MÓDULO 2: PROCESSOS ENDÓGENOS E EXÓGENOS NA FORMAÇÃO DO RELEVO

- *Forças internas na Formação do Relevo: A Tectônica (Aula 4)*
- *Forças externas: Processos Geomorfológicos (Aula 5)*
- *Forças externas: Intemperismo (Aula 6)*

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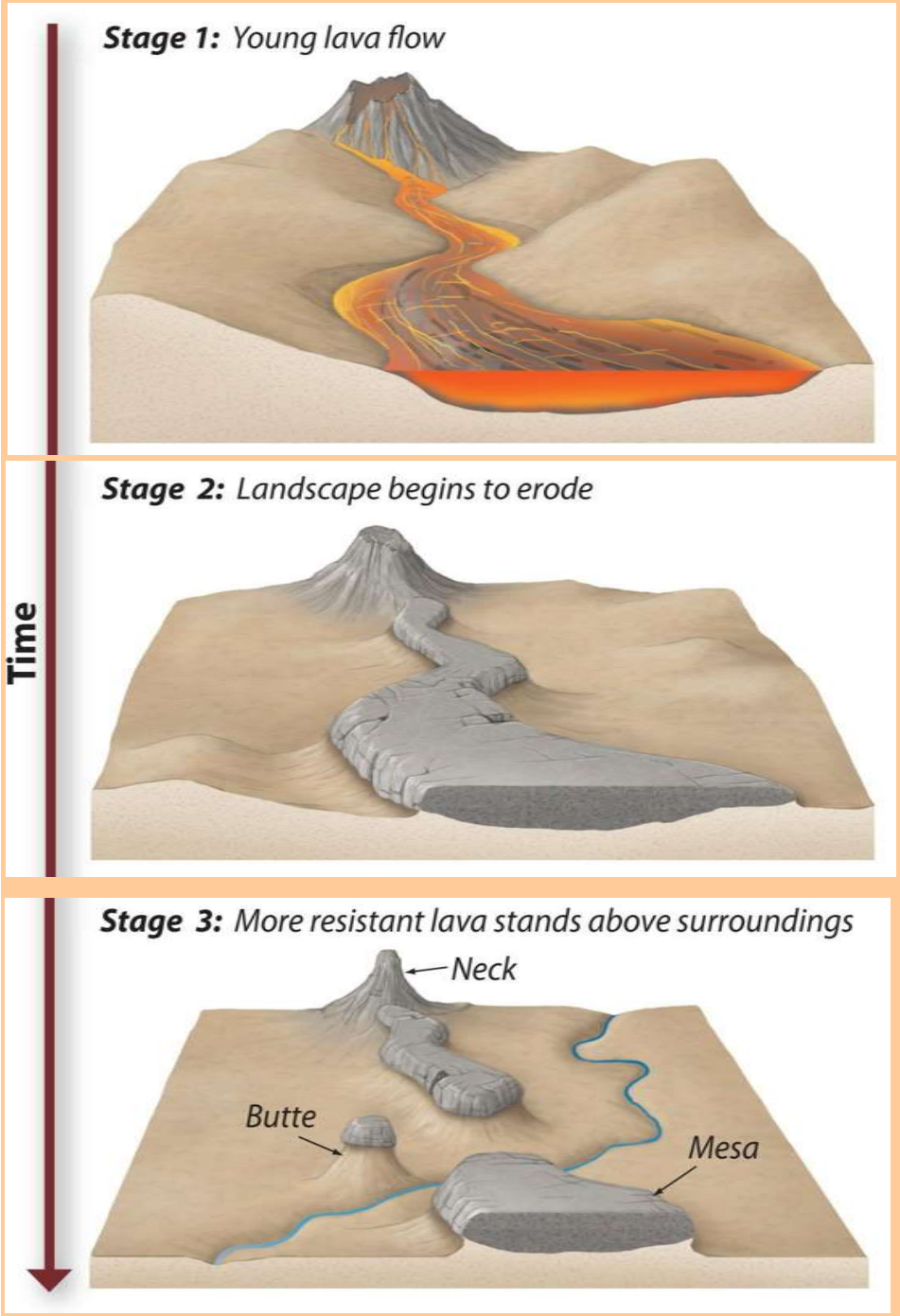

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Bierman, P.R. and Montgomery, D.R. (2014). In: Key Concepts in Geomorphology. W.H. Freeman and Company Publishers New York.

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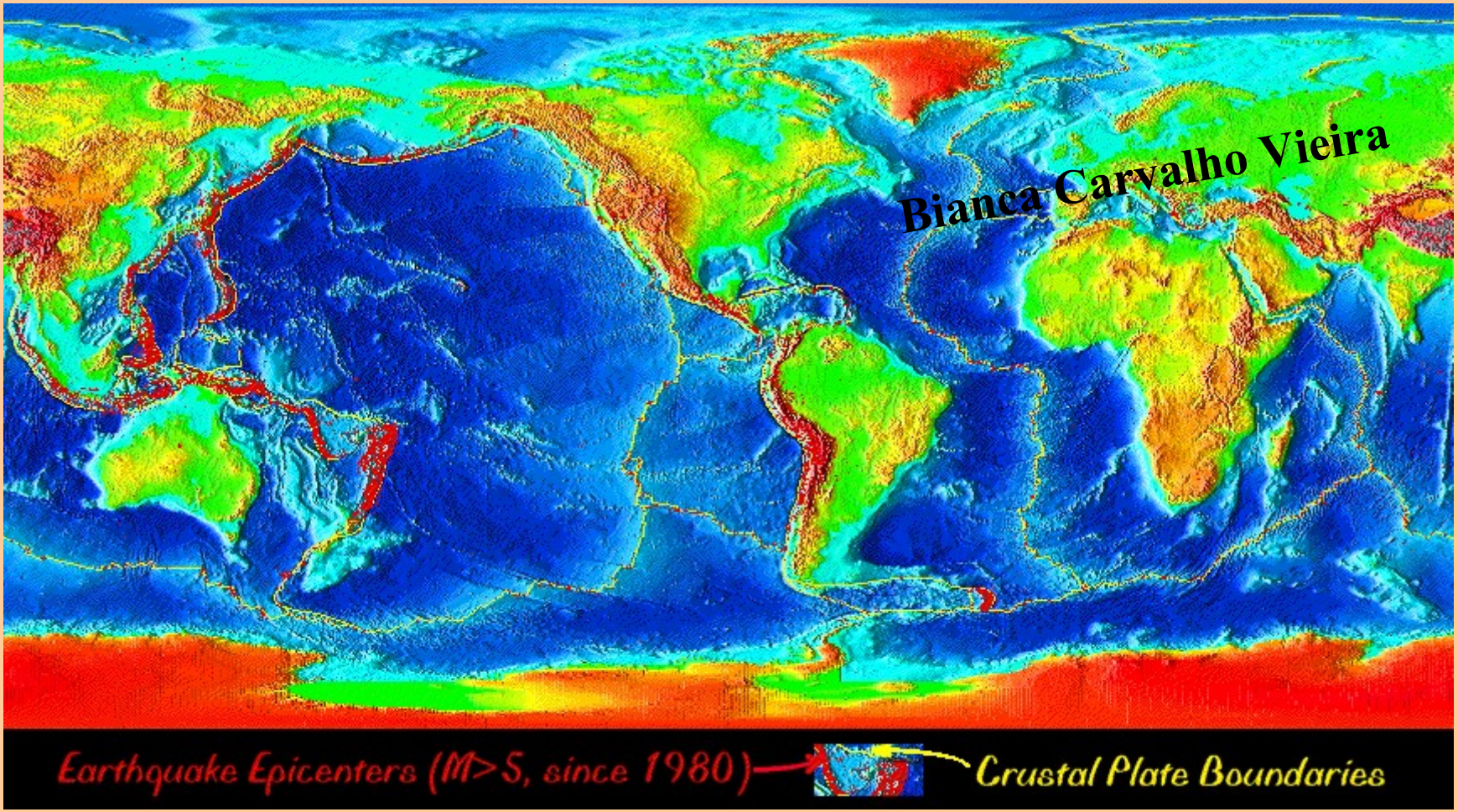
A Terra está dividida em placas relativamente finas (contendo continentes ou não) que se movem e se chocam provocando terremotos, vulcões, falhas, dobras, cadeias montanhosas, etc.



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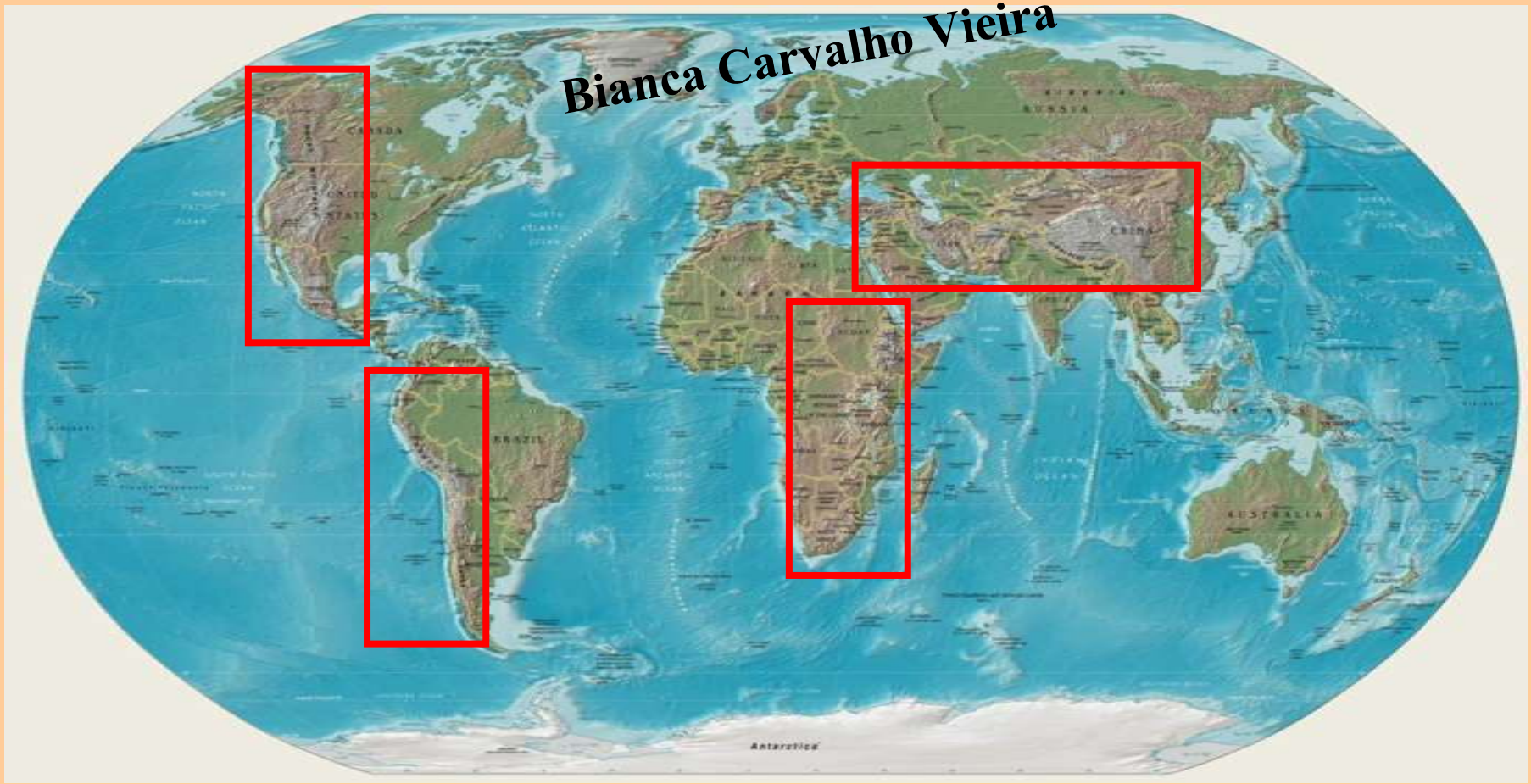
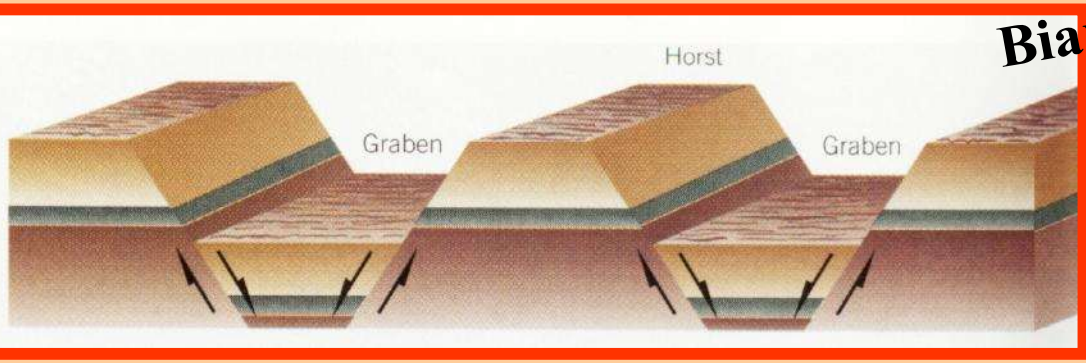
Tectônica de Placas



RESULTADO DE

PROCESSOS INTERNOS

1. Em domínios divergentes a paisagem mais característica são os grábens e os horstes;



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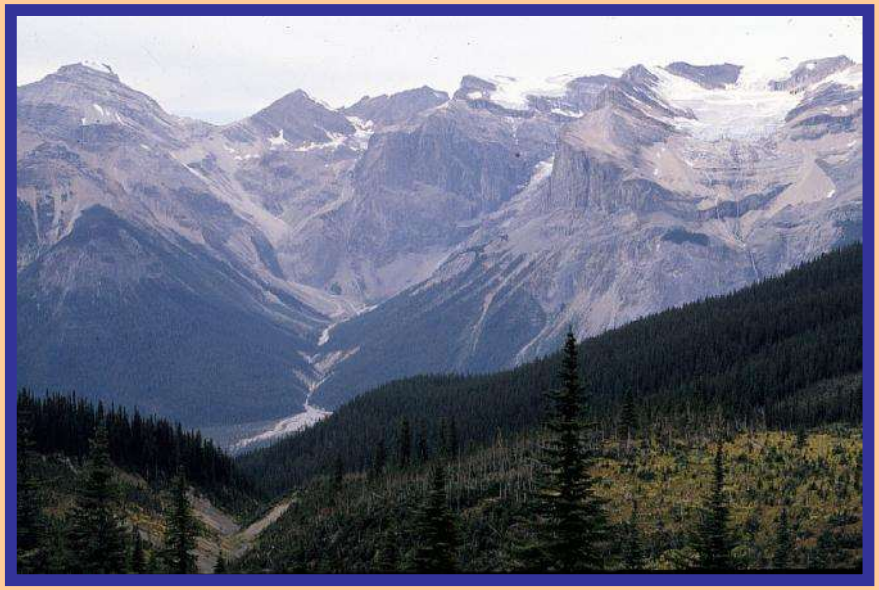
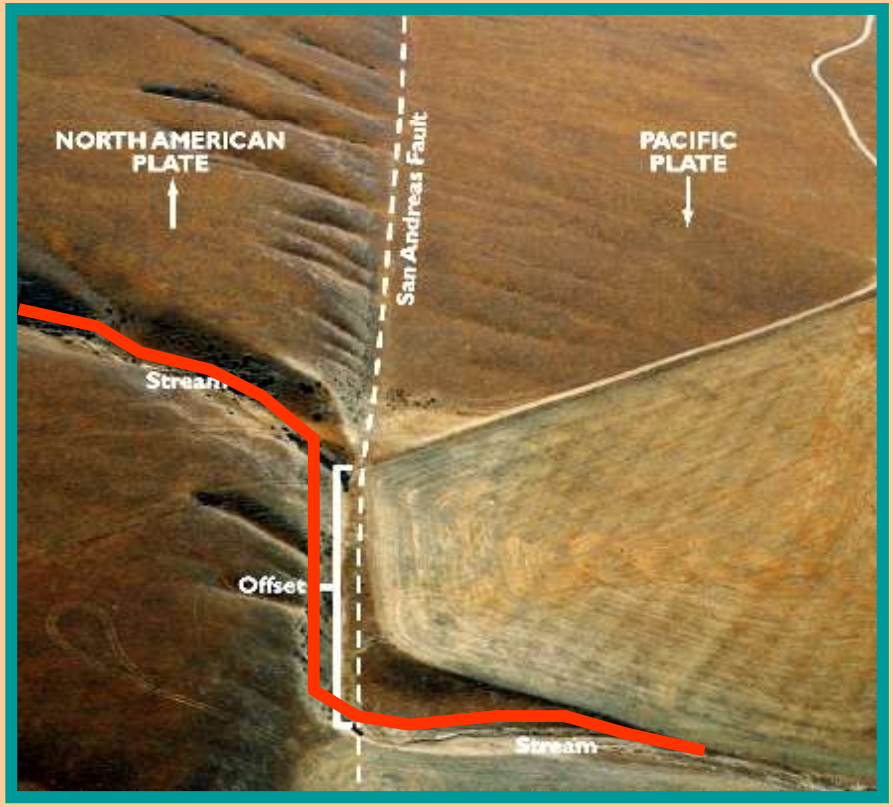
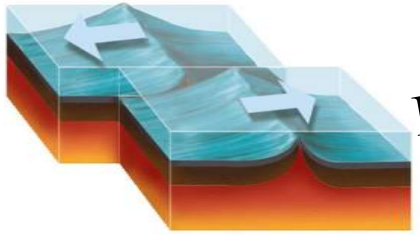
3. Em domínios transcorrentes são as escarpas de falhas, os longos lineamentos e os deslocamentos na drenagem e no relevo.

2. Em domínios convergentes são os cinturões orogênicos



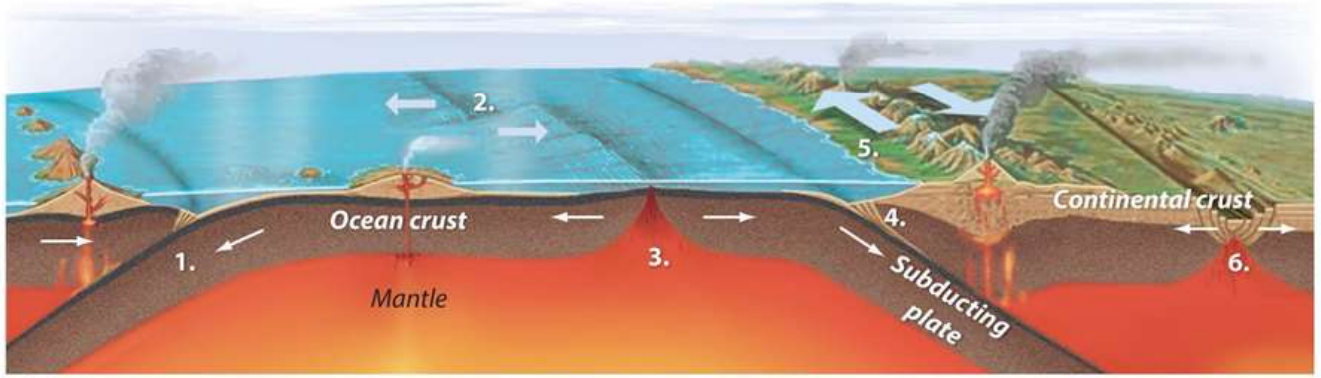


1. Where an oceanic plate **subducts** under another oceanic plate at a **convergent boundary,** a chain of steep, explosive volcanoes, known as an **island arc,** forms.

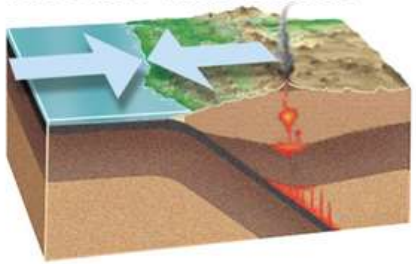


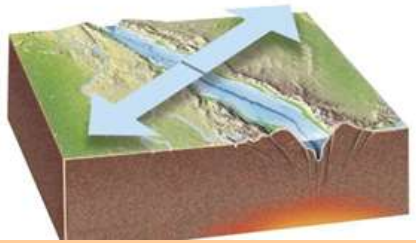
2. Marine transform faults offset spreading ridge segments. These strike slip faults are clearly visible in remotely sensed of sea-floor topography near spreading ridges.

3. Divergent boundaries are characterized by **basaltic volcanism** and shoulders uplifted by **thermal buoyancy** of the warm, less dense mantle rock that comes close to Earth's surface here.



Terrestrial environments





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DOMÍNIOS DIVERGENTES


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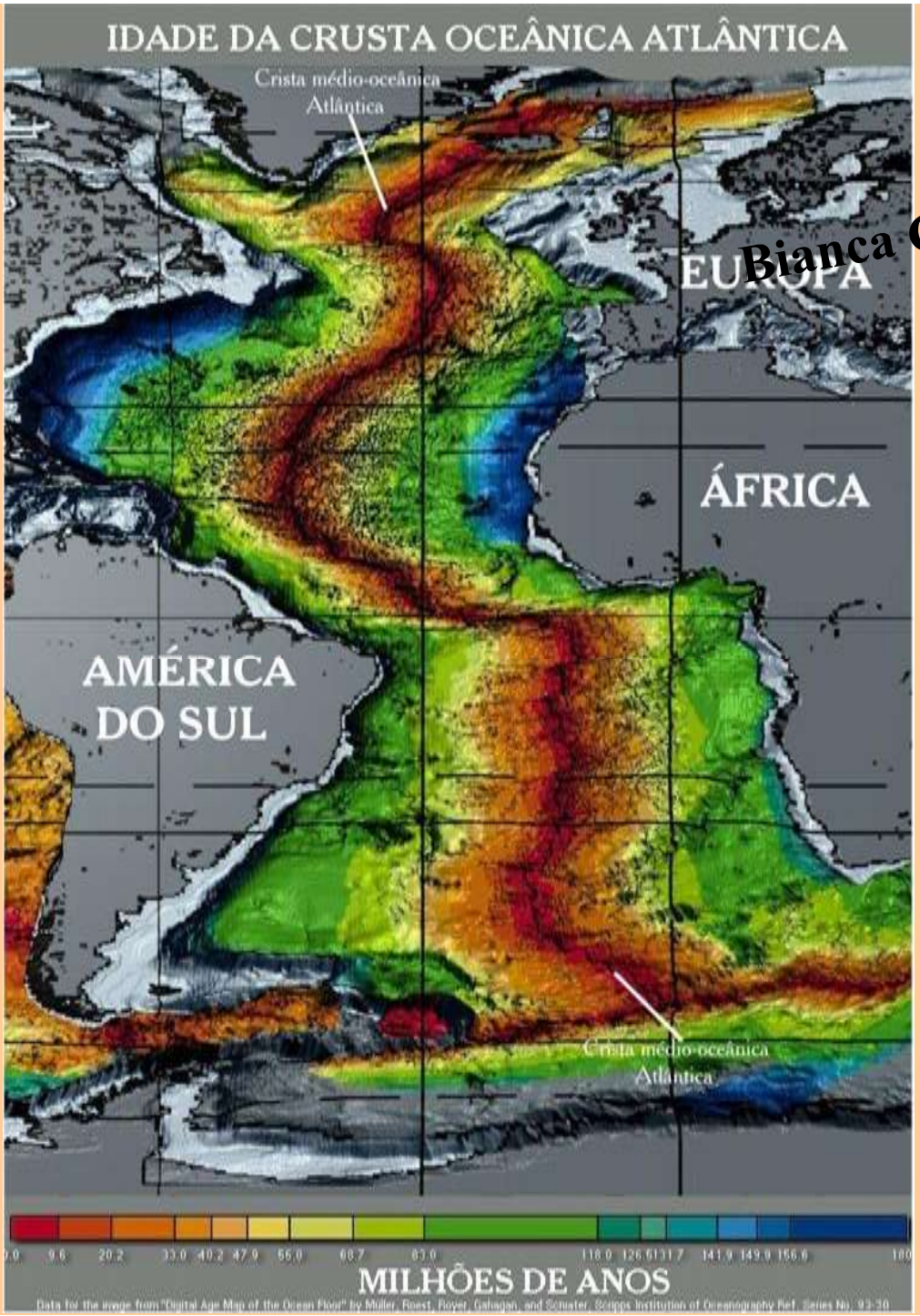
PLACA EURO-ASIÁTICA
PLACA NORTE-AMERICANA
1 cm/ano
4 cm/ano
PLACA CARIBEANA
PLACA FILIPINA
PLACA DE COCOS
EQUADOR
11 cm/ano
6 cm/ano
PLACA ARÁBICA
PLACA INDIANA
PLACA AFRICANA
PLACA DE NAZCA
PLACA SUL-AMERICANA
2 cm/ano
3 cm/ano
PLACA AUSTRALIANA
PLACA PACÍFICA
6 cm/ano
4 cm/ano
PLACA ANTÁRCTICA
PLACA ESCÓCIA



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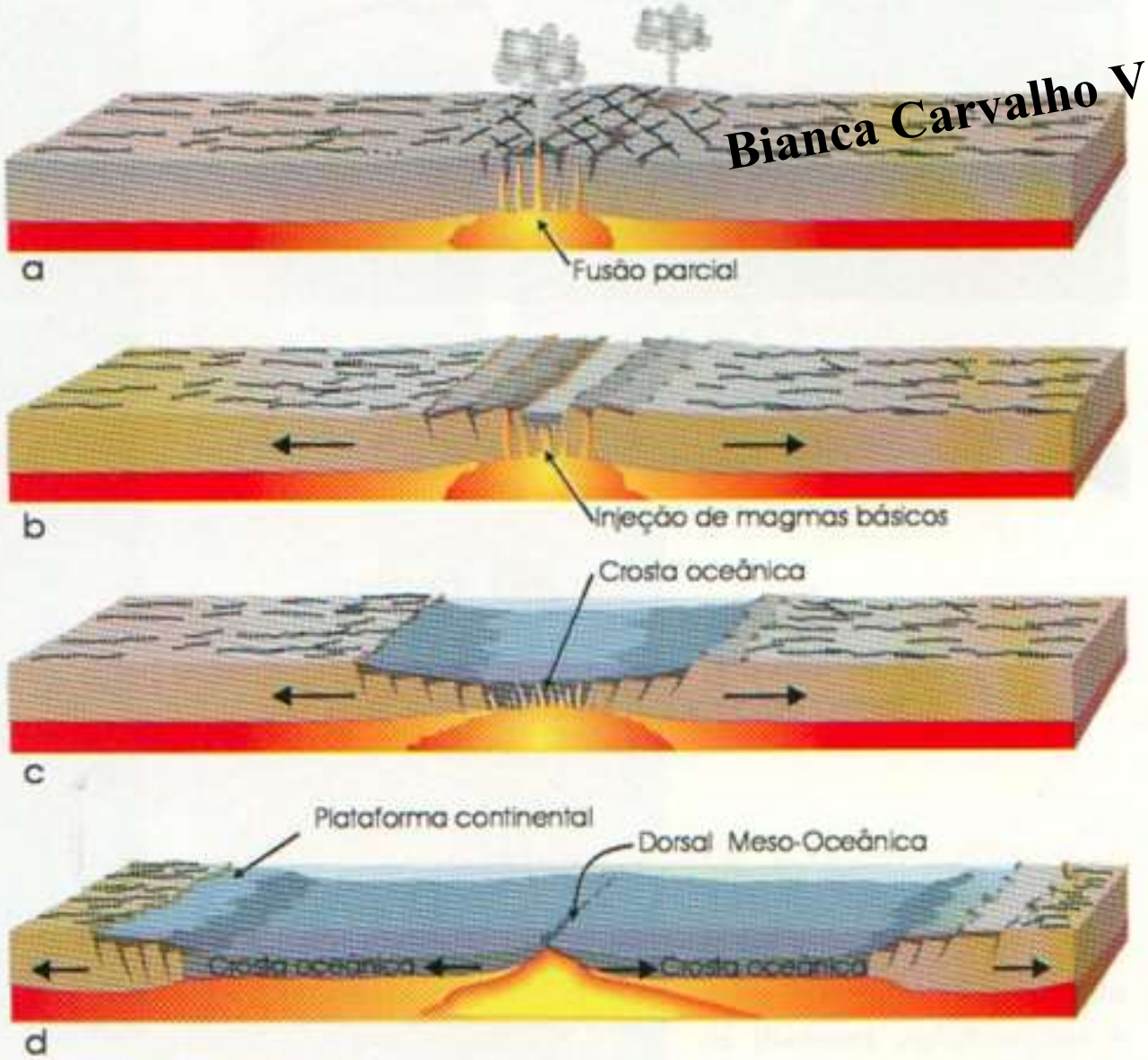

Fig. 6.15 Esquema evolutivo de fragmentação de uma massa continental e desenvolvimento de margens continentais passivas.

Fonte: PRESS *et alli*. *Para Entender a Terra*. Porto Alegre: Bookman, 2006. 656p.

1. DOMÍNIOS DIVERGENTES

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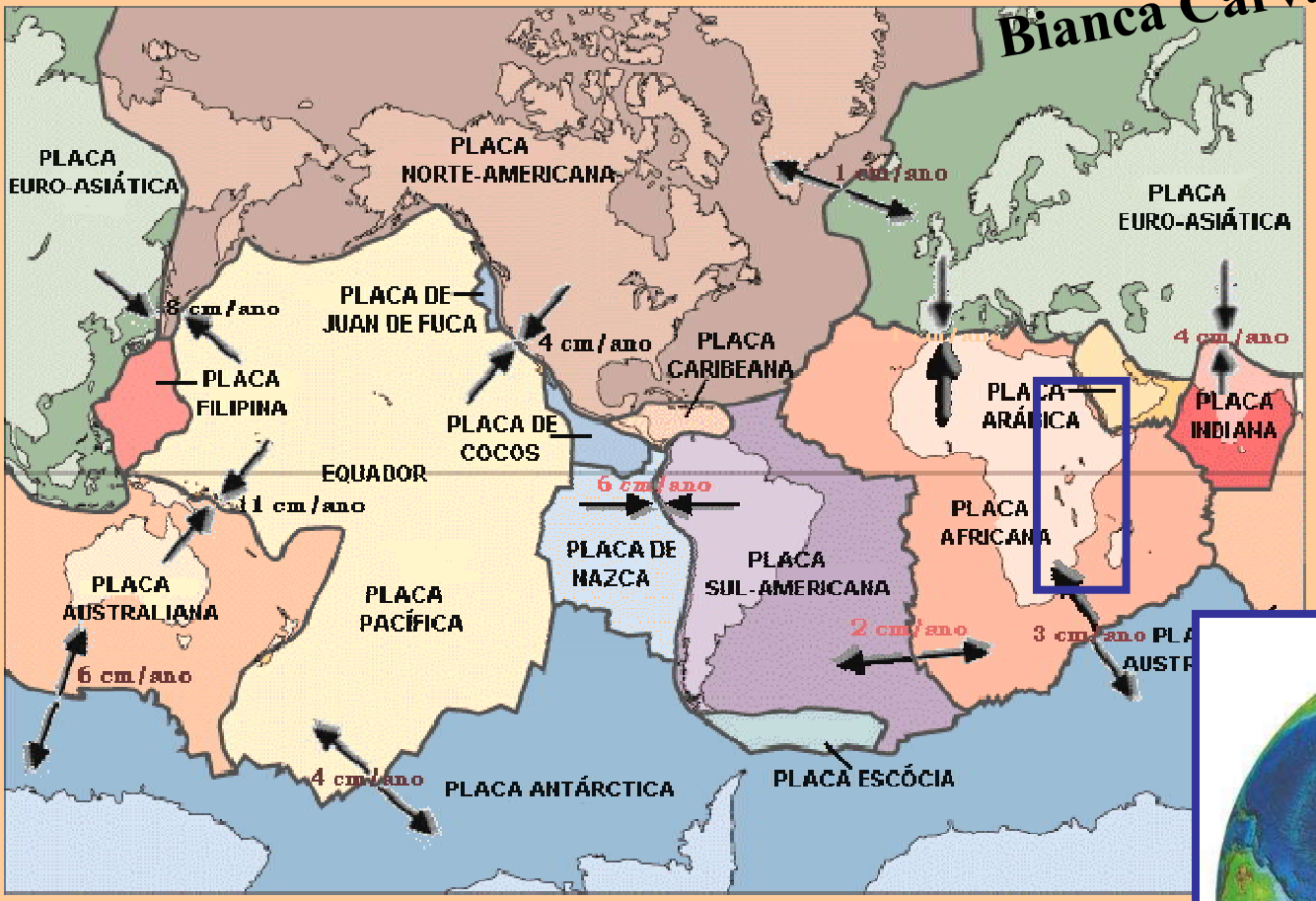

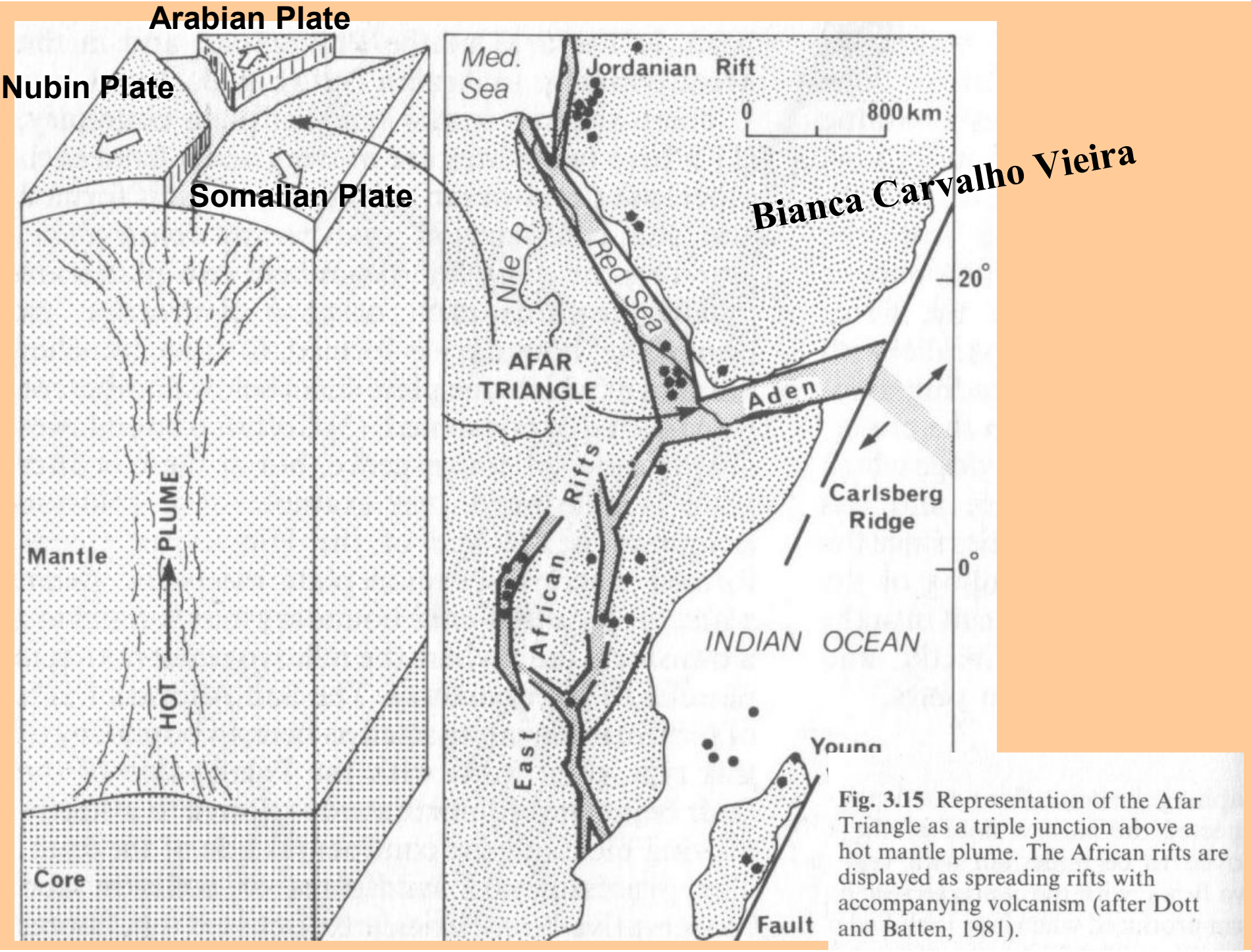

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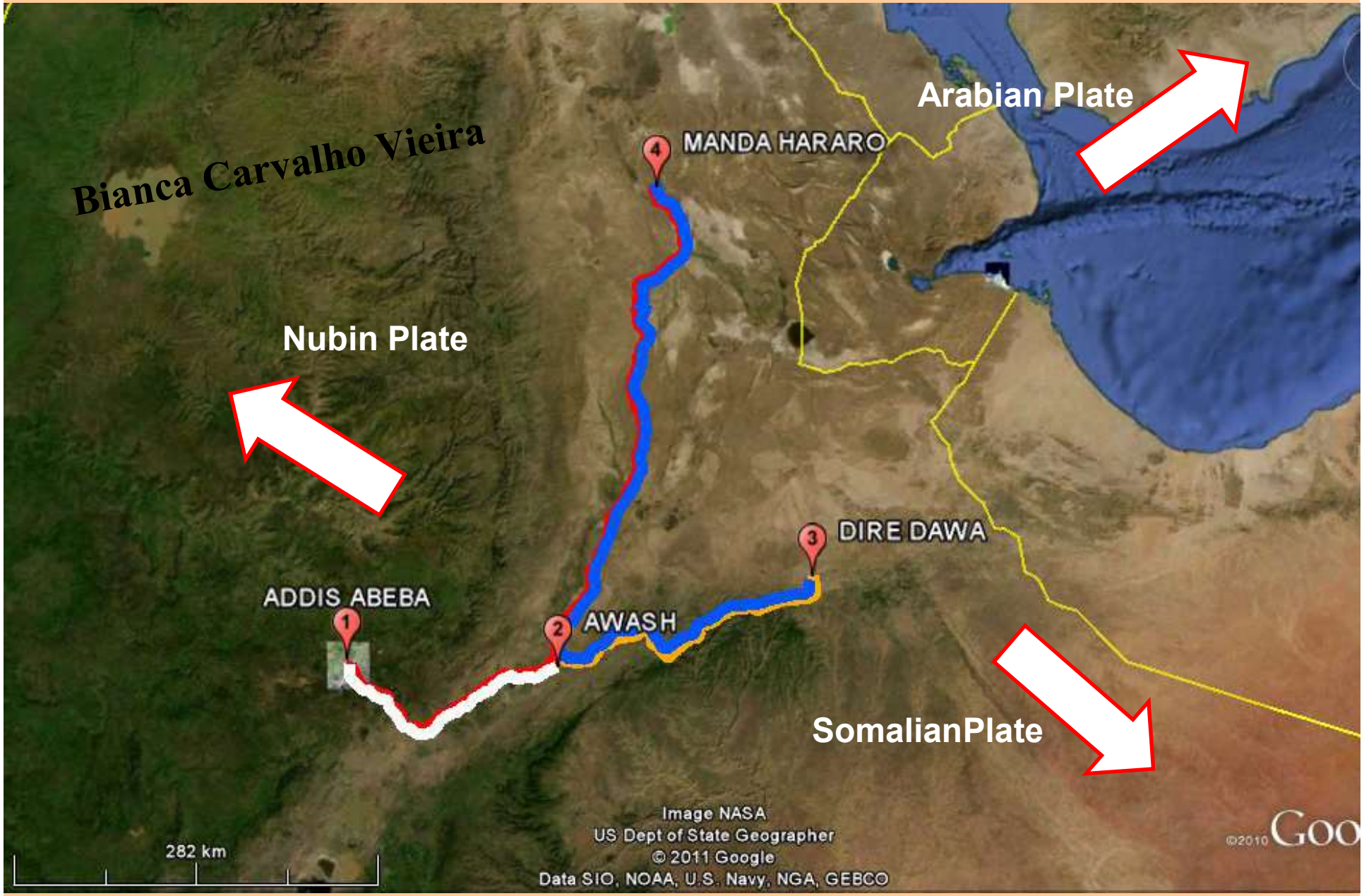
Fig. 3.15 Representation of the Afar Triangle as a triple junction above a hot mantle plume. The African rifts are displayed as spreading rifts with accompanying volcanism (after Dott and Batten, 1981).



Fonte: pre-conference excursion guide to the main ethiopian rift (MER) (15 – 17 February 2011)
Editors: Asfawossen Asrat & Mohammed Umer


ETHIOPIAN RIFT
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ETHIOPIAN RIFT
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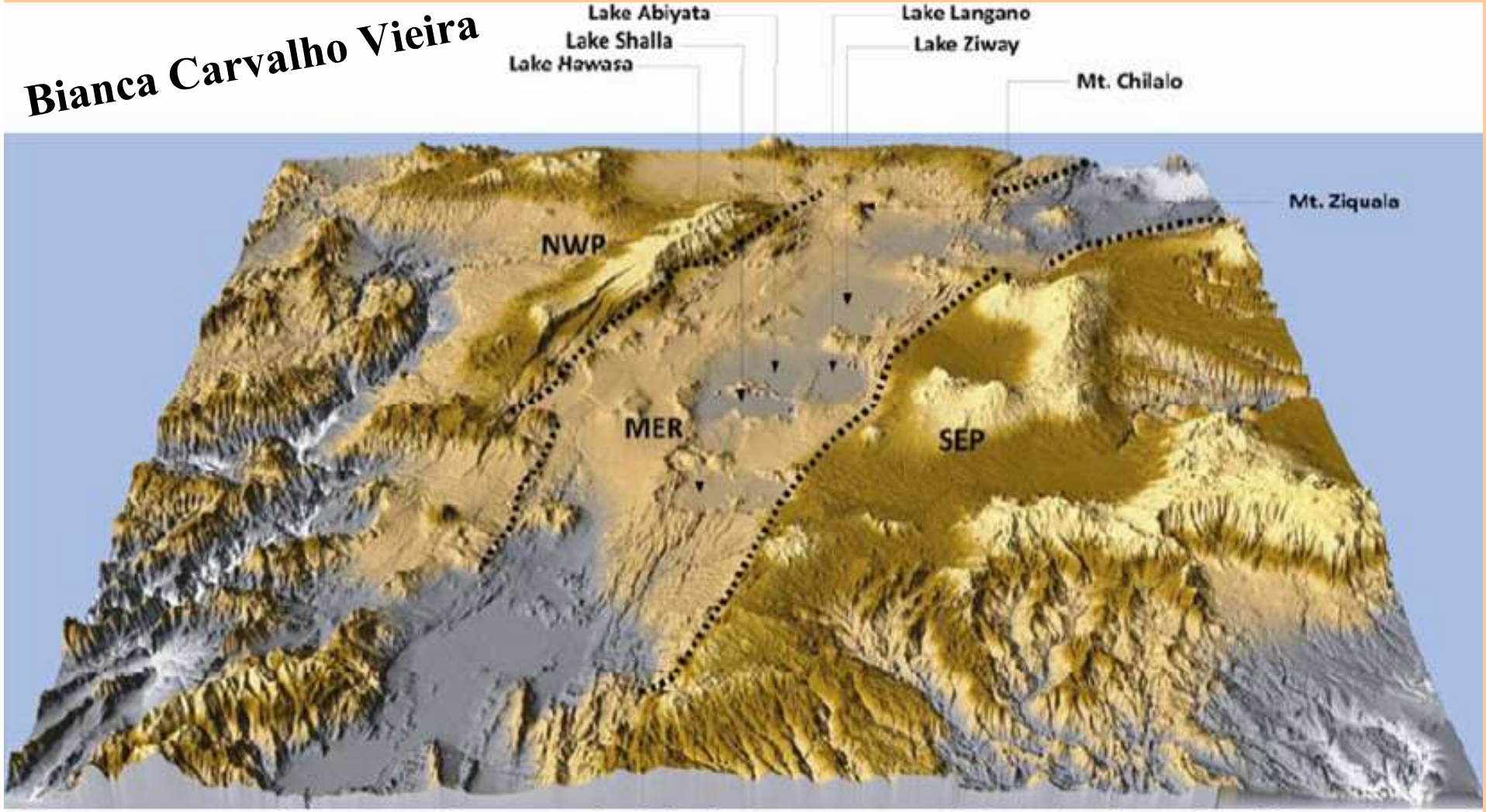
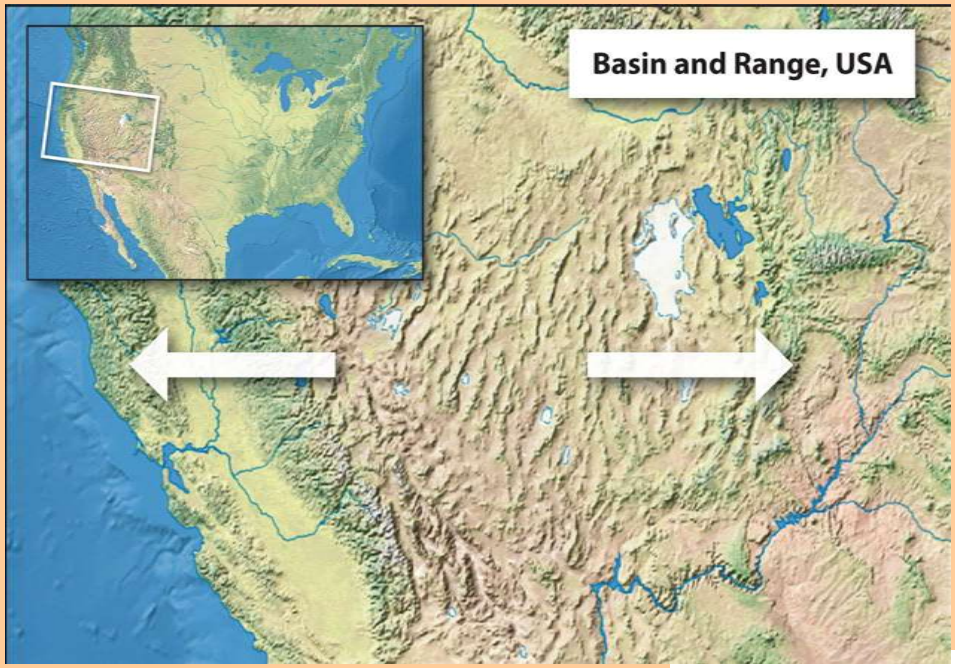


Fig. 2. 3D Map of the central sector of Ethiopia (same area of Fig. 1) where the rift margins and the rift lakes are highlighted.

Fonte: pre-conference excursion guide to the main ethiopian rift (MER) (15 – 17 February 2011)
Editors: Asfawossen Asrat & Mohammed Umer



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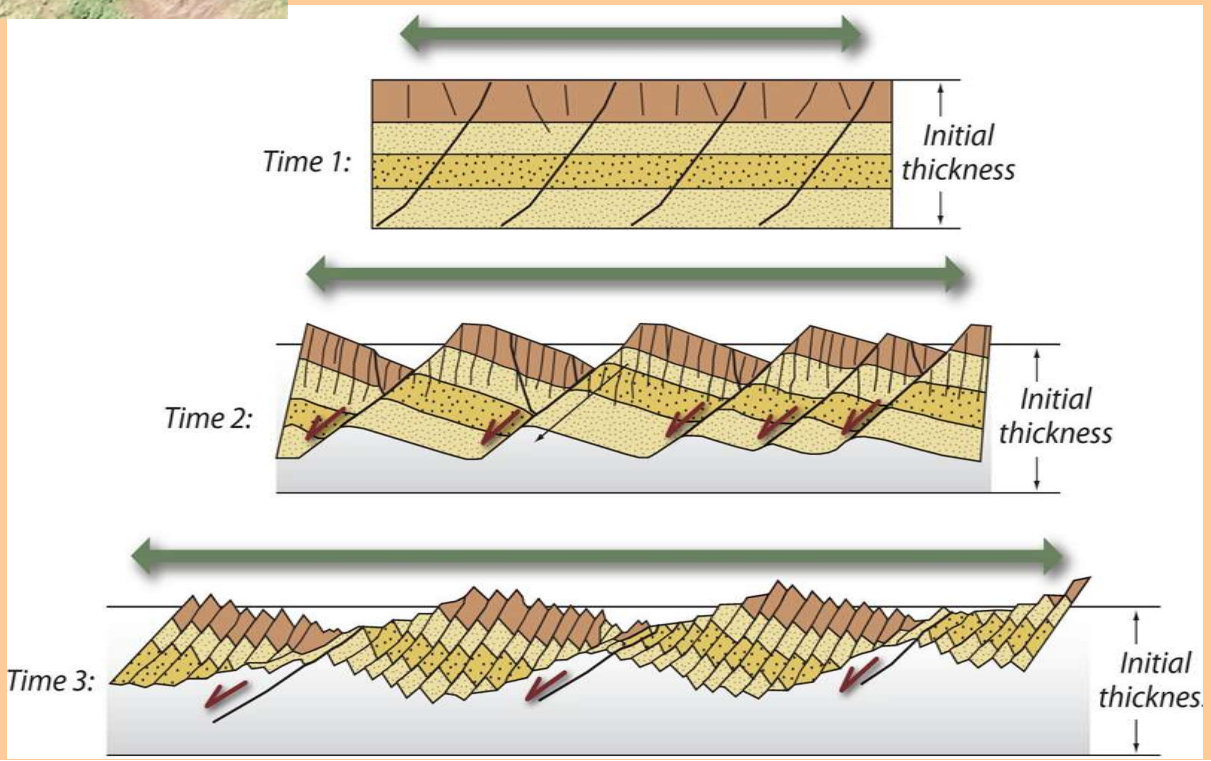

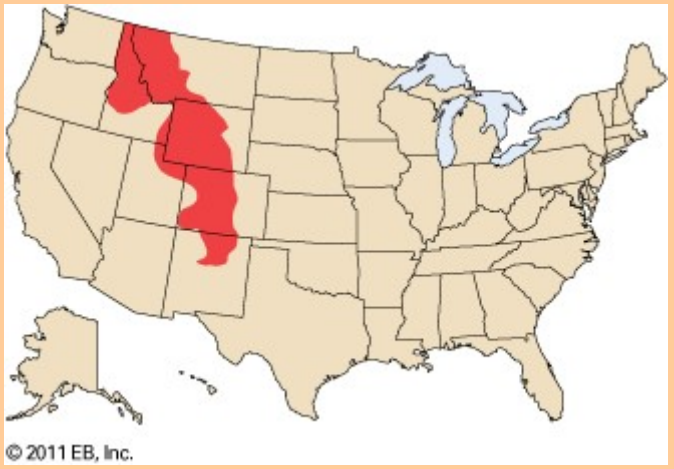

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https://www.nps.gov


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DOMÍNIOS CONVERGENTES

•Nova crosta é criada - crosta antiga é destruída (reciclada) nas zonas de subducção

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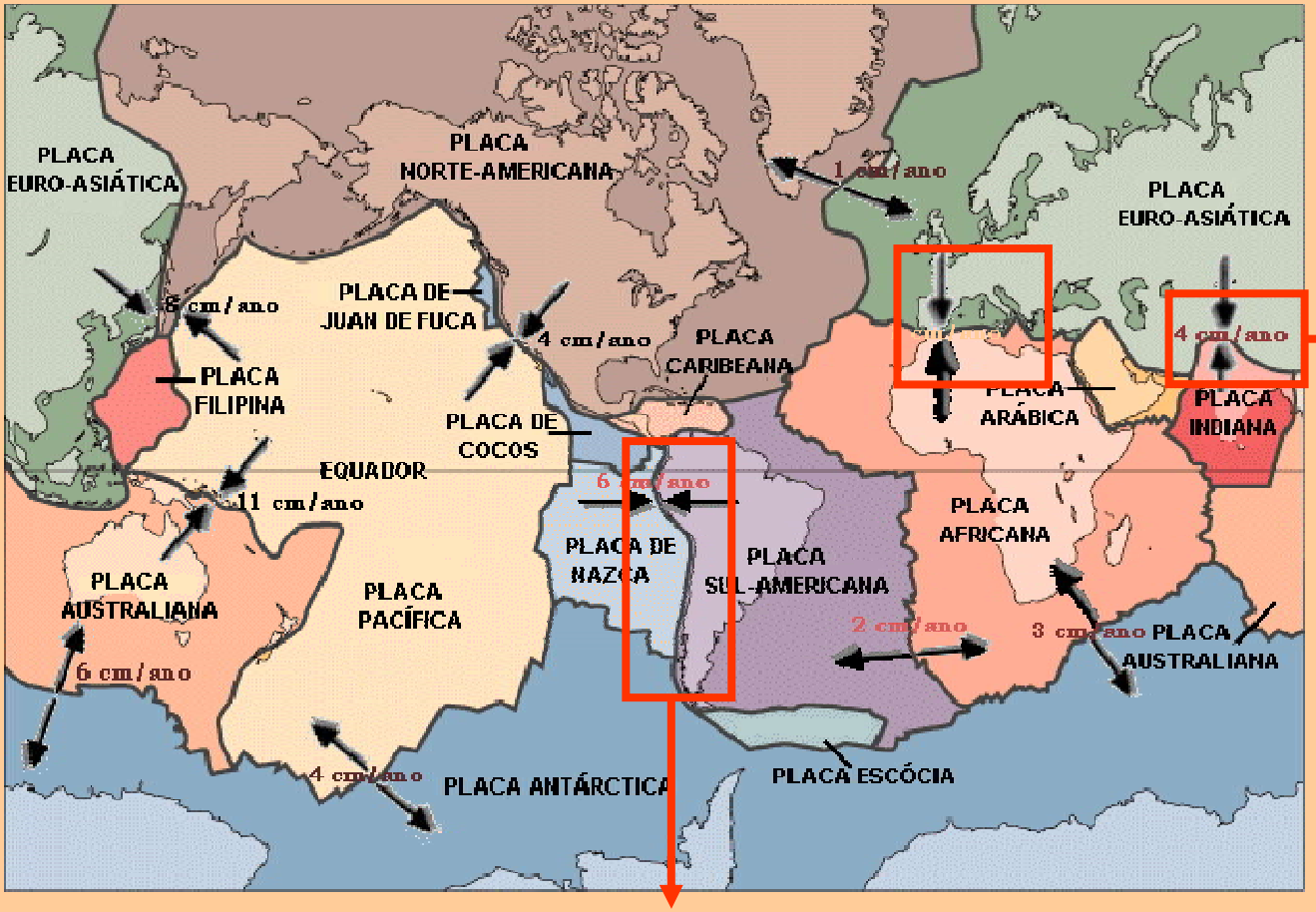
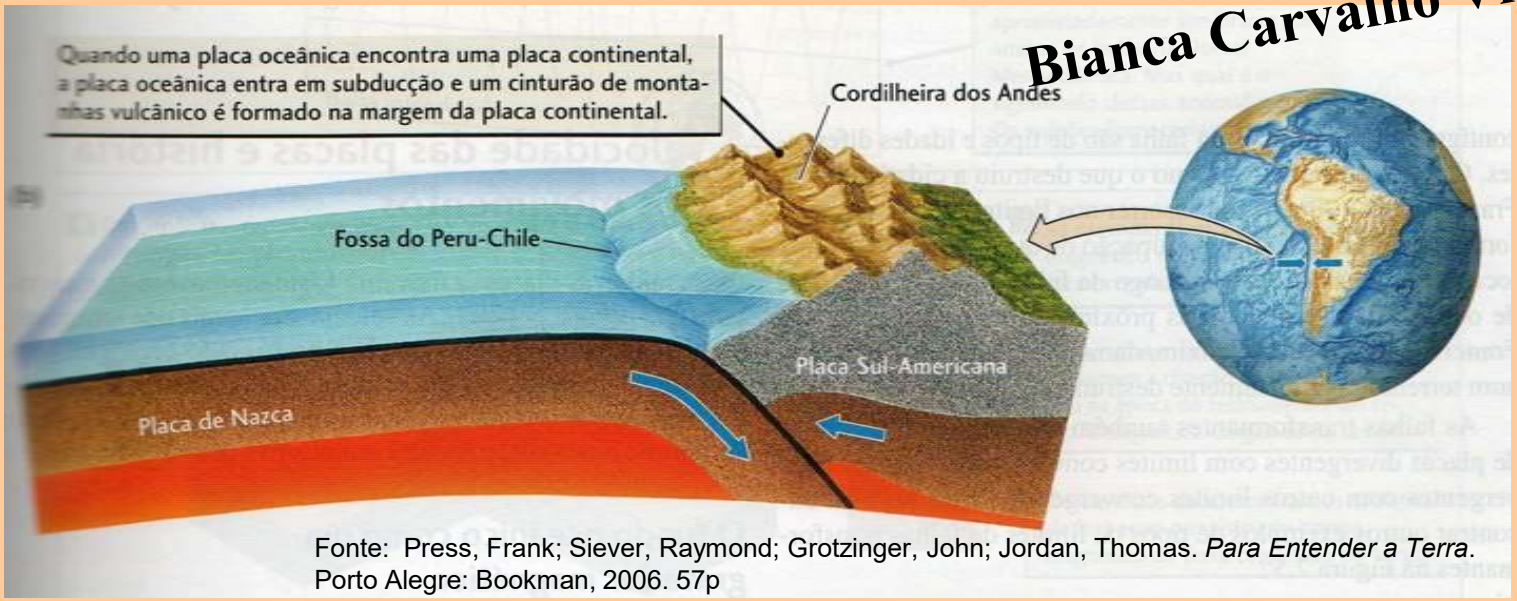


Continental–Continental

Himalaia

Oceânica–continental (Andes)

Oceânica–continental (Andes)



Fonte: Press, Frank; Siever, Raymond; Grotzinger, John; Jordan, Thomas. *Para Entender a Terra*. Porto Alegre: Bookman, 2006. 57p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- **Permiano e o Triássico (separação da Pangea) –**
- **Era Mesozóica (240-206 M. A):**

- Os sedimentos foram dobrados e o magma migrou para superfície e formou vulcões na superfície.
- Na base desses grandes vulcões existem sedimentos do Paleozóico (antes da separação da Pangea) formando cadeias a leste dos Andes.
- Em torno de 140 milhões de anos (Jurássico – configuração atual dos continentes) a placa de Nazca empurrou a placa Sul-americana que sofreu subducção.

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OROGENIA MAIS ANTIGA (PALEOZÓICO):

•Formadas ao longo do Paleozóico antes da formação da Pangéia, no período Permiano-Triássico (290 M. A.). Hoje o relevo encontra-se erodido com níveis baixos de altitude.

❖ Ex. 1: APALACHES: colisão no final do Paleozóico (antes da separação da Pangea).

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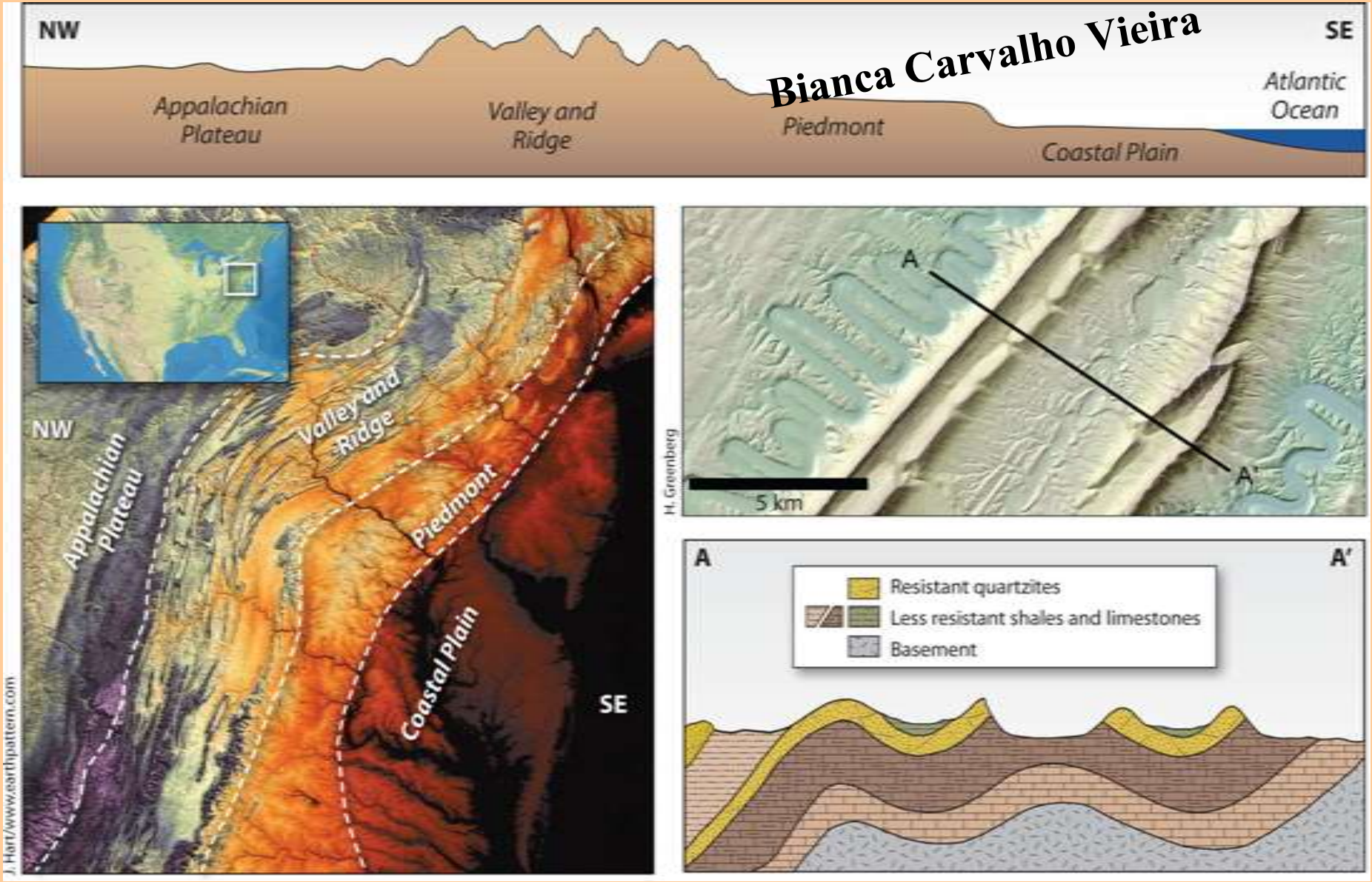
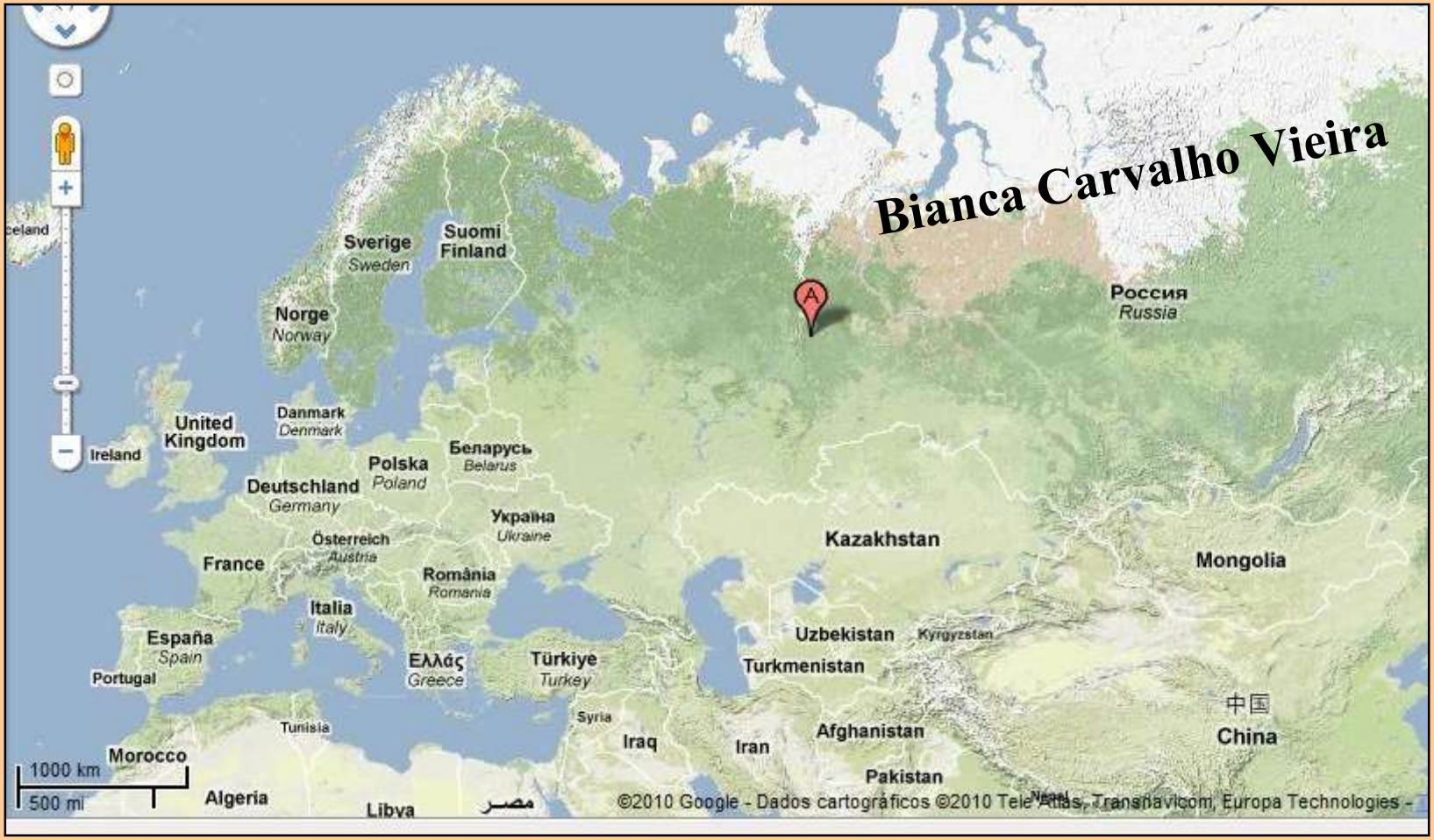


Bierman, P.R. and Montgomery, D.R. (2014). In: Key Concepts in Geomorphology. W.H. Freeman and Company Publishers New York.

Os Montes Urais ergueram-se há cerca de 250 milhões de anos e sofreram intensa erosão.




Asia
Europe
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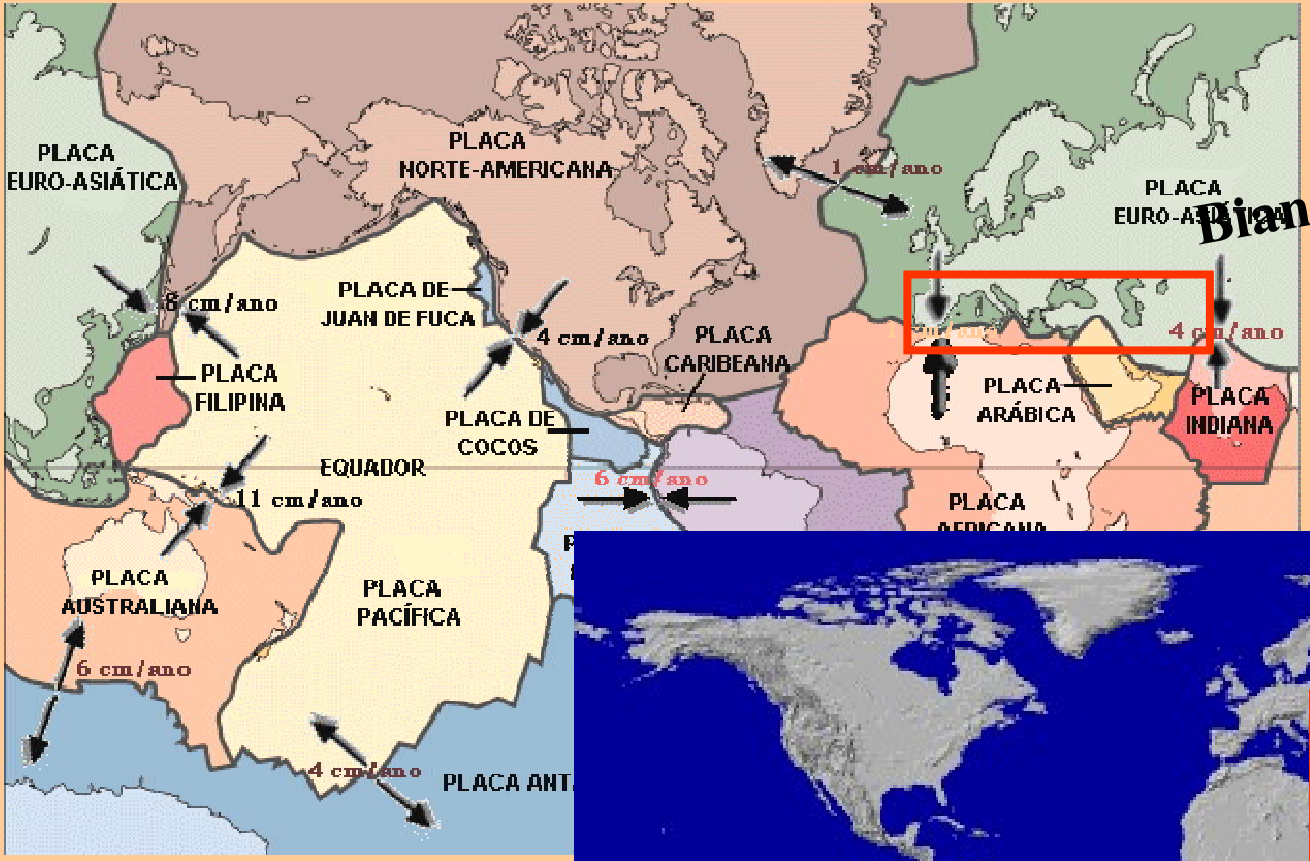
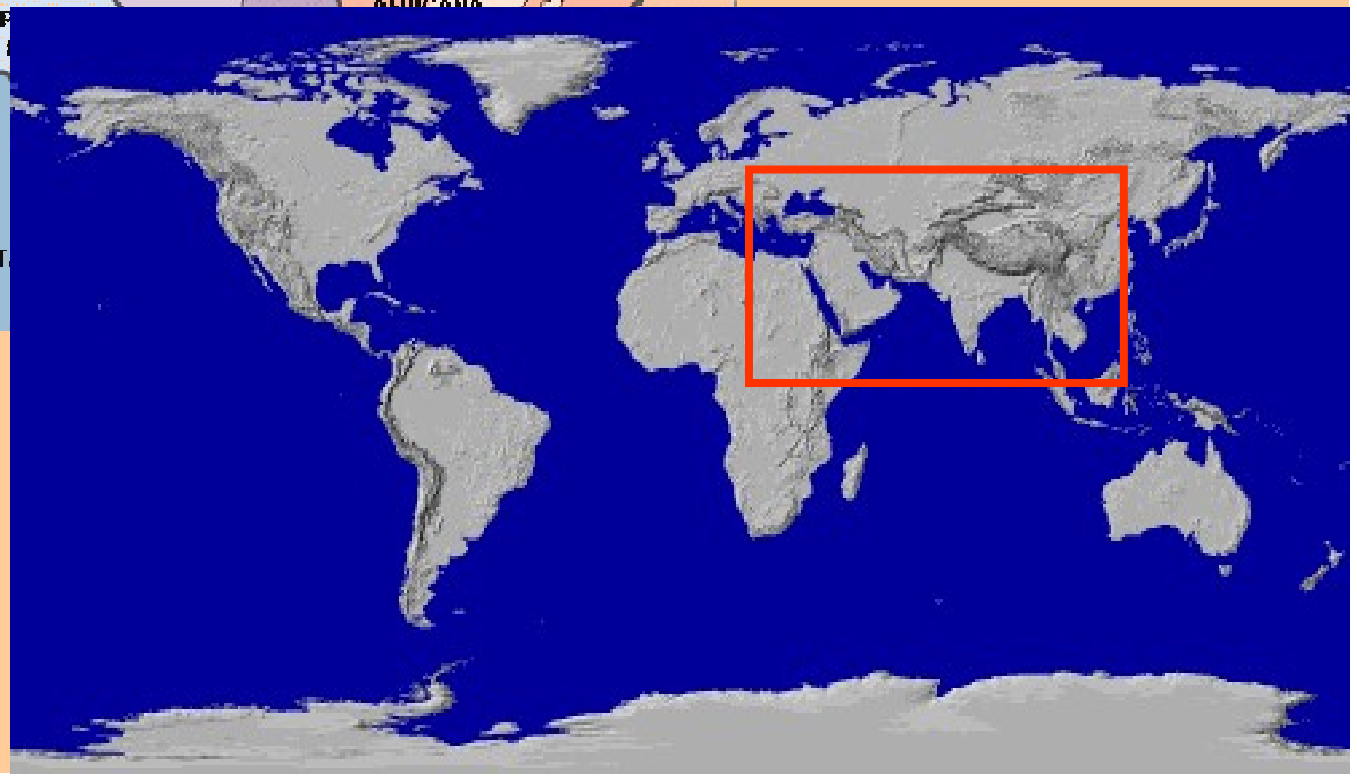
2. DOMÍNIOS CONVERGENTES Continental–Continental





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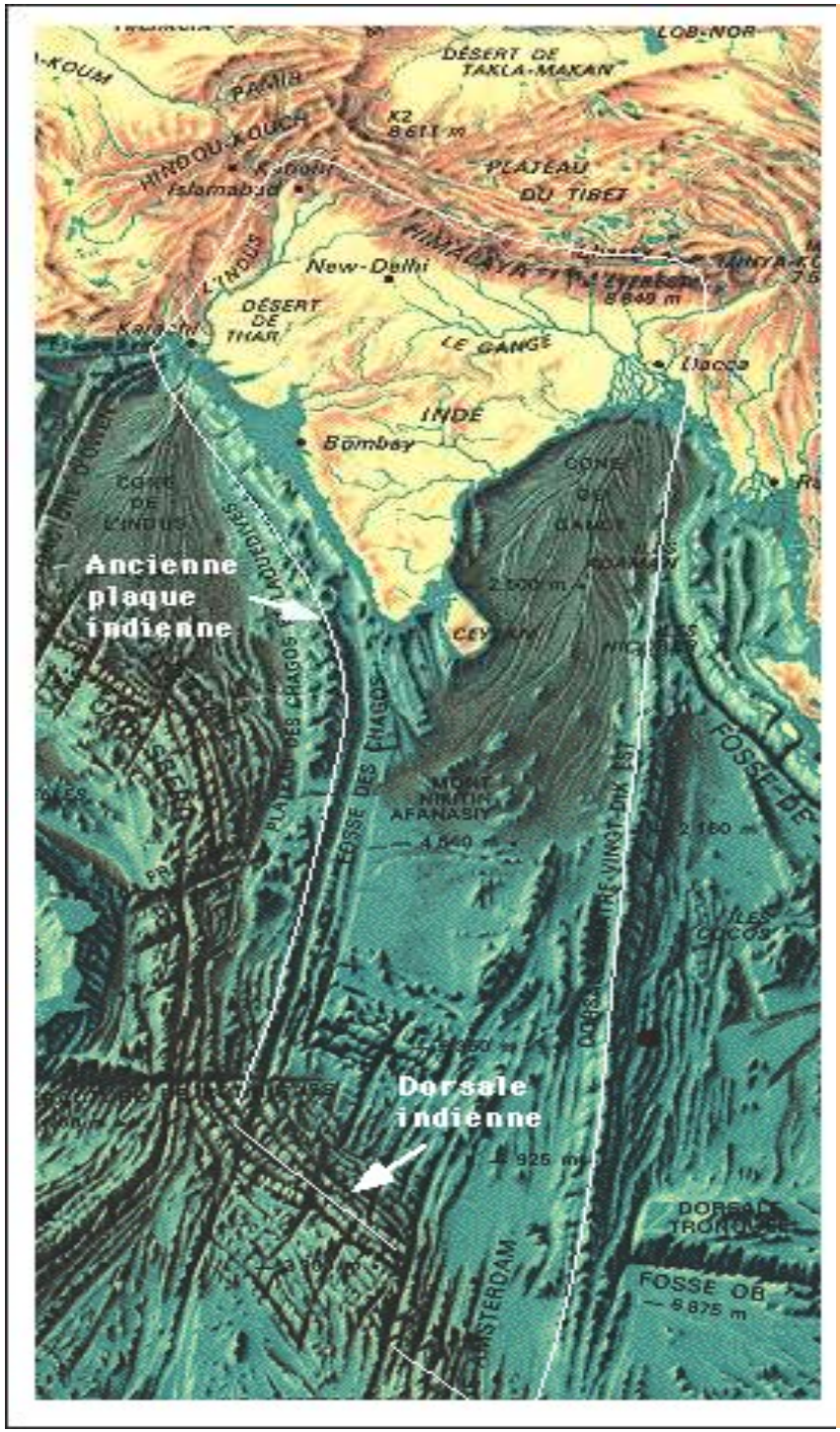

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• Colisão continental - Era Cenozóica (65 M. A. até hoje) ocorreu ao longo de linhas tectônicas da borda sul da Placa Eurasiana.

Relevo dobrado - Espanha

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DOMÍNIOS TRANSCORRENTES


San Andreas
Fault


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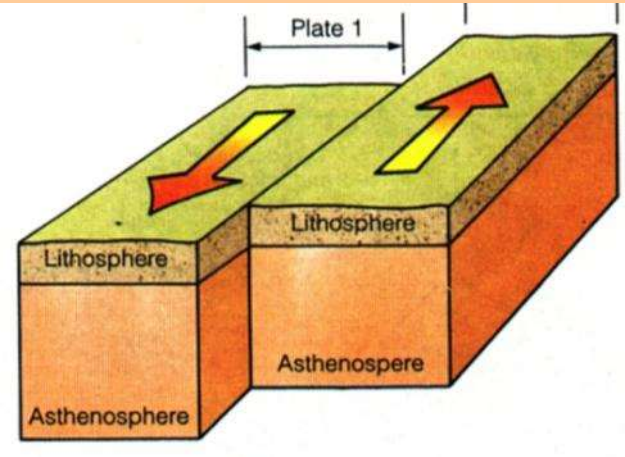
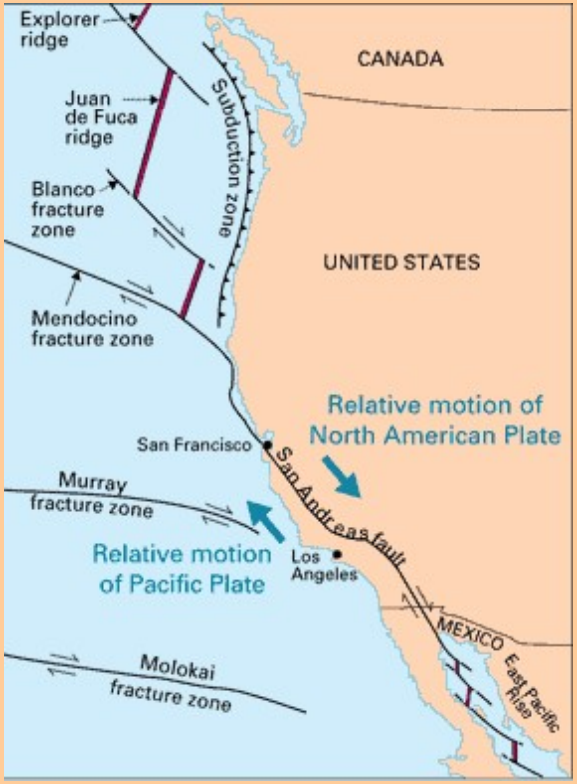
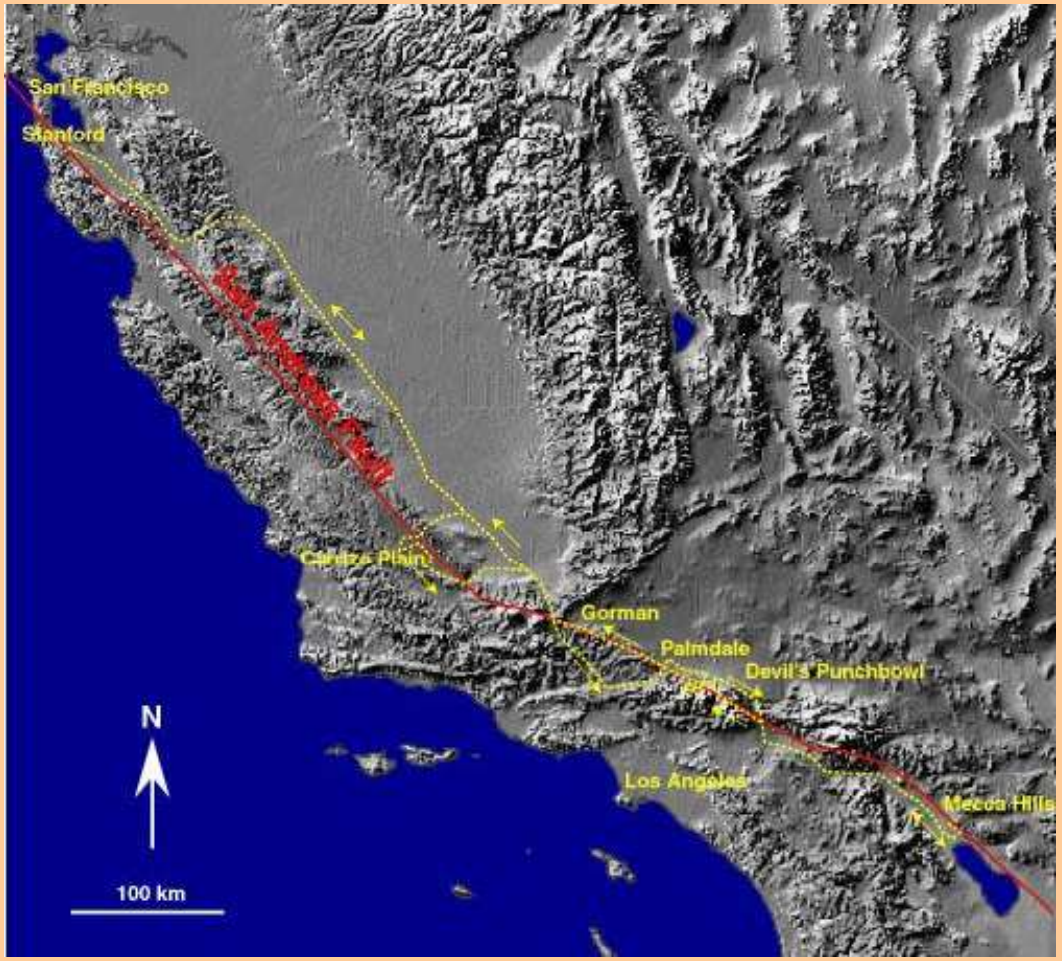
3. DOMÍNIOS TRANSCORRENTES







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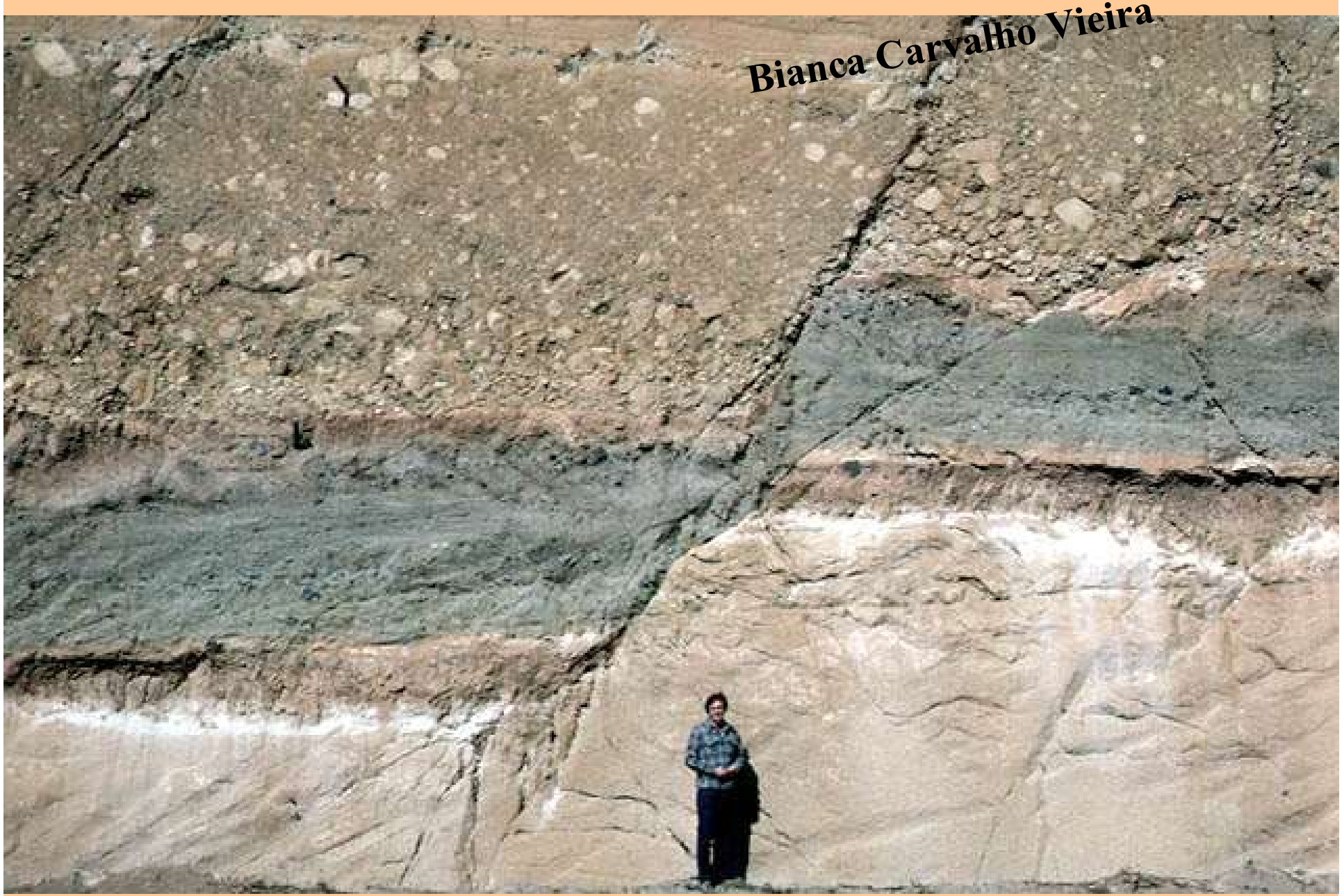
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Bierman, P.R. and Montgomery, D.R. (2014). In: Key Concepts in Geomorphology. W.H. Freeman and Company Publishers New York.

Falha de San Andreas

http://commons.bcit.ca/civil/students/earthquakes/unit1_01.htm

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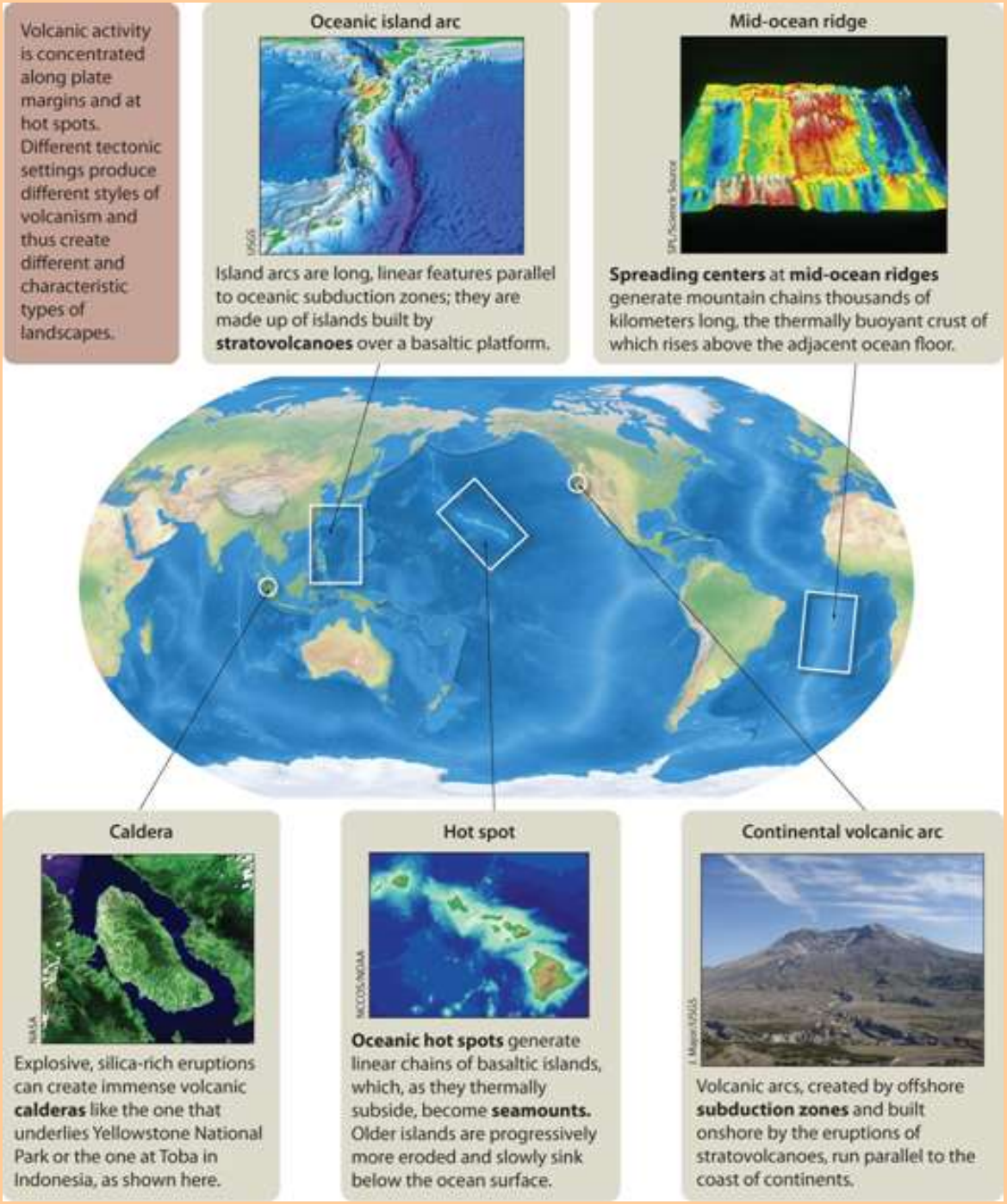
Falha de San Andreas (Reservatório)

Fonte:http://sepwww.stanford.edu/oldsep/joe/fault_images/BayAreaSanAndreasFault.htm



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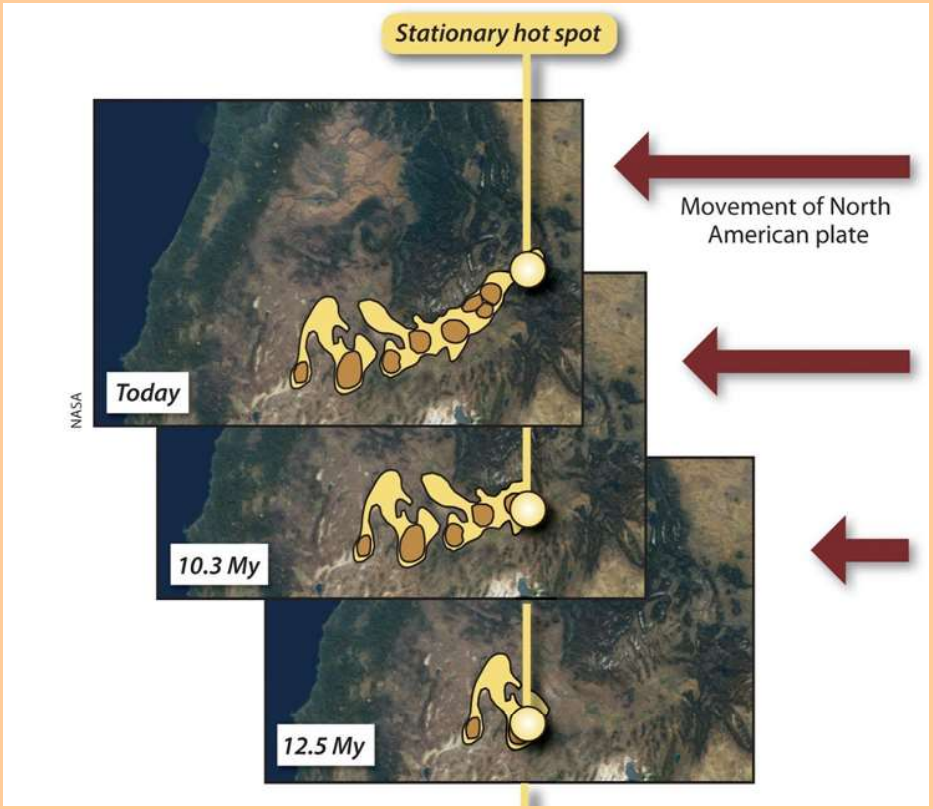

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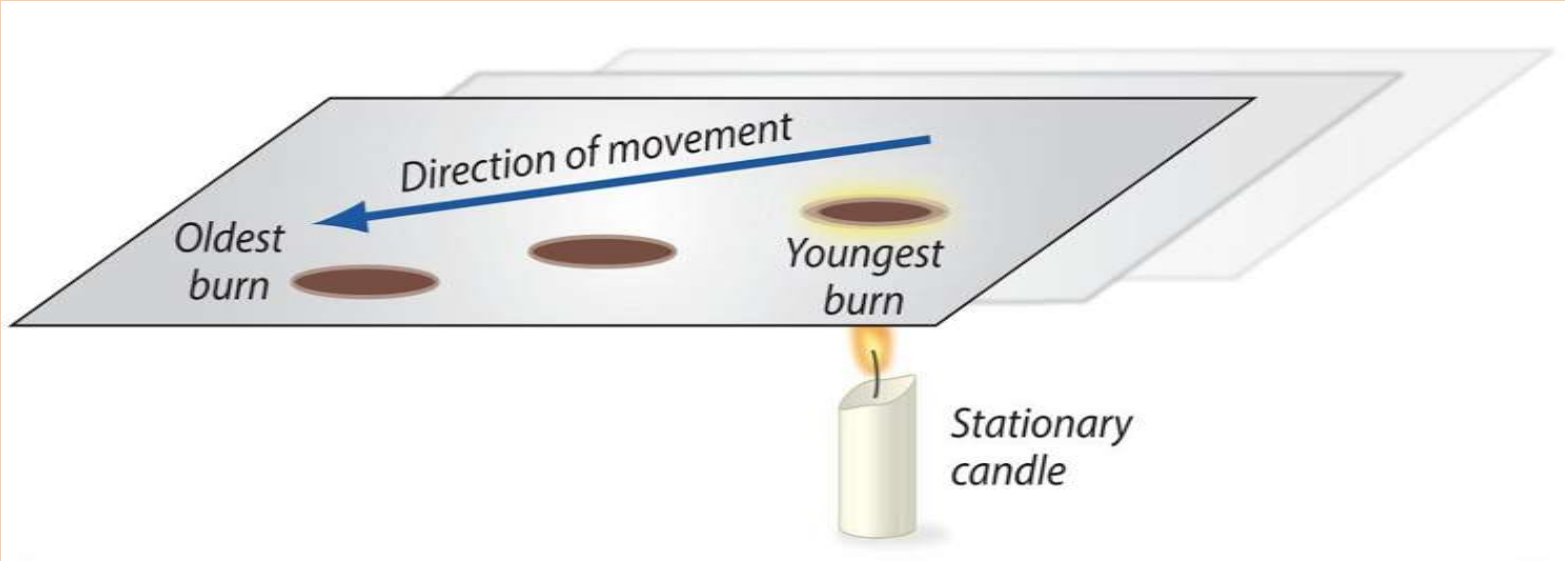
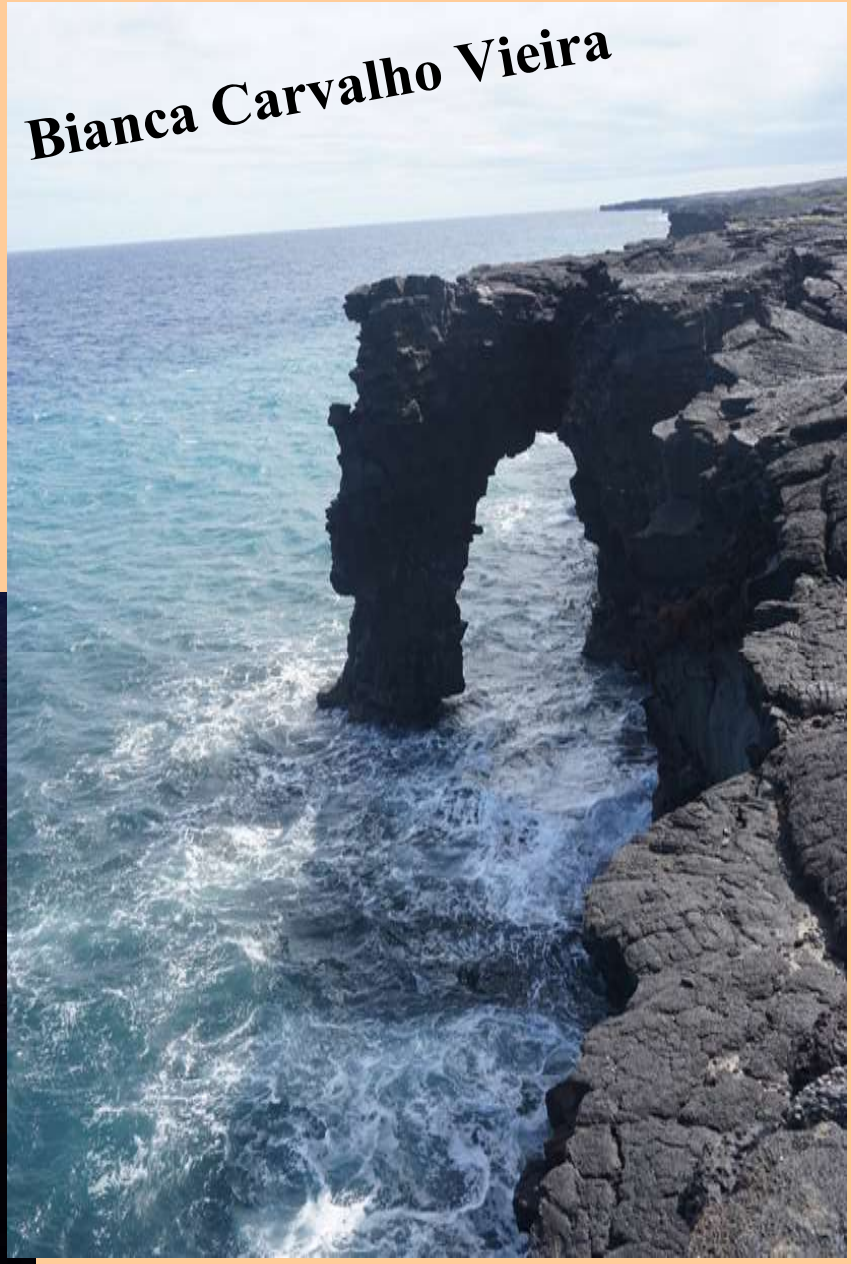



Princeville
Kapaa
Koloa
Kahului
Honolulu
Lahaina
Kihei
Kehului
HAVAÍ
Waimea
Waikoloa Village
Hilo
Island of Hawaii
Volcano
Pahoa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