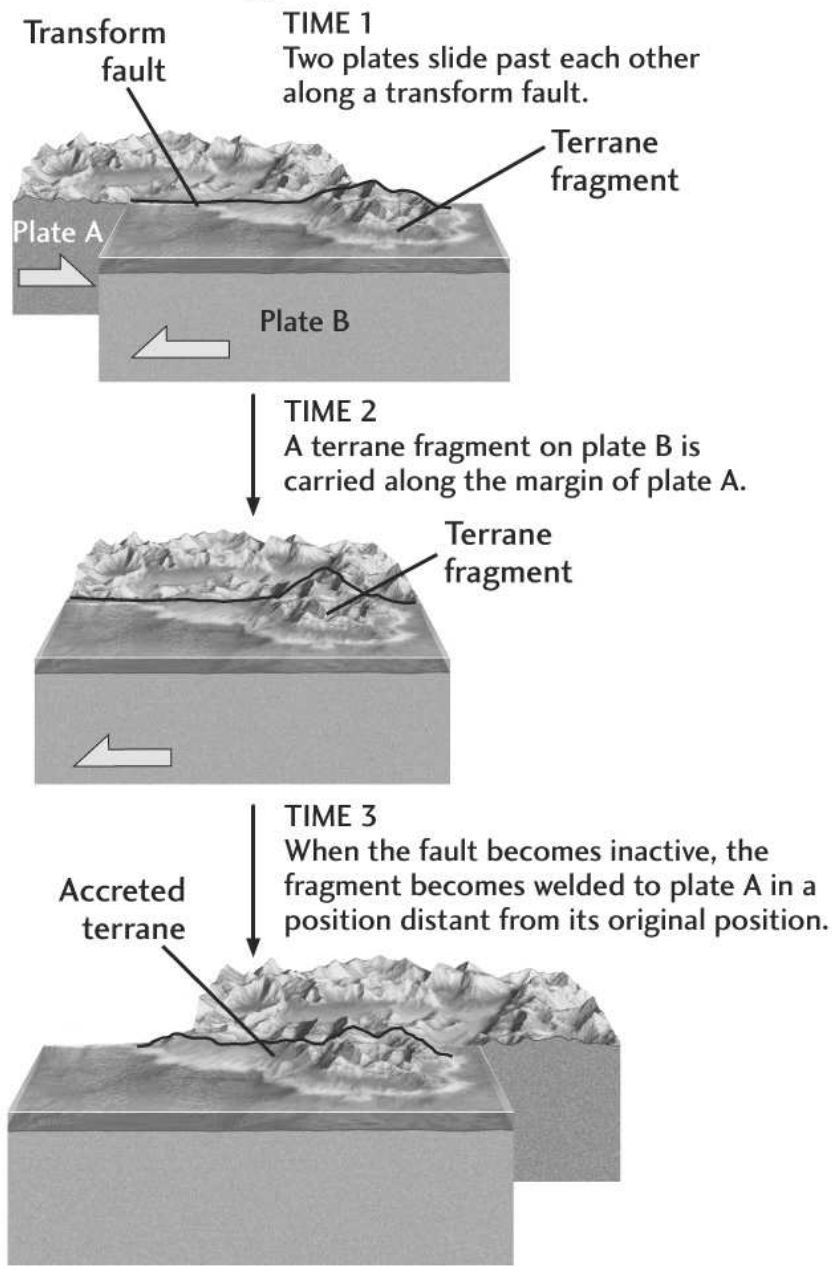


How Continents Grow:

Accretion of island arcs

Fig. 20.12b

Accretion along a transform fault

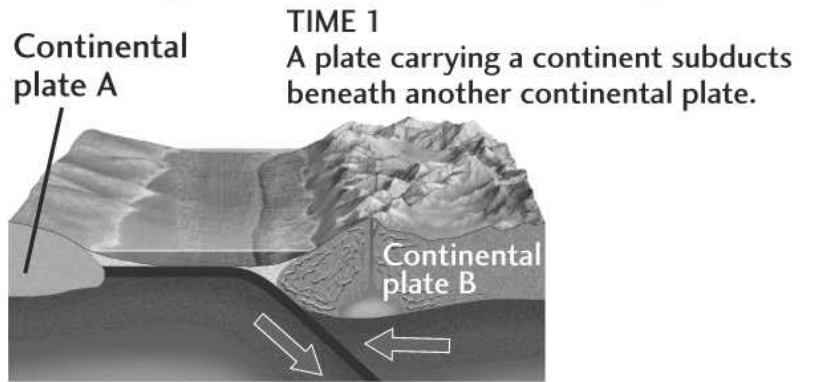


How Continents Grow:

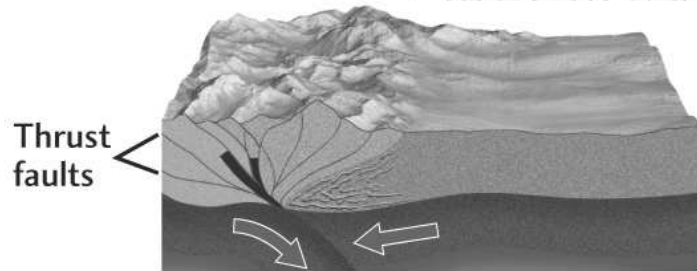
Accretion along transform faults

Fig. 20.12c

Accretion by continental collision and rifting

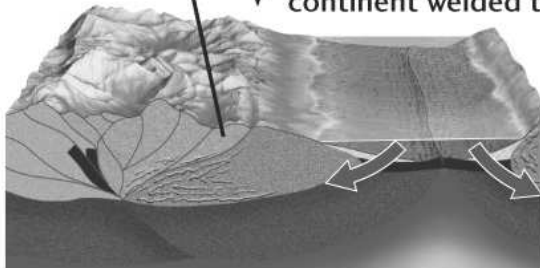


TIME 2
The continent is not subducted, so two continents are welded together along a set of thrust faults.



Accreted terrane

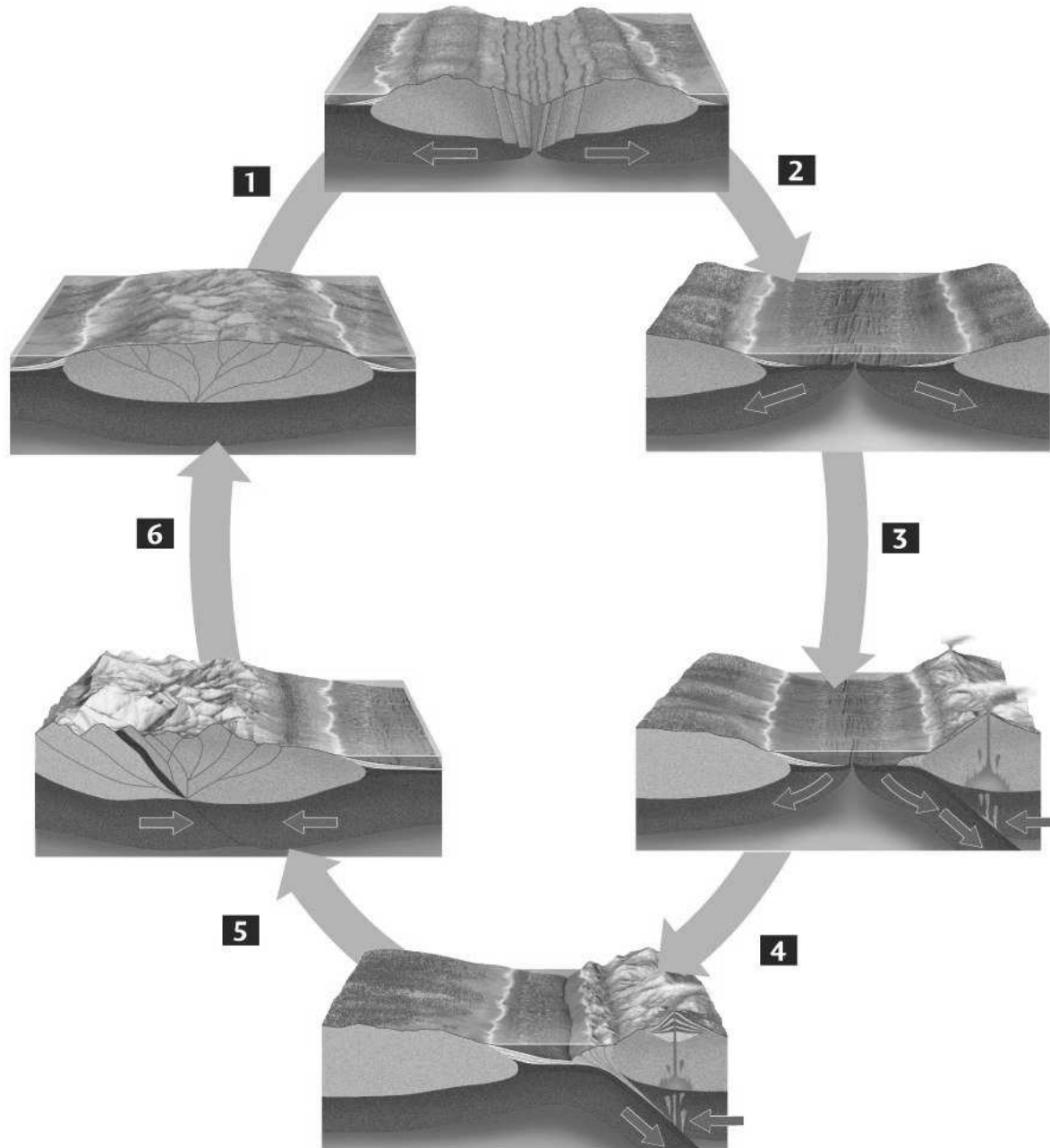
TIME 3
Later, rifting and seafloor spreading carry the continental plates apart, leaving a fragment of one continent welded to the other.



How Continents Grow:

Accretion by continental collision/ rifting

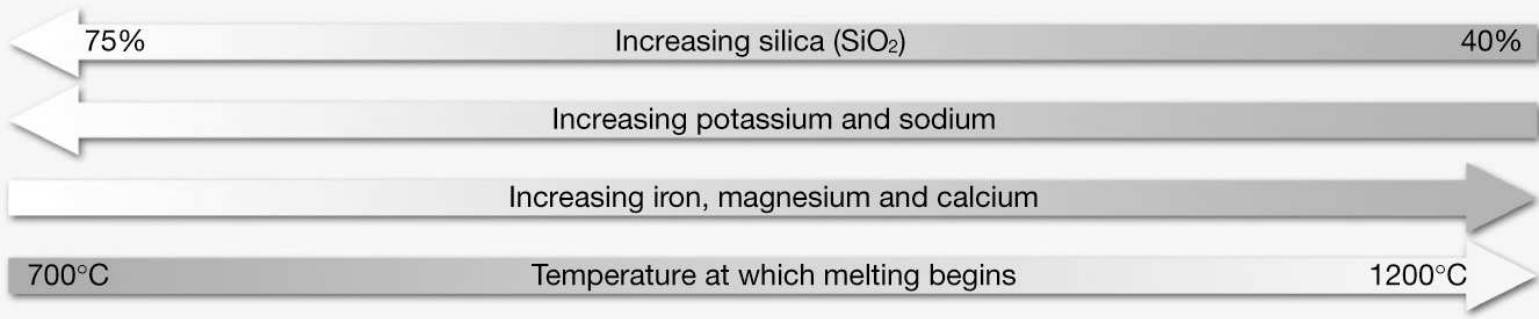
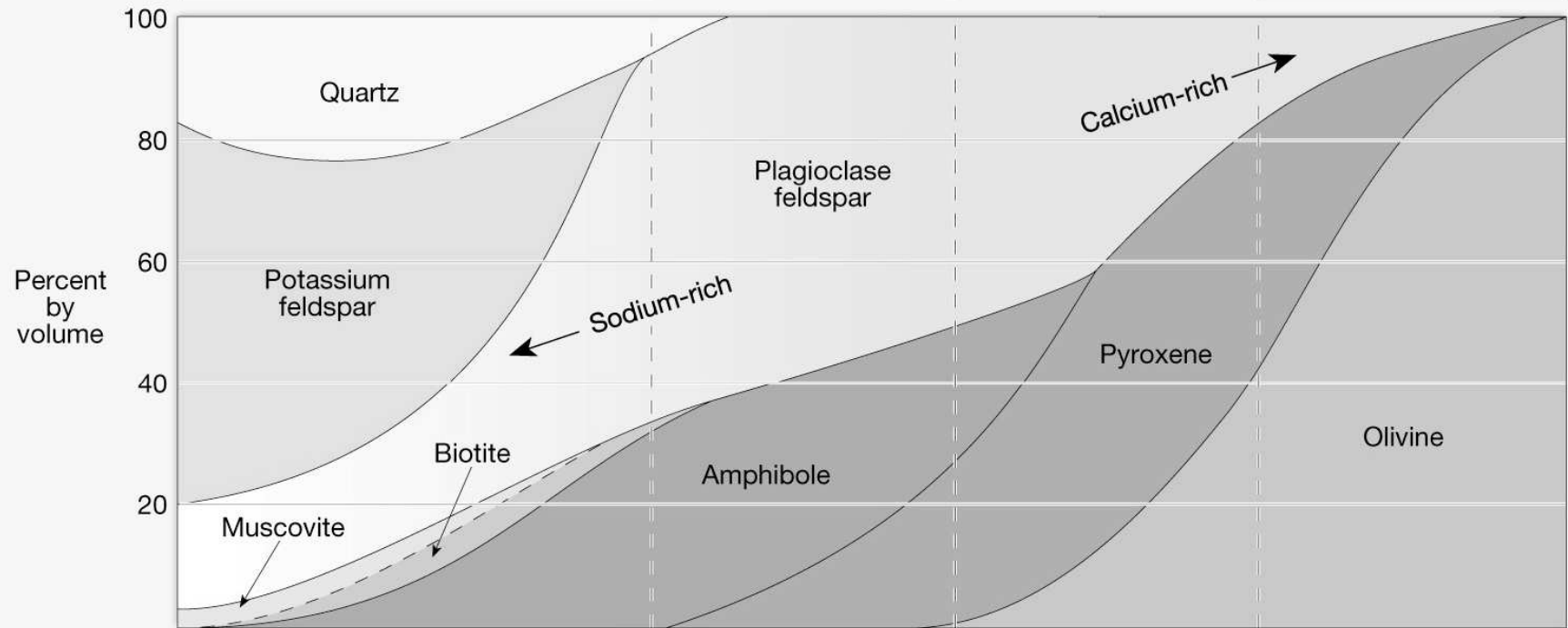
Fig. 20.12d



The Wilson Cycle

Fig. 20.18

Composition	Felsic (Granitic)	Intermediate (Andesitic)	Mafic (Basaltic)	Ultramafic
Rock types	Granite/Rhyolite	Diorite/Andesite	Gabbro/Basalt	Peridotite/Komatiite



World Tectonic Provinces

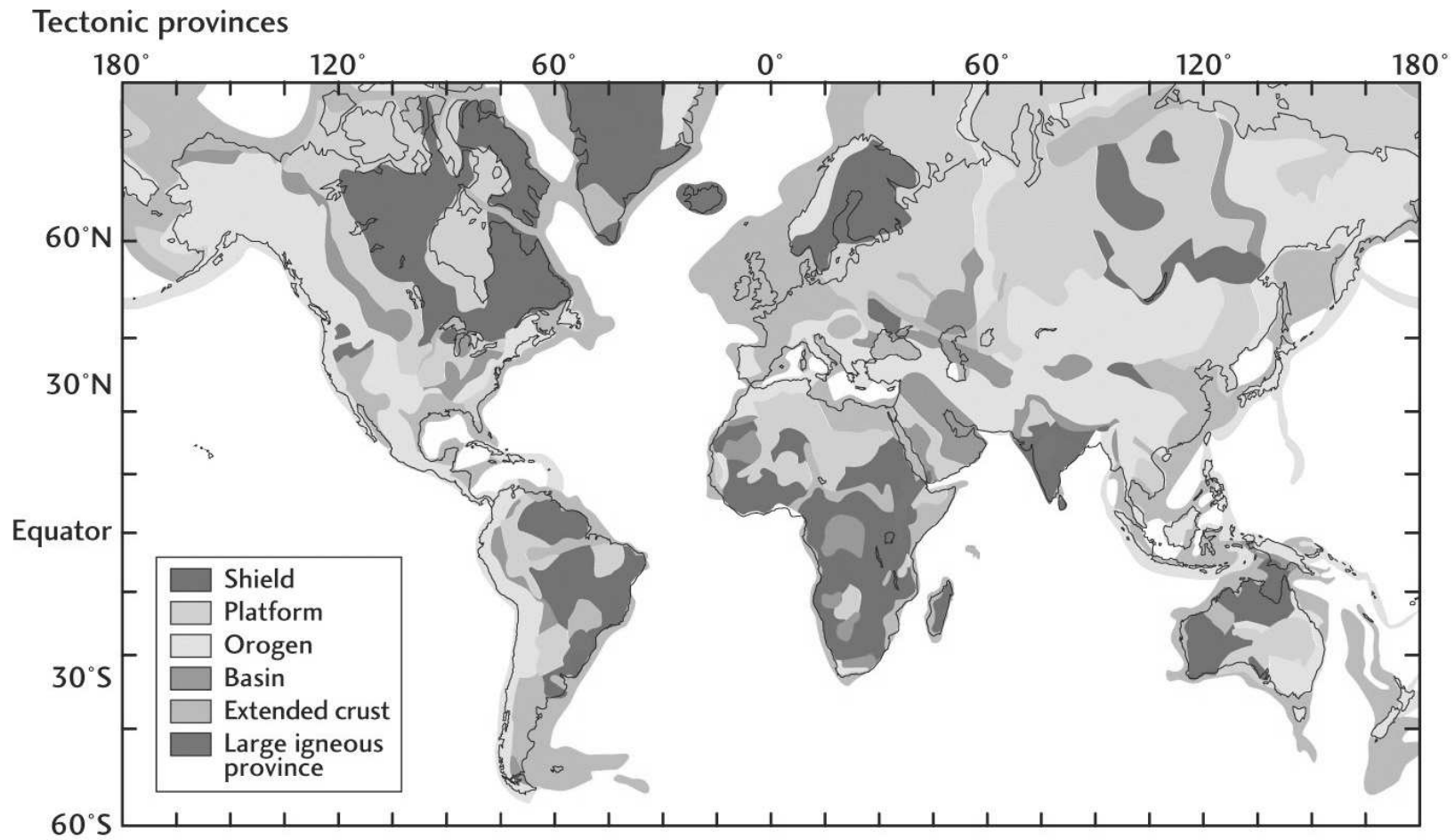


Fig. 20.8a

