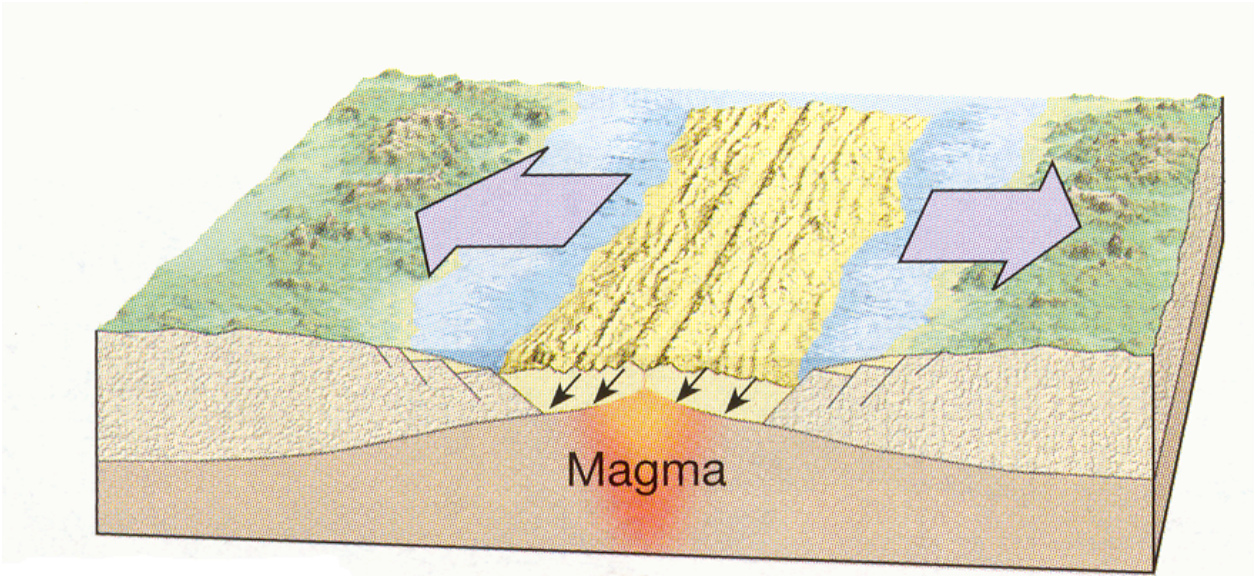
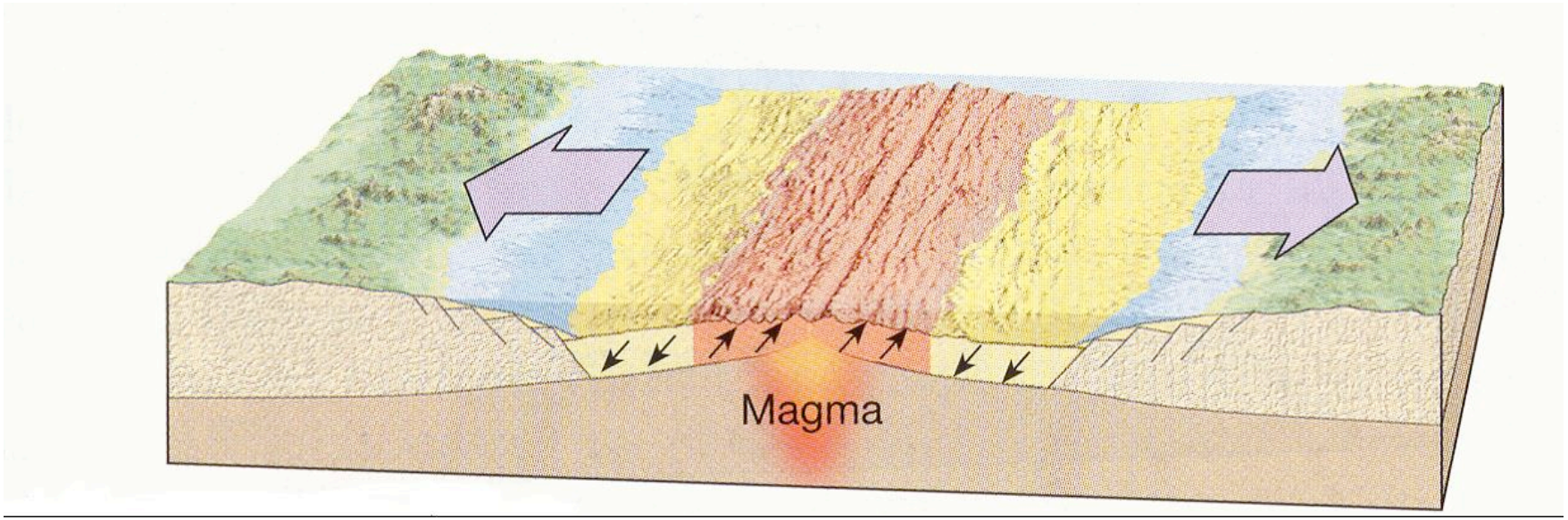
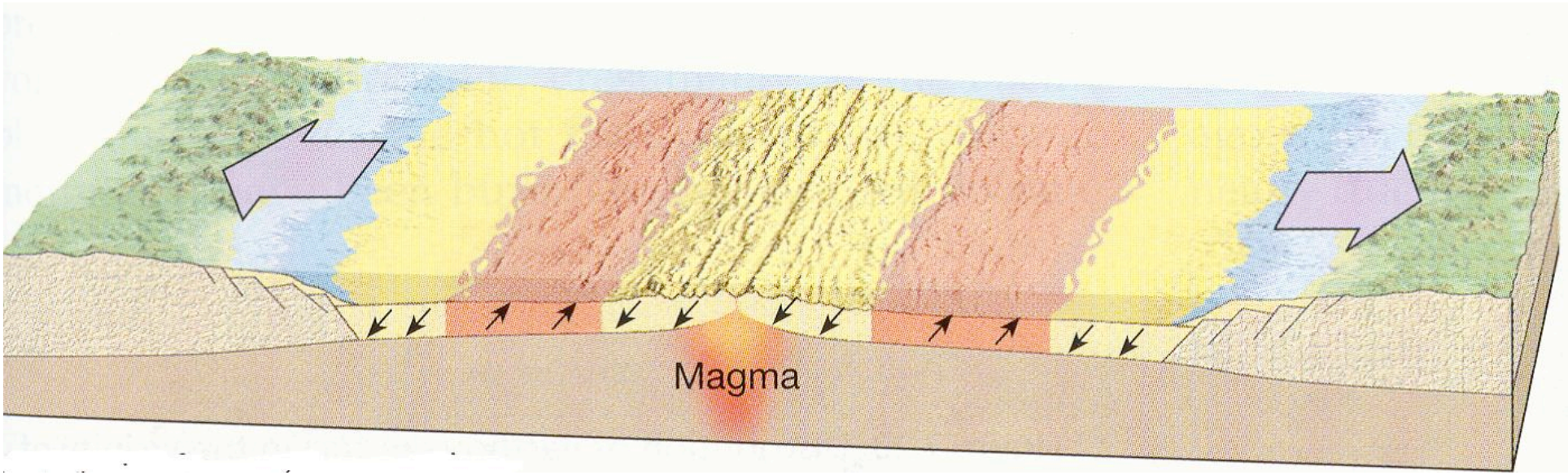
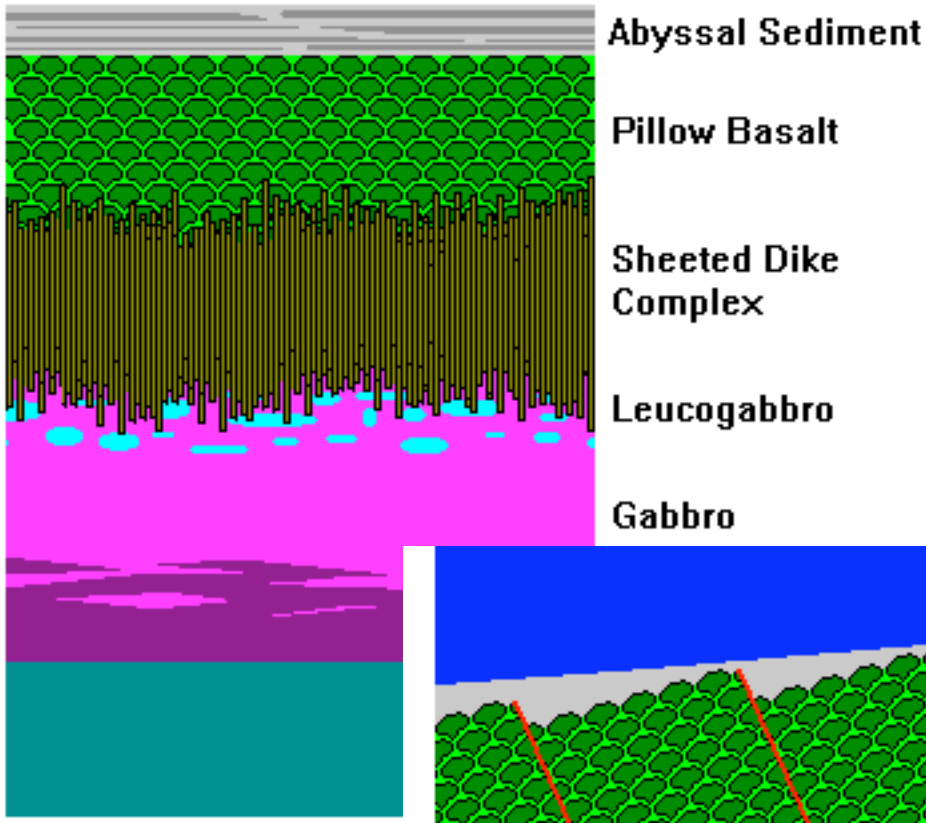

Magma

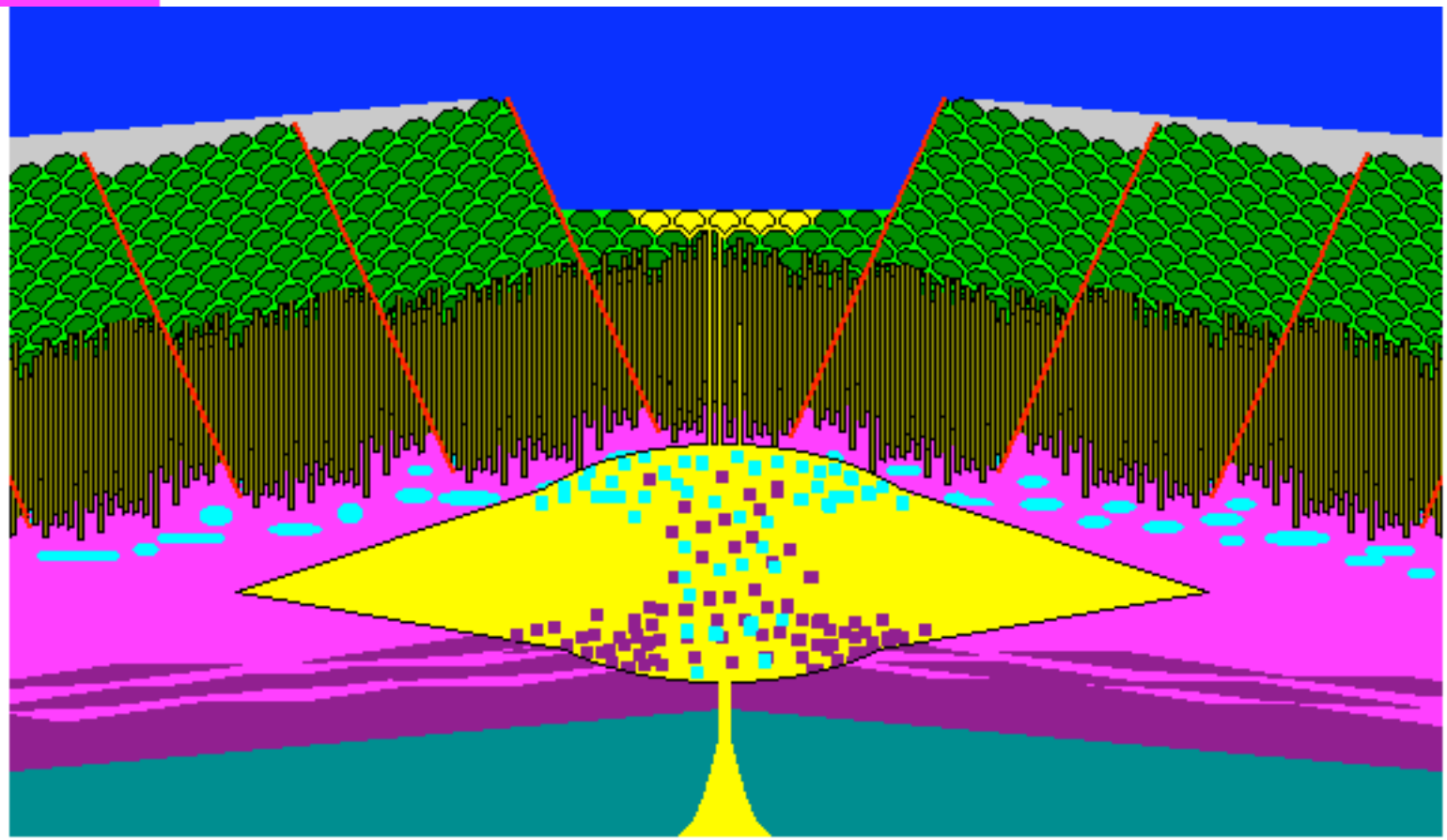

Magma

Oceanic lithosphere formed at MOR

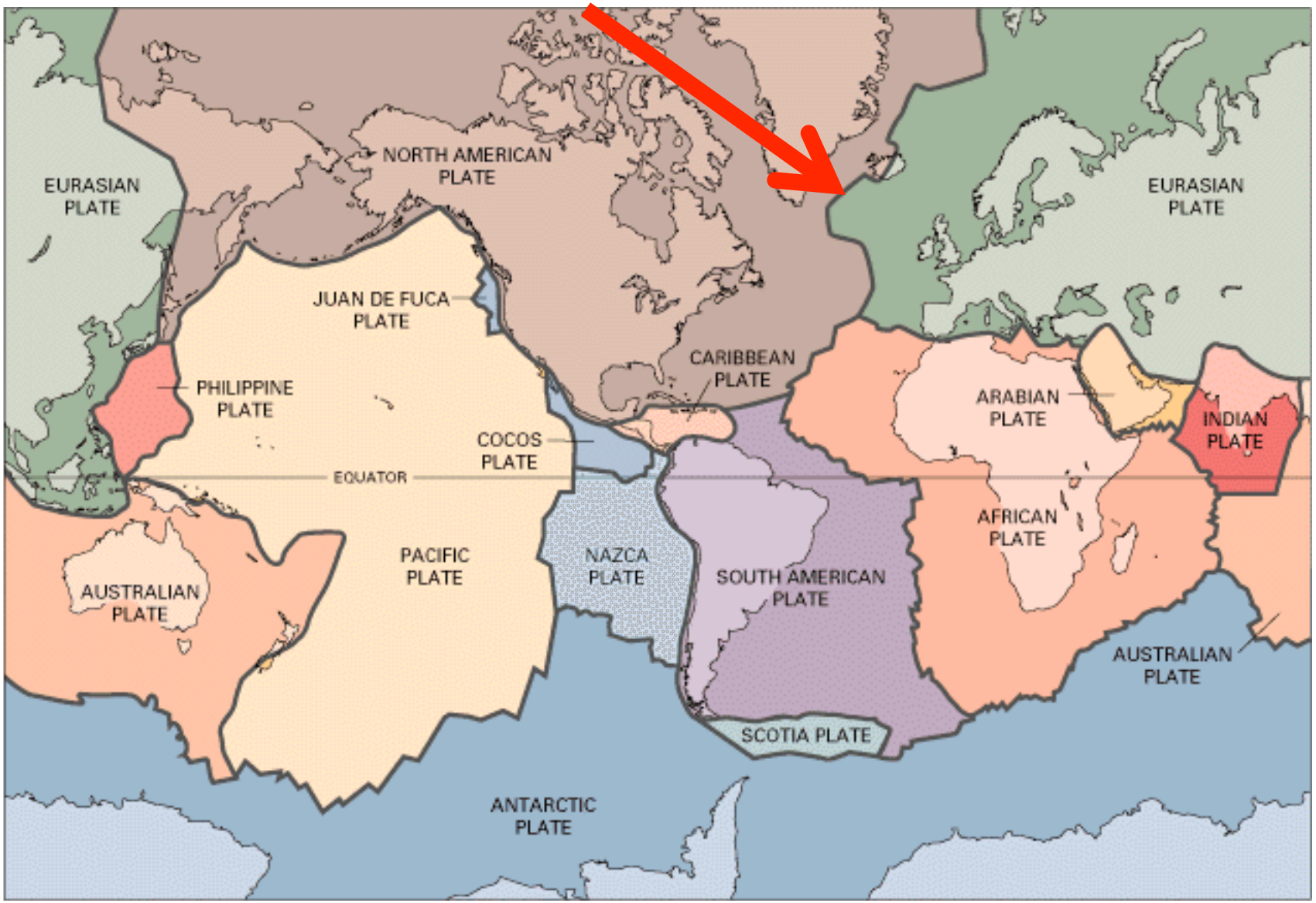




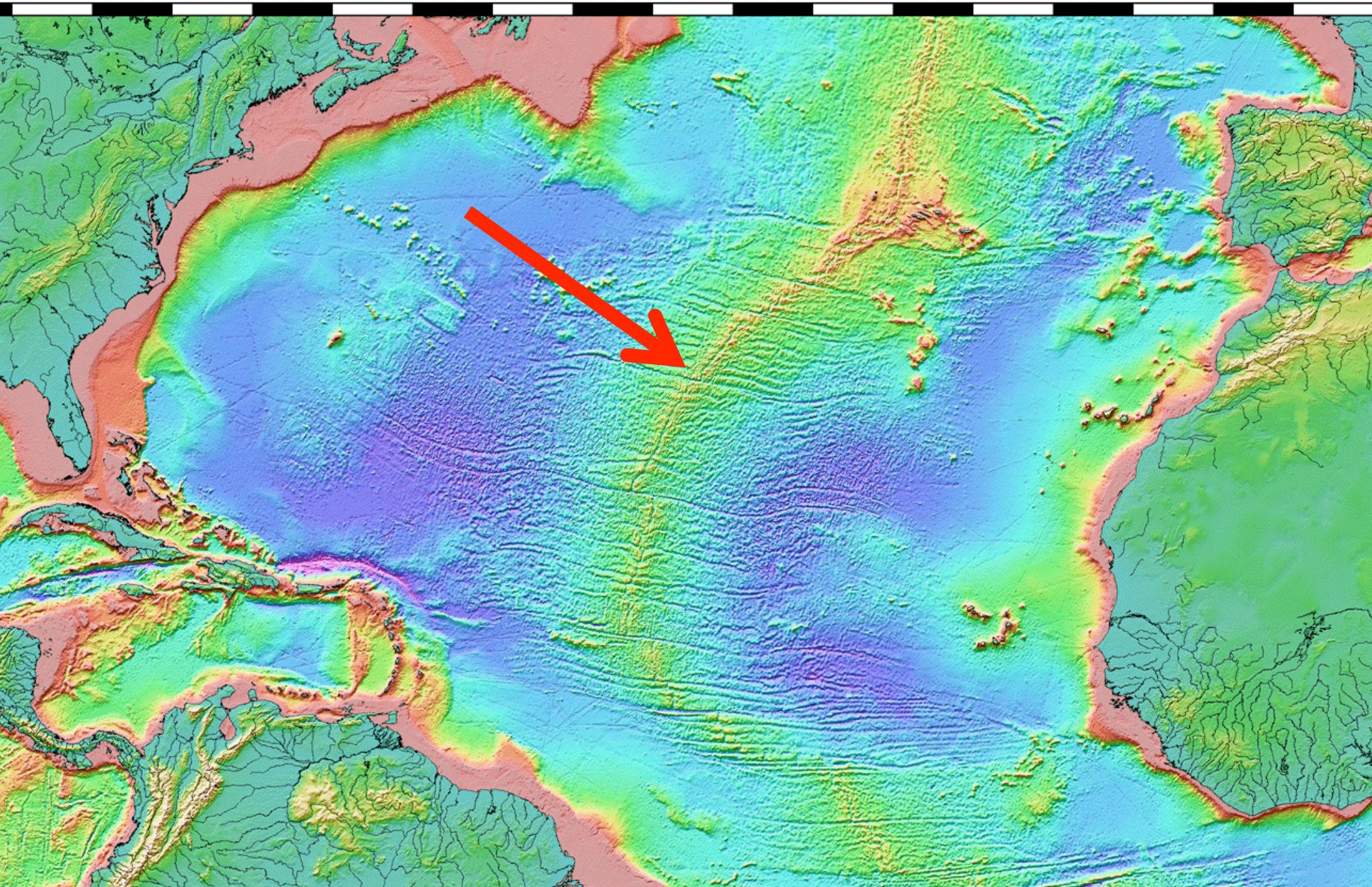
Mid-ocean ridge magma chamber
Oceanic crust
Ophiolite

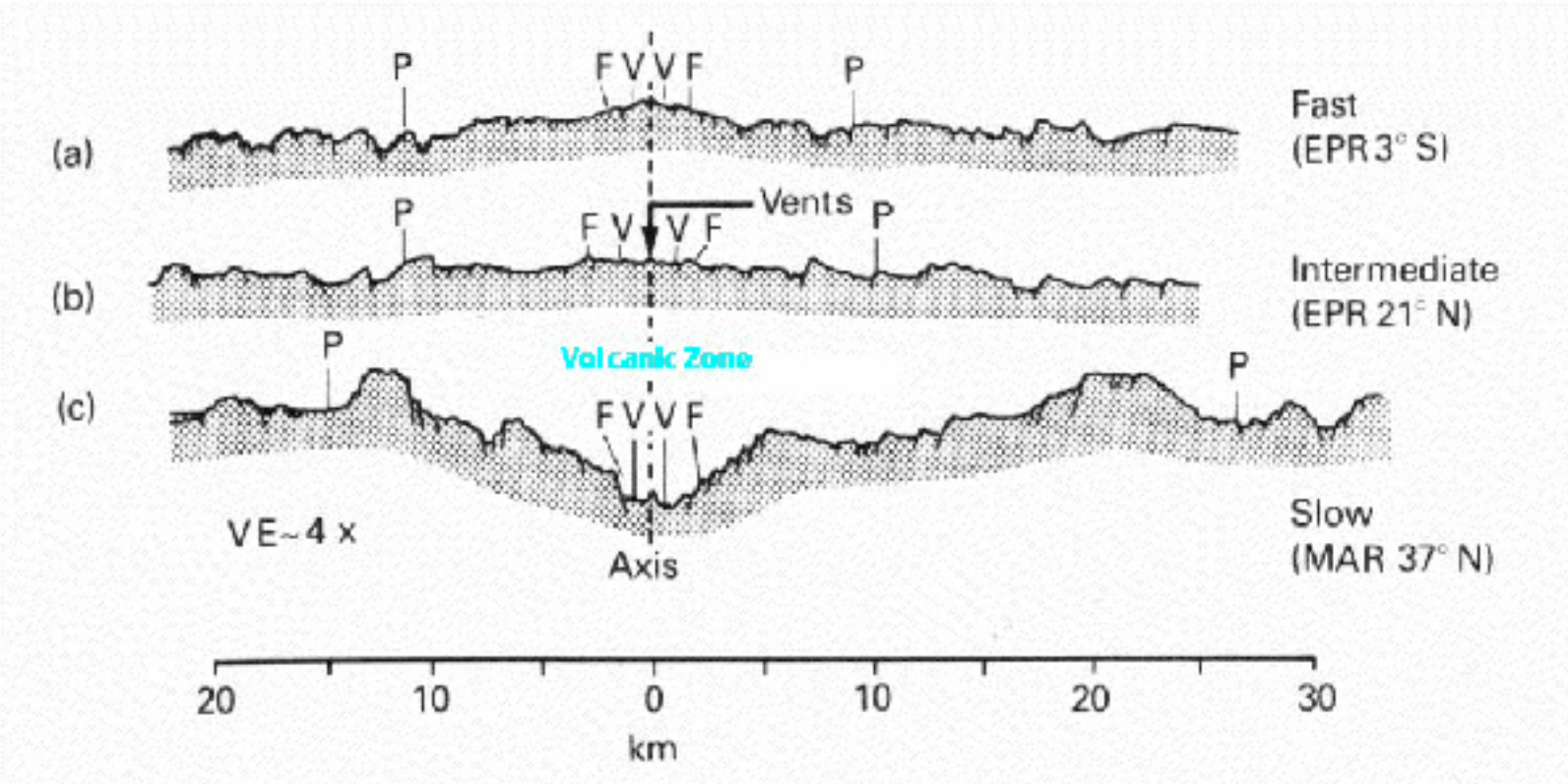


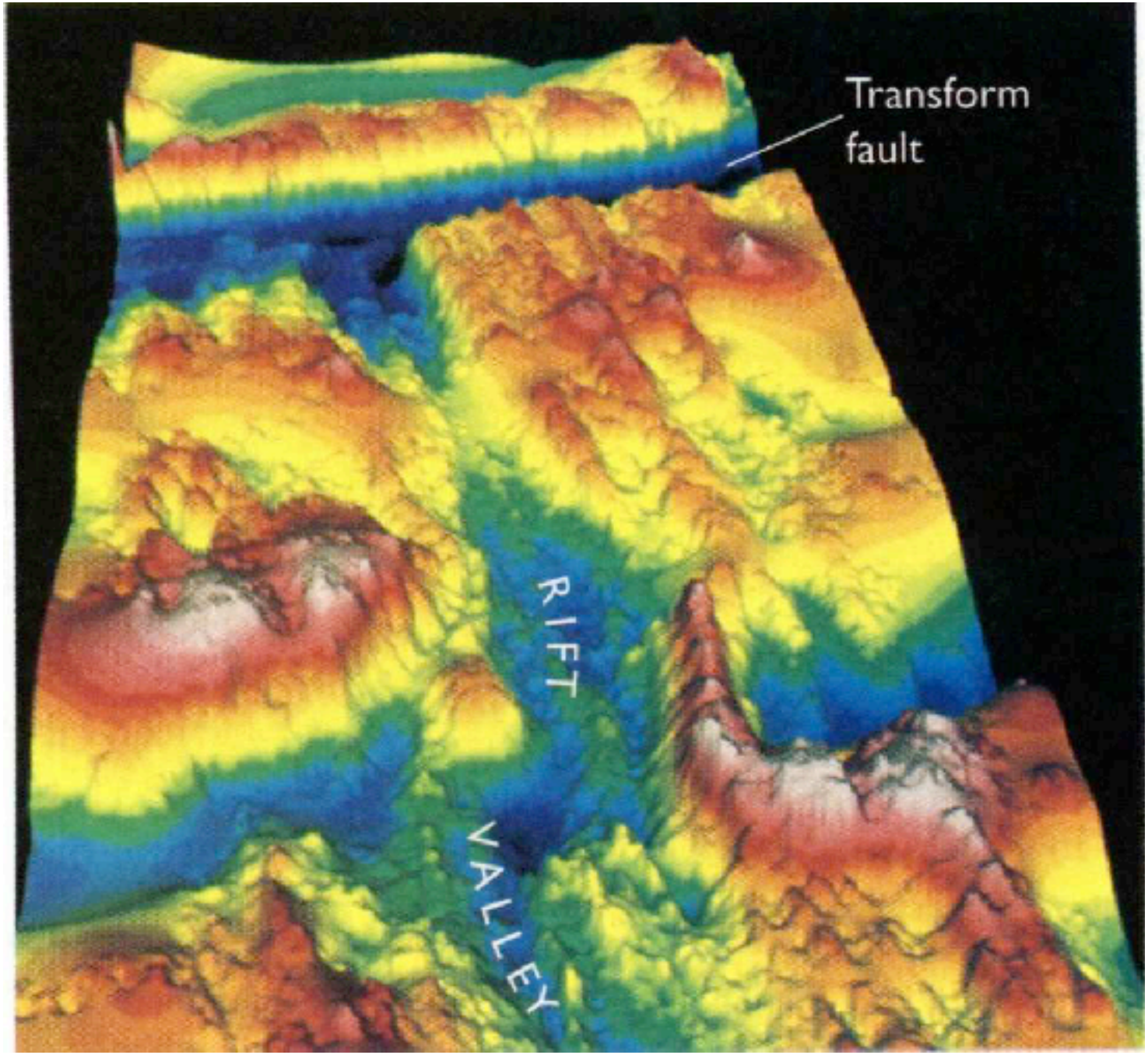
Mid-Atlantic ridge, slow spreading center, transform faults

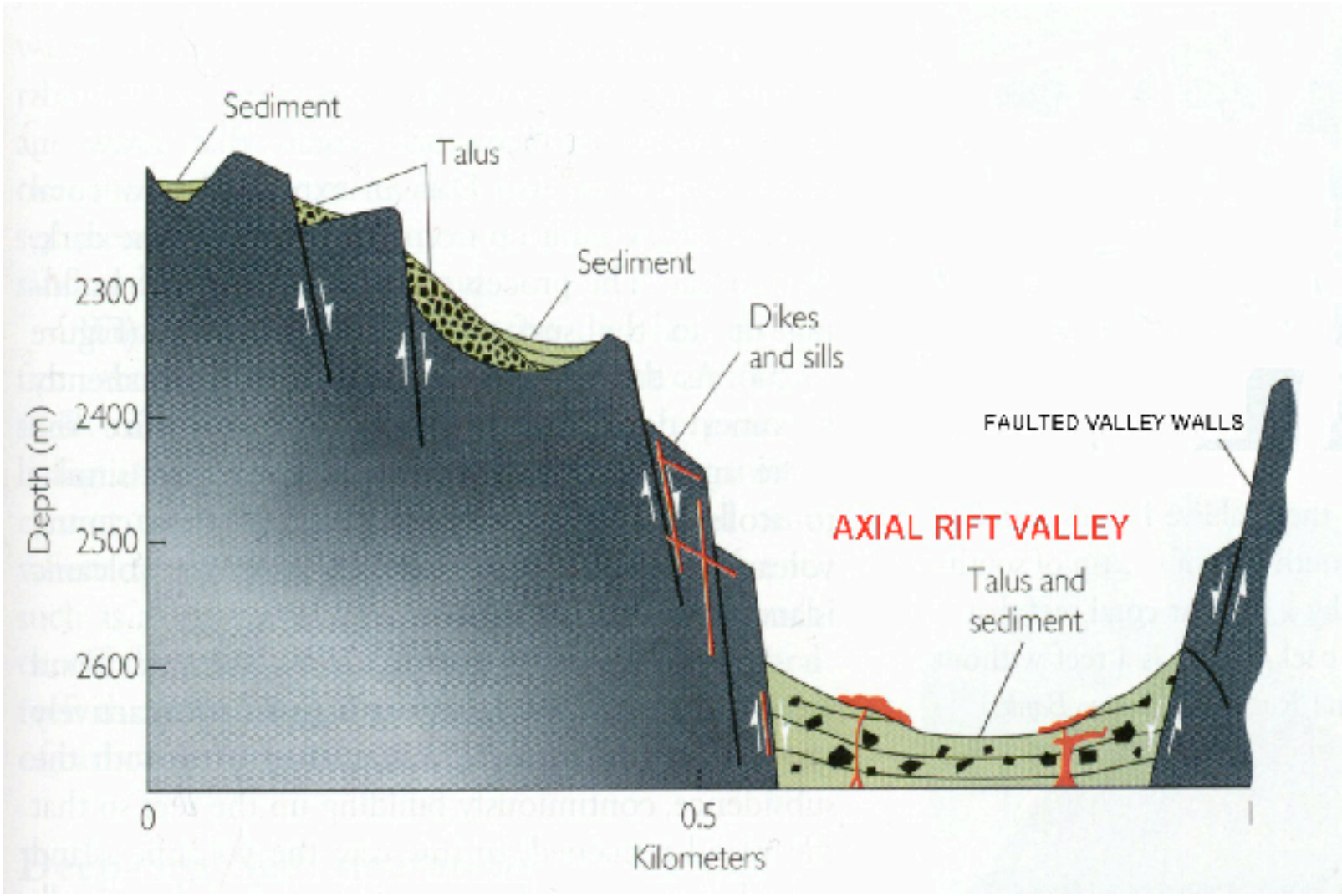


Mid Atlantic ridge, axial graben –rough topography

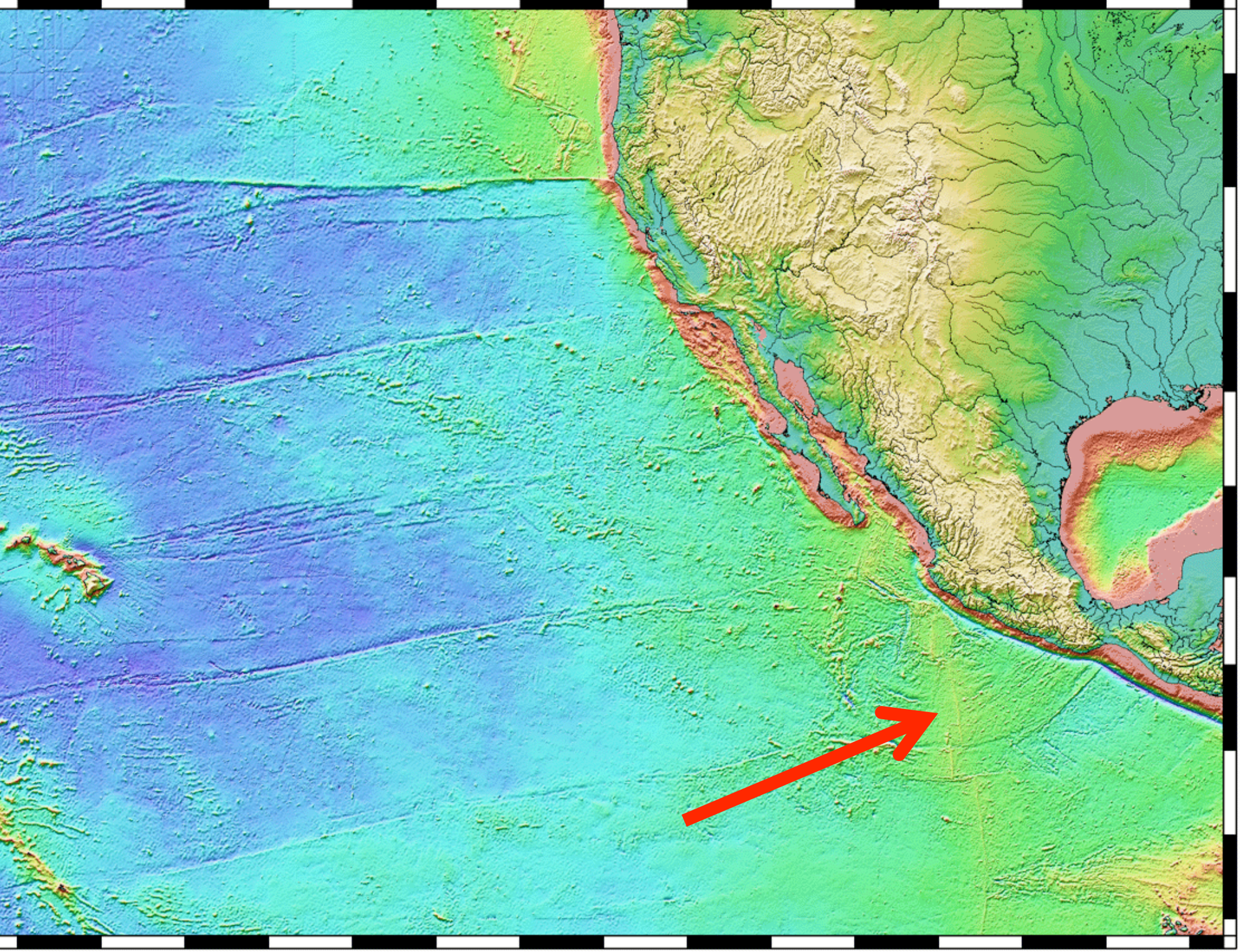


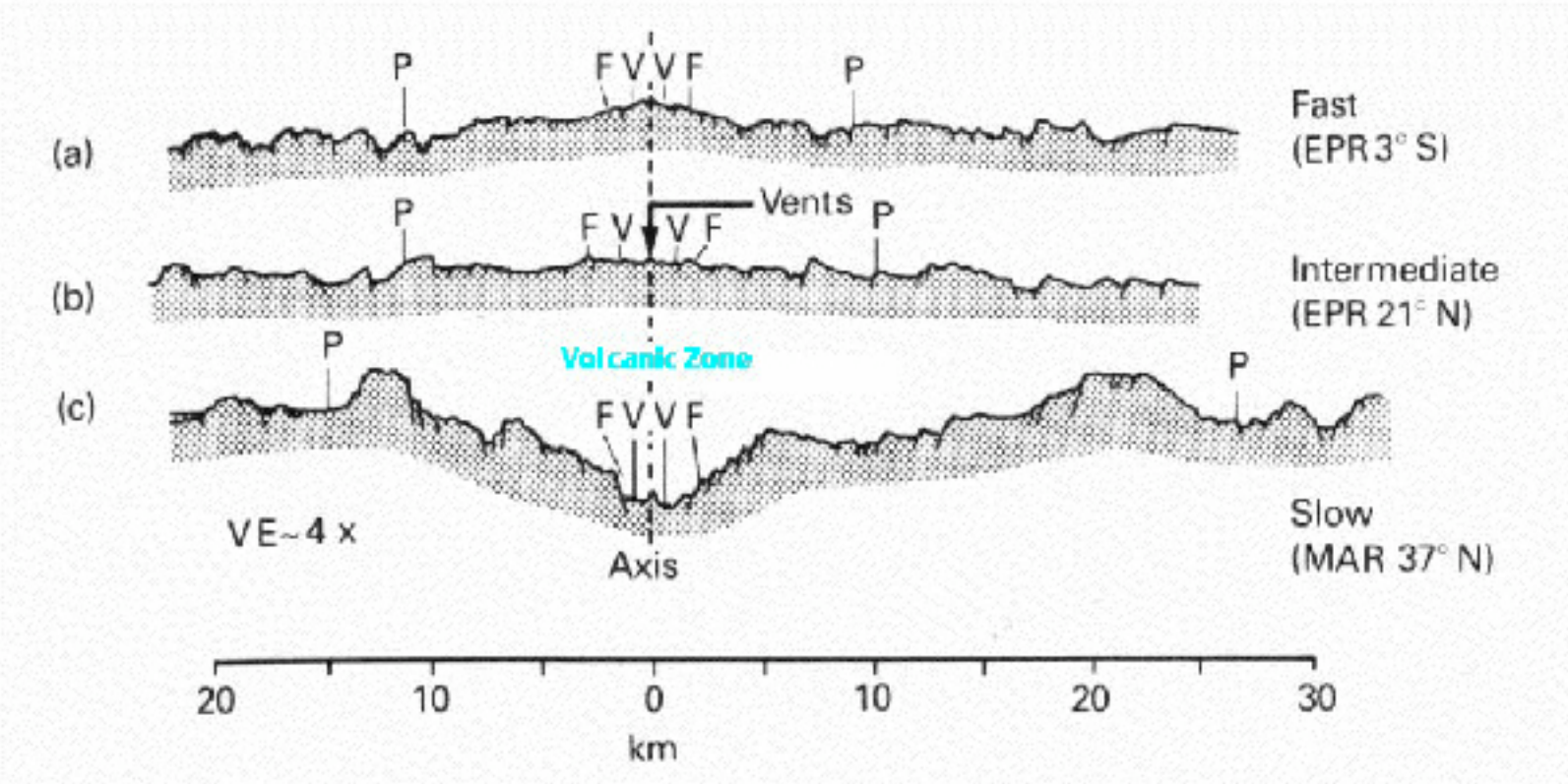

(a)
P
F V V F
P
Fast
(EPR 3° S)
(b)
P
Vents
F V V F
P
Intermediate
(EPR 21° N)
(c)
P
Volcanic Zone
P
F V V F
VE~4 x
Axis
Slow
(MAR 37° N)
20
10
0
10
20
30
km

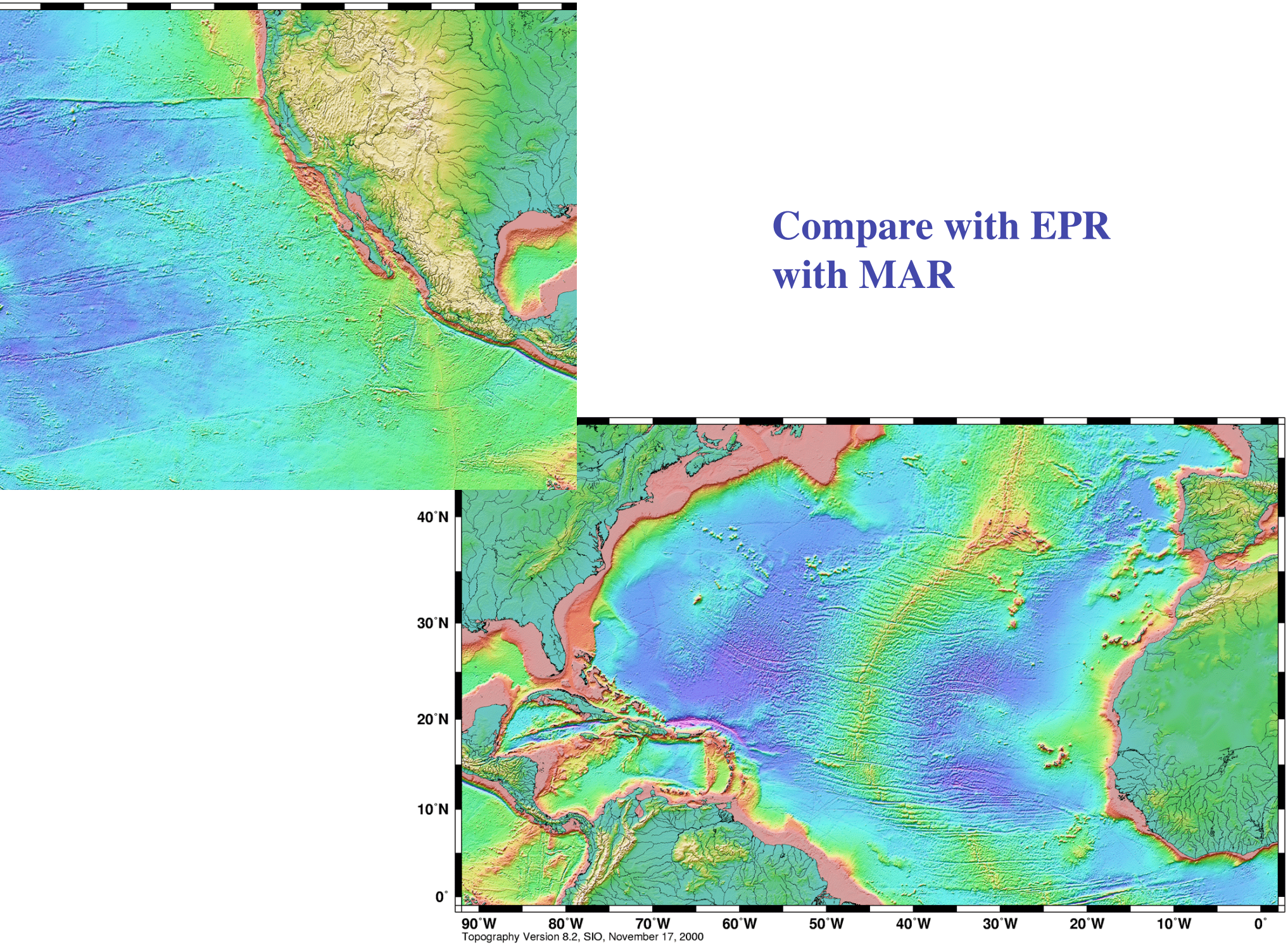

Transform
fault
RIFT
VALLEY


Sediment
Talus
Sediment
Dikes
and sills
FAULTED VALLEY WALLS
AXIAL RIFT VALLEY
Talus and
sediment
Depth (m)
2300
2400
2500
2600
0
0.5
1
Kilometers

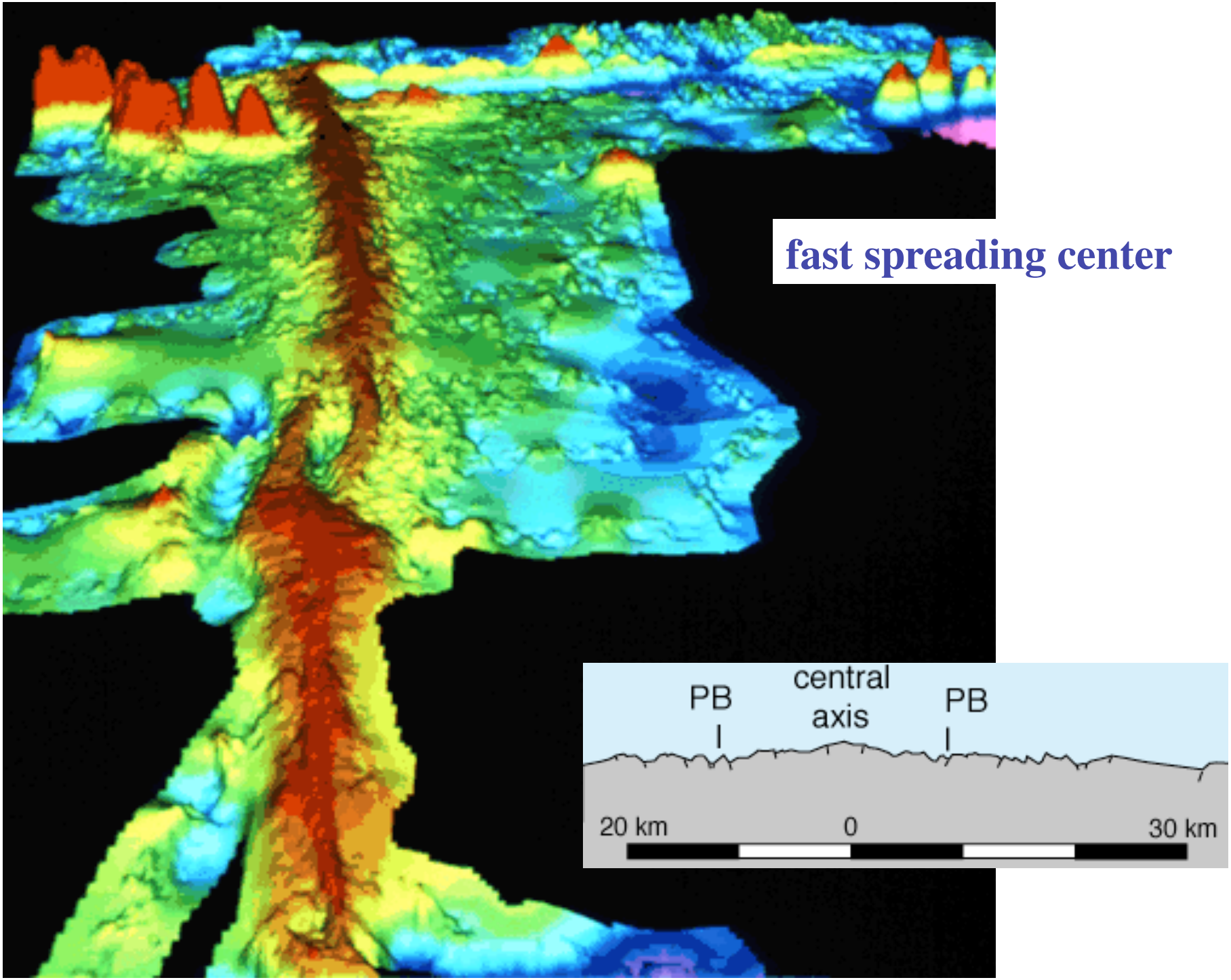
East Pacific rise, fast spreading center, triple junction


60˚W
150˚W
140˚W
130˚W
120˚W
110˚W
100˚W
90˚W

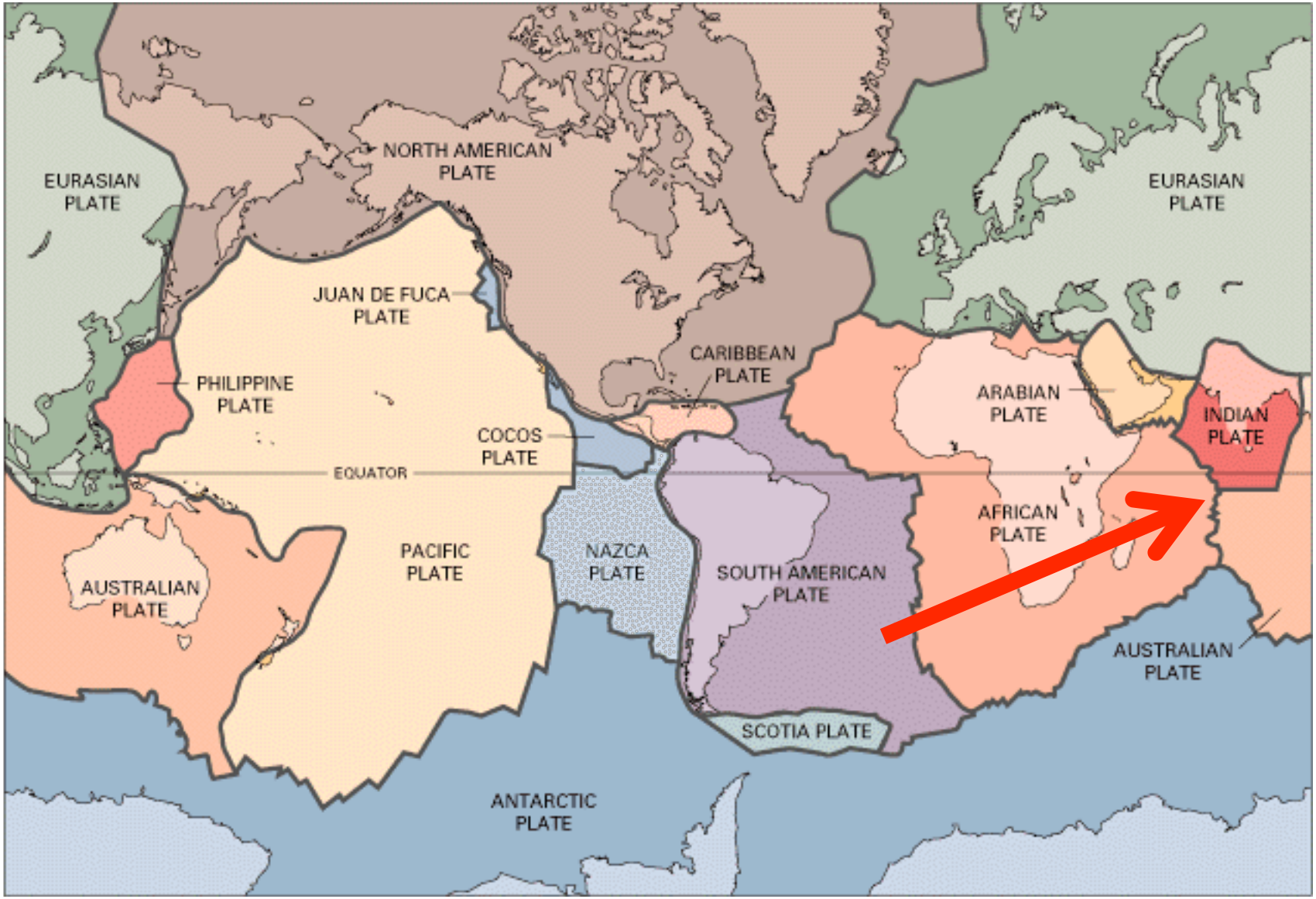

(a)
P
F V V F
P
Fast
(EPR 3° S)
(b)
P
Vents
F V V F
P
Intermediate
(EPR 21° N)
(c)
P
Volcanic Zone
P
F V V F
VE~4 x
Axis
Slow
(MAR 37° N)
20
10
0
10
20
30
km

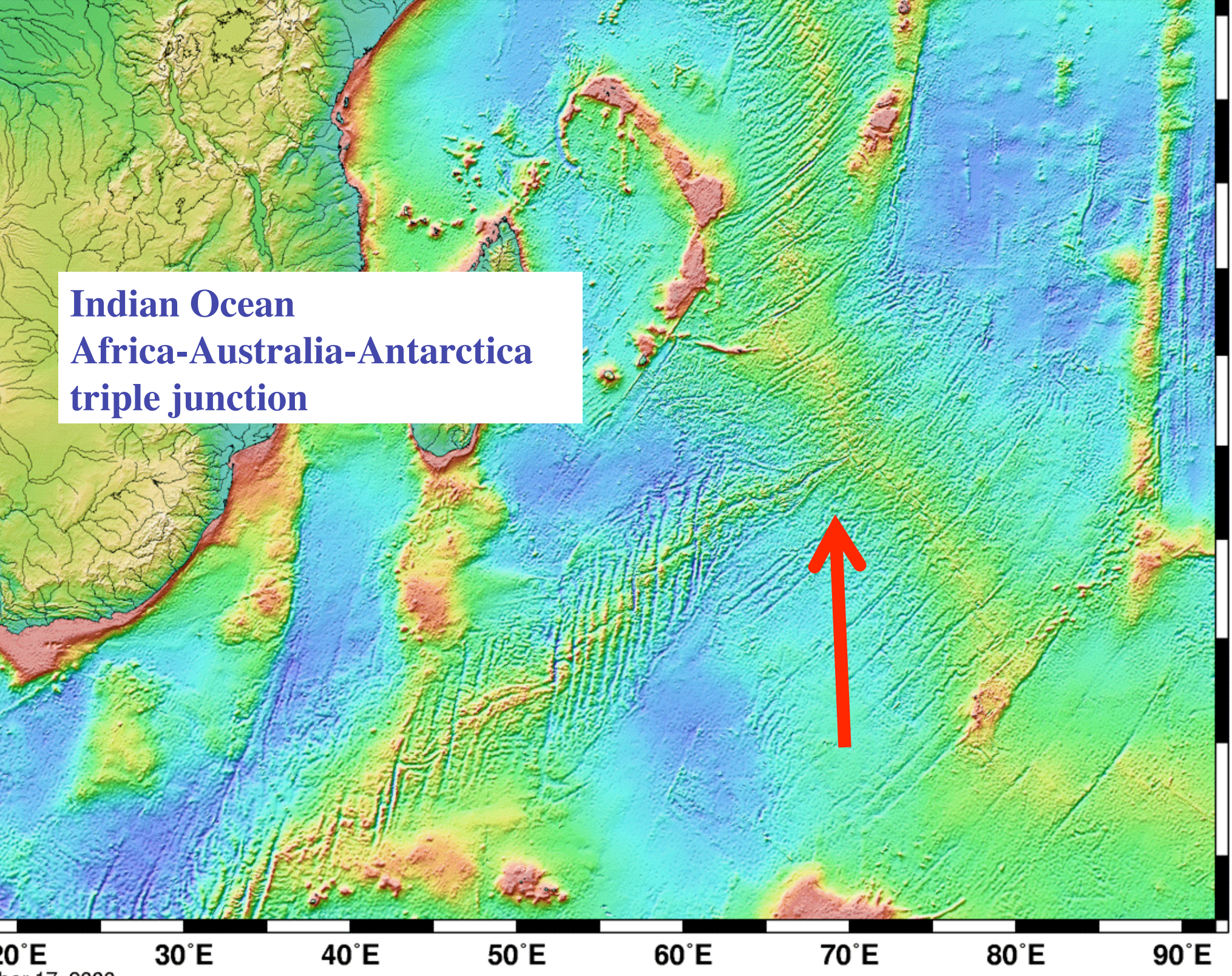


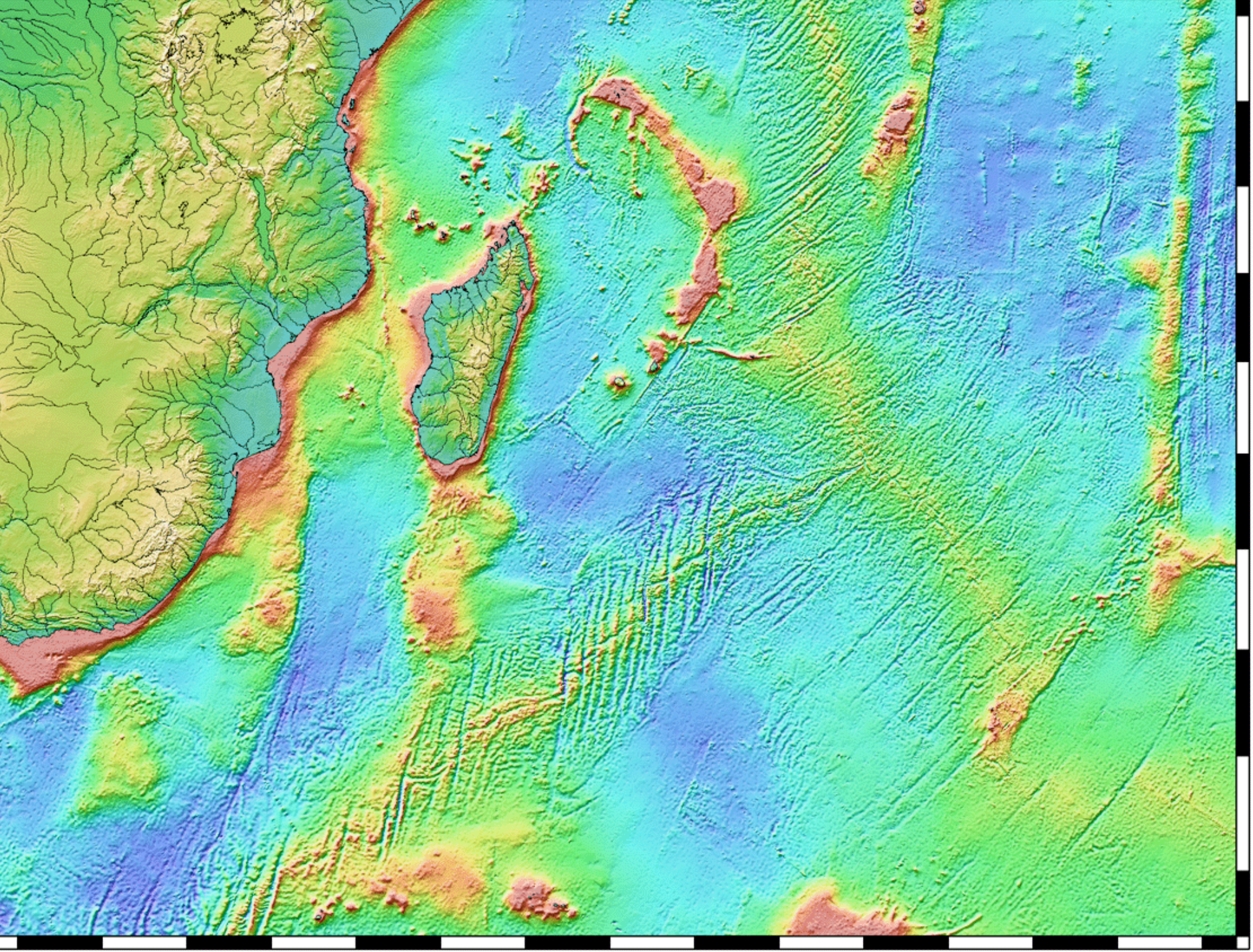
Compare with EPR with MAR


fast spreading center
PB
central
axis
PB
20 km
0
30 km

Indian Ocean, triple junction




Indian Ocean
Africa-Australia-Antarctica
triple junction
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
ber 17, 2000



ber 17, 2000

Age of ocean floor:

Magnetic anomalies

Magnetic reversal time scale

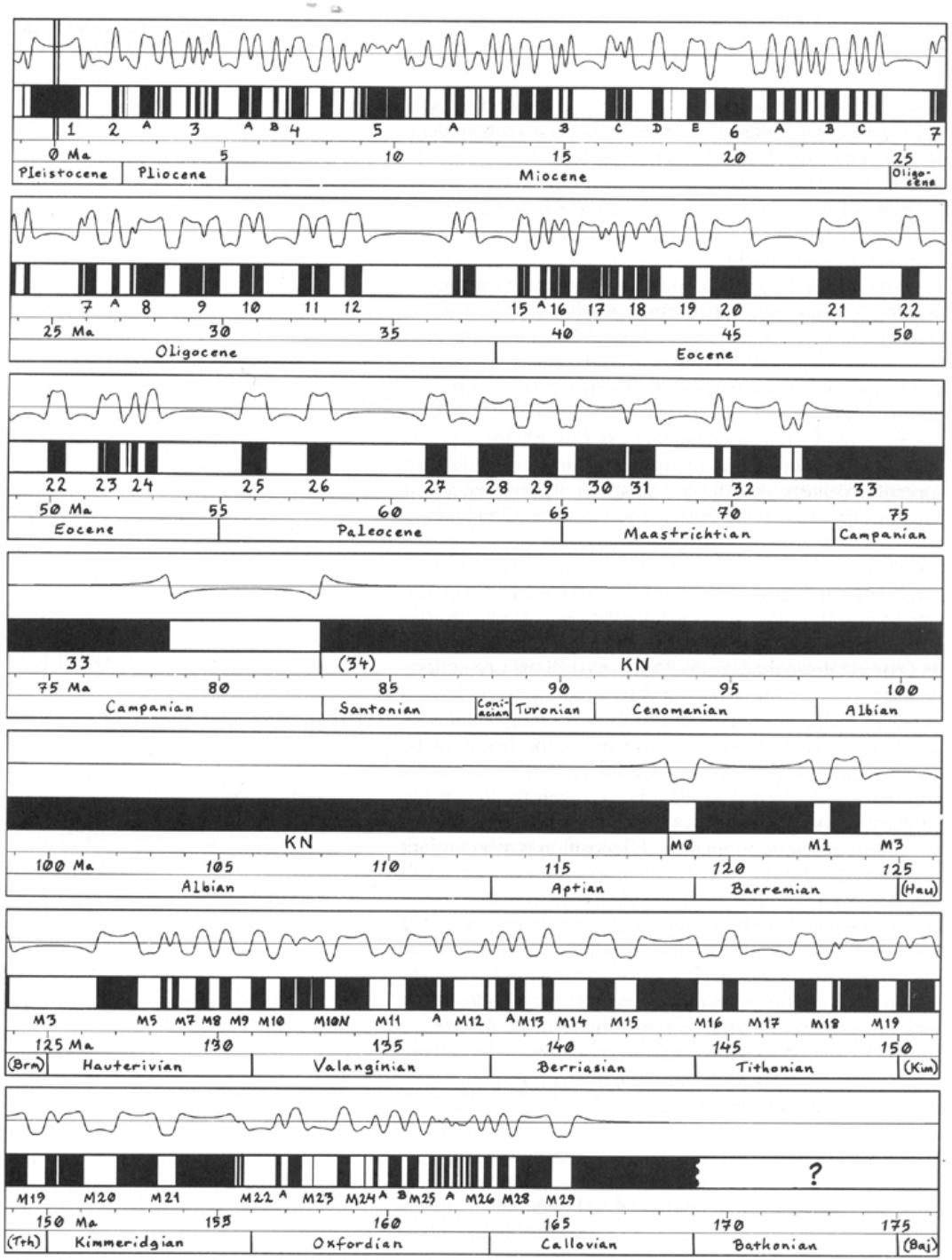
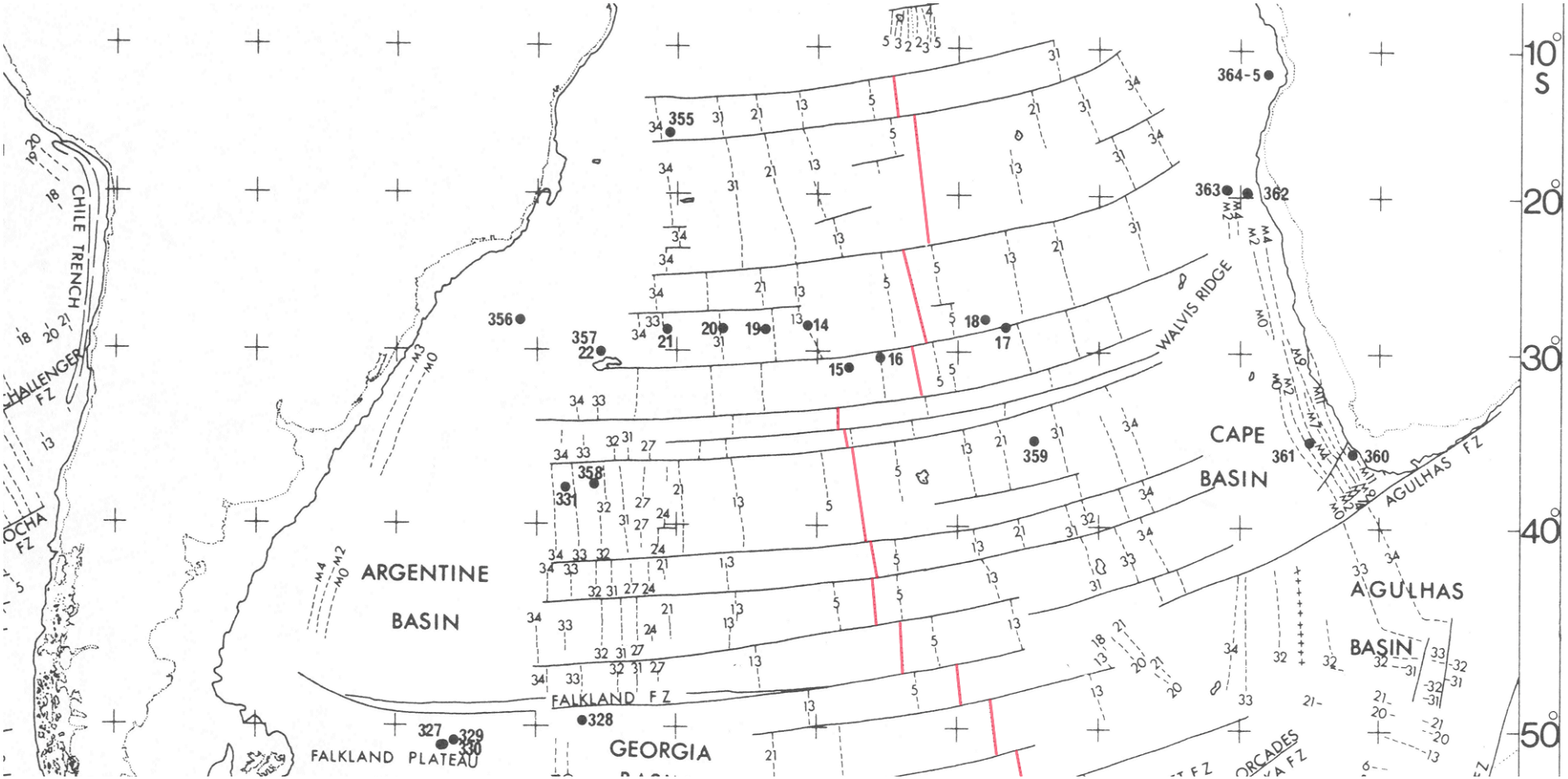


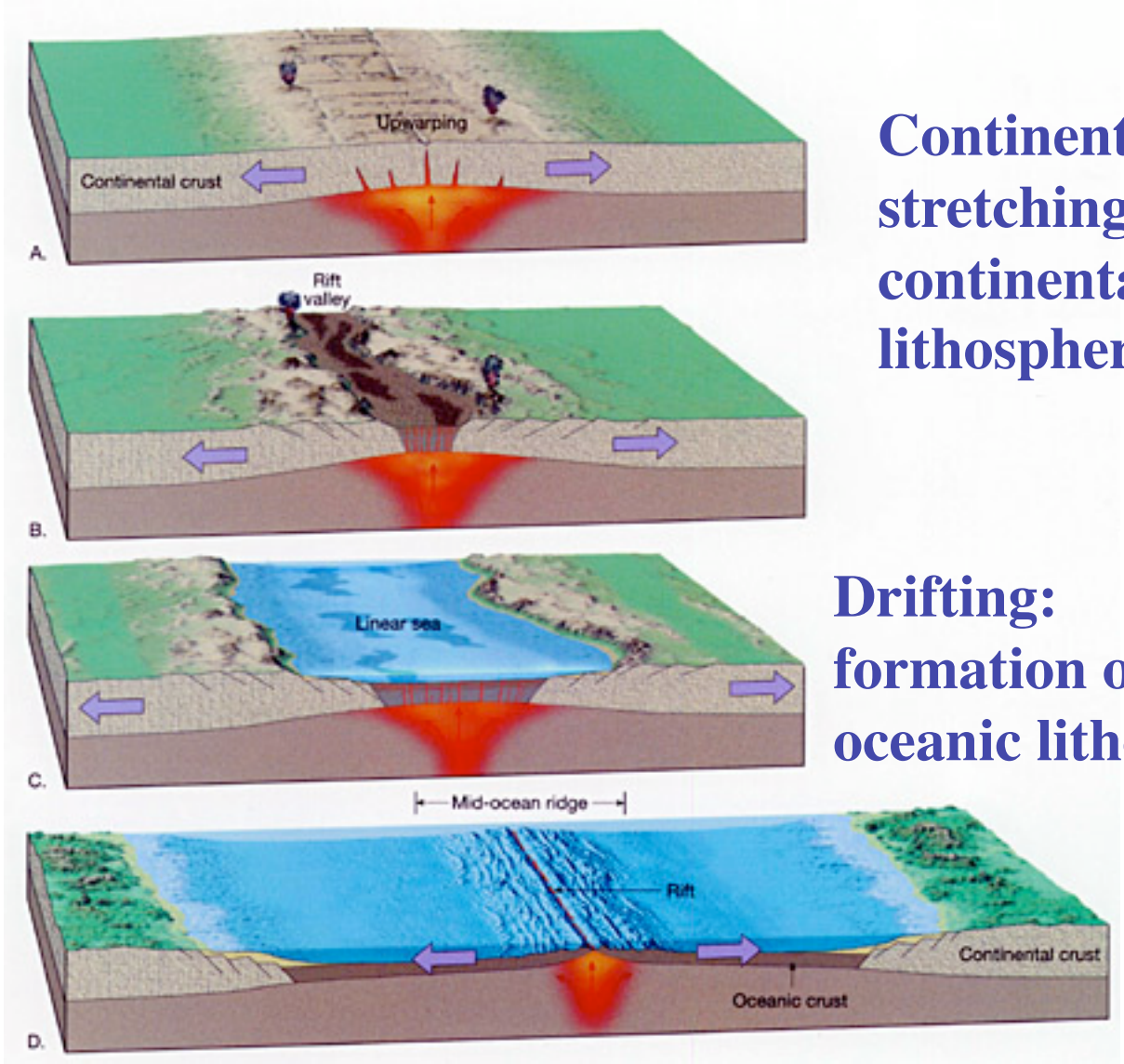
Figure 8-9.

South Atlantic magnetic anomalies



Spreading rate and direction

Rifting: formation of a new MOR



Continental rifting: stretching of old continental lithosphere

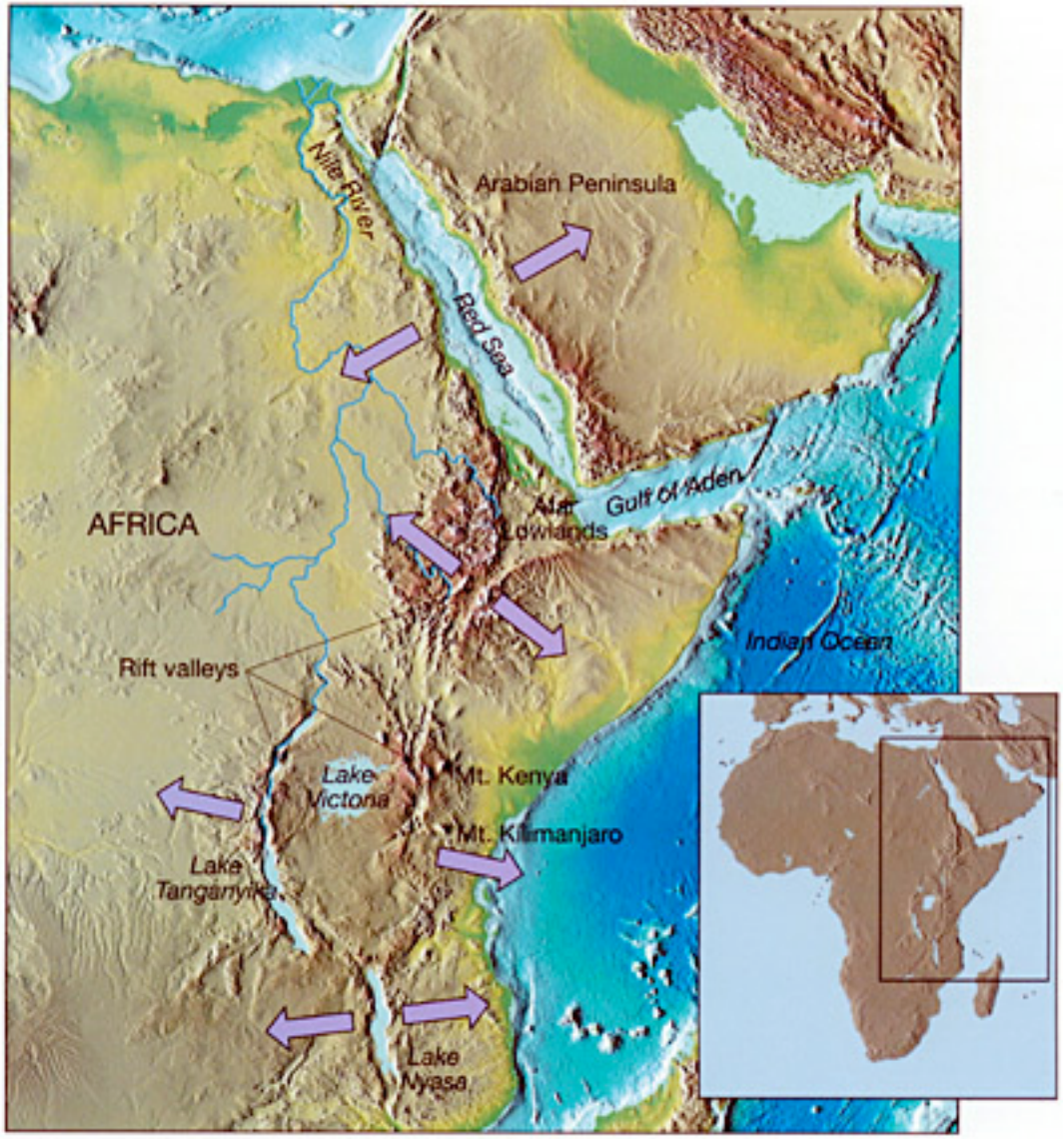
Drifting: formation of new oceanic lithosphere

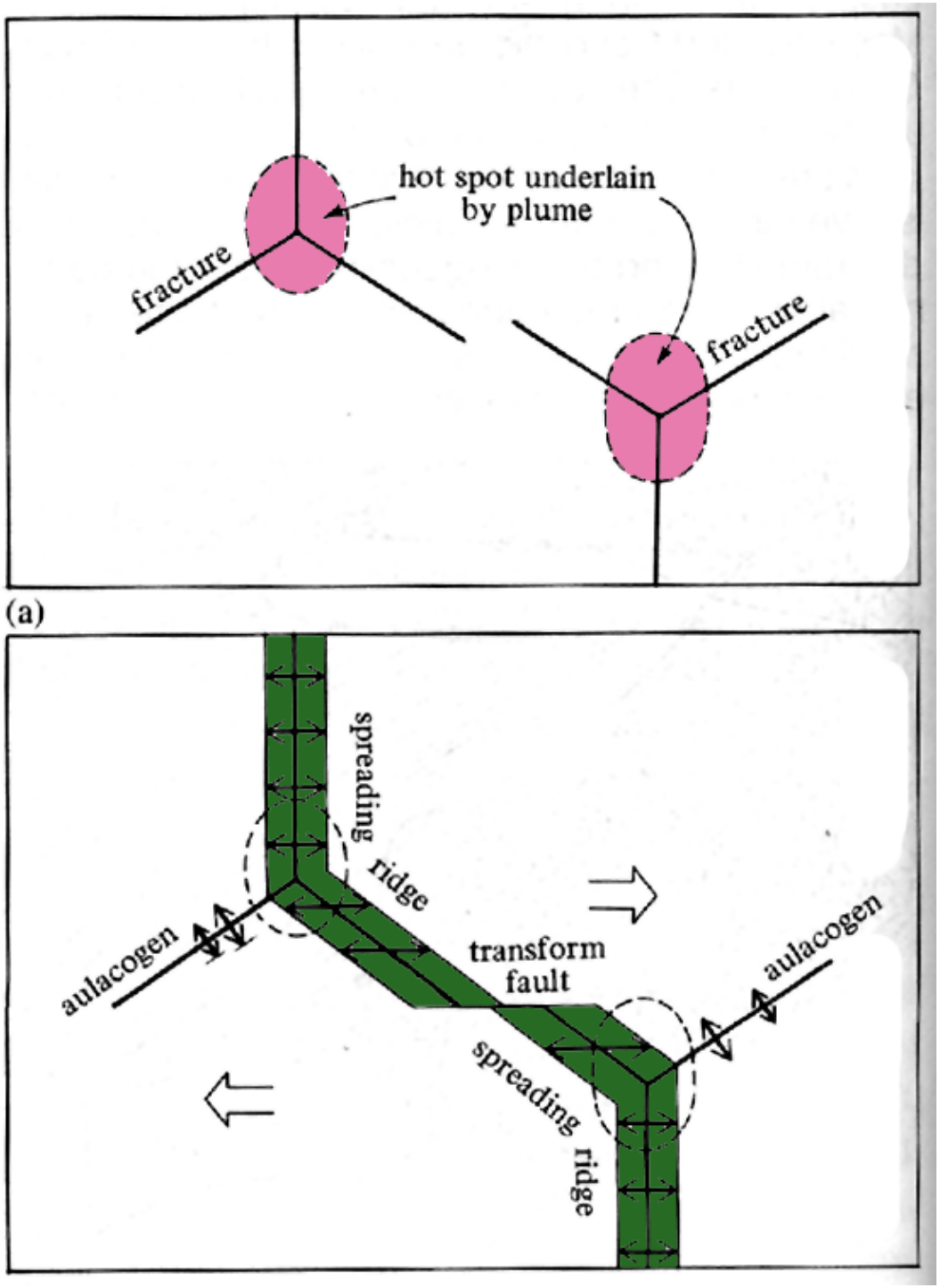
Rift initiation: East African rift

Initiation at a triple junction


Space Shuttle image: East African rift

New spreading center: Red Sea





Triple junction and start of spreading