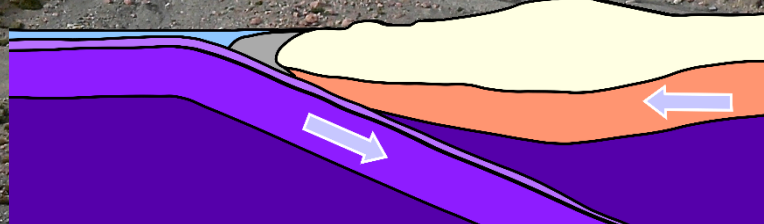


DE LA TECTÓNICA DE PLACAS A LA CORDILLERA DEL ATLAS

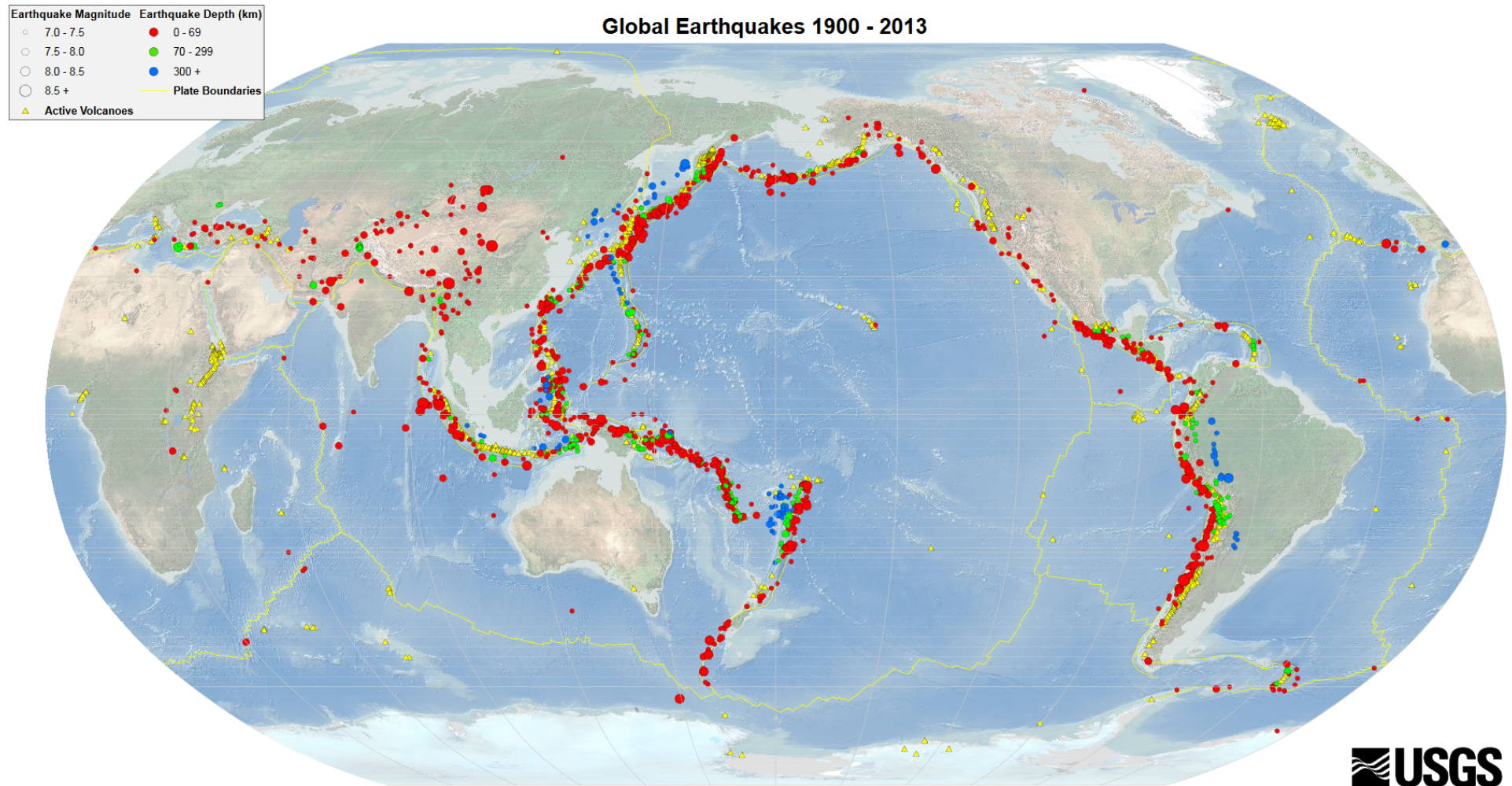
Qué estudia un geólogo para interpretar las cadenas de montañas

Maria Luisa Arboleya
Dpt. de GEOLOGIA



Universitat
Autònoma
Barcelona

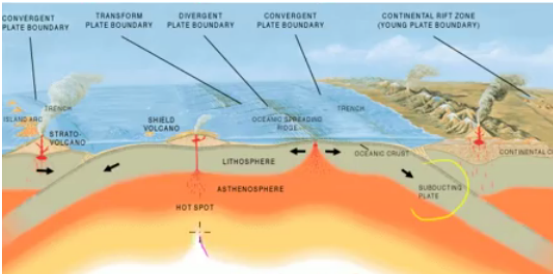
LA TECTÓNICA DE PLACAS NOS AFECTA: terremotos y volcanes ligados a los bordes de placa



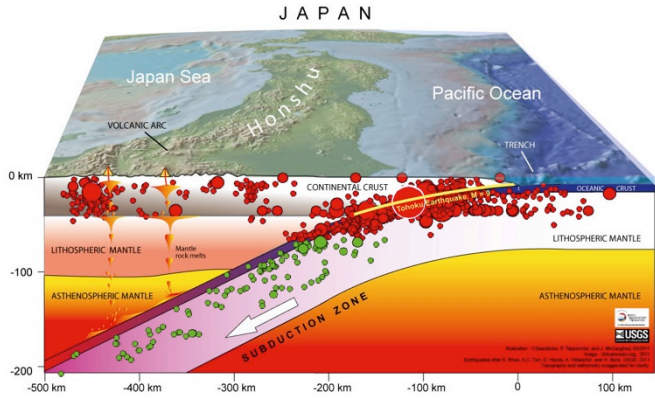
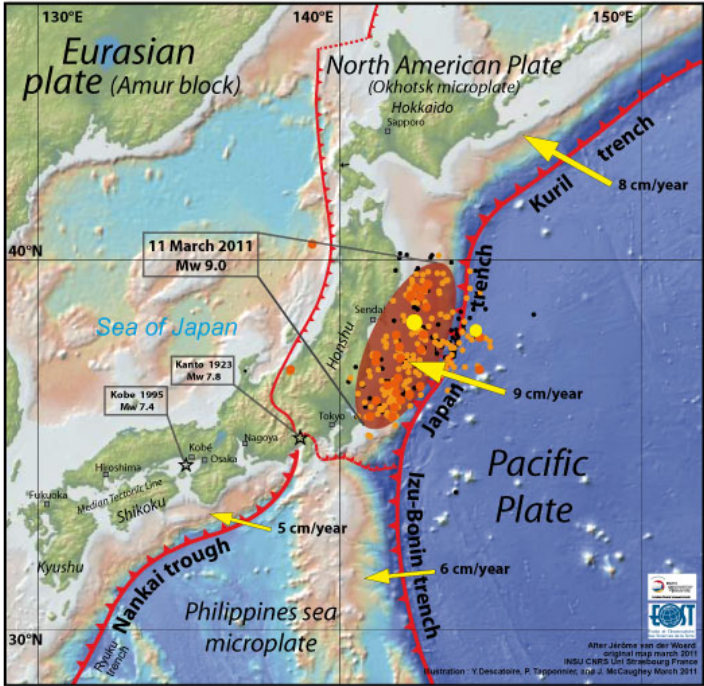
Volcán Eyjafjallökull,
(Islandia) abril, 2010



Volcán Kilauea (Hawaii)
Desde junio 2018

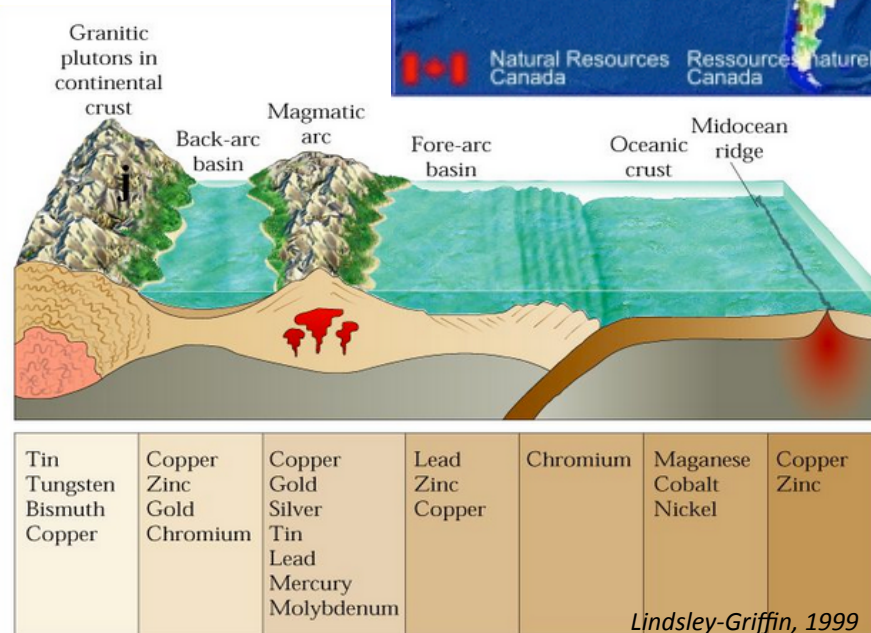
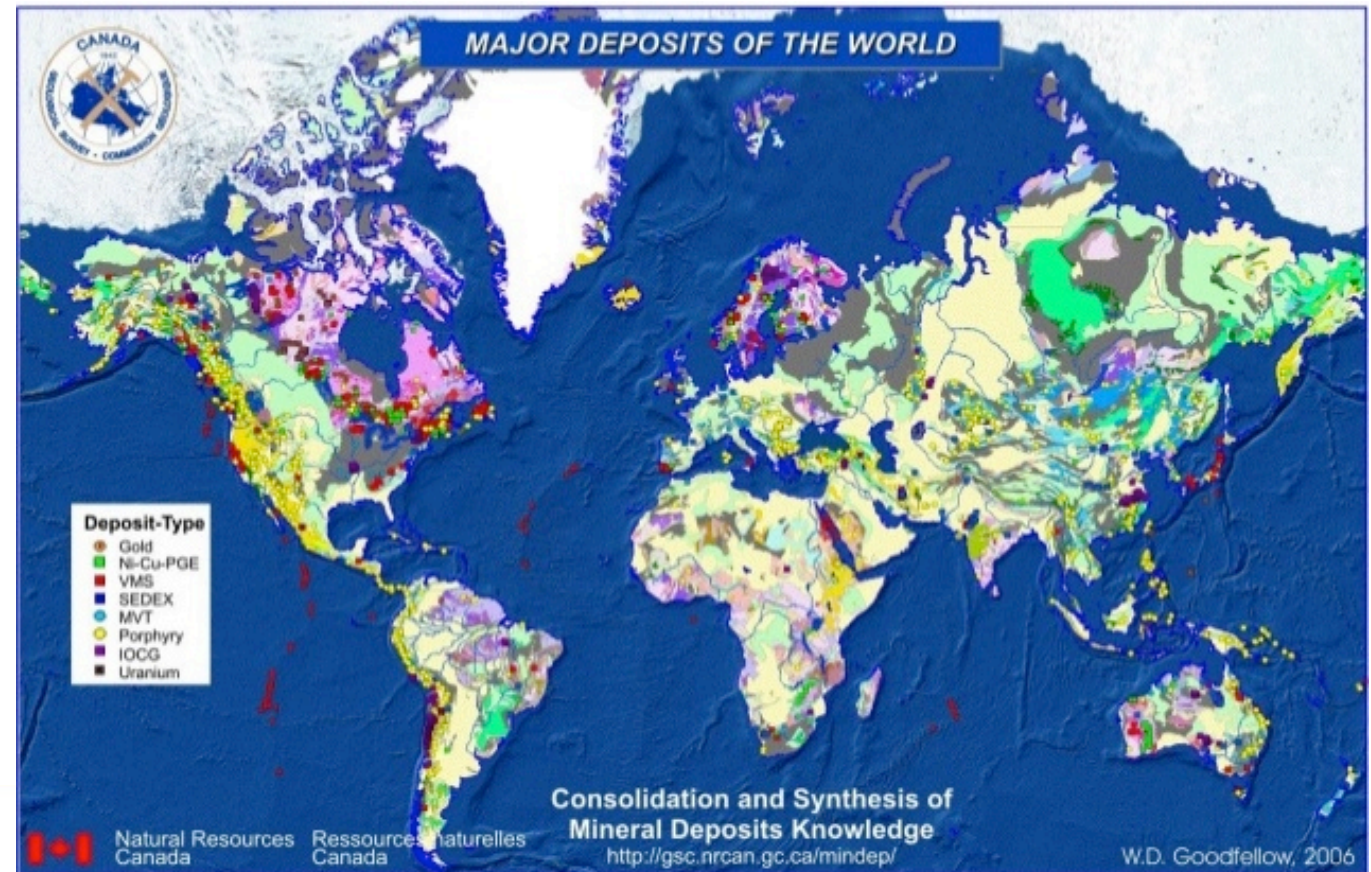


Terremoto de Tohoku (Japón)
M = 9 11- 3 -2011

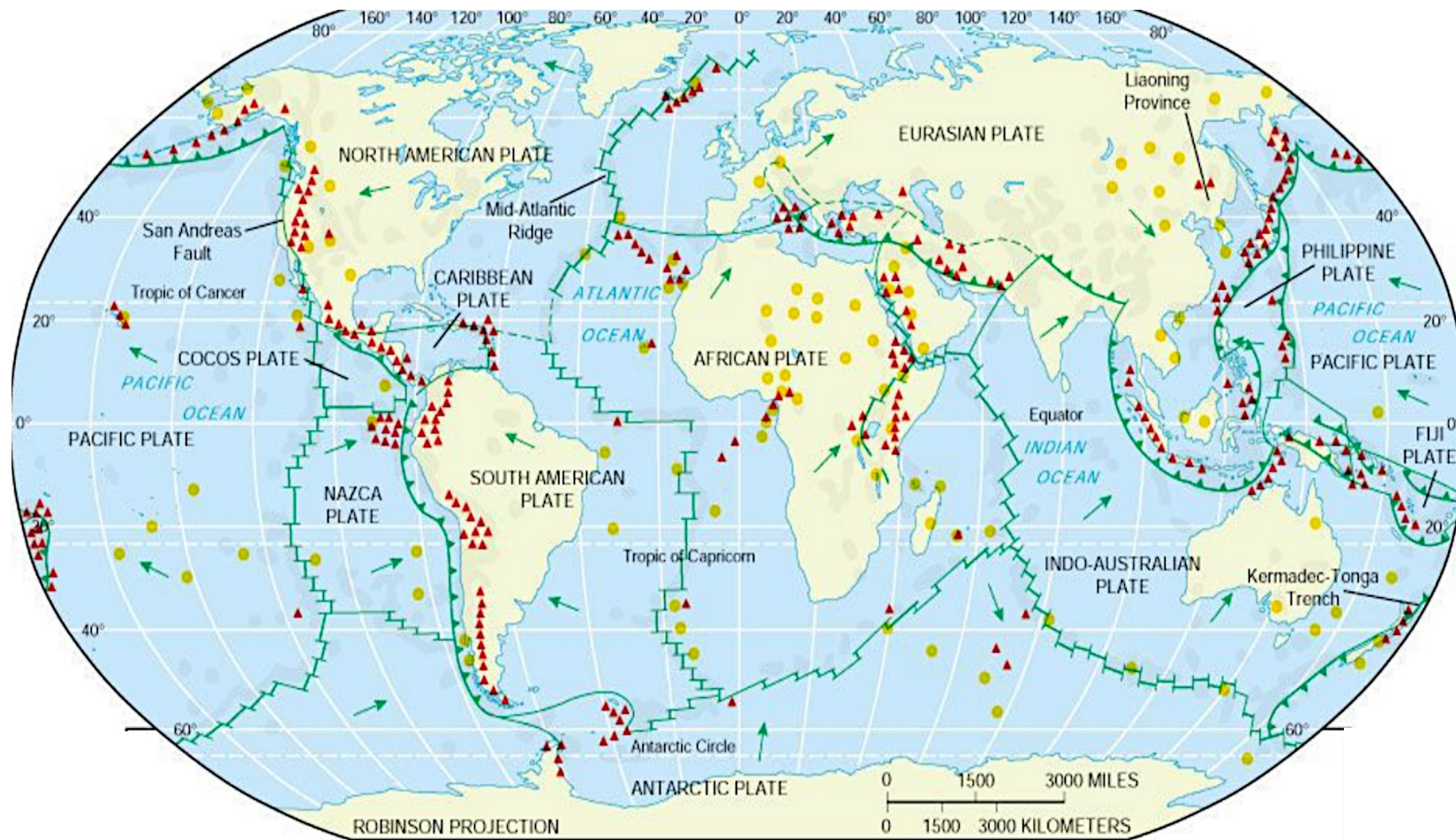


USGS NEIC (WDCS-D)

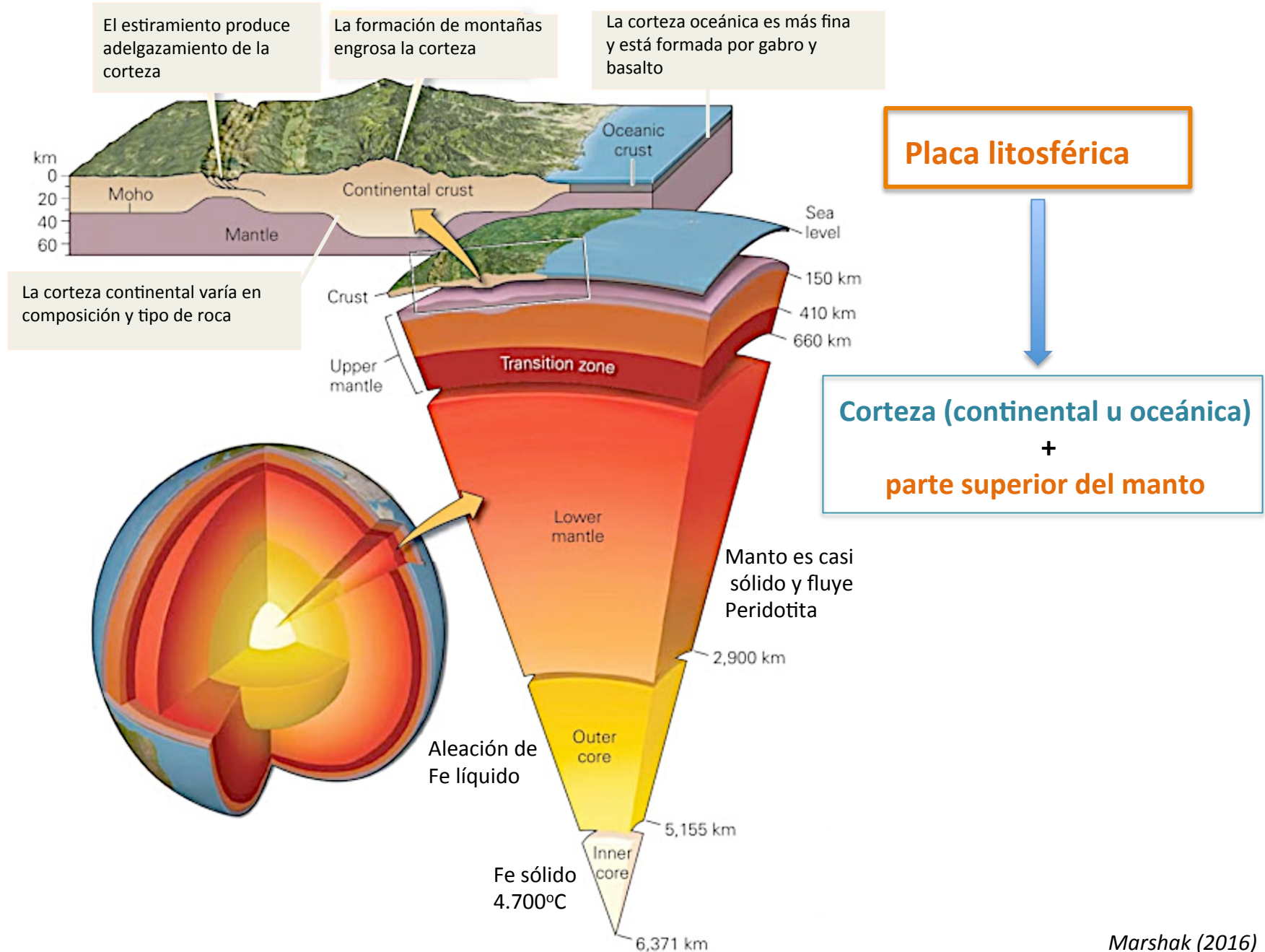
La tectónica de placas controla la formación de yacimientos minerales



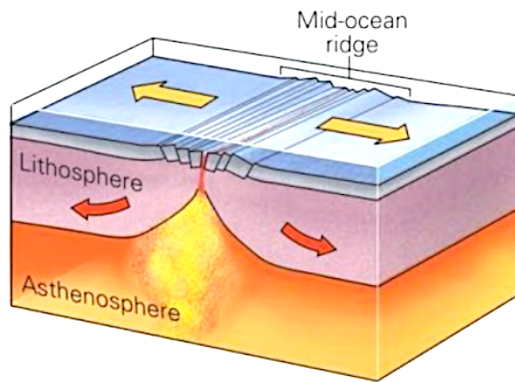
LAS PLACAS TECTÓNICAS



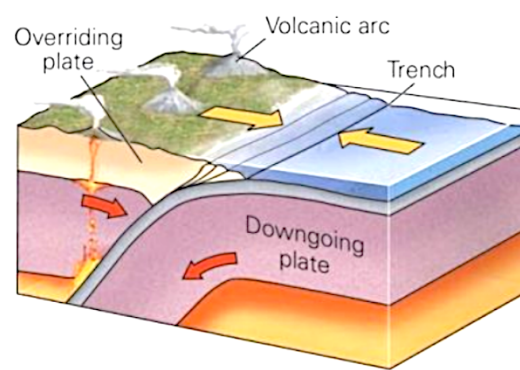
QUÉ ES UNA PLACA ?



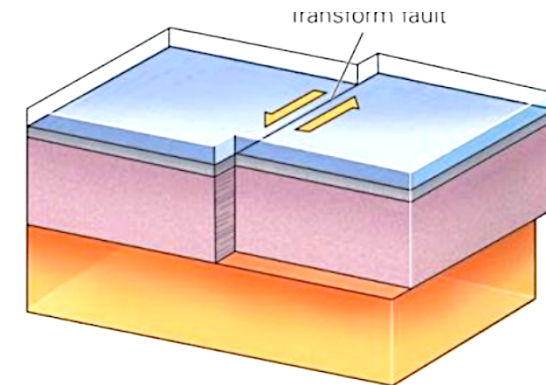
TIPOS DE BORDES DE PLACAS



Divergente



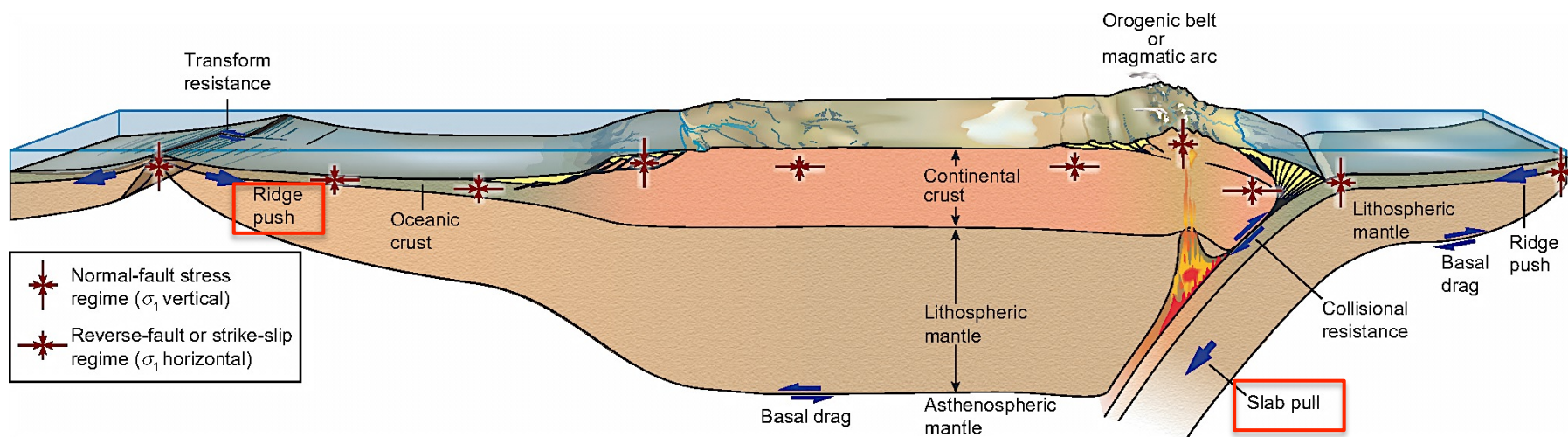
Convergente



Transformante

Marshak (2016)

QUÉ MUEVE LAS PLACAS?

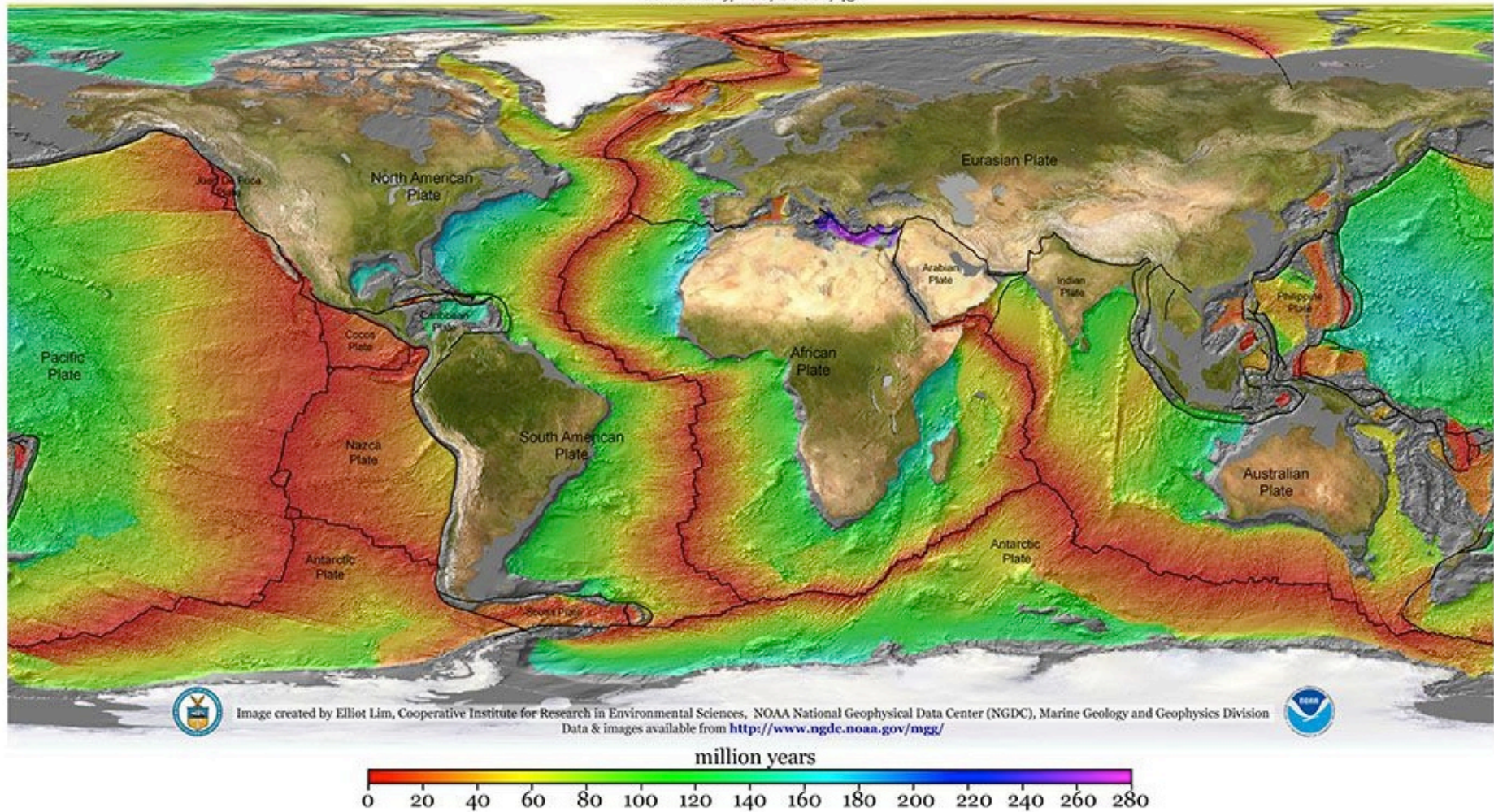


Fossen(2010)

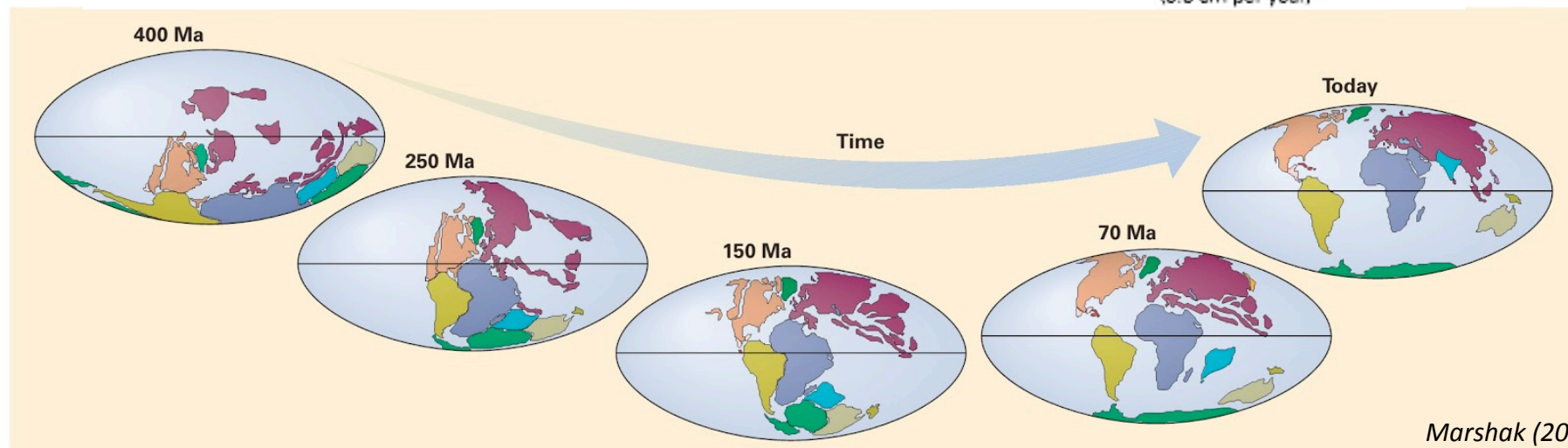
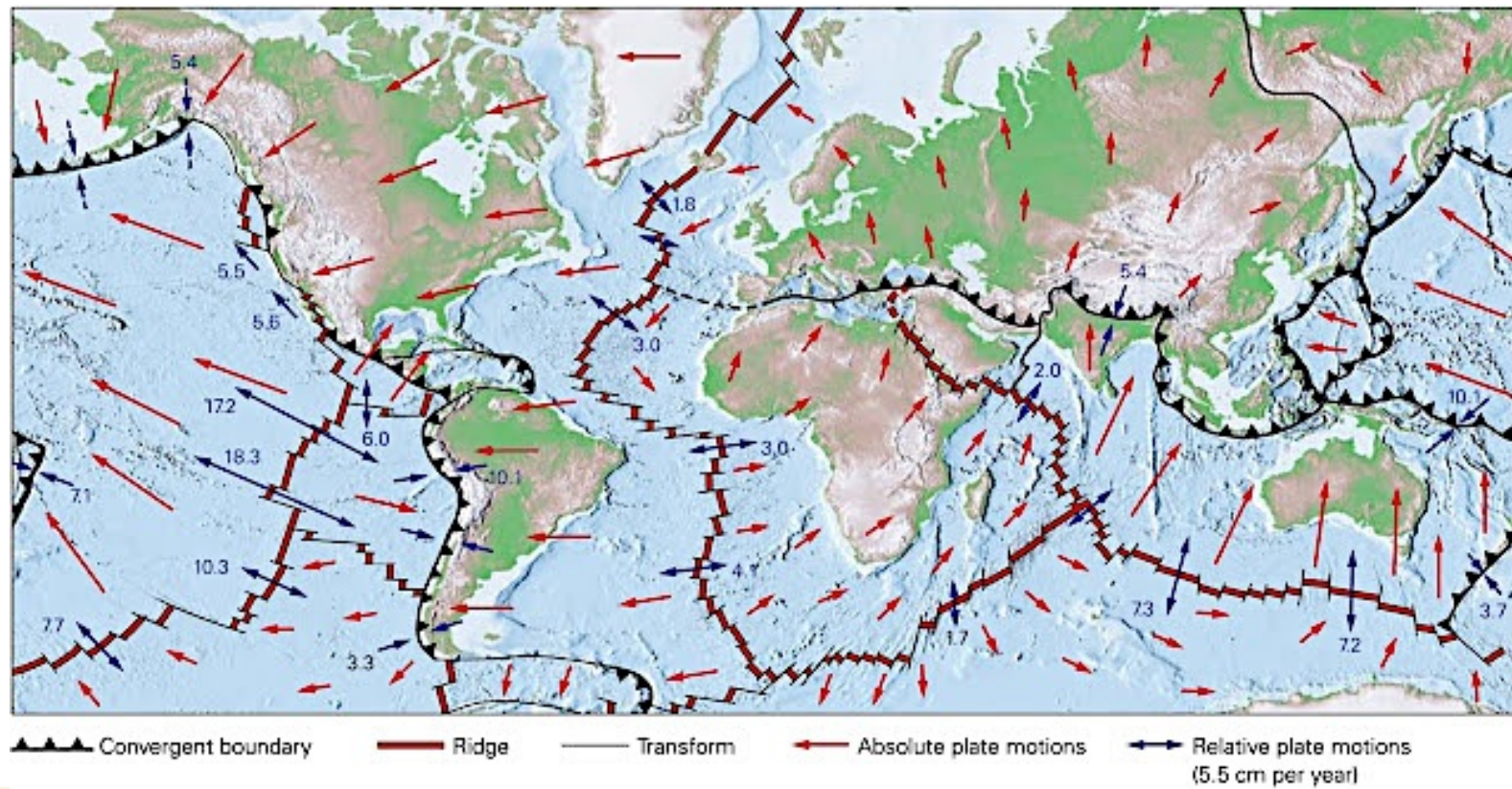
Age of Oceanic Lithosphere (m.y.)

Data source:

Muller, R.D., M. Sdrolias, C. Gaina, and W.R. Roest 2008. Age, spreading rates and spreading symmetry of the world's ocean crust, *Geochem. Geophys. Geosyst.*, 9, Q04006, doi:10.1029/2007GC001743.

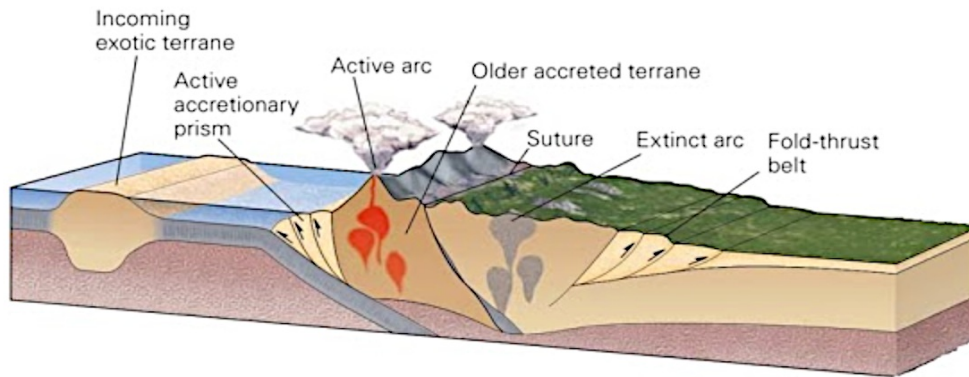


Movimiento lento a escala humana: cm/año



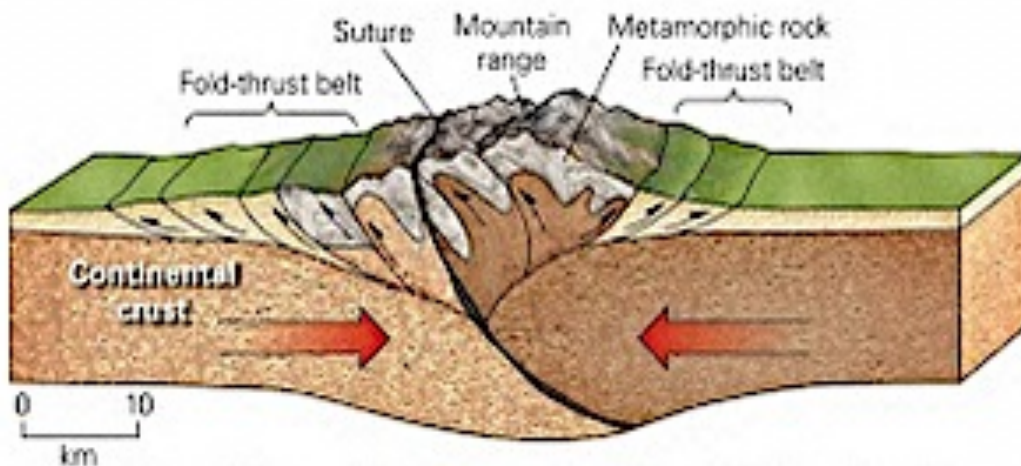
OROGÉNESIS: fuerzas generadas por la convergencia entre placas

Montañas relacionadas con subducción



Los Andes (Torres del Paine, Chile)

Montañas relacionadas con colisión continental

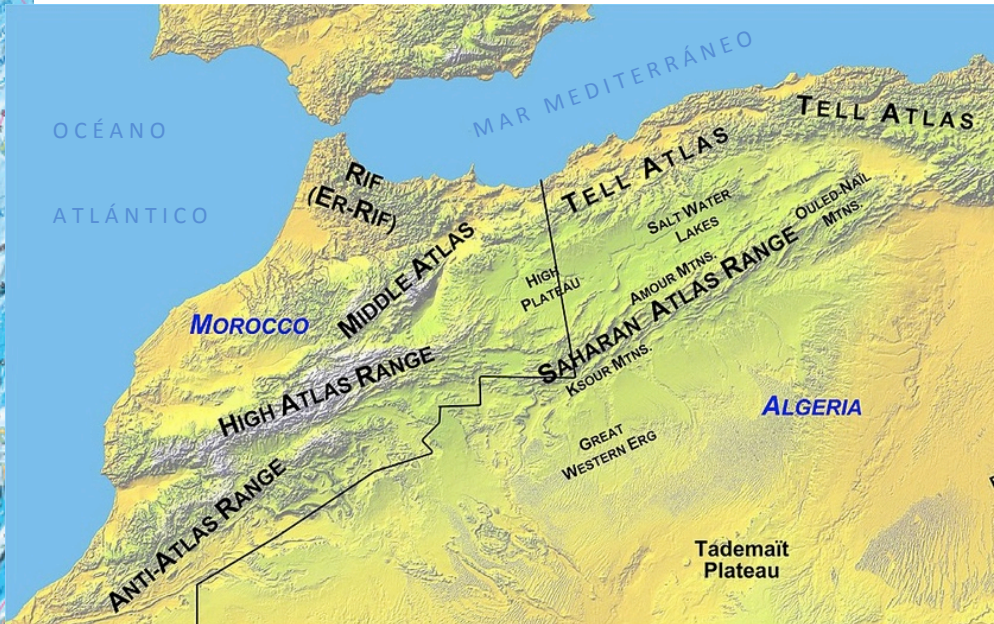
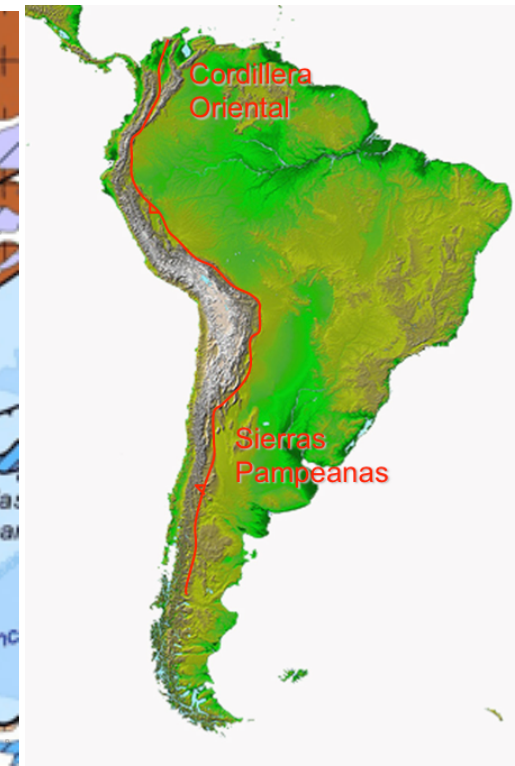


Los Pirineos (Valle del Ara)

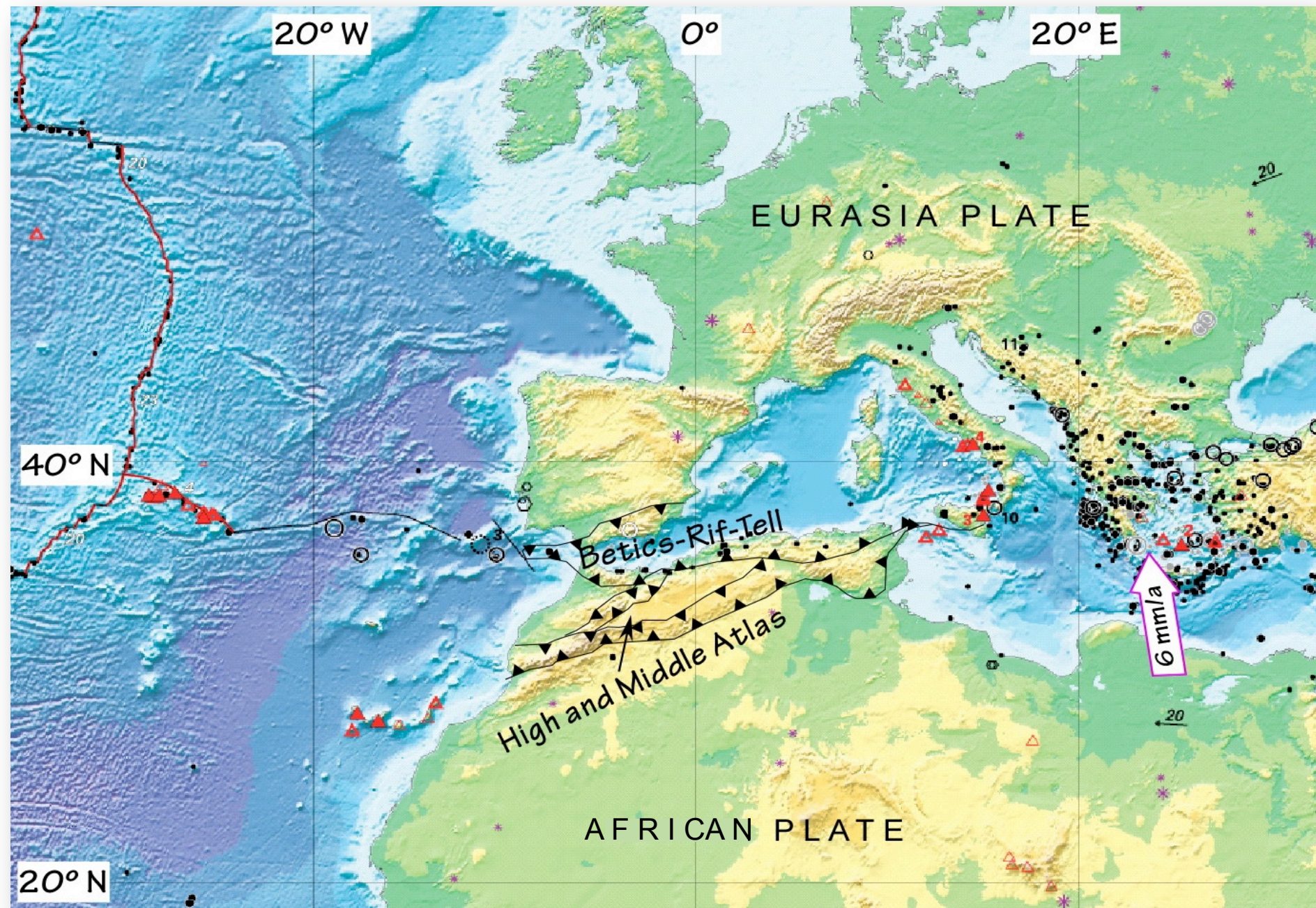
La orogénesis genera fallas y pliegues a consecuencia de la compresión



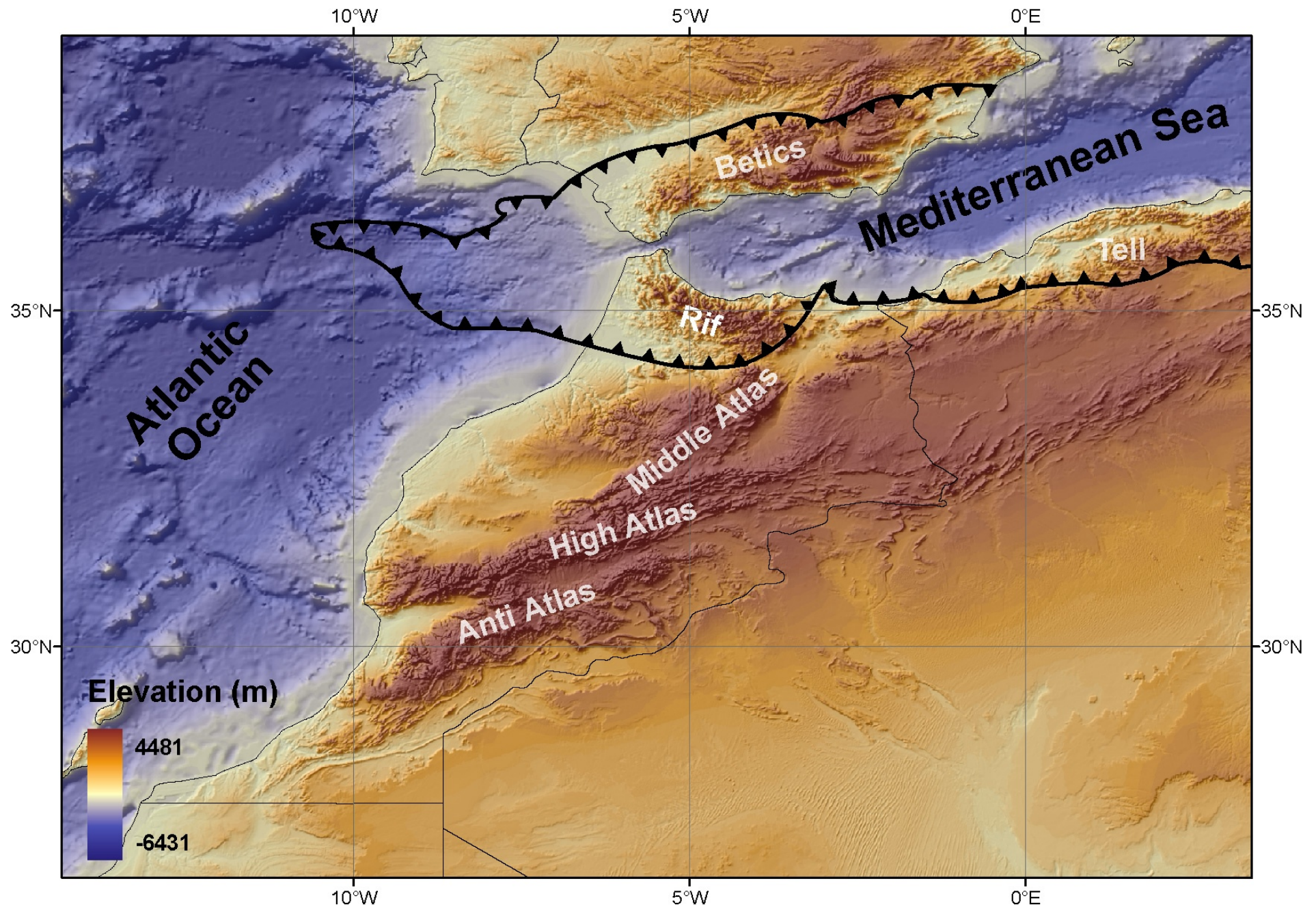
También hay orógenos de intraplaca



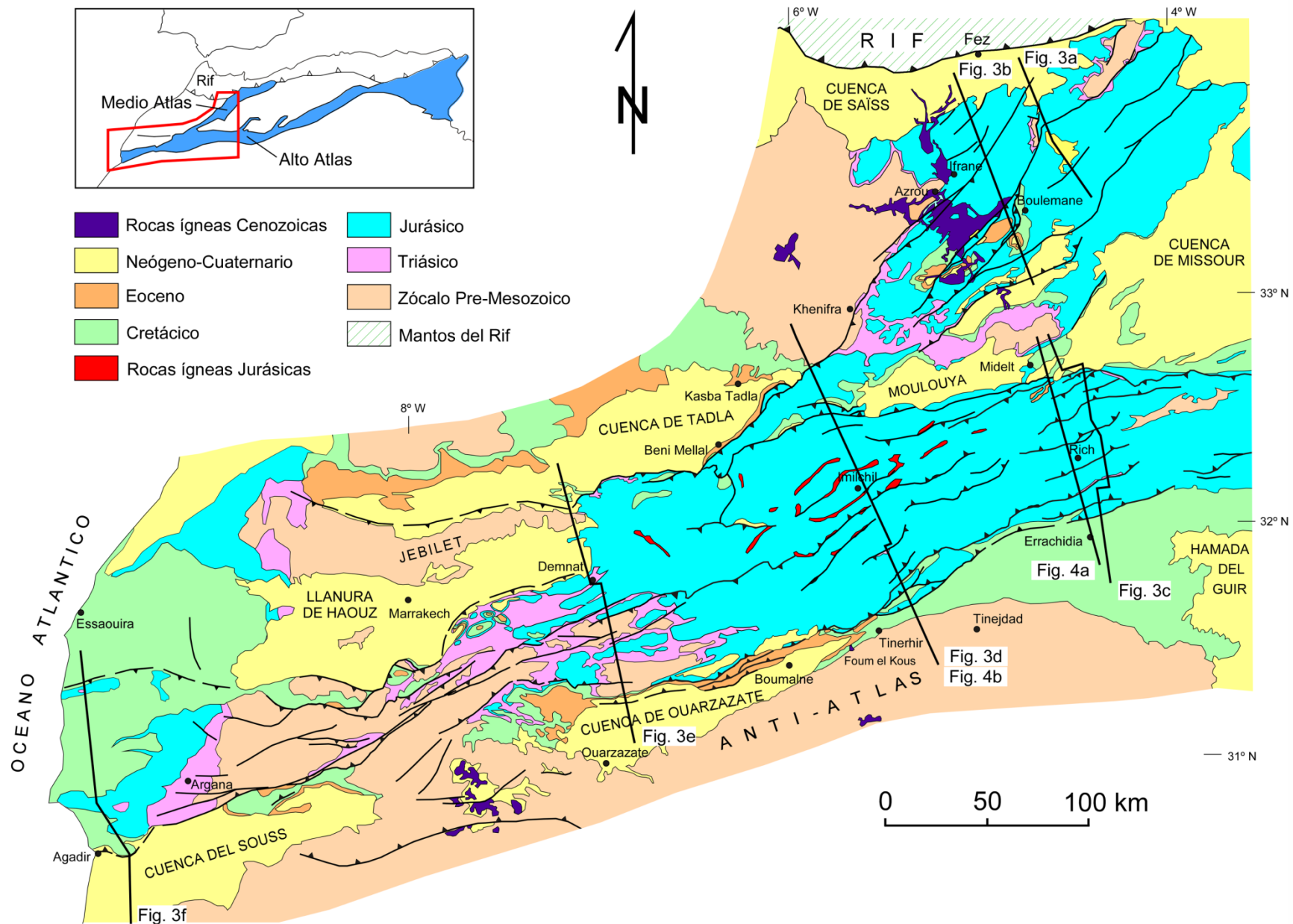
CONTEXTO TECTÓNICO DE LAS CORDILLERAS DEL ATLAS



LAS CORDILLERAS DEL ATLAS

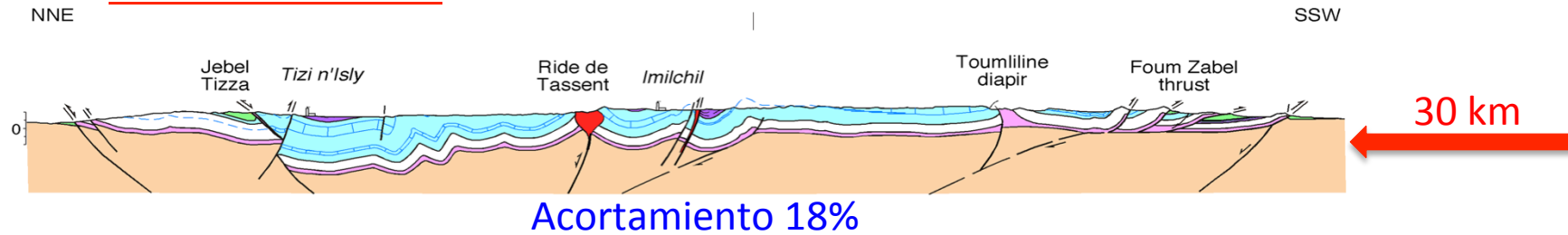


MAPA GEOLÓGICO DEL ATLAS DE MARRUECOS

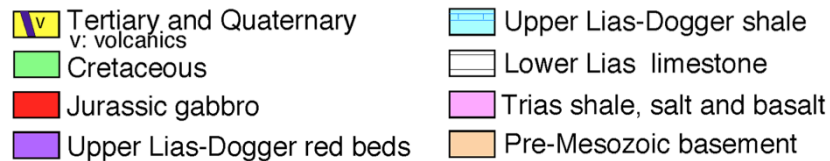
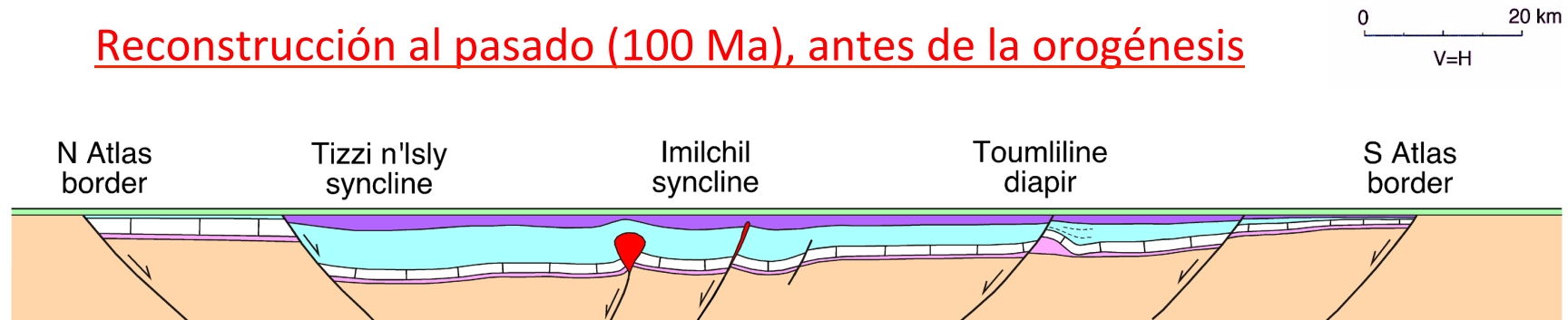


CORTE GEOLÓGICO DE IMILCHIL (ALTO ATLAS CENTRAL)

Estructura actual



Reconstrucción al pasado (100 Ma), antes de la orogénesis

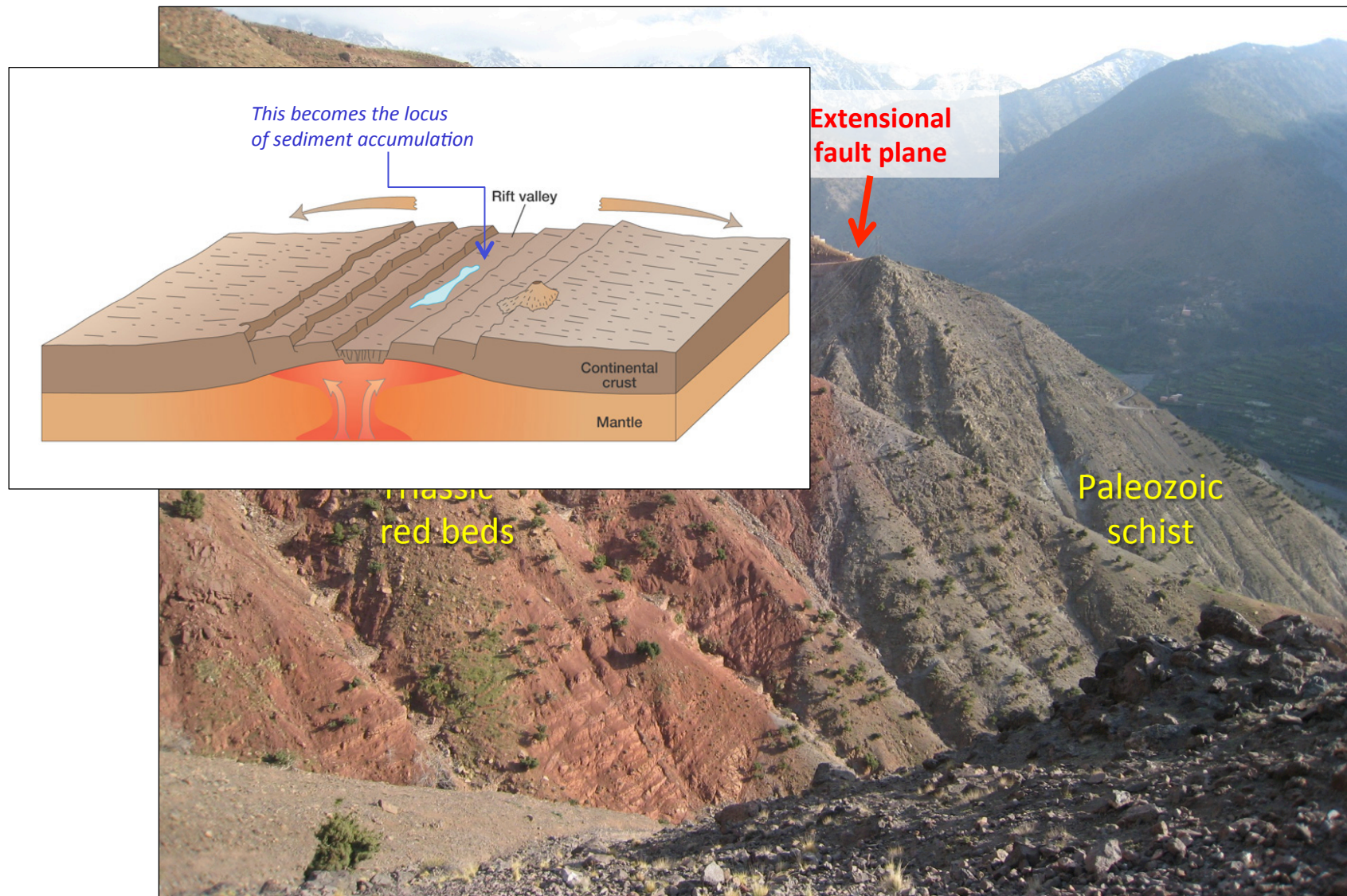


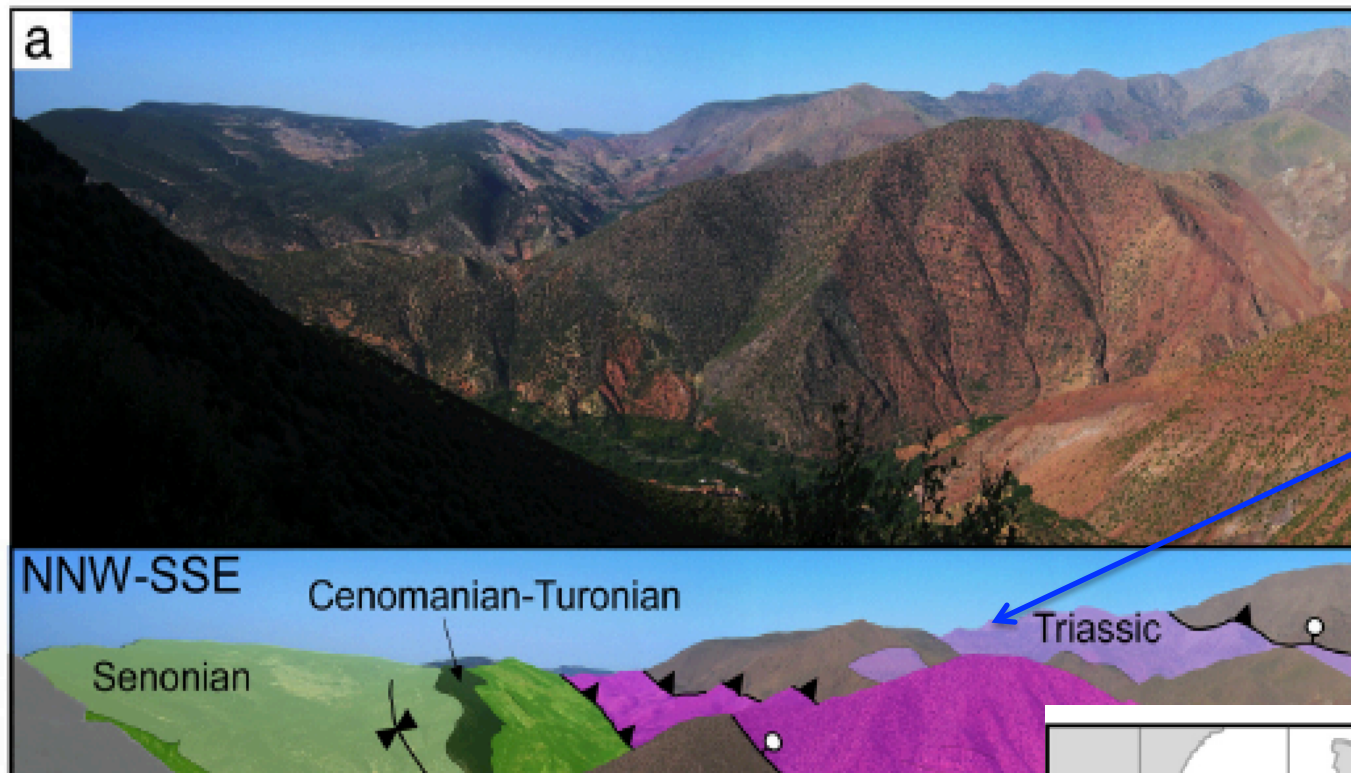
Acortamiento

- Alto Atlas entre 24 y 15% disminuye de E a W
- Atlas Medio < 10%

Topografía elevada (hasta 4000m)

LA EXTENSIÓN TRIÁSICA: precursora de las cordilleras

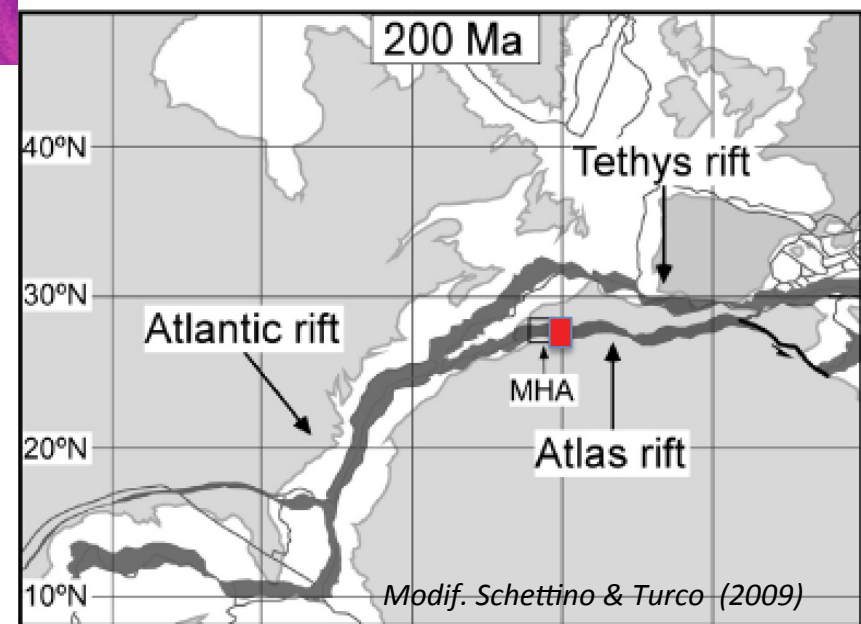




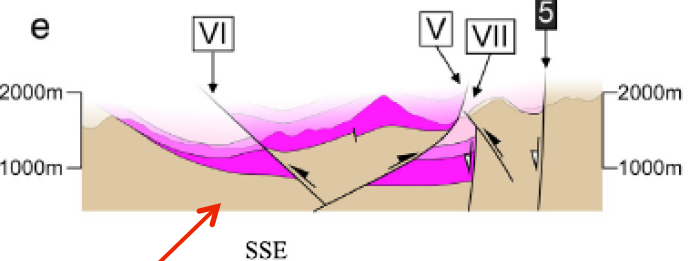
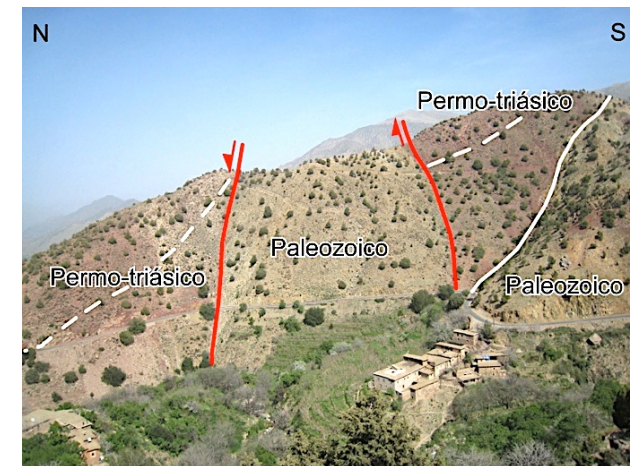
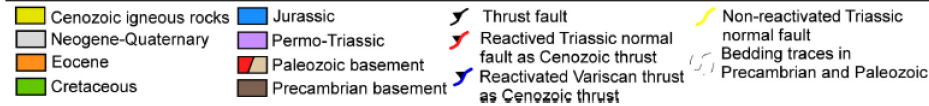
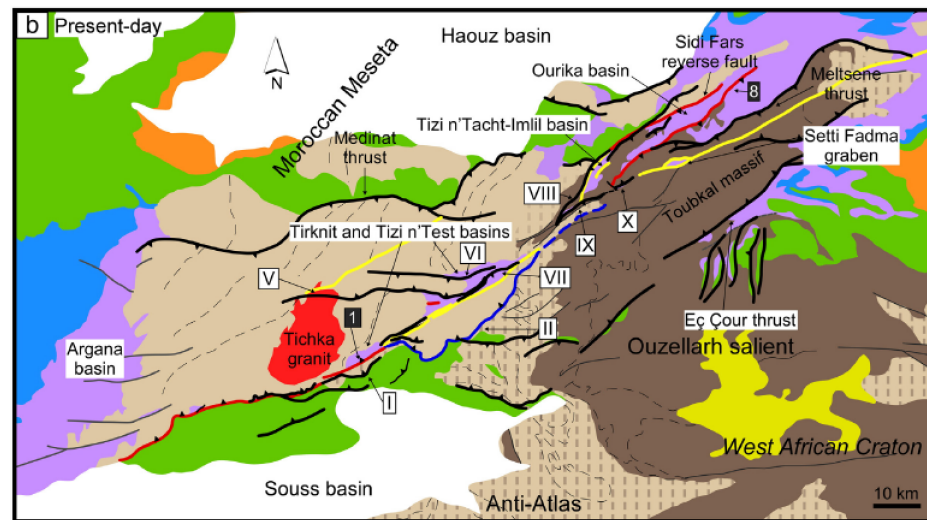
Surco sedimentario
("rift") Triásico

M. Domenech, PhD thesis, UAB 2015

Surcos rift ligados a la fragmentación del
supercontinente Pangea de Wegener

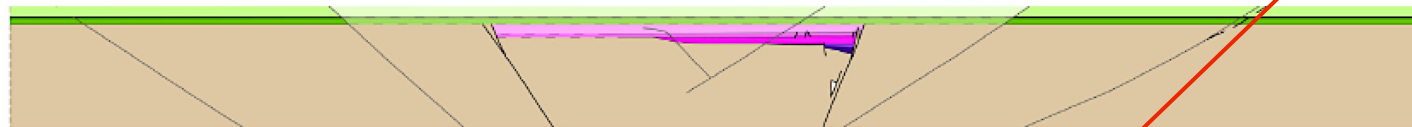


Evolución completa del Atlas, de la extensión a la compresión

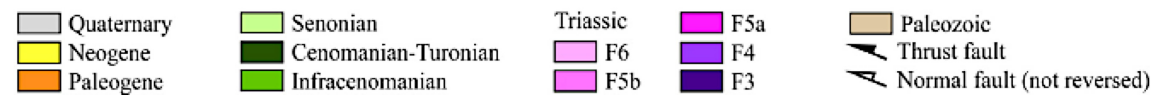
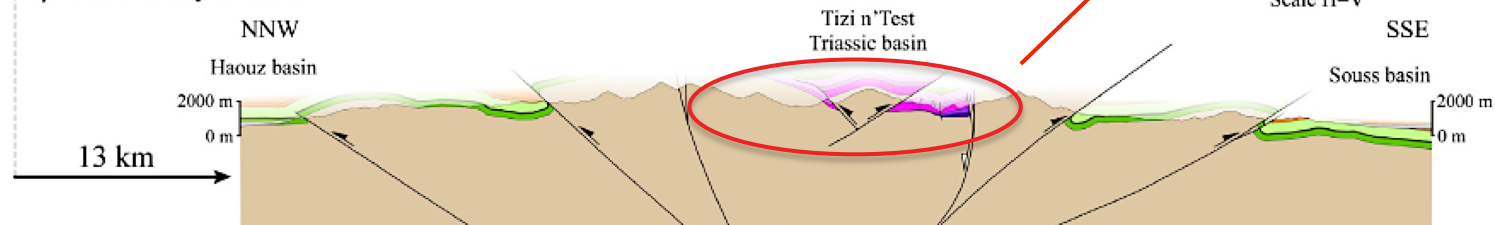


a) Late Cretaceous

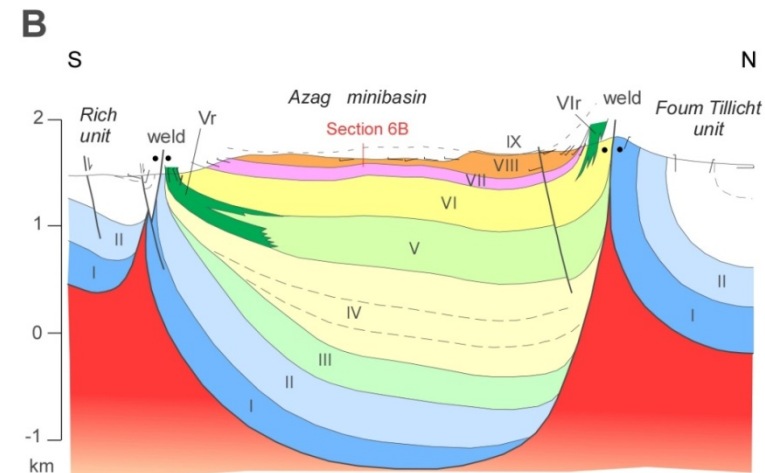
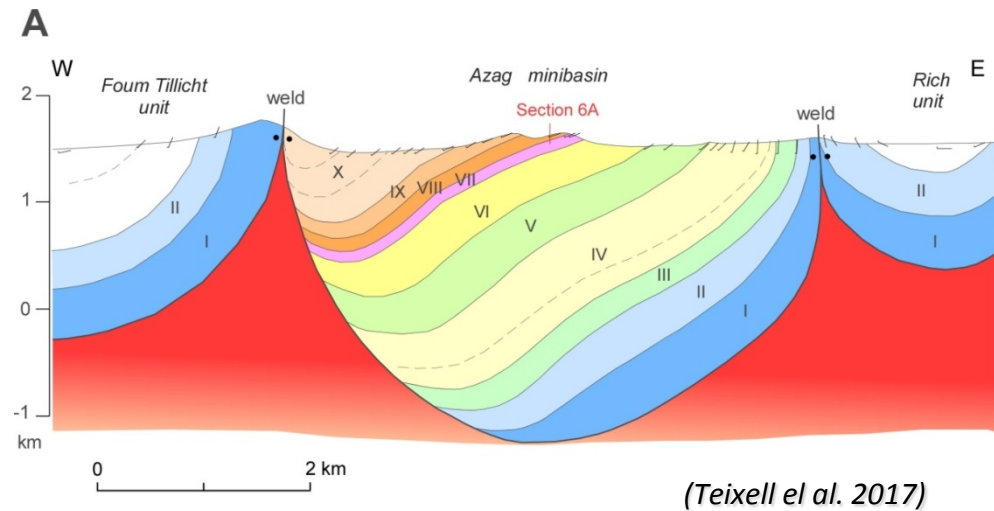
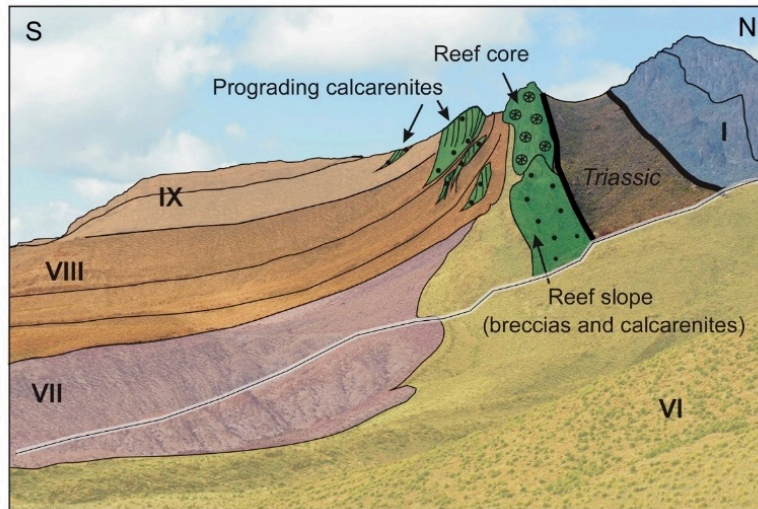
NNW



b) Present-day section



Tectónica salina ligada a la extensión



- Ascenso por densidad de las formaciones salinas
- Hundimiento de minicuenas carbonatadas