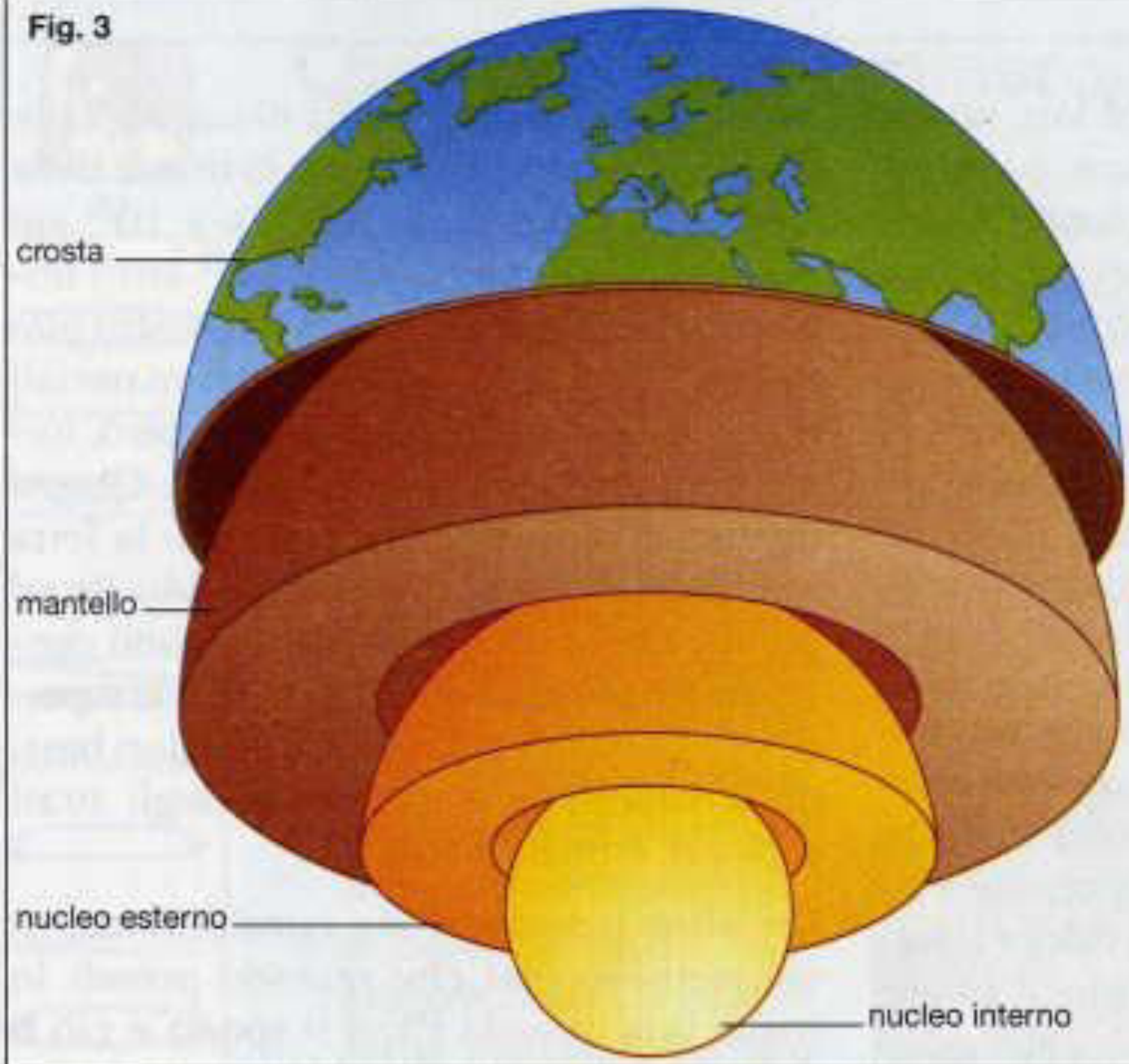
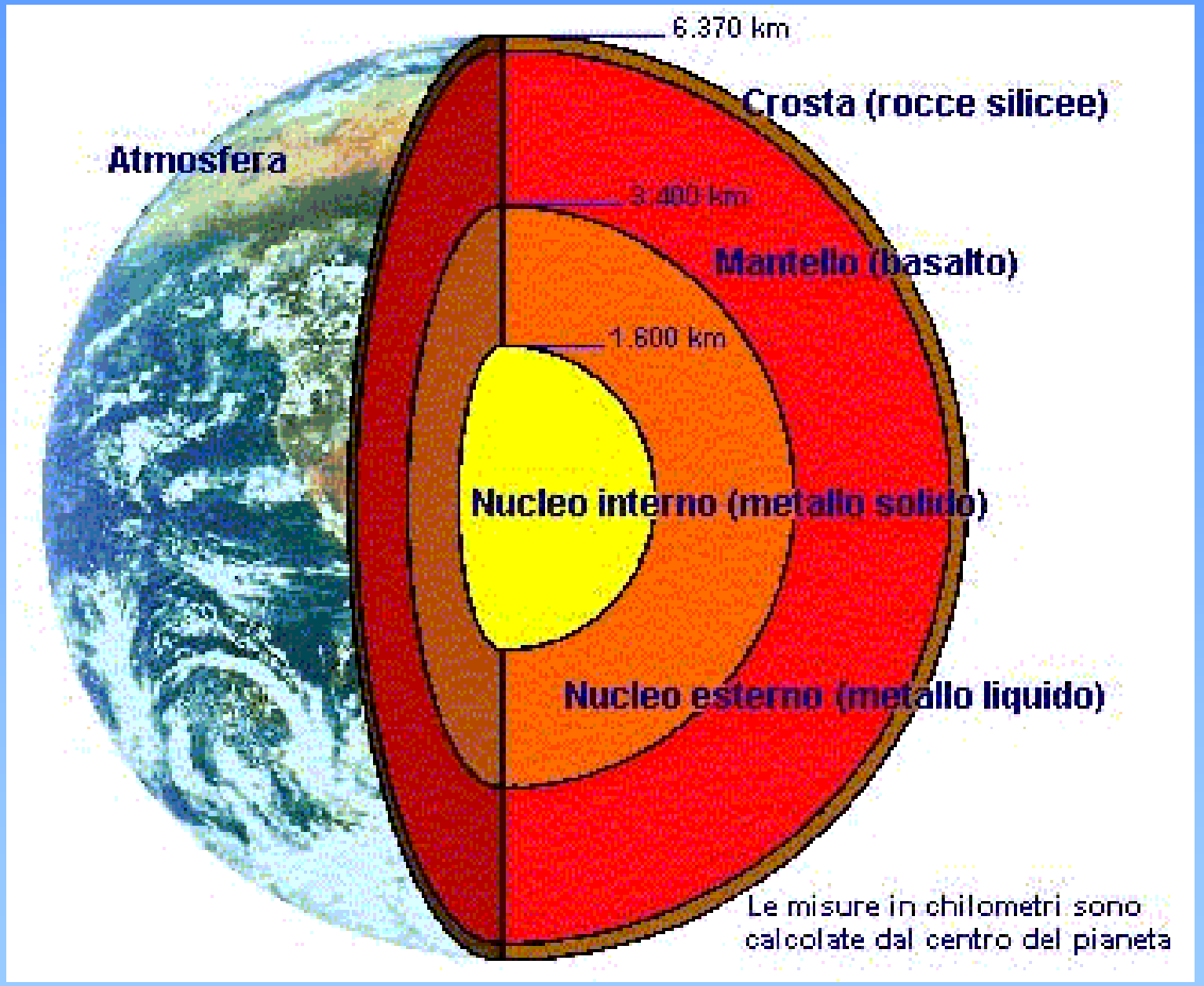
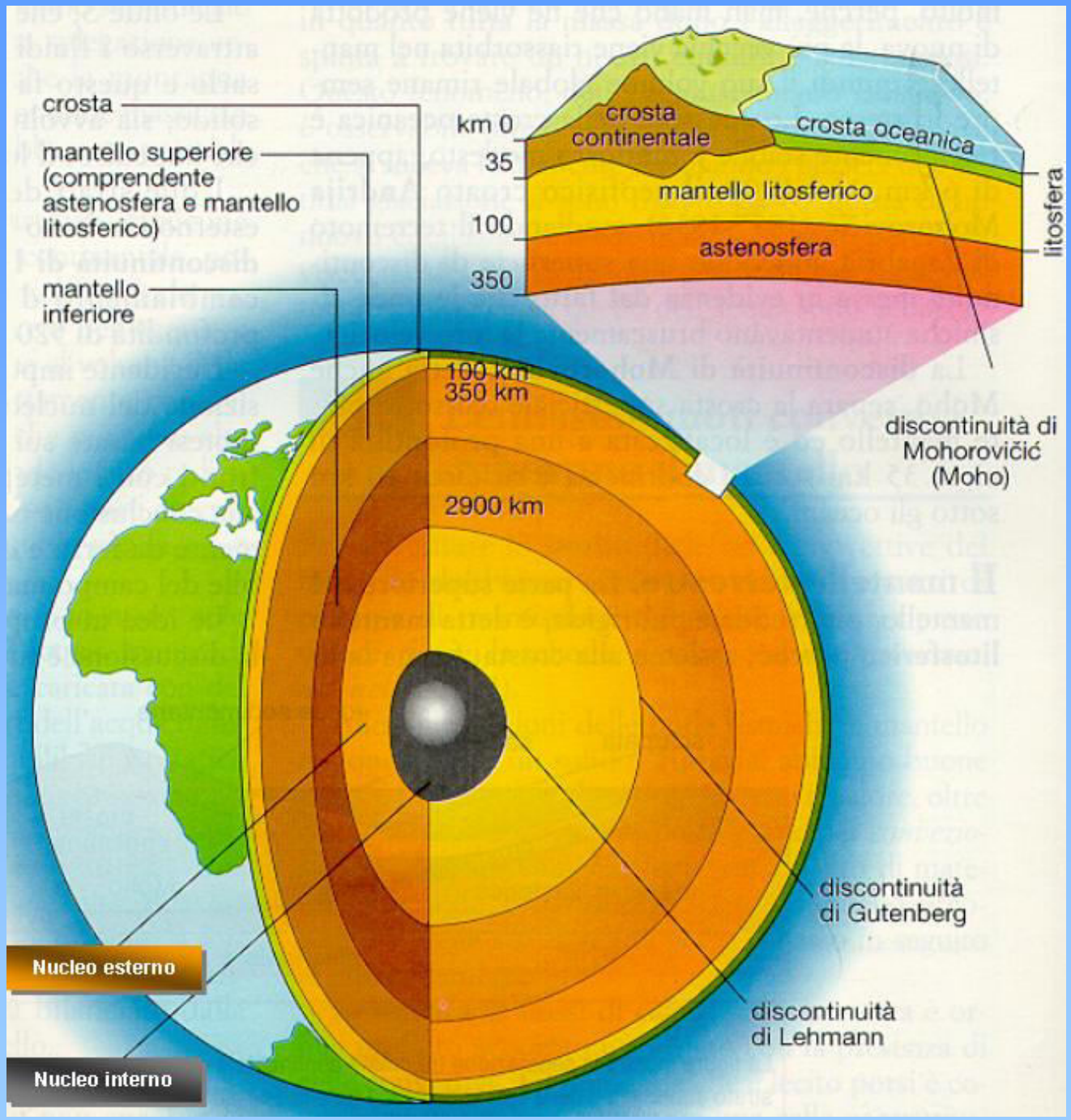
La struttura interna della Terra

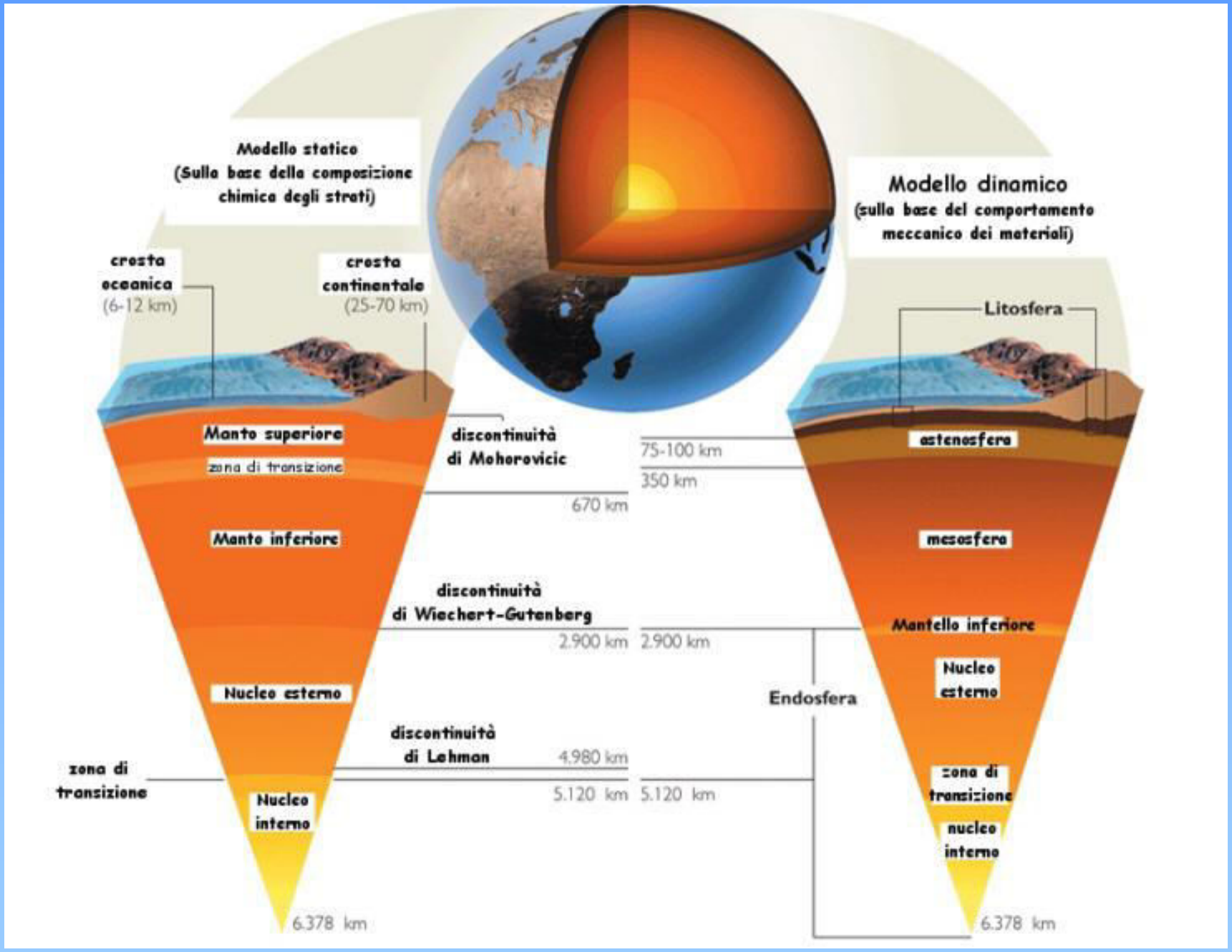
Fig. 3

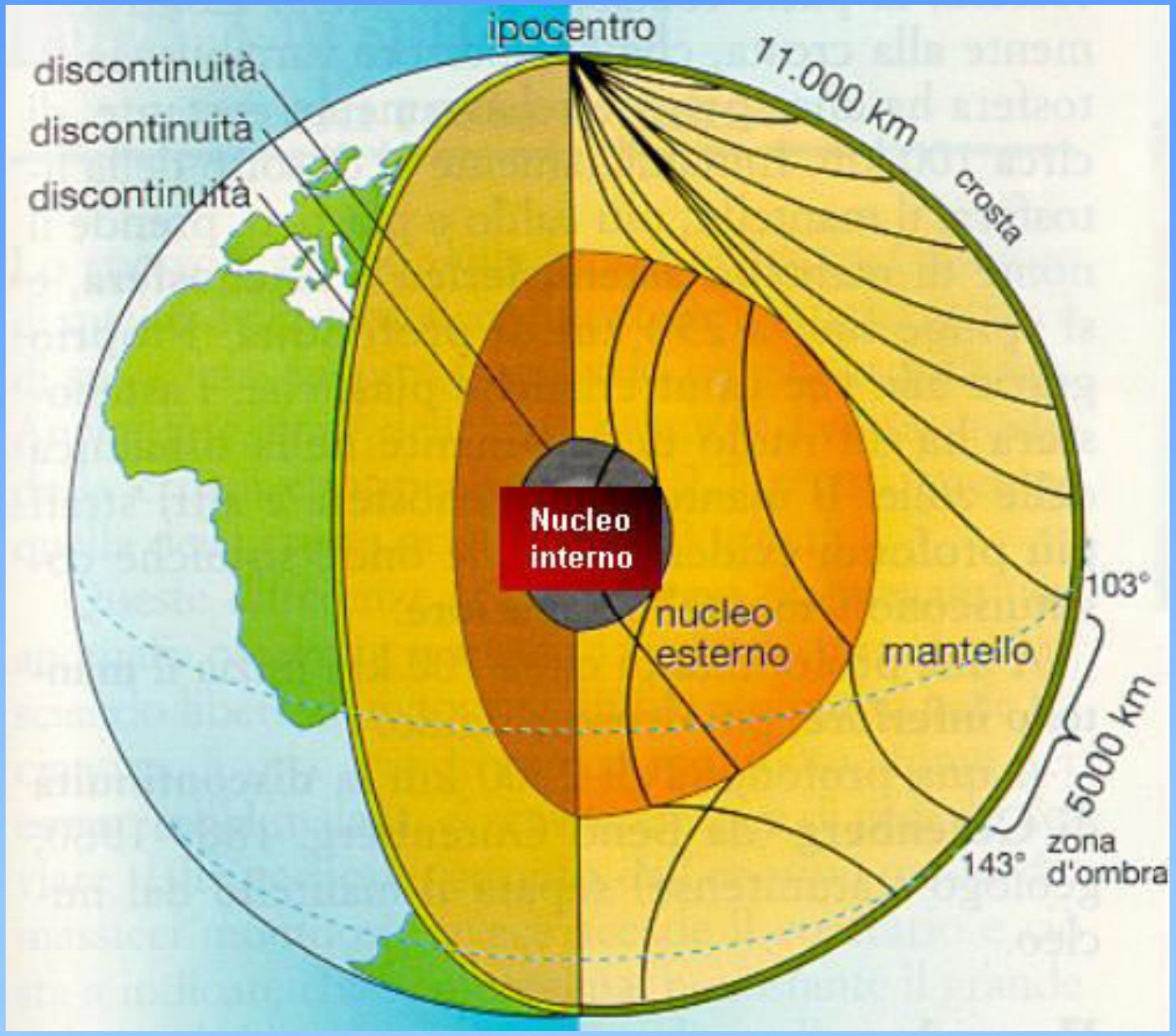


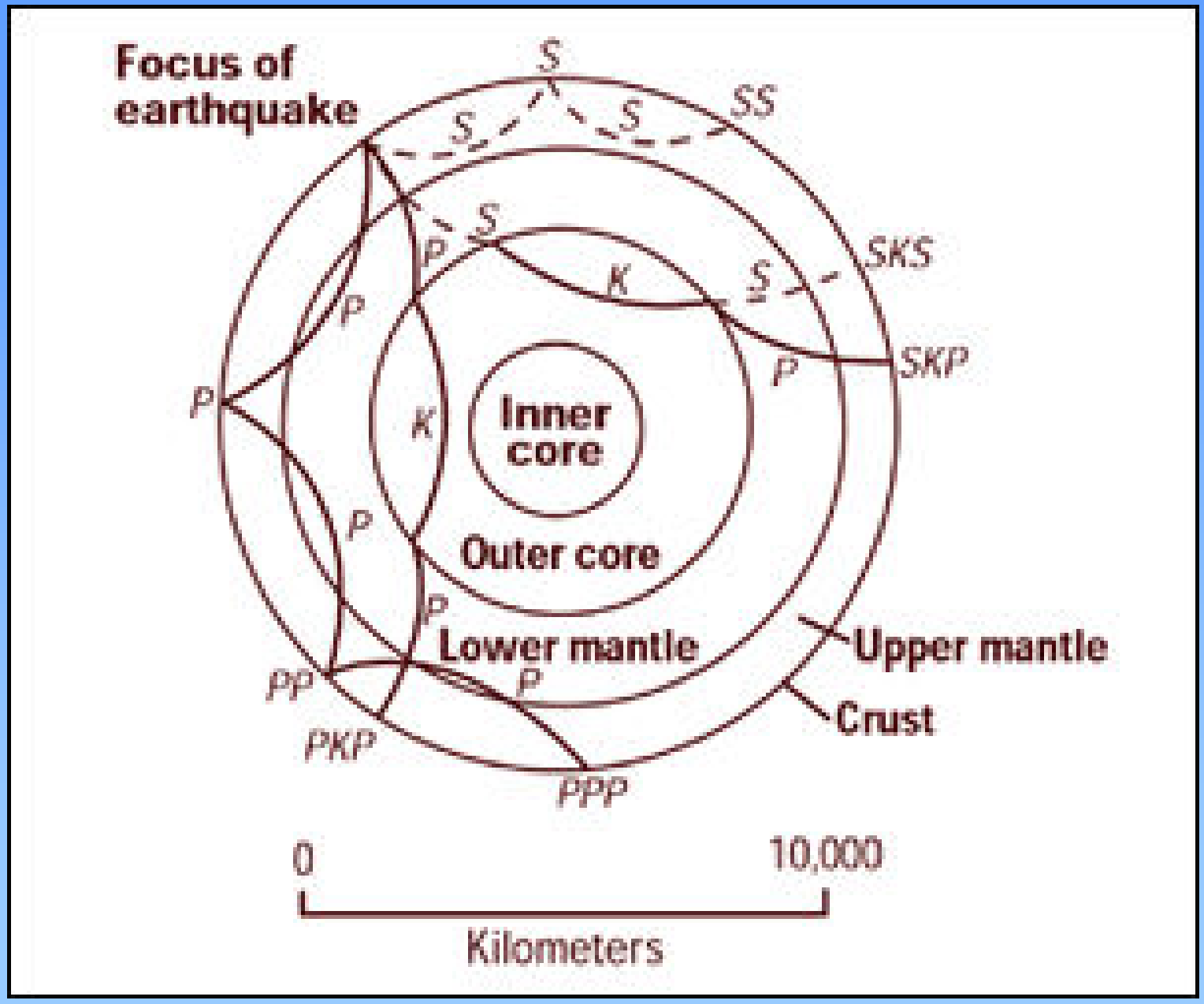
Le parti che formano la Terra sono disposte come gli strati di una cipolla: la crosta in superficie, il mantello, il nucleo esterno liquido e il nucleo interno solido.


6.370 km
Crosta (rocce silicee)
Atmosfera
3.400 km
Mantello (basalto)
1.600 km
Nucleo interno (metallo solido)
Nucleo esterno (metallo liquido)
Le misure in chilometri sono
calcolate dal centro del pianeta


crosta
mantello superiore (comprendente astenosfera e mantello litosferico)
mantello inferiore
km 0
35
100
350
crosta continentale
crosta oceanica
mantello litosferico
astenosfera
litosfera
discontinuità di Mohorovičić (Moho)
100 km
350 km
2900 km
discontinuità di Gutenberg
discontinuità di Lehmann
Nucleo esterno
Nucleo interno


Modello statico
(Sulla base della composizione chimica degli strati)
Modello dinamico
(sulla base del comportamento meccanico dei materiali)
crosta oceanica
(6-12 km)
crosta continentale
(25-70 km)
Litosfera
Manto superiore
zona di transizione
discontinuità di Mohorovicic
670 km
Manto inferiore
75-100 km
350 km
astenosfera
mesosfera
discontinuità di Wiechert-Gutenberg
2.900 km
2.900 km
Mantello inferiore
Nucleo esterno
Endosfera
Nucleo esterno
discontinuità di Lehman
4.980 km
zona di transizione
5.120 km
5.120 km
zona di transizione
Nucleo interno
nucleo interno
6.378 km
6.378 km

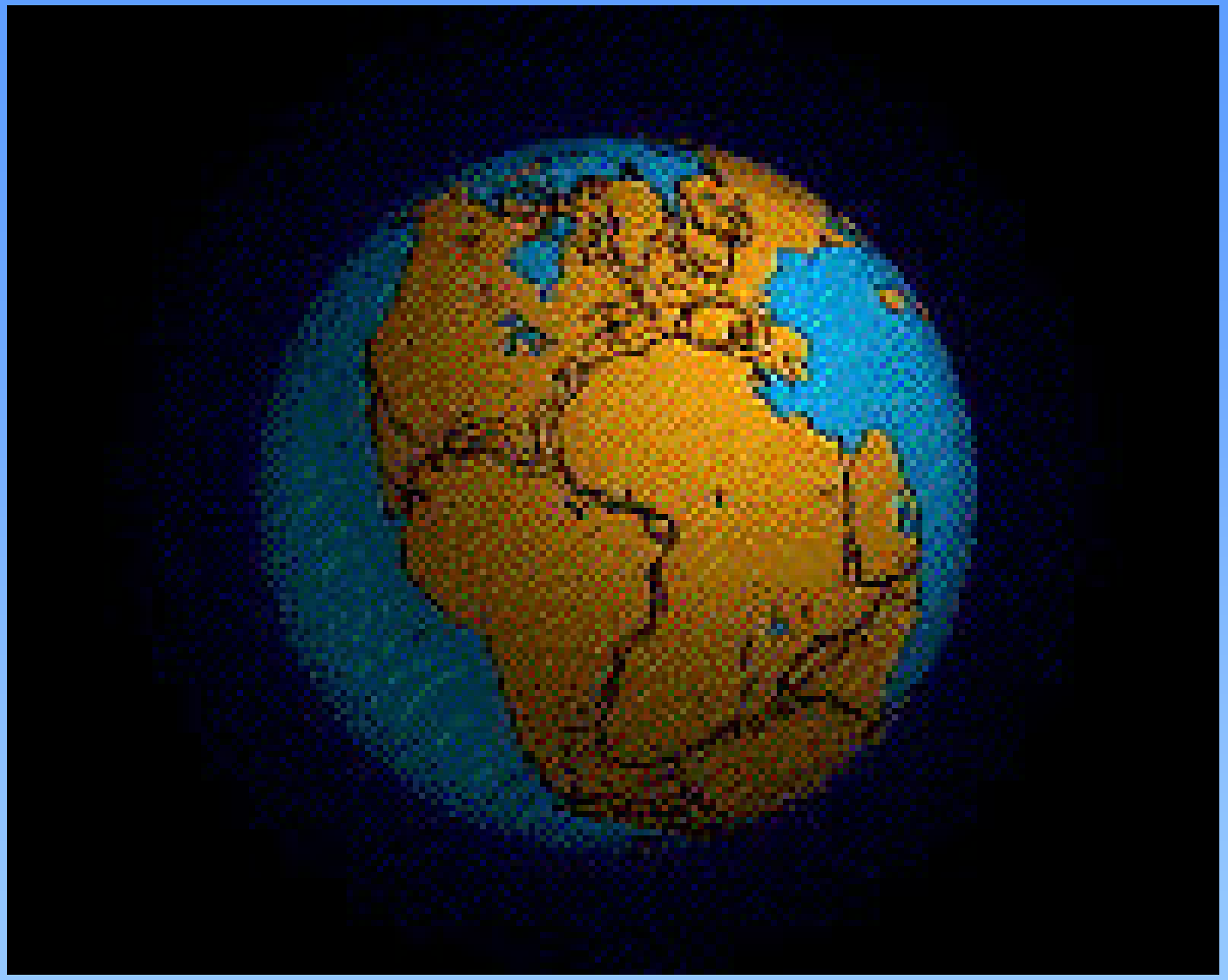

ipocentro
discontinuità
discontinuità
discontinuità
11.000 km
crosta
Nucleo interno
nucleo esterno
mantello
103°
5000 km
143°
zona d'ombra


Focus of earthquake
S
SS
S
S
S
S
SKS
K
S
SKP
P
P
P
P
K
Inner core
Outer core
P
Lower mantle
Upper mantle
PP
P
Crust
PKP
PPP
0
10,000
Kilometers

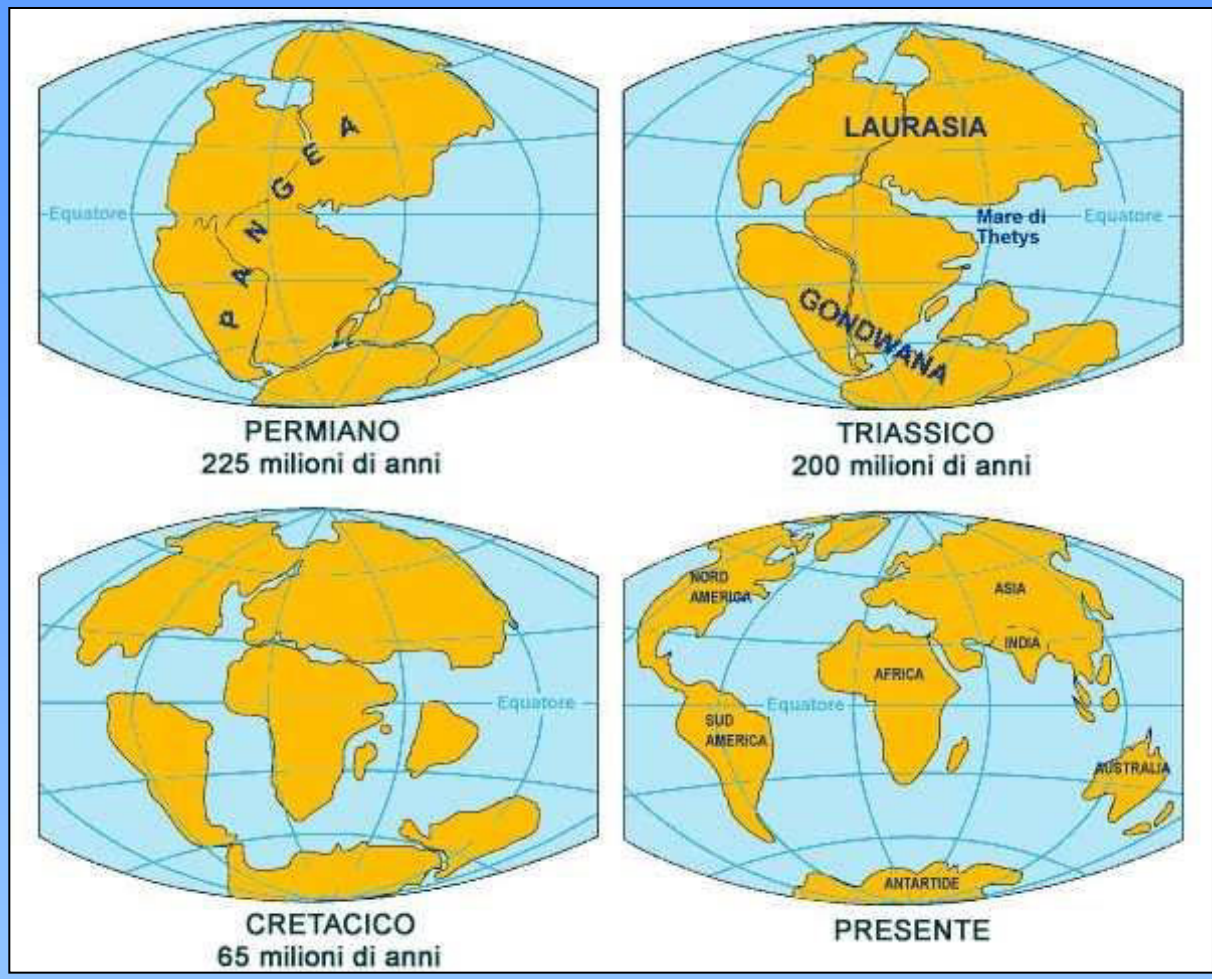
La teoria della deriva dei continenti

Alfred Wegener (Berlino, 1880 – Groenlandia, 1930)

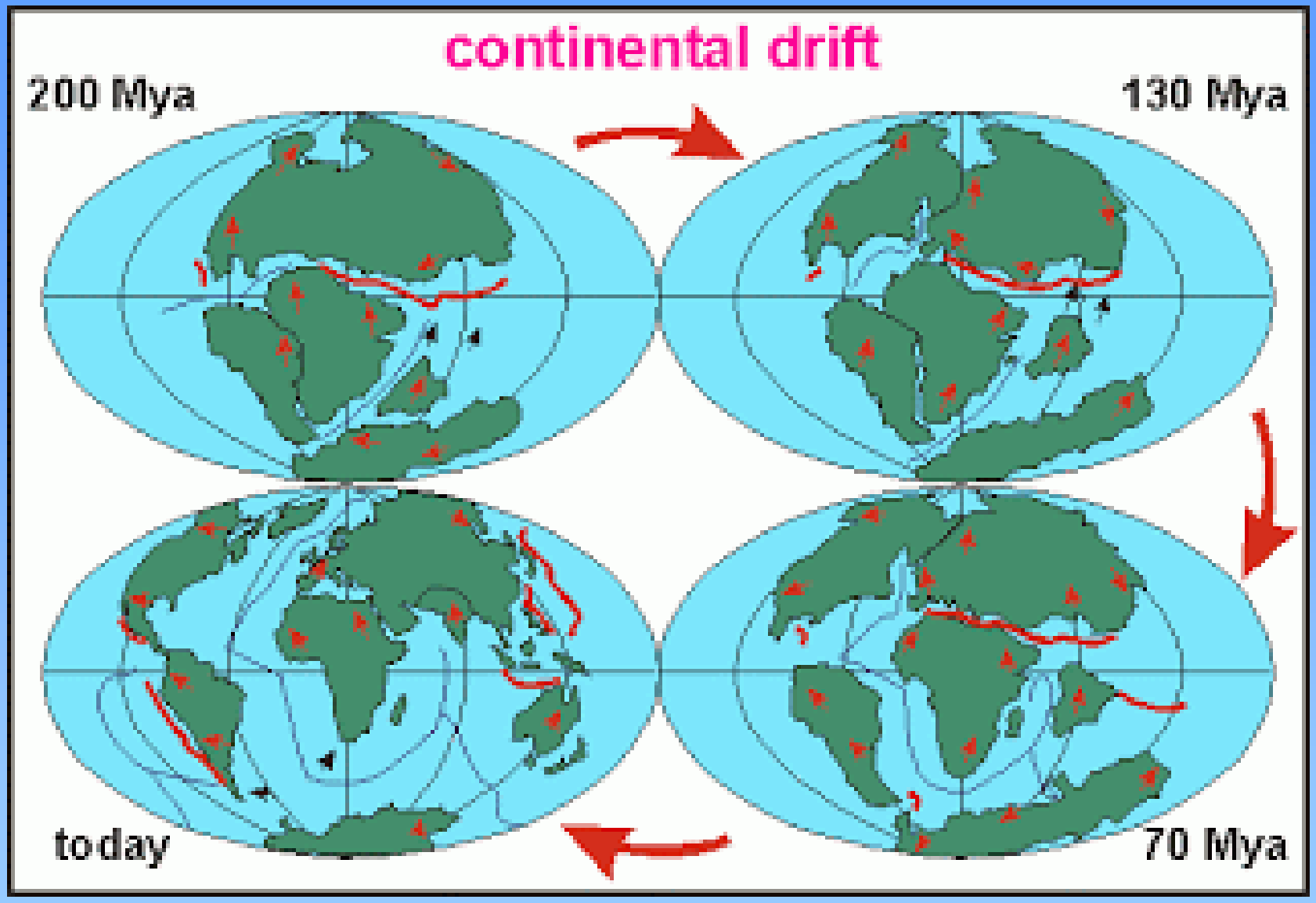
Un'idea rivoluzionaria

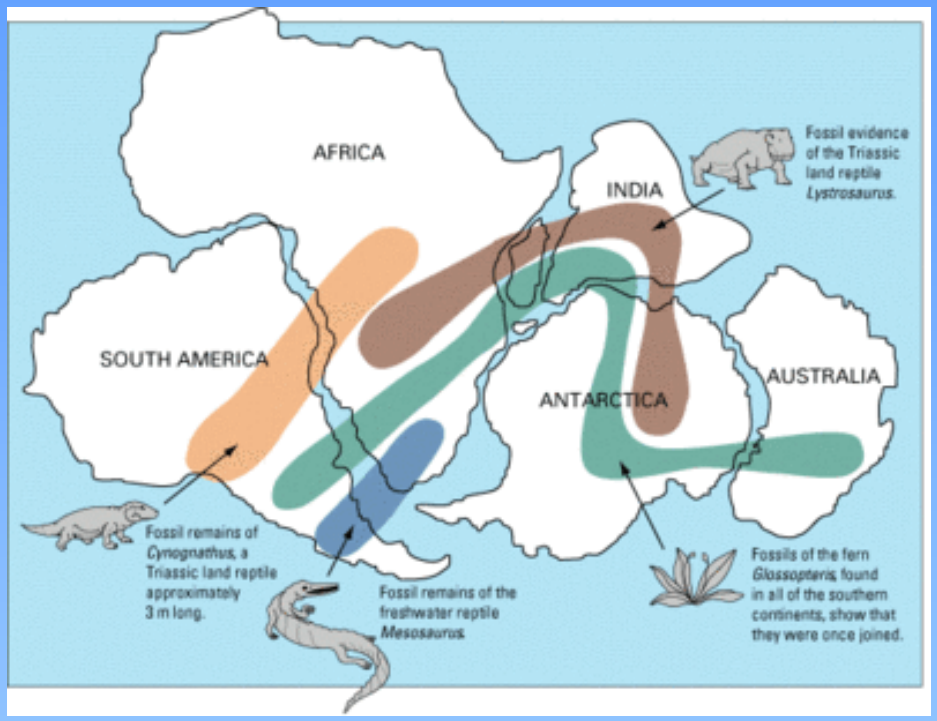


Terre in movimento

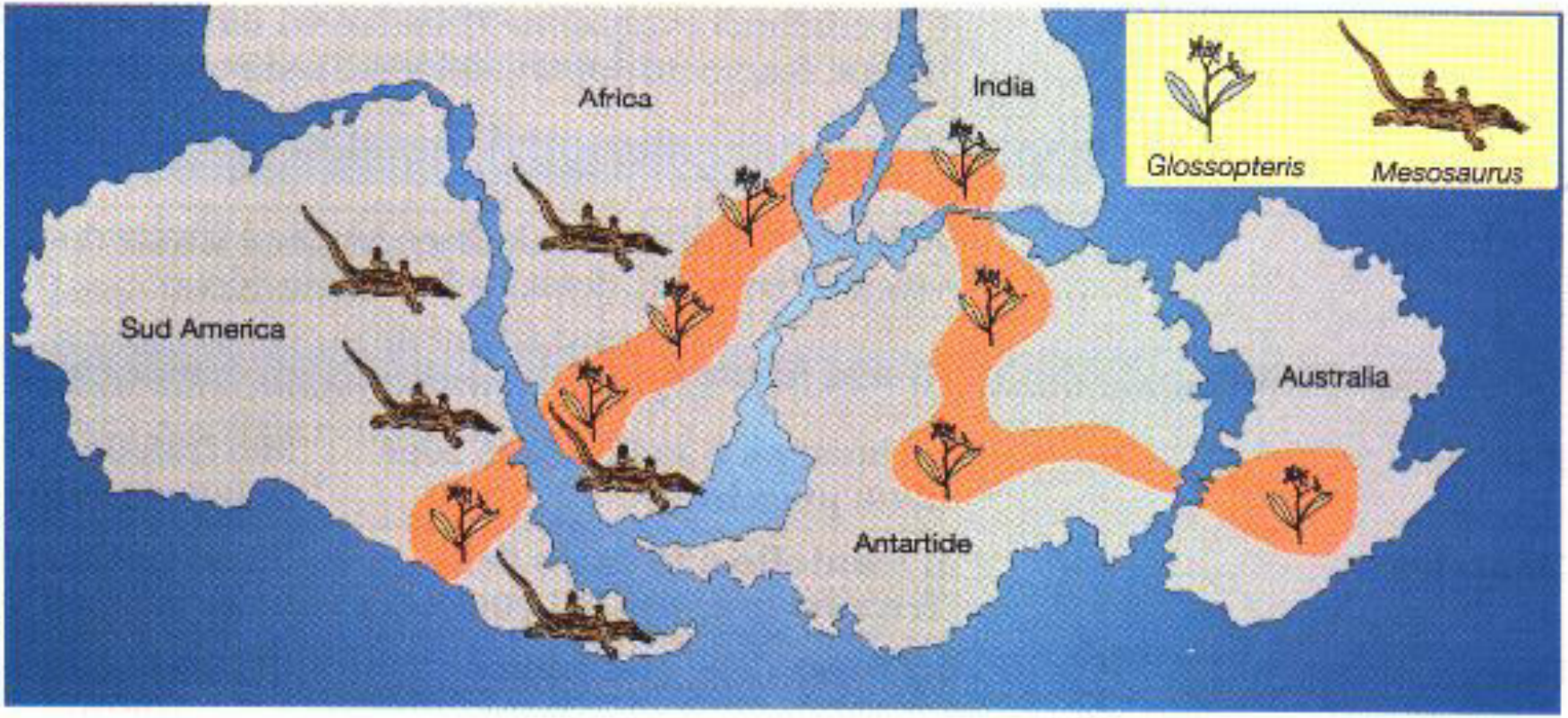


Da un unico continente alle terre emerse

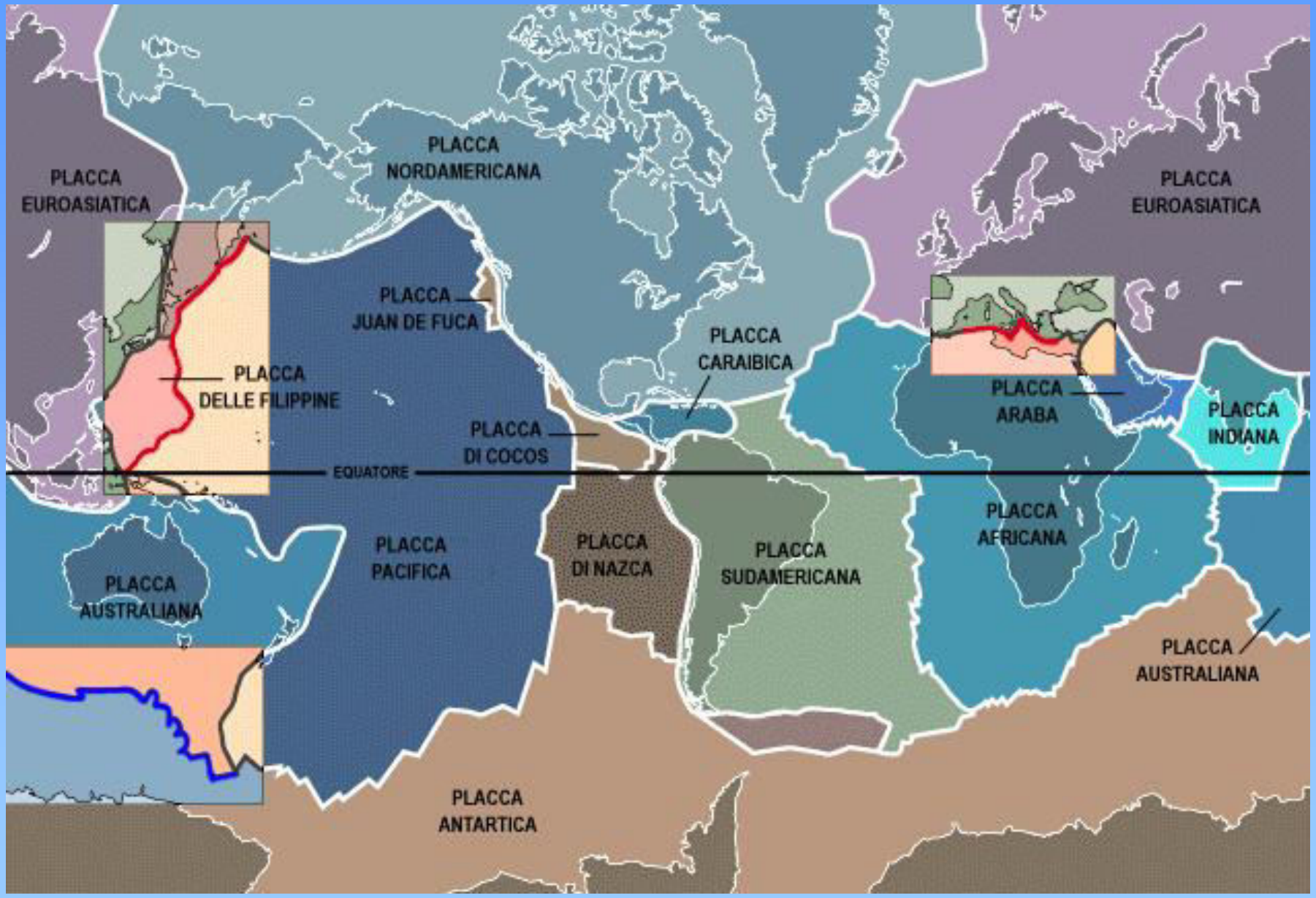

continental drift
200 Mya
130 Mya
today
70 Mya

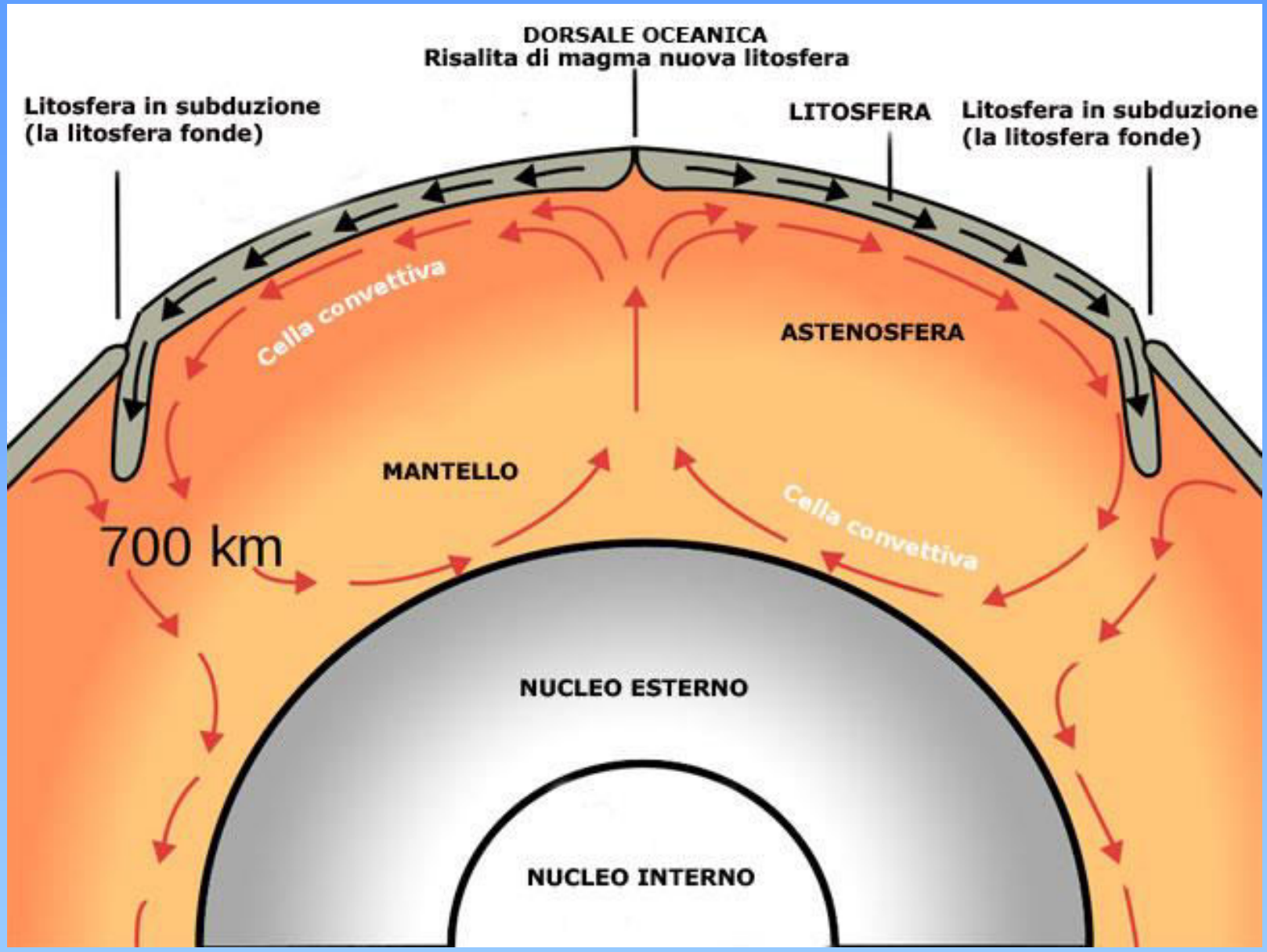


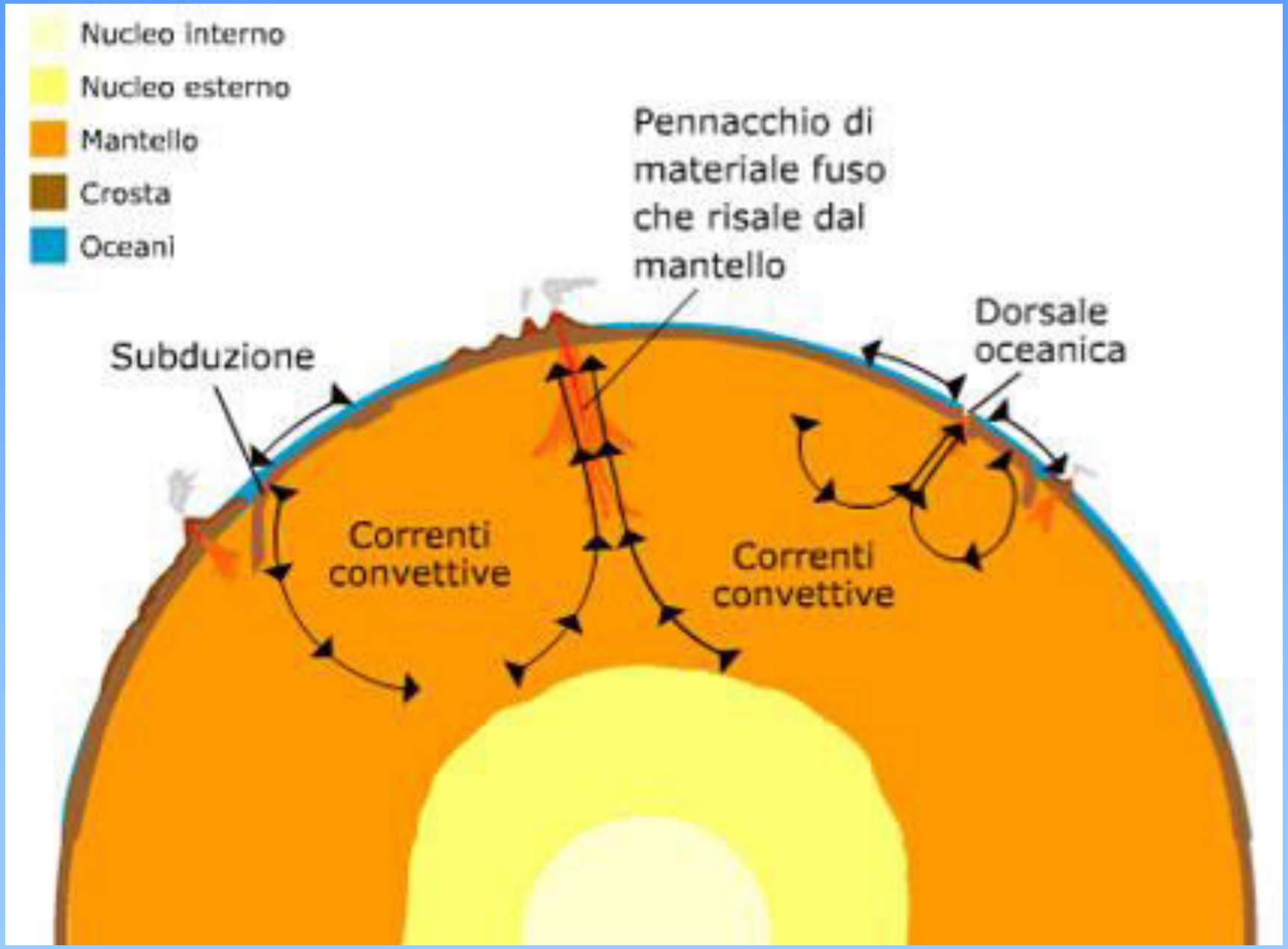
Prove a sostegno di una teoria

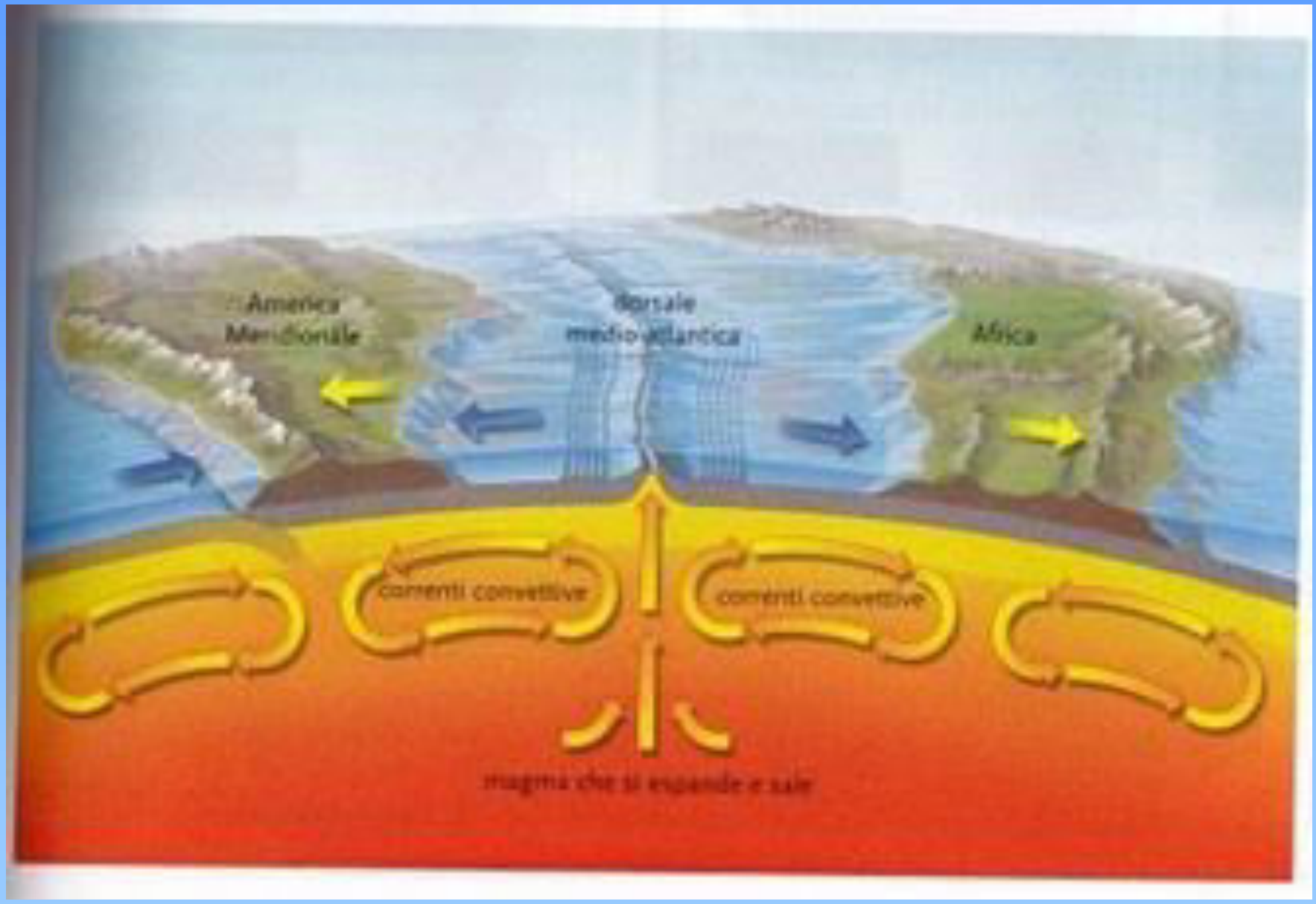

Africa
India
Sud America
Australia
Antartide
Glossopteris
Mesosaurus

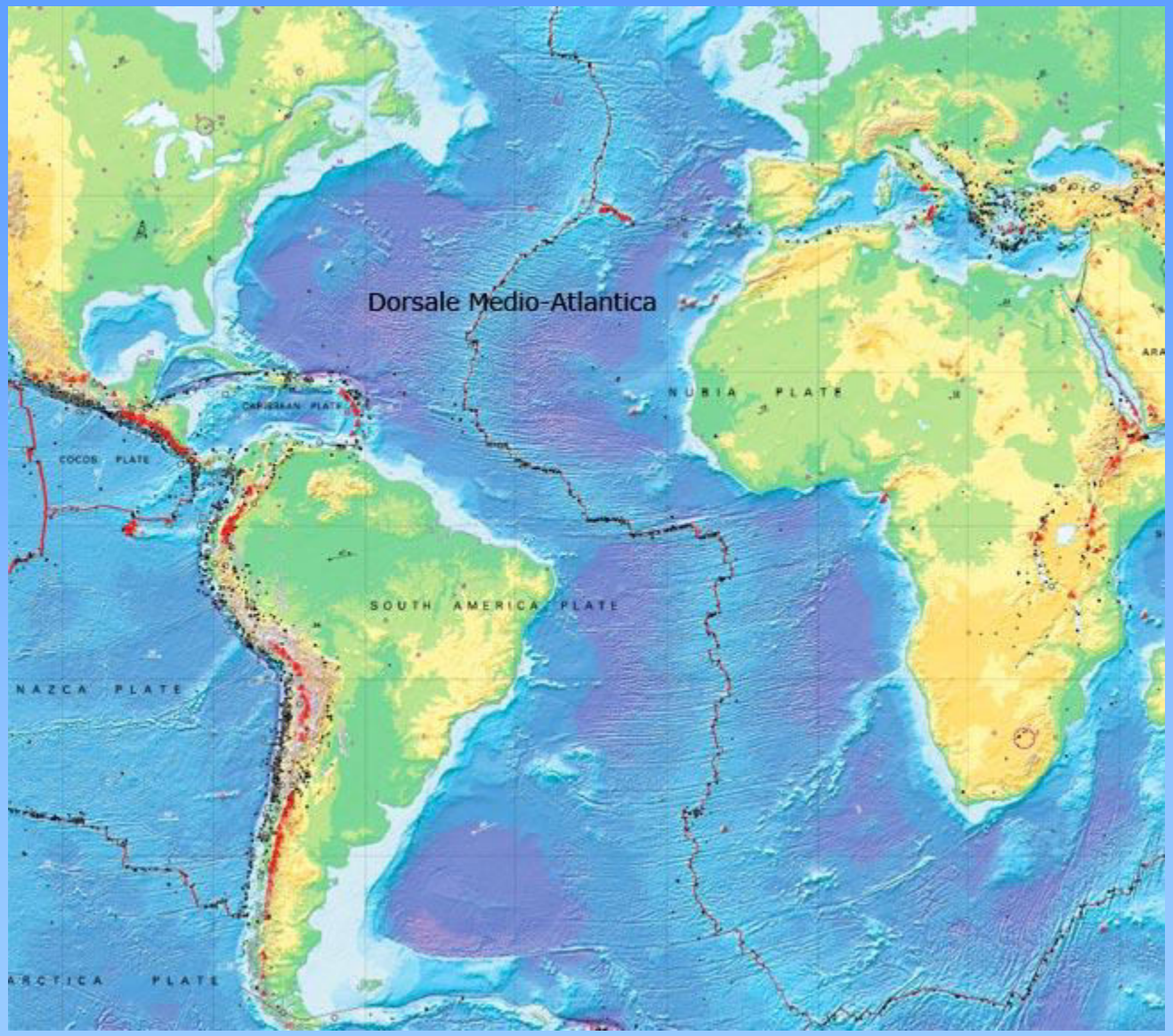
La tettonica delle placche

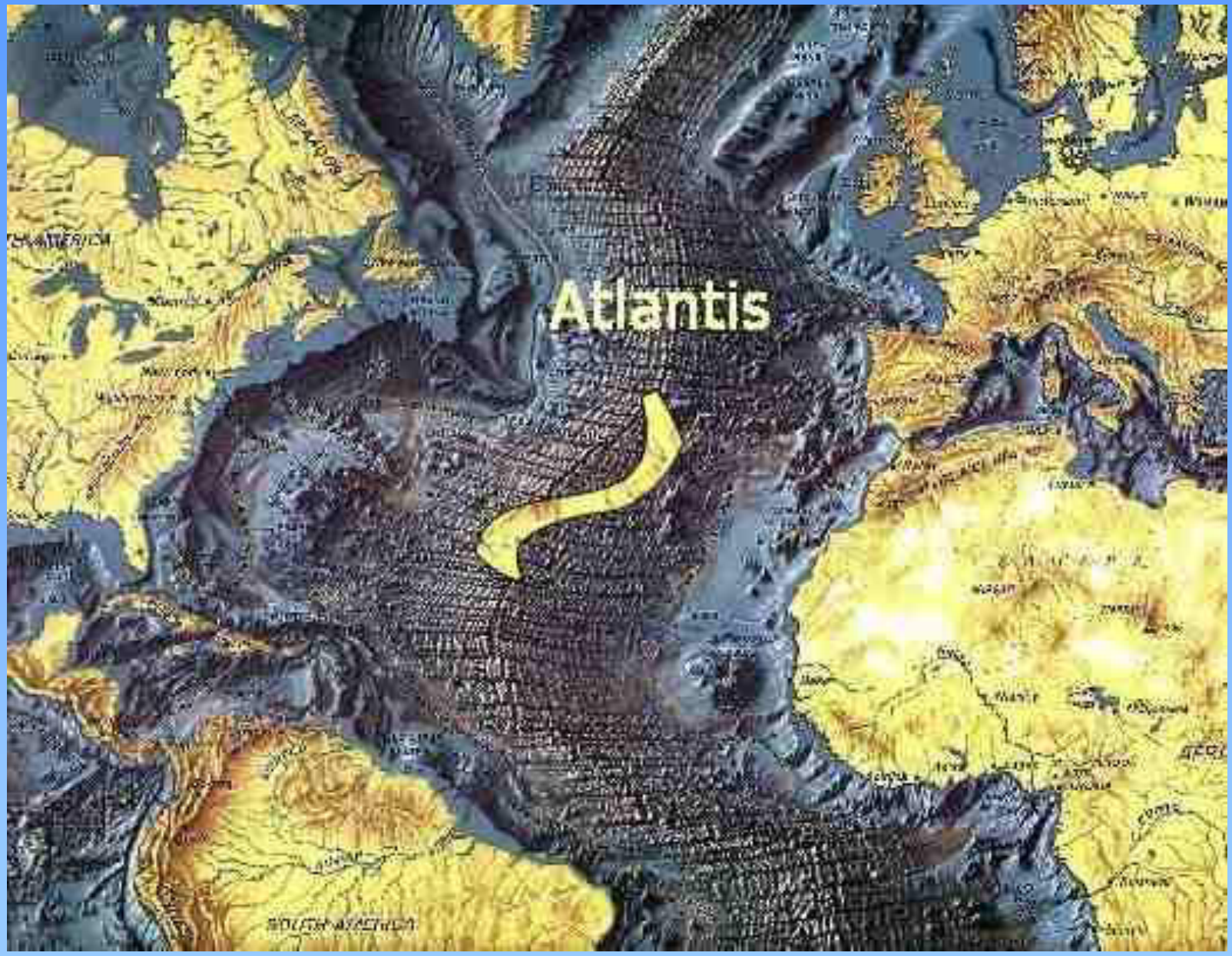

PLACCA EUROASIATICA
PLACCA NORDAMERICANA
PLACCA EUROASIATICA
PLACCA JUAN DE FUCA
PLACCA CARAIBICA
PLACCA DELLE FILIPPINE
PLACCA ARABA
PLACCA INDIANA
PLACCA DI COCOS
EQUATORE
PLACCA PACIFICA
PLACCA DI NAZCA
PLACCA SUDAMERICANA
PLACCA AFRICANA
PLACCA AUSTRALIANA
PLACCA AUSTRALIANA
PLACCA ANTARTICA


DORSALE OCEANICA
Risalita di magma nuova litosfera
Litosfera in subduzione
(la litosfera fonde)
LITOSFERA
Litosfera in subduzione
(la litosfera fonde)
Cella convettiva
ASTENOSFERA
MANTELLO
700 km
Cella convettiva
NUCLEO ESTERNO
NUCLEO INTERNO

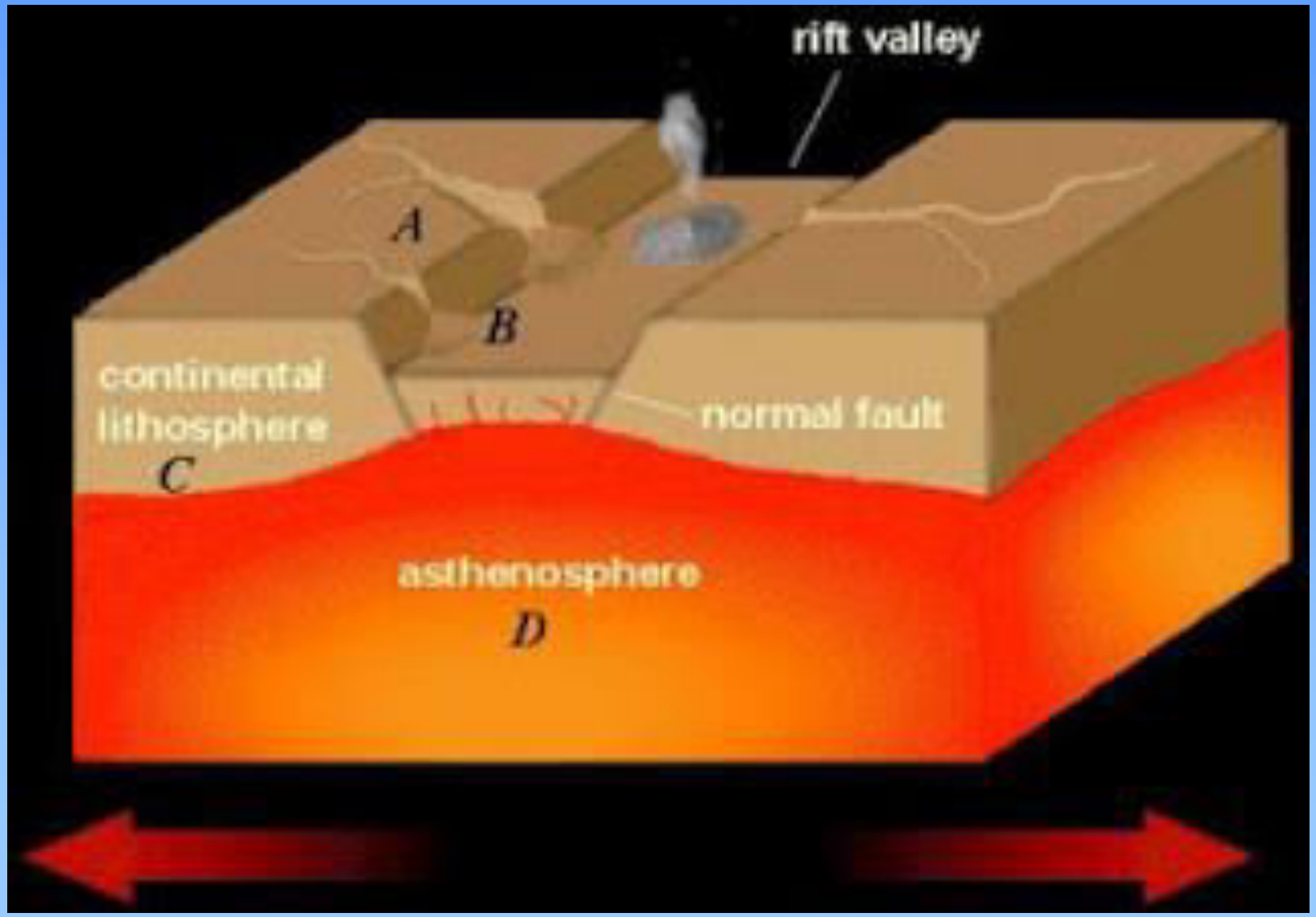

Nucleo interno
Nucleo esterno
Mantello
Crosta
Oceani
Pennacchio di materiale fuso che risale dal mantello
Subduzione
Dorsale oceanica
Correnti convettive
Correnti convettive

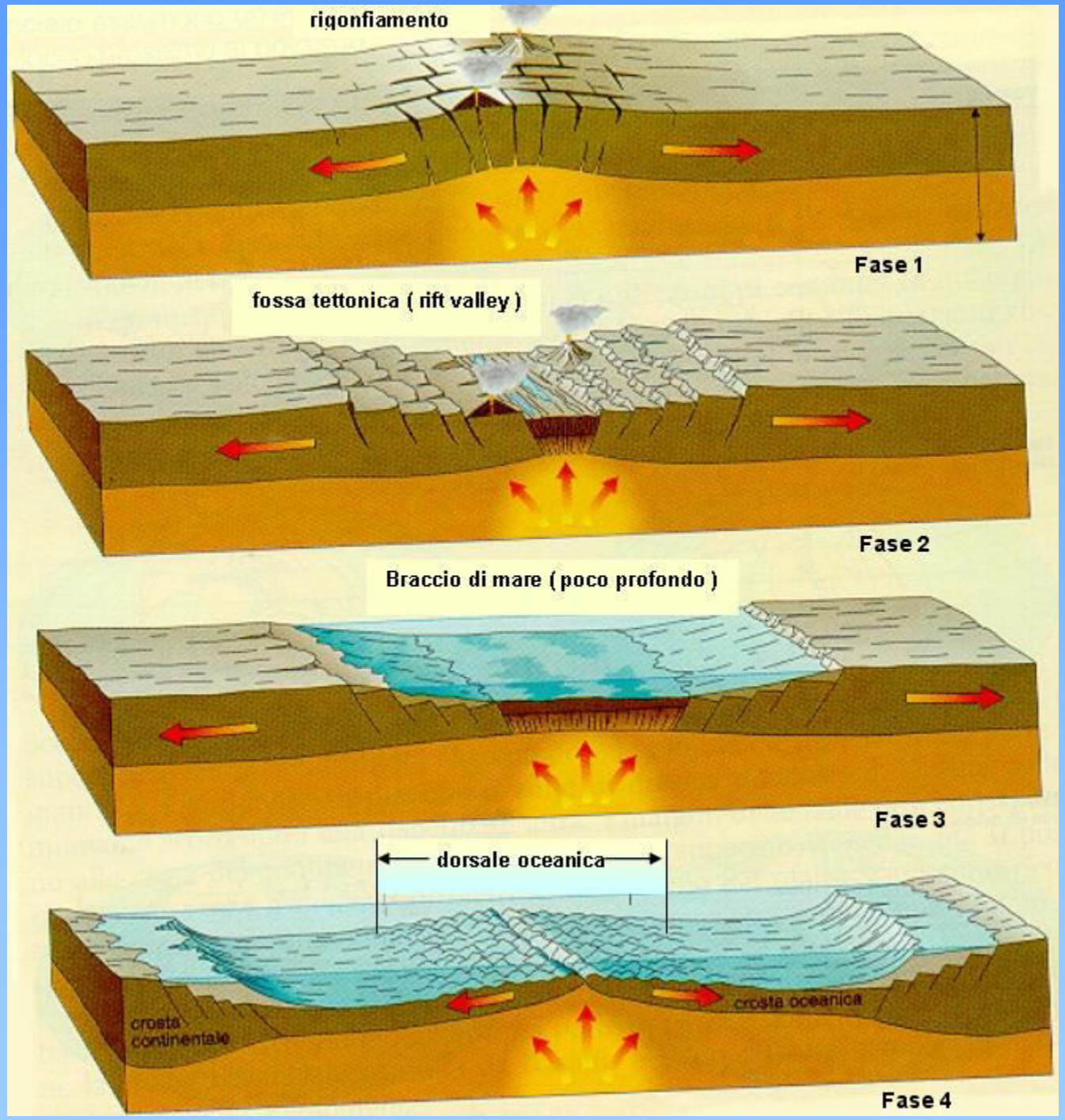

America
Meridionale
dorsale
medio-atlantica
Africa
correnti convettive
correnti convettive
magma che si espande e sale

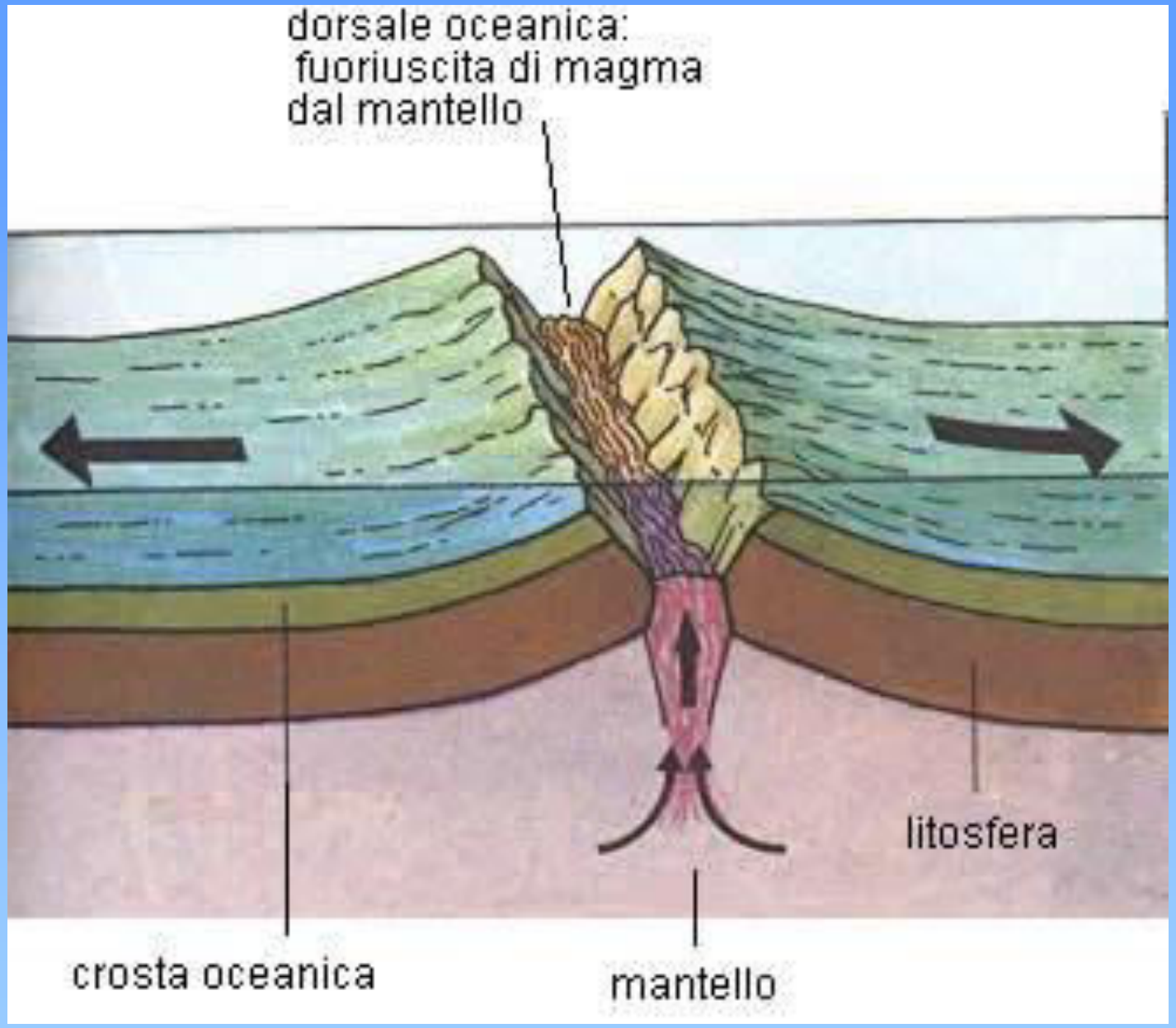

Dorsale Medio-Atlantica
NUBIA PLATE
COCOS PLATE
SOUTH AMERICA PLATE
NAZCA PLATE
PLATE

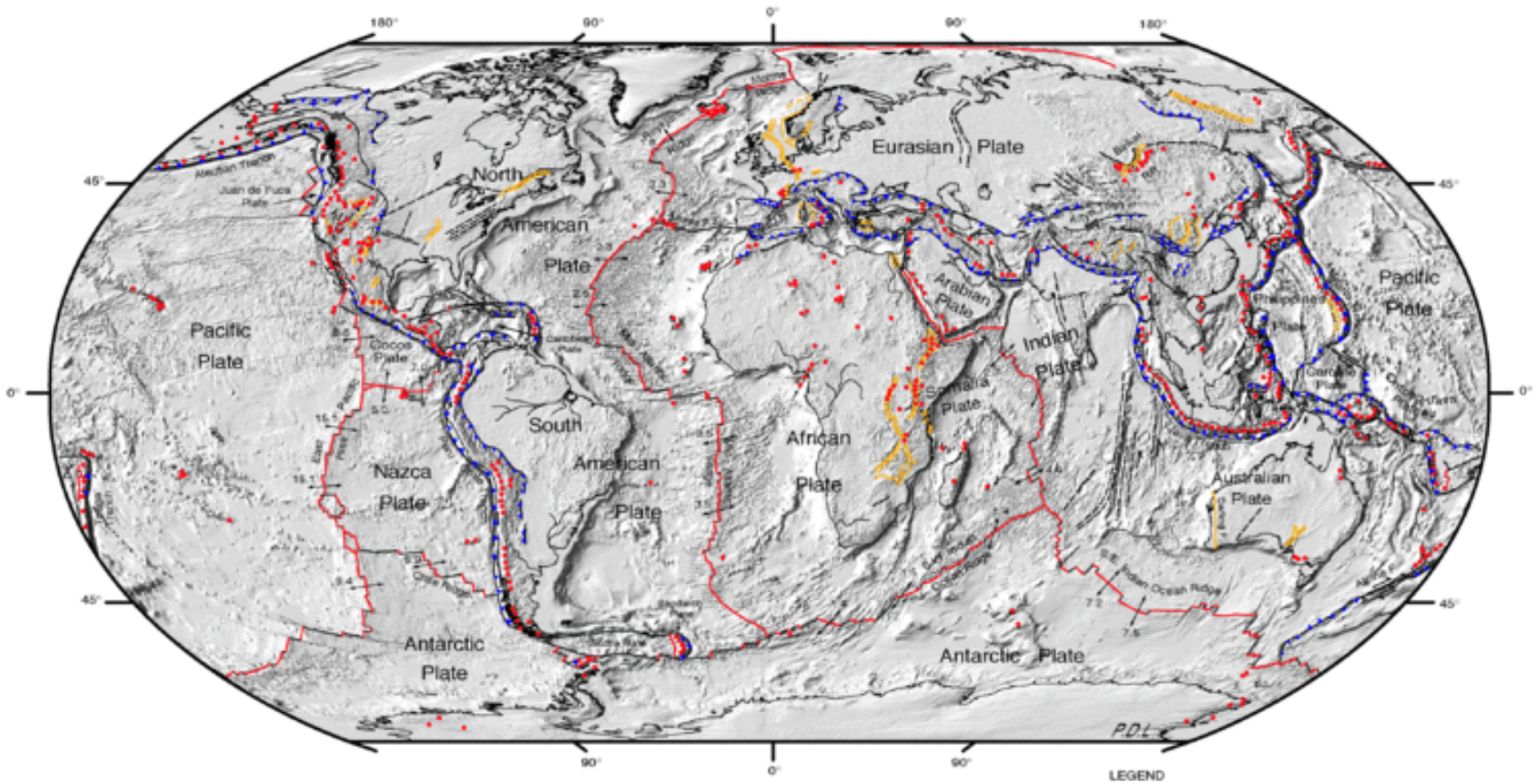

Atlantis


allargamento dei
fondali oceanici
america
dorsale
medio-atlantica
africa
mantello


rift valley
A
B
continental
lithosphere
C
normal fault
asthenosphere
D


rigonfiamento
Fase 1
fossa tettonica (rift valley)
Fase 2
Braccio di mare (poco profondo)
Fase 3
dorsale oceanica
crosta continentale
crosta oceanica
Fase 4


dorsale oceanica:
fuoriuscita di magma
dal mantello
litosfera
crosta oceanica
mantello



DIGITAL TECTONIC ACTIVITY MAP OF THE EARTH

Tectonism and Volcanism of the Last One Million Years

DTAM - 1

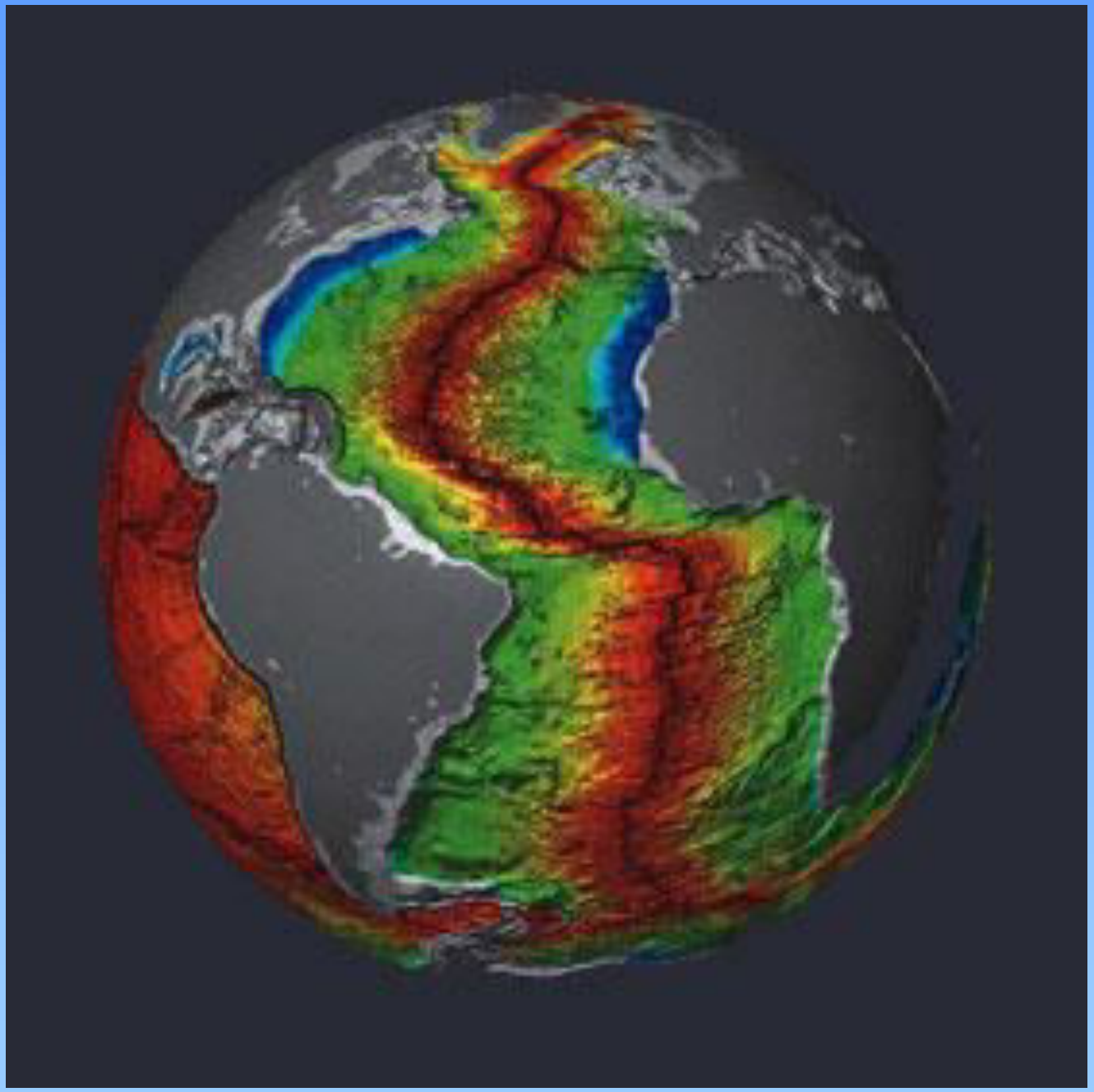
NASA/Goddard Space Flight Center
Greenbelt, Maryland 20771

Robinson Projection
October 2002

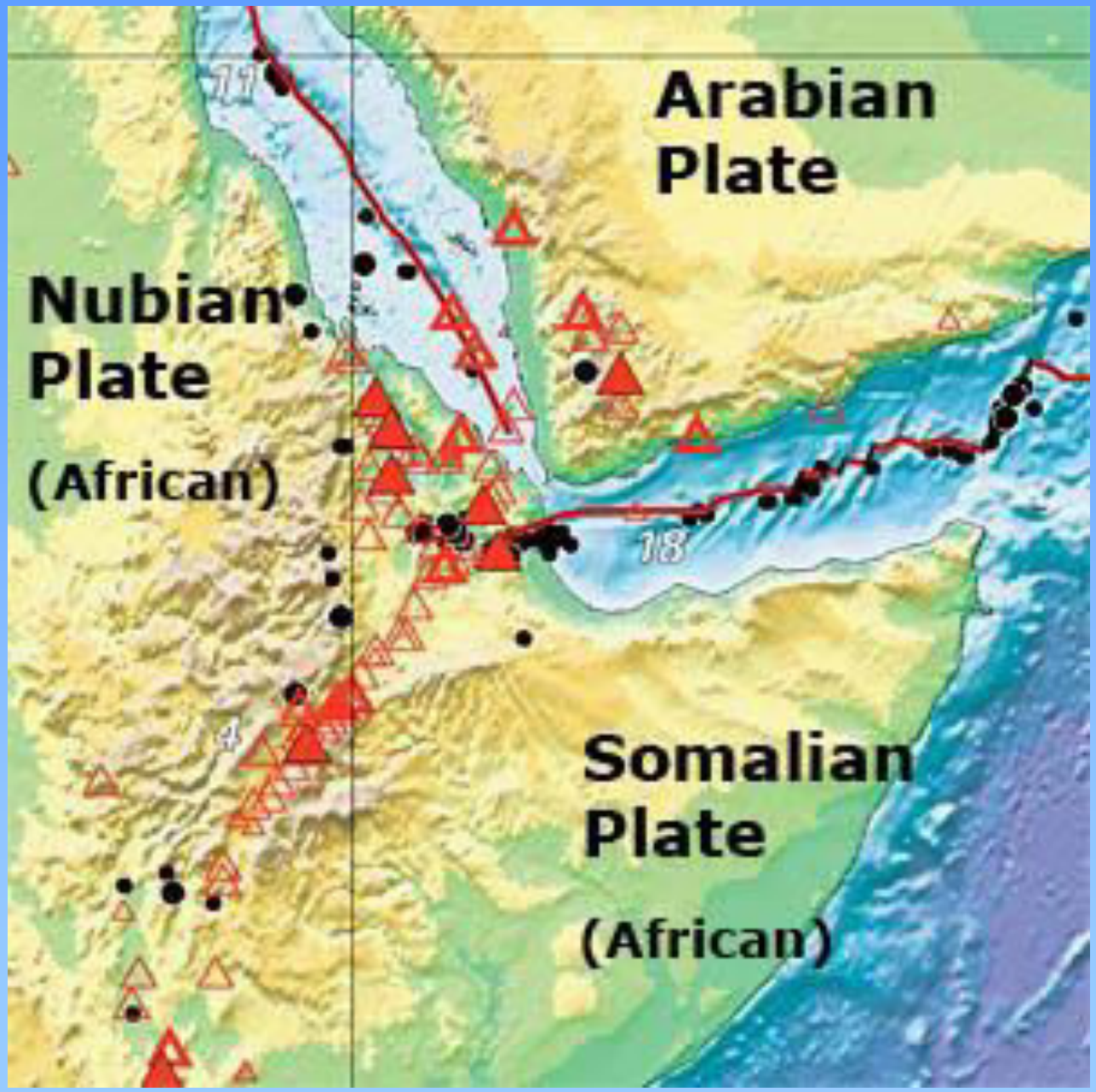
LEGEND

- Actively-spreading ridges and transform faults
- Total spreading rate, cm/year
- Major active fault or fault zone; dashed where nature, location, or activity uncertain
- Normal fault or rift; hachures on downthrown side
- Reverse fault (overthrust, subduction zones); generalized; barbs on upthrown side
- Volcanic centers active within the last one million years; generalized. Minor basaltic centers and seamounts omitted.

G221.001

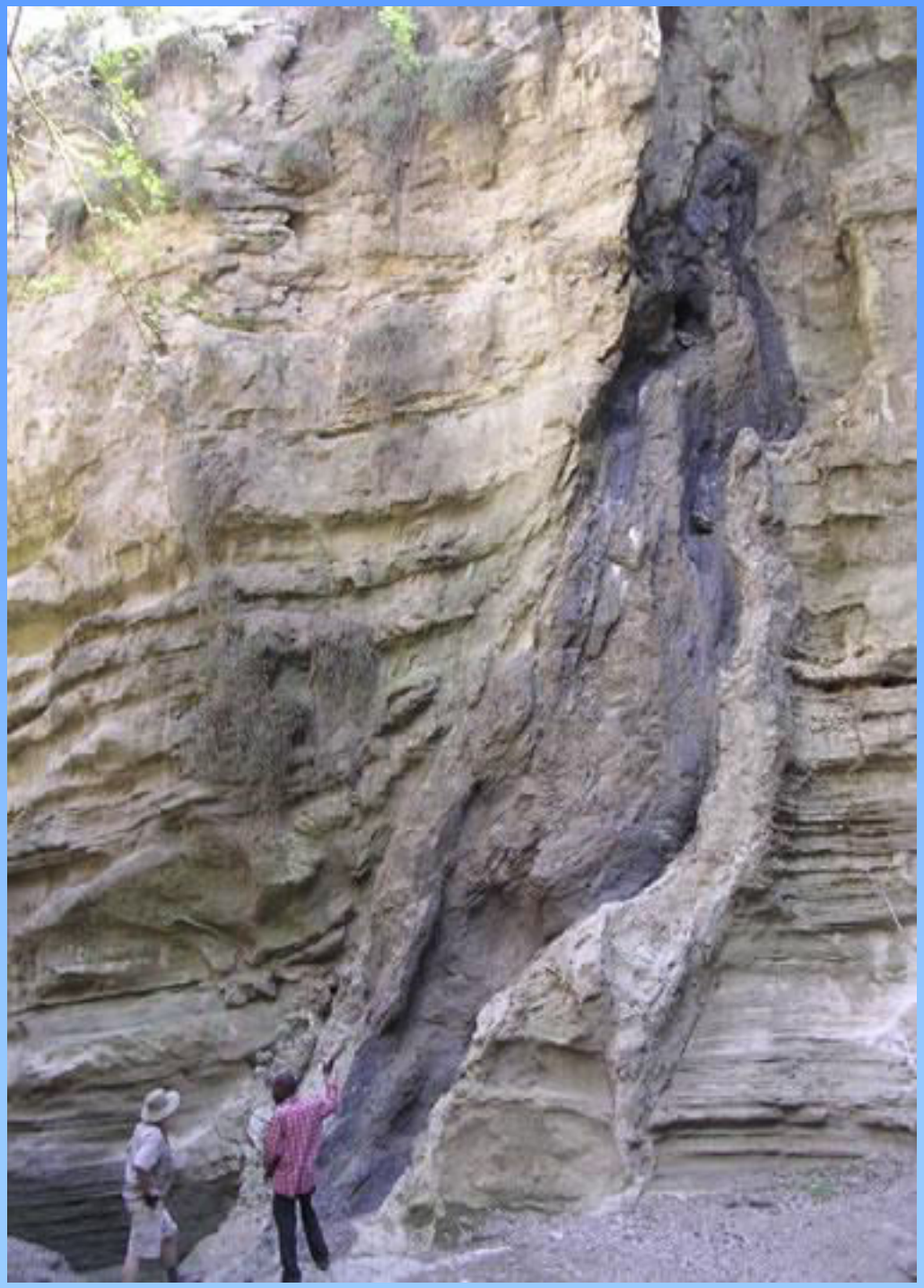



Limite de plaque tectonique
Vallée du grand rift
Volcan
Golfe Persique
PLAQUE EURASIENNE
PLAQUE ARABIQUE
Mer Rouge
Golfe D'Aden
PLAQUE INDIENNE
PLAQUE AFRICAINE
Ol Doinyo Lengaï
Lac Victoria
Lac Tanganyika
Lac Malawi
PLAQUE SOMALIENNE
En cours de formation
OCÉAN INDIEN


Arabian
Plate
Nubian
Plate
(African)
Somalian
Plate
(African)

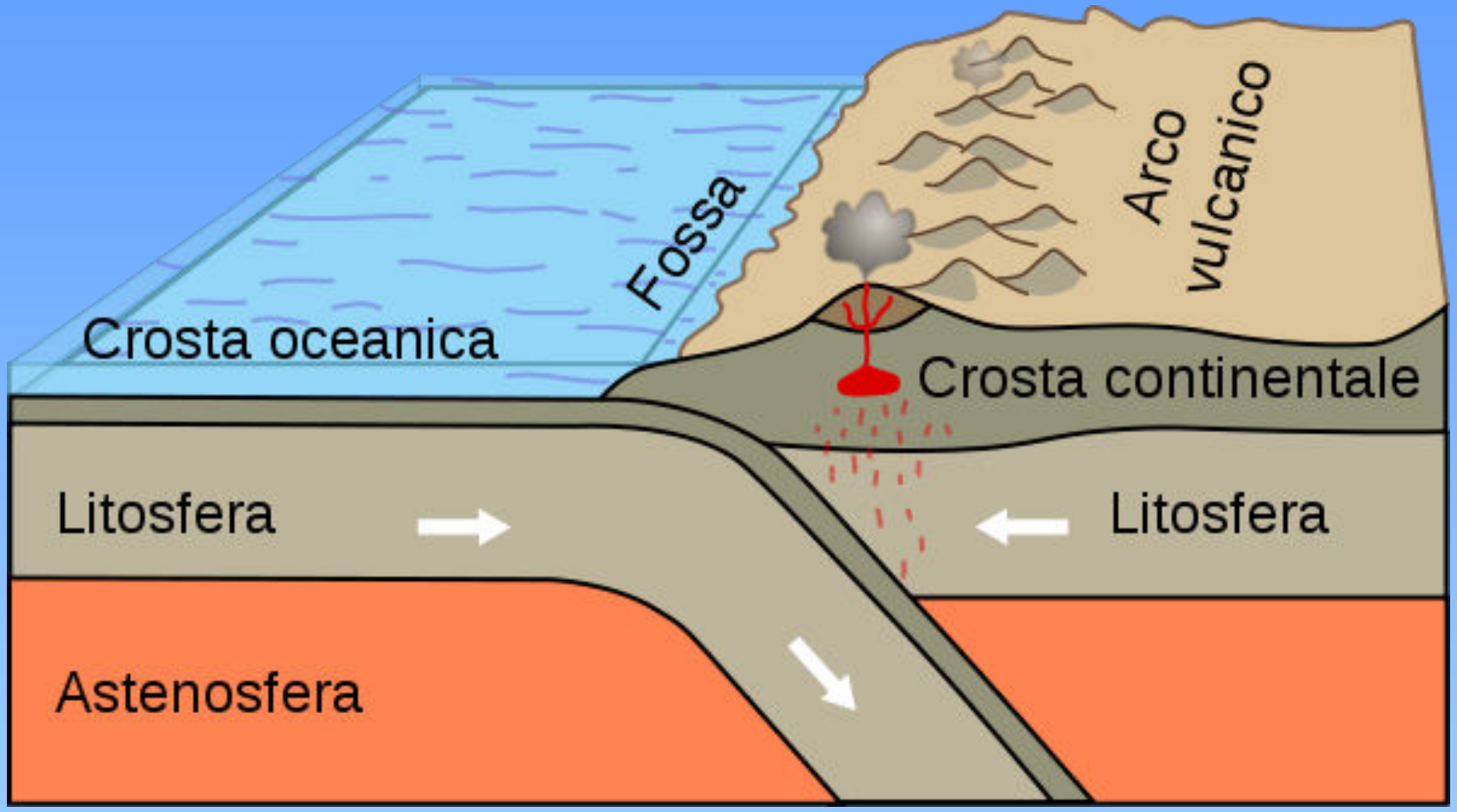

Arabian Plate
Nubian (African) Plate
Ethiopian Dome
Somalian Plate
Kenya Dome
Plate Boundary
Developing Plate Boundary
Dome Boundaries

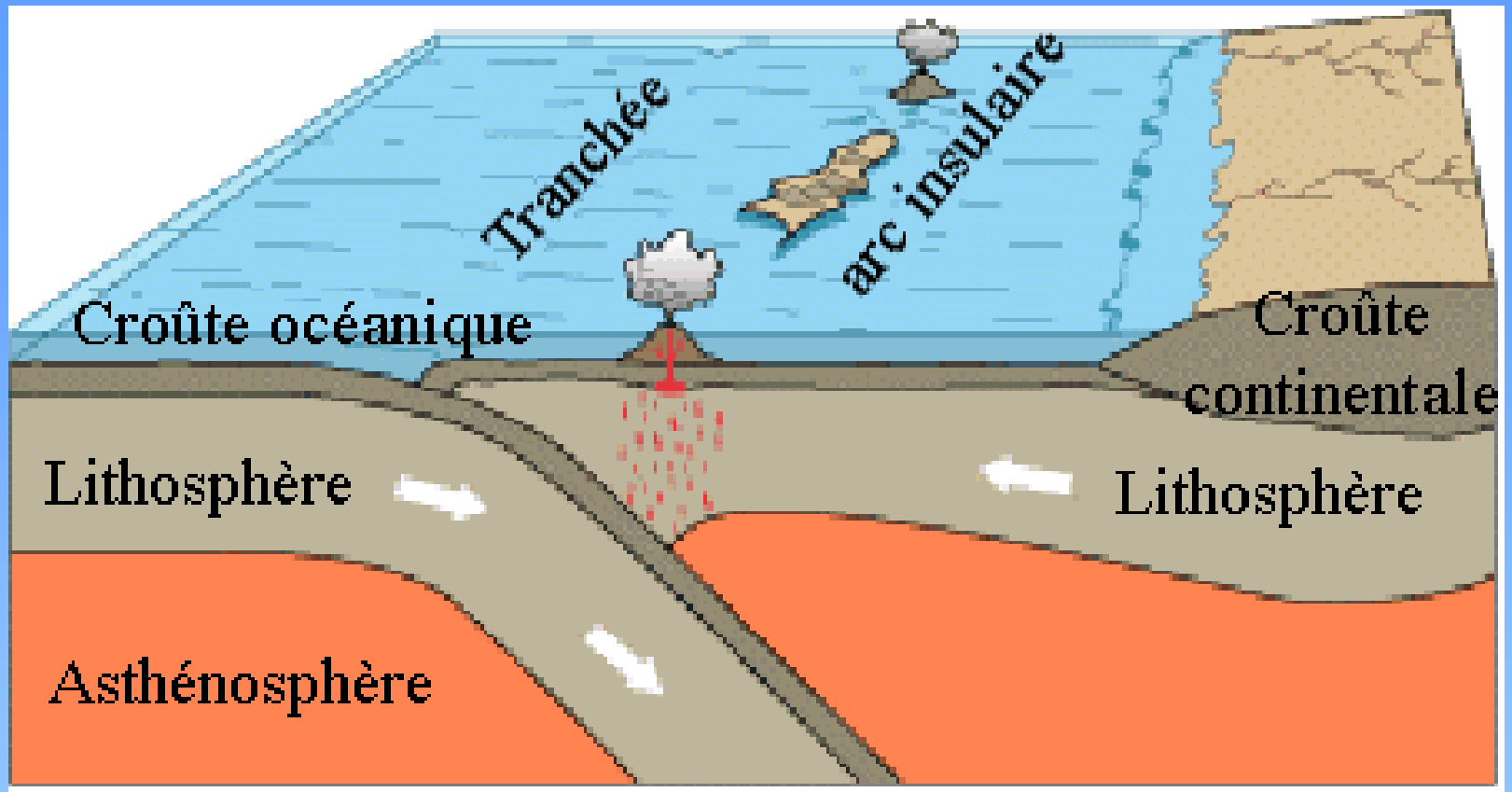

Red Sea
Gulf of Aden
Ethiopian Rift
East African Rift
Western Branch
Eastern Branch
?



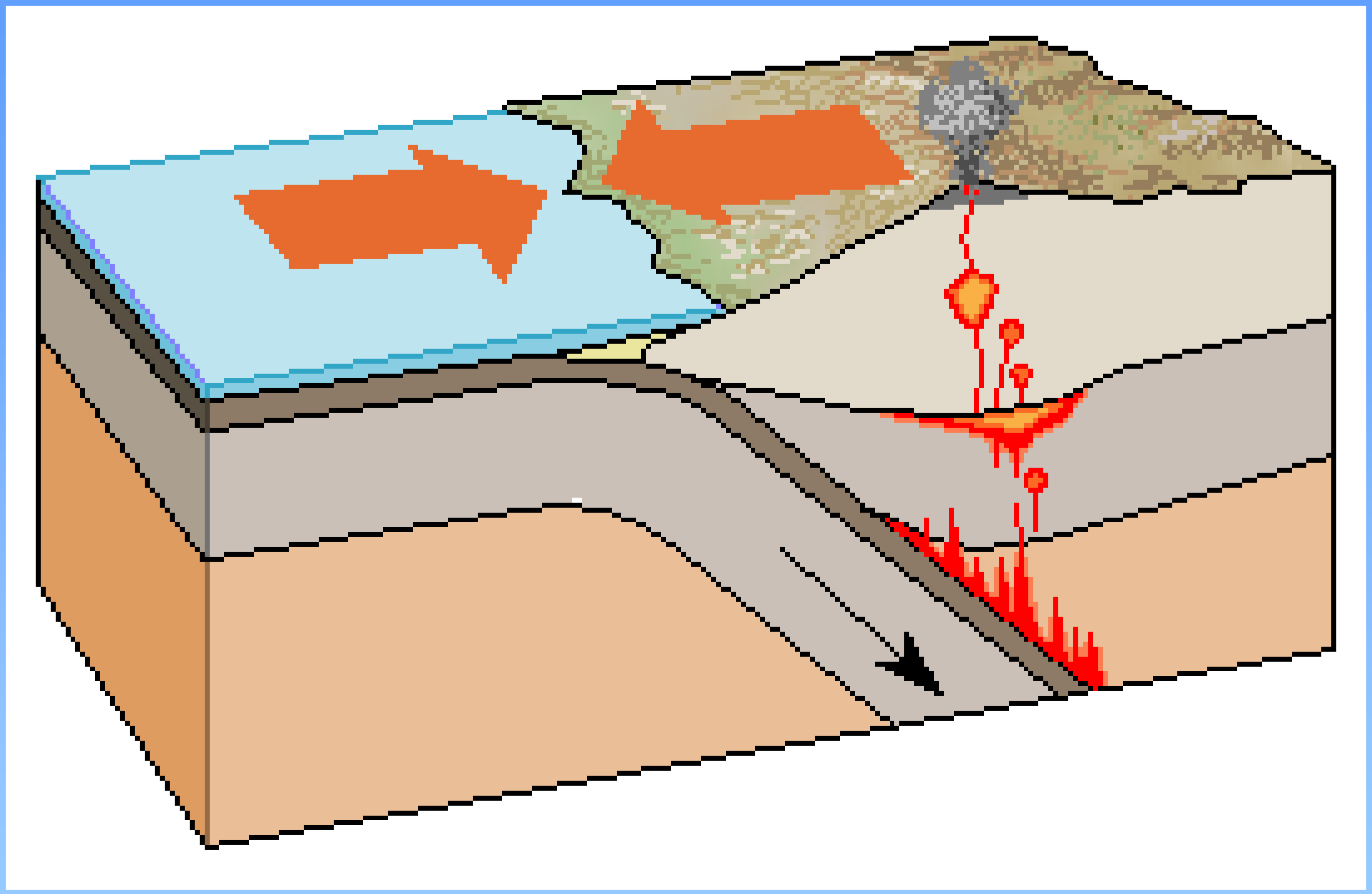

California's
San Andreas Fault
Crescent City
Eureka
Garberville
Point Delgada
Point Arena
Ukiah
Santa Rosa
Point Reyes
San Francisco
Daly City
San Jose
Santa Cruz
Hollister
San Juan Bautista
Monterey
Parkfield
San Luis Obispo
Simmler
Carrizo Plain
Soda Lake Rd
Frazier Park
Palmdale
Santa Barbara
San Bernardino
Desert Hot Springs
Los Angeles
Palm Springs
Brawley
San Diego
San Andreas Fault
Map copyright © 2006 David K. Lynch

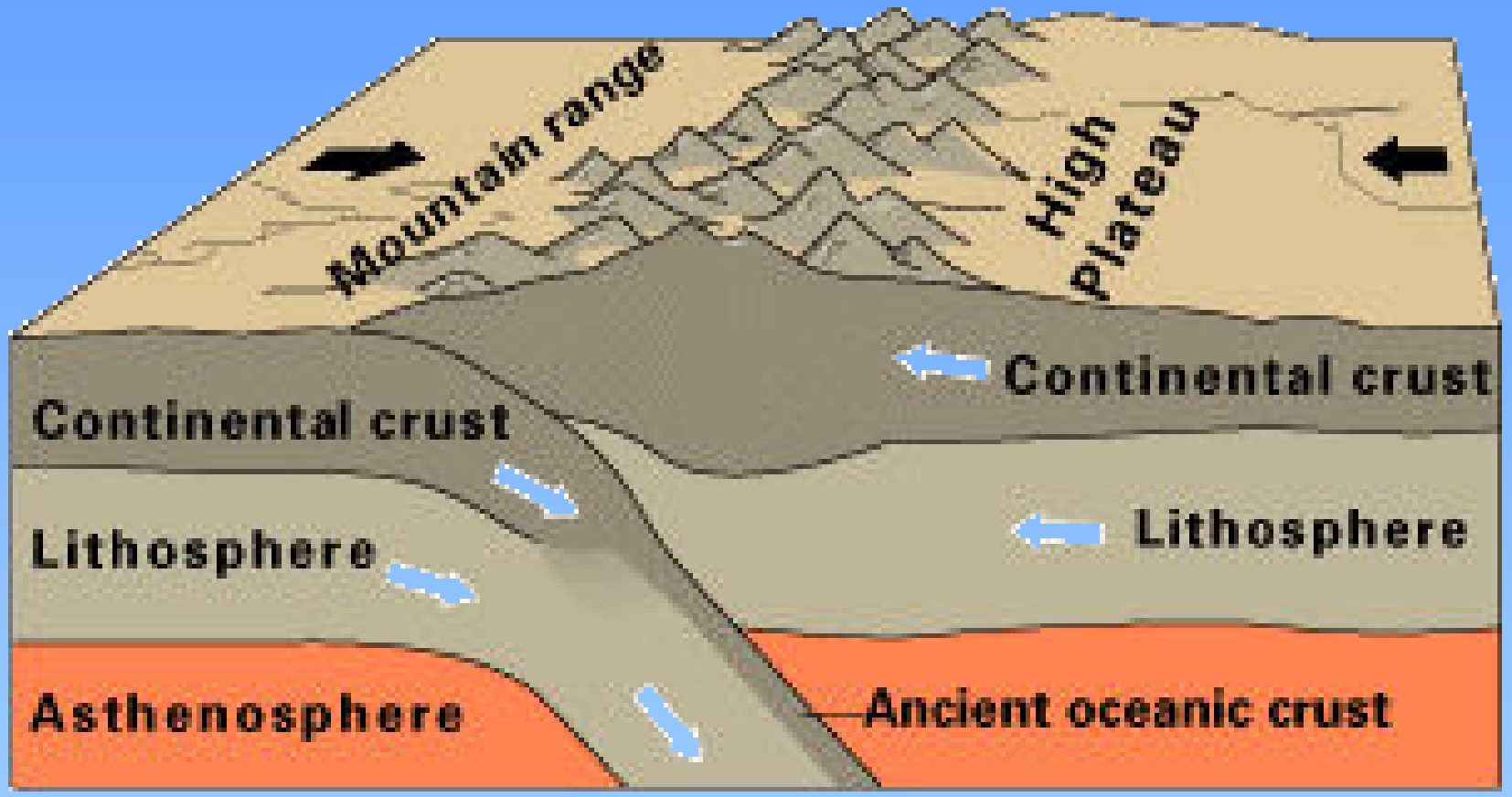

Explorer ridge
Juan de Fuca ridge
Blanco fracture zone
Mendocino fracture zone
Murray fracture zone
Molokai fracture zone
Subduction zone
CANADA
UNITED STATES
MEXICO
San Francisco
Los Angeles
San Andreas fault
East Pacific Rise
Relative motion of North American Plate
Relative motion of Pacific Plate


Fossa
Arco vulcanico
Crosta oceanica
Crosta continentale
Litosfera
Litosfera
Astenosfera

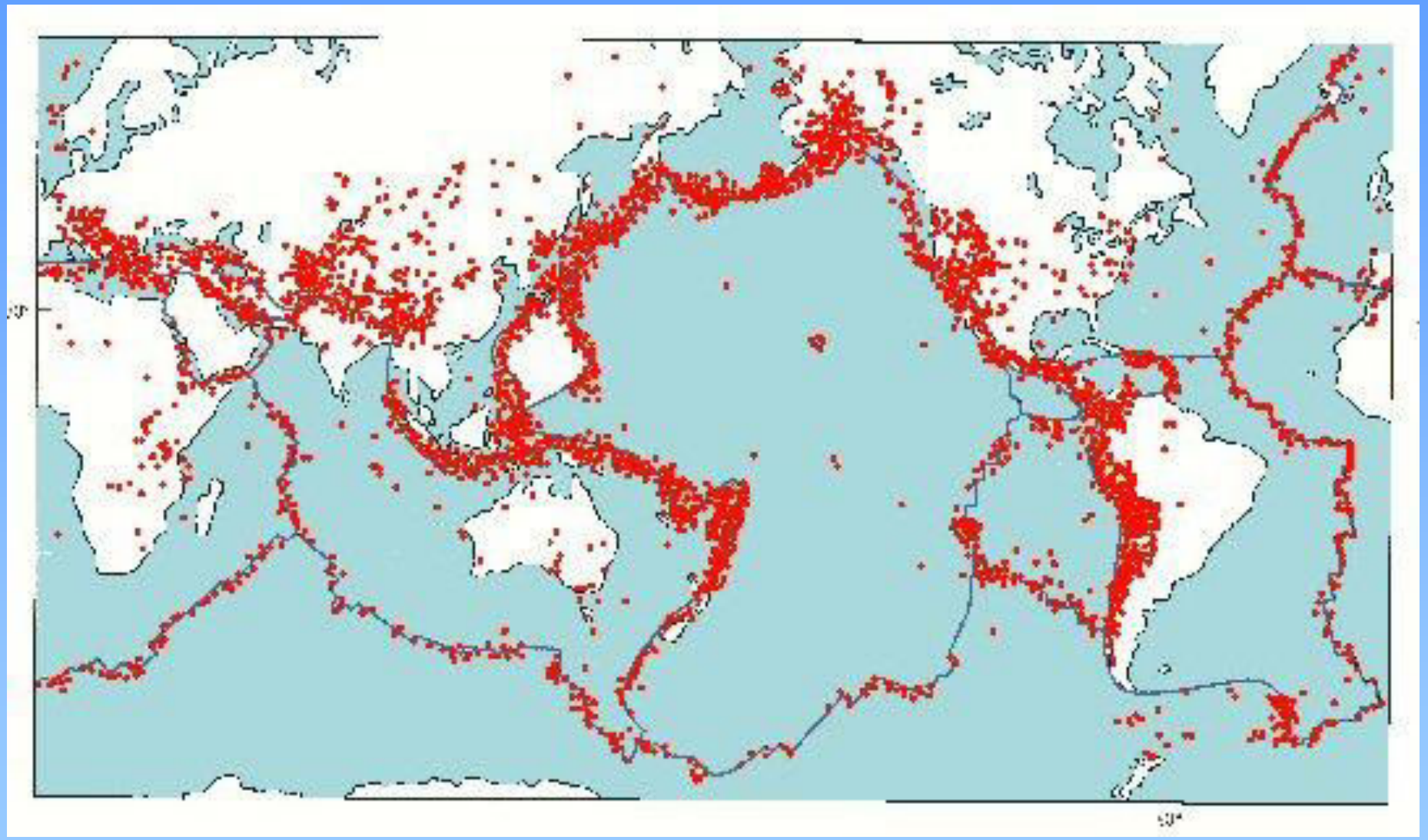


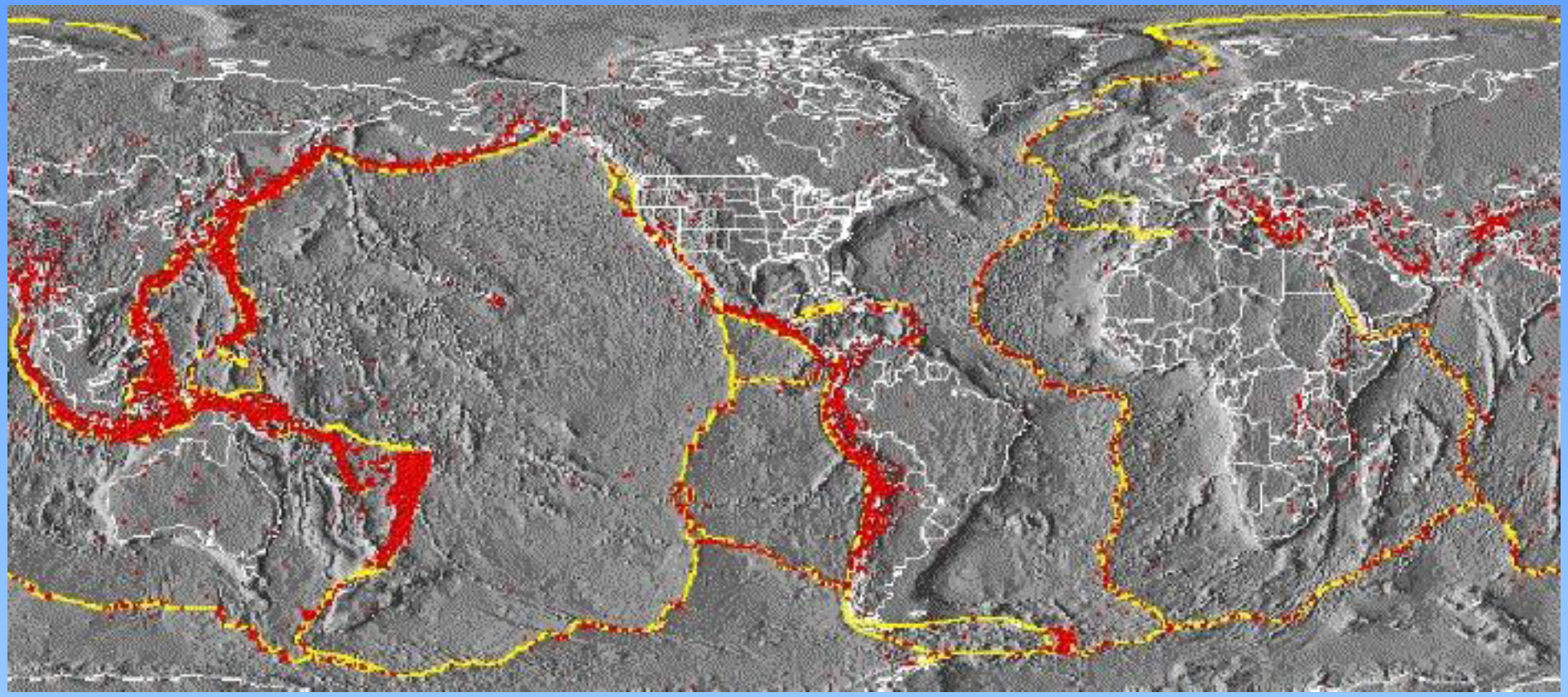
Convergence océan-océan

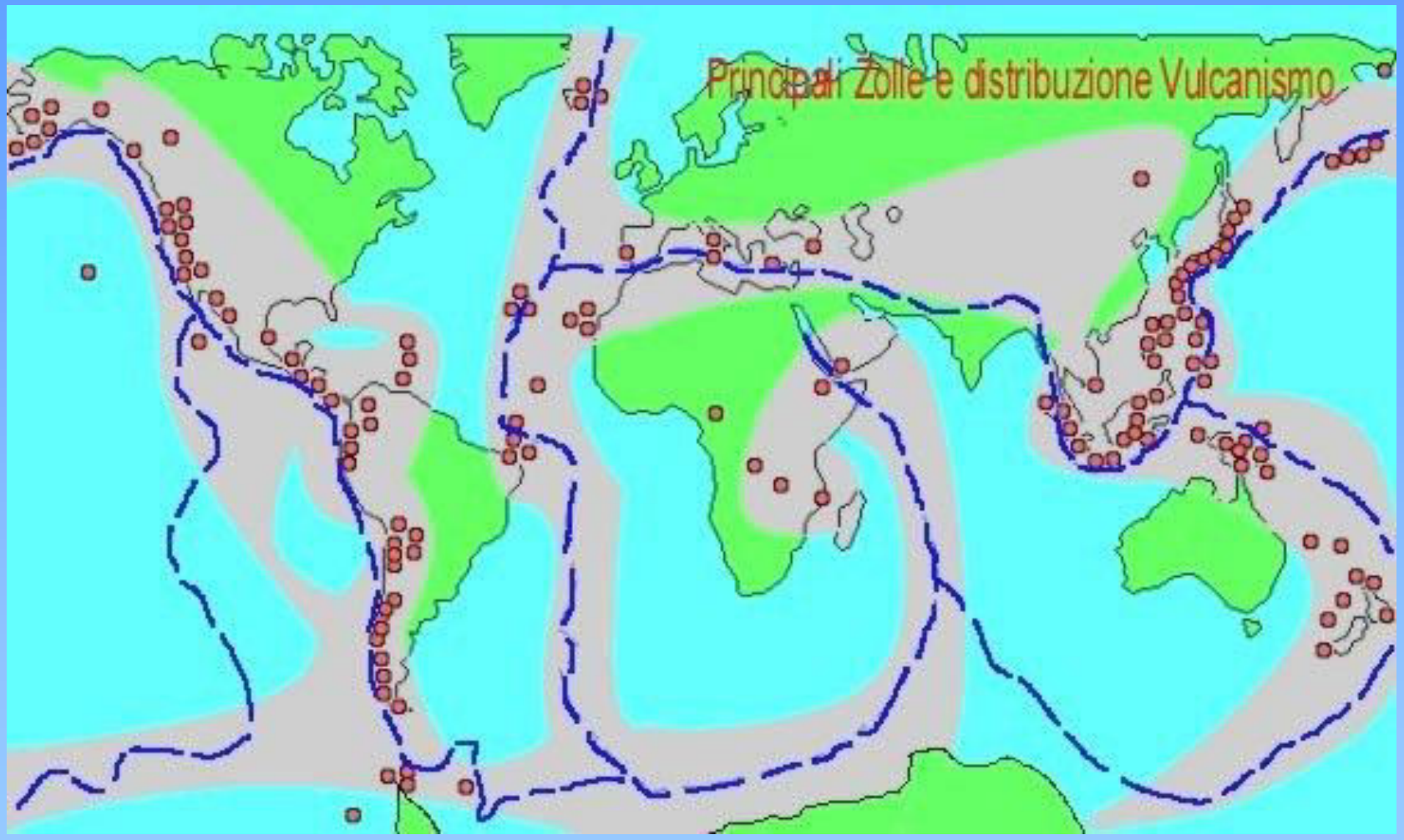




Continental-continental convergence






Principali Zolle e distribuzione Vulcanismo