

GEOMORFOLOGÍA

Edier V. Aristizábal G.

evaristizabal@unal.edu.co

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GEOMORFOLOGÍA TECTÓNICA & ESTRUCTURAL

Geoformas tectónicas: son producidas por procesos endógenos sin la intervención de las fuerzas denudacionales (proceso exógeno).

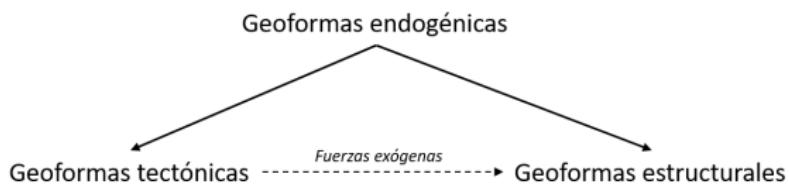
Prediseño tectónico. Características del paisaje con características endogénicas o tectónicas estampadas sobre ellas (redes de drenaje).

La influencia tectónica se manifiesta en la estructura de las cadenas montañosas, volcanes, arcos de isla, y otras estructuras de gran escala expuesta sobre la superficie terrestre, pero también en pequeños elementos tales como escarpes de falla.

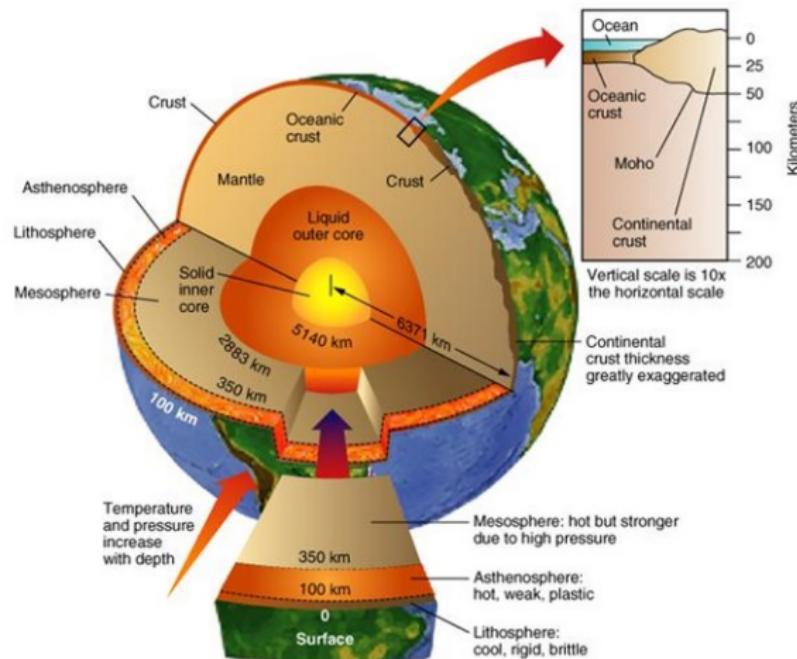
Geomorfología tectónica: investiga los efectos de los procesos tectónicos activos (fallas, lineamientos, subsidencias) sobre las geoformas.

Geoformas estructurales: resultado de las fuerzas exógenas actuando sobre geoformas tectónicas denudando rocas menos resistentes o líneas de debilidad.

Geomorfología estructural: influencia pasiva de estructuras geológicas sobre geoformas.



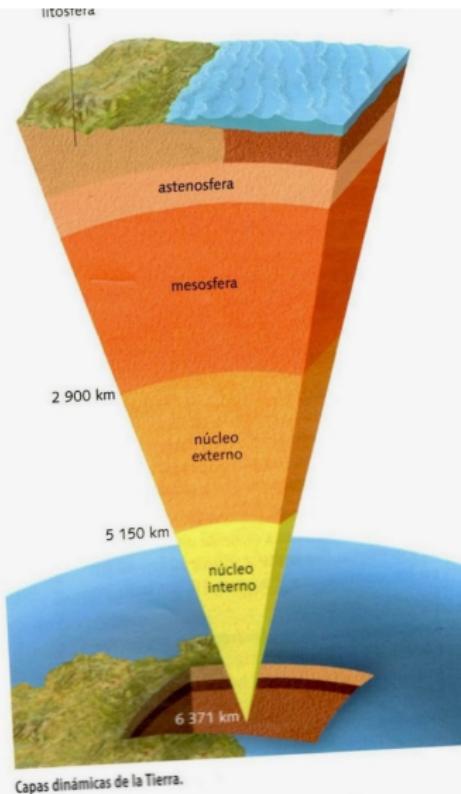
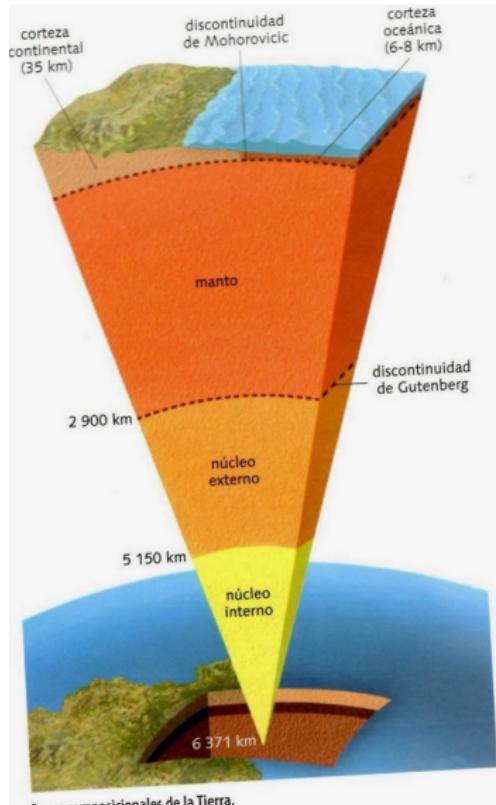
Estructura de la Tierra



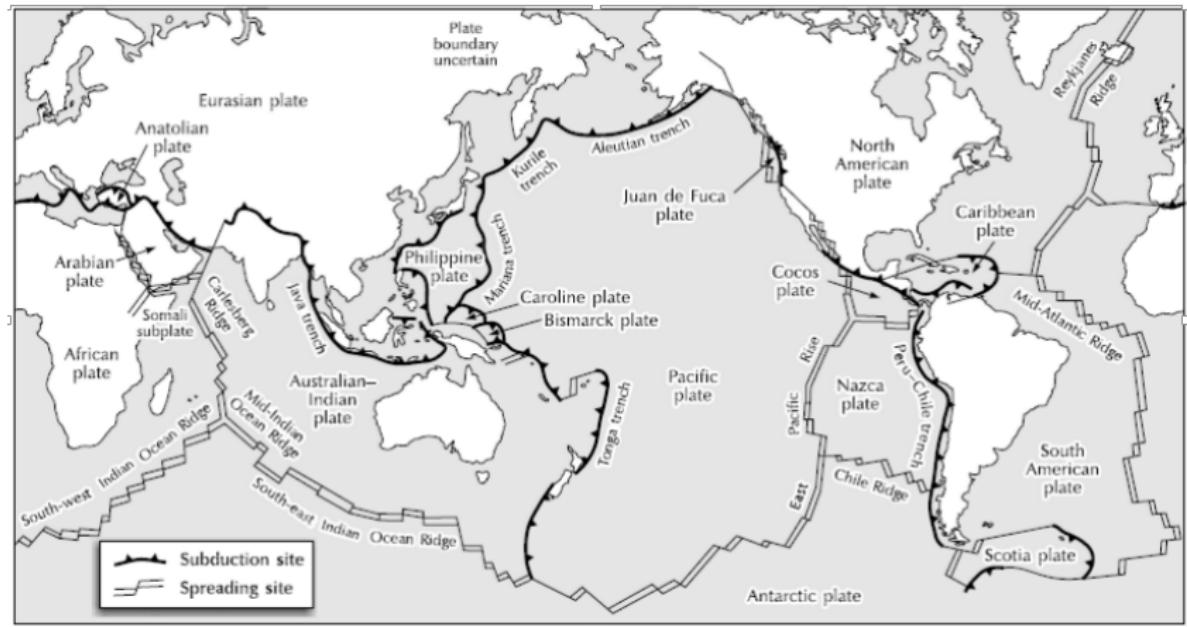
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Fuente: Fundamentals of geomorphology by R. Huggett

Estructura de la Tierra

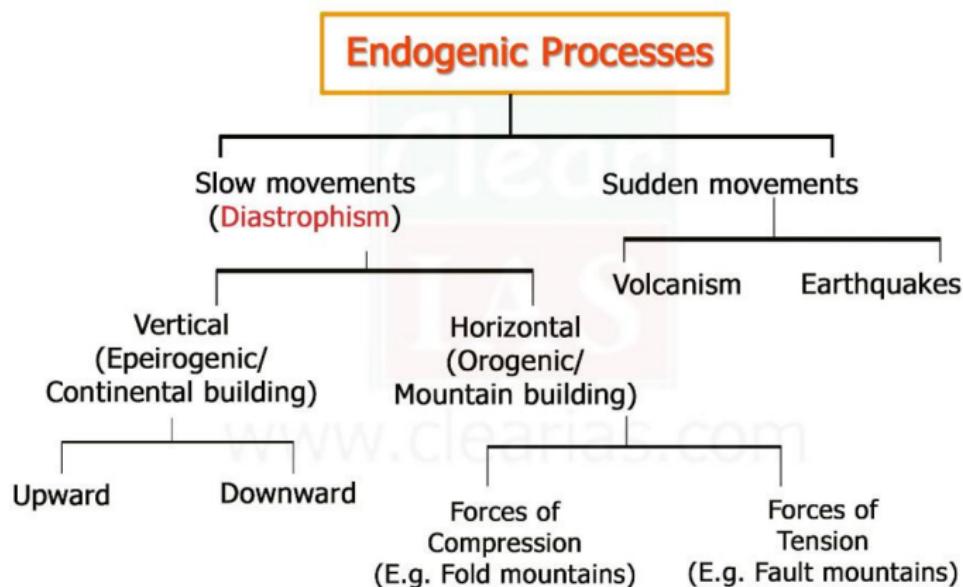


Tectónica de Placas



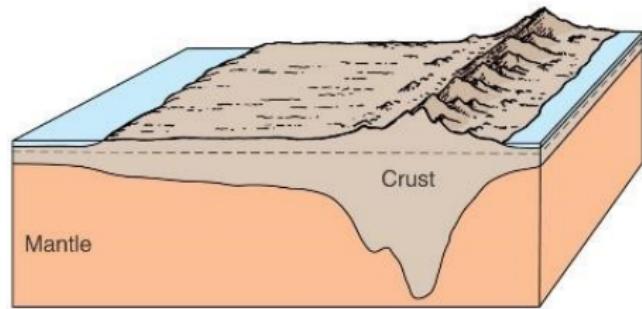
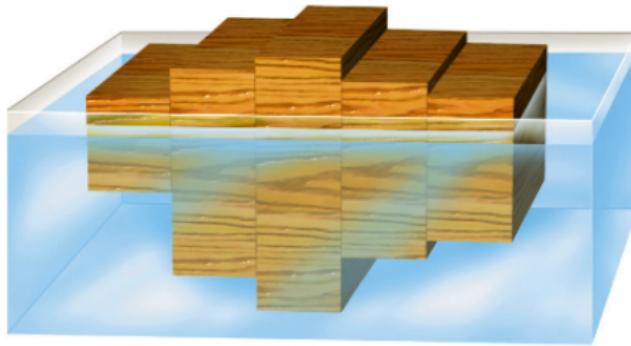
Fuente: Fundamentals of geomorphology by R. Huggett

Procesos Endogénicos

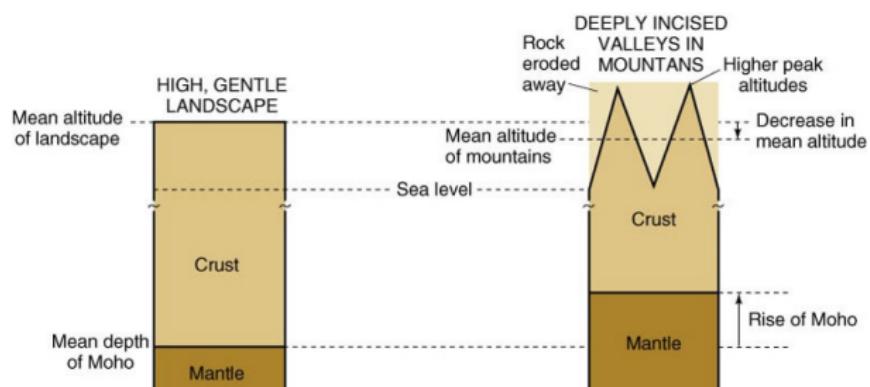
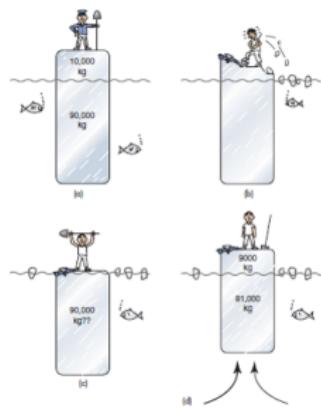


Isostacia

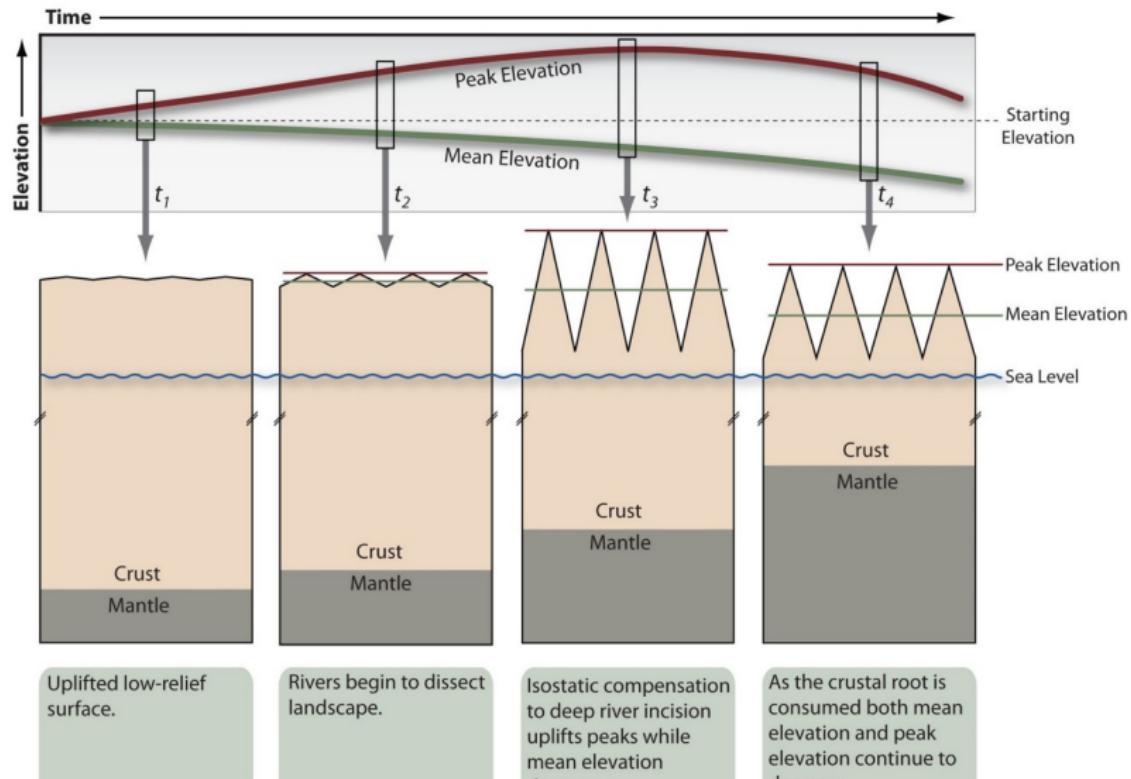
Levantamiento vertical o subsidencia de la corteza en respuesta a cambios en el espesor. A medida que material es adicionado, el espesor de la corteza aumenta y se hunde mas dentro del manto, y a medida que el material es erosionado, la corteza se adelgaza, y material formado a profundidades sube hacia la superficie



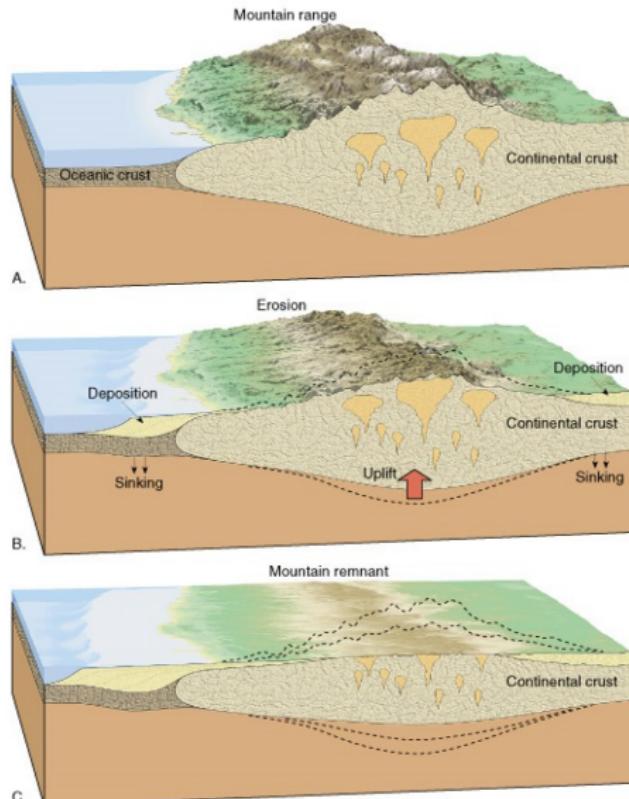
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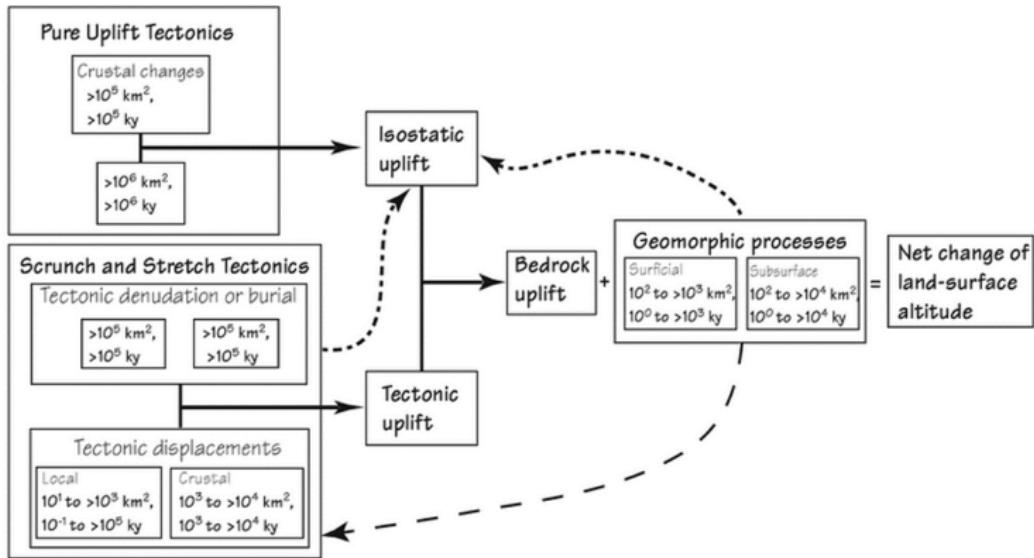
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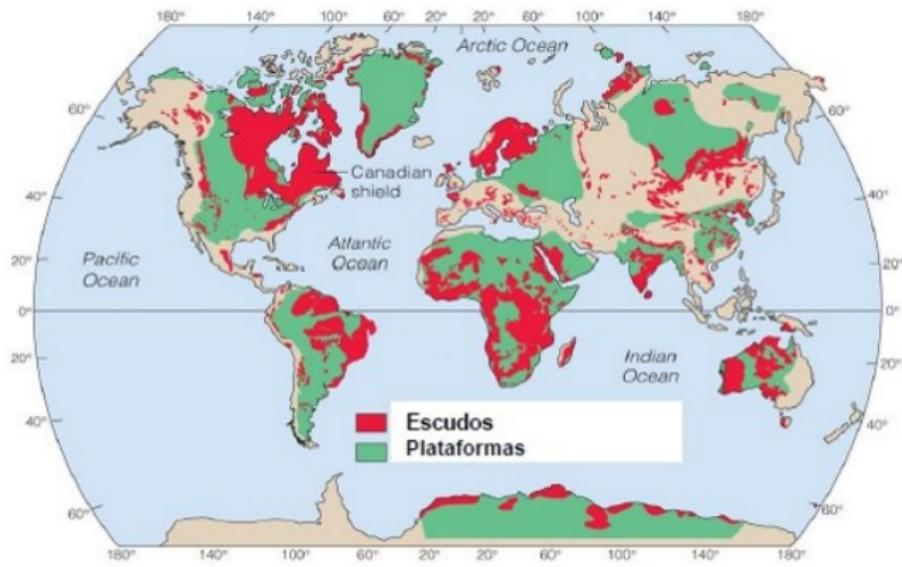


Levantamiento Vertical



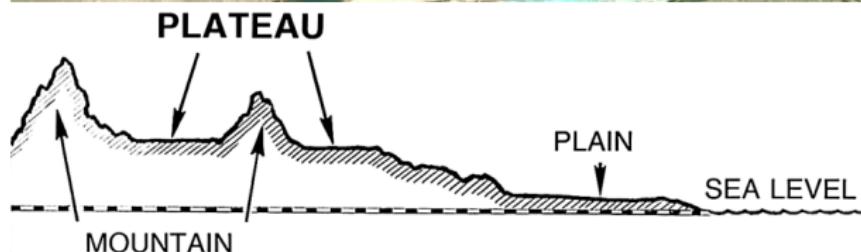
Fuente: Tectonic geomorphology of mountains

Geoformas al interior de la placa

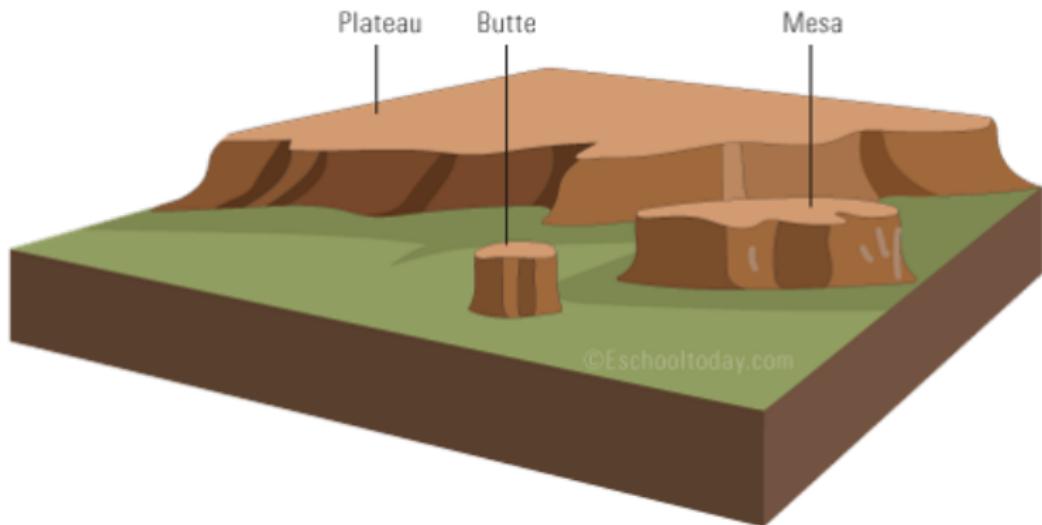


Los **cratones** son antiguas superficies continentales de baja elevación y bajo relieve que se caracterizan por su prolongada estabilidad tectónica. Cuando los cratones son expuestos se utiliza el término **escudos**, y cuando son cubiertos inconformemente por delgadas cubiertas sedimentarias se utiliza el término **plataforma**.

Geoformas al interior de la placa



Geoformas al interior de la placa



Geoformas al interior de la placa



Figure: Columbia River Plateau in North America

Geoformas al interior de la placa

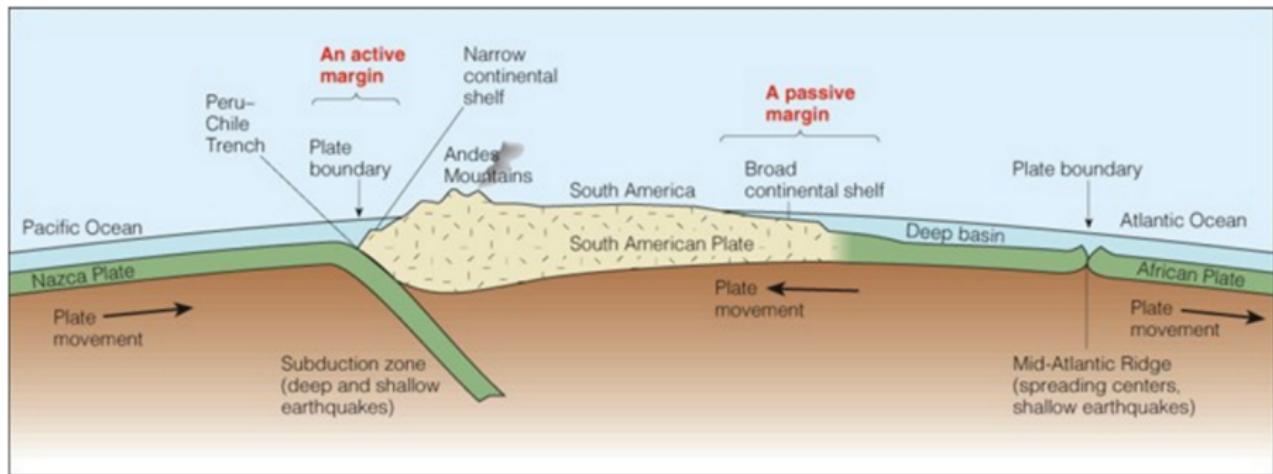


Geoformas al interior de la placa

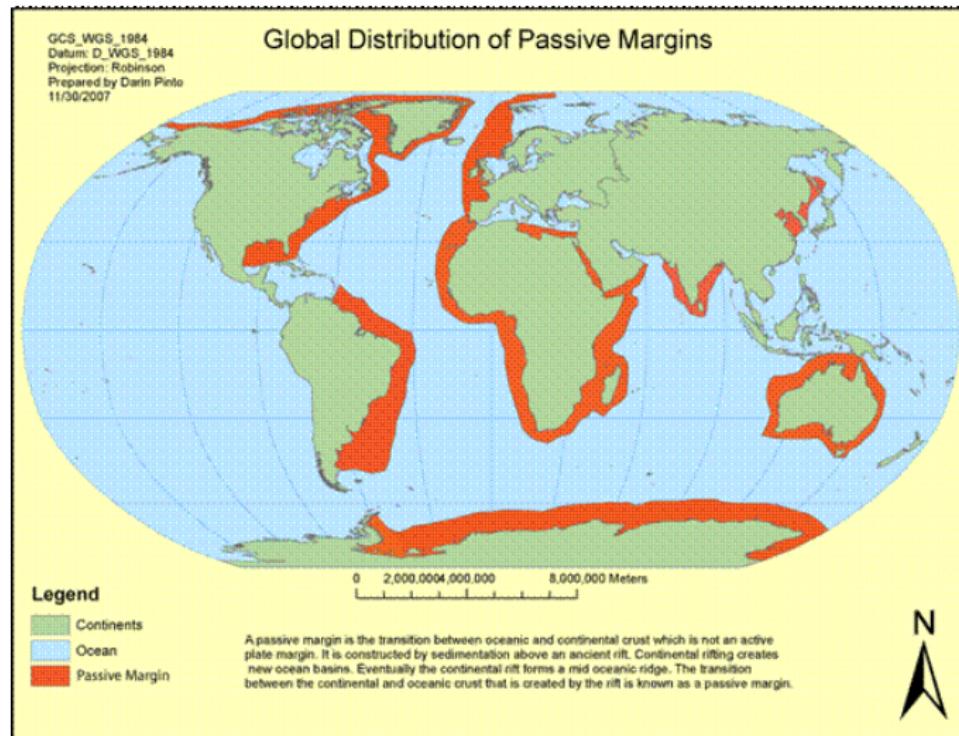


Figure: Merrick Butte in Monument Valley, Arizona

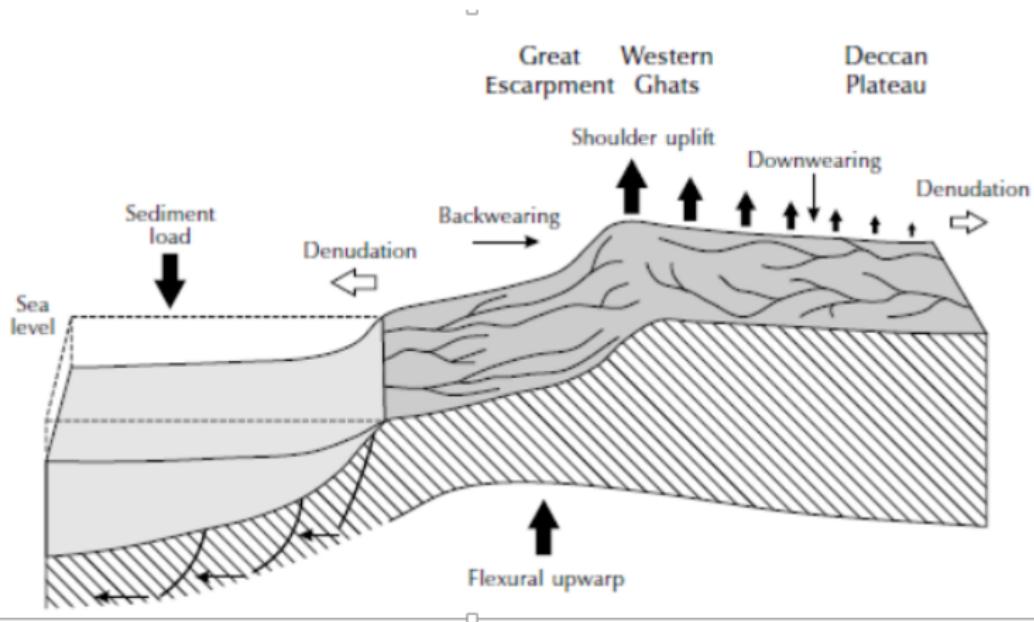
Márgenes Activas & Pasivas



Márgenes Pasivas



Márgenes Pasivas

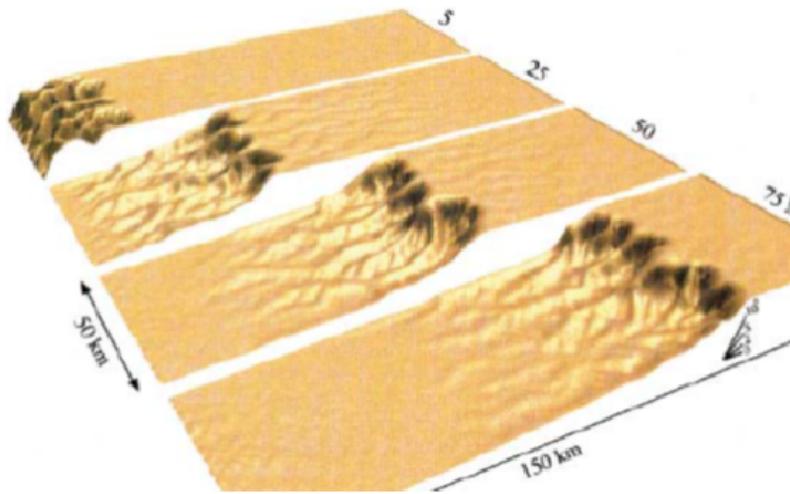


Márgenes Pasivas



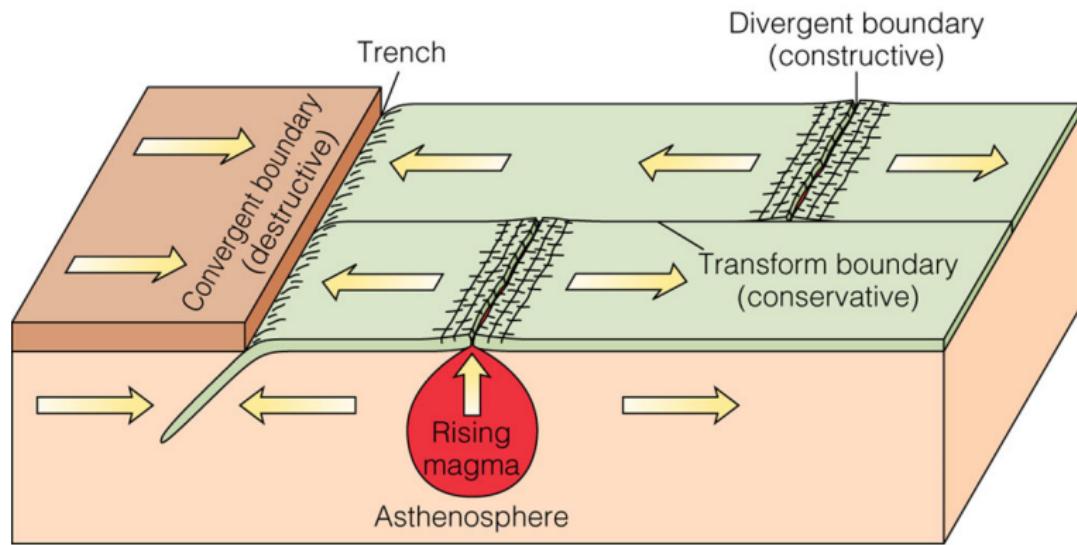
Figure: Escarpe y plateaux de una margen pasiva en el norte de New South Wales.

Márgenes Pasivas



Fuente: Bishop (2007)

Márgenes Activas



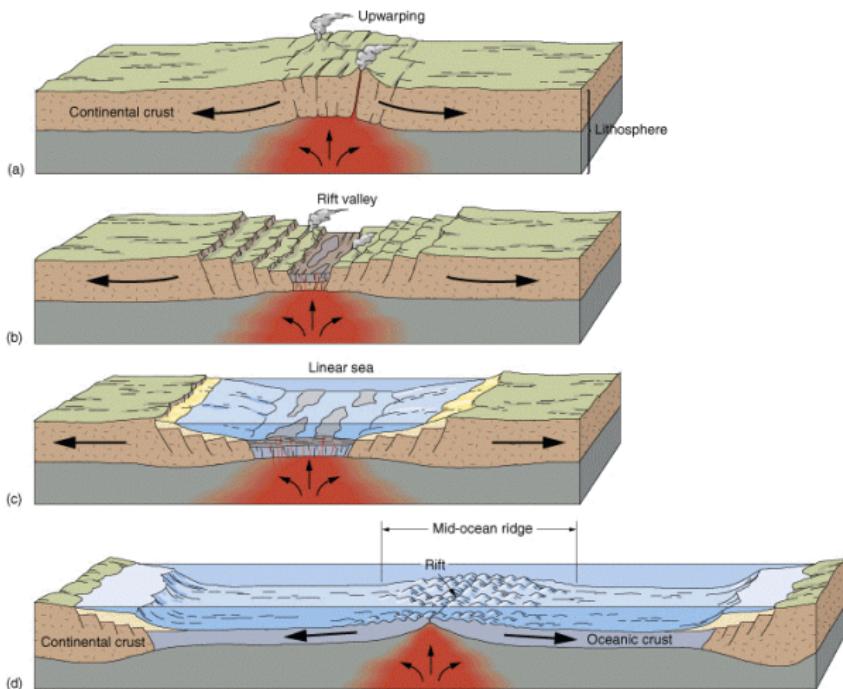
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Márgenes Activas

Types of Plate Boundaries: Dynamics, Results, and Examples

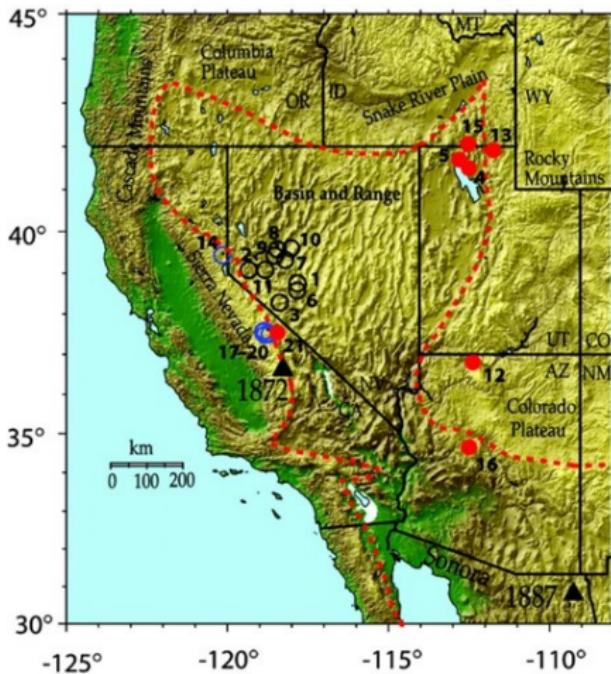
Plate Boundary	Plates Involved	Dynamics	Results	Example
Divergent	Usually oceanic	Spreading. The two plates move away from each other and molten rock rises up to fill the gap.	Mid-ocean ridge forms and new material is added to each plate.	African and North American plate boundary (Figure 2.5a) Mid-Atlantic Ridge
Convergent	Ocean-continent	Oceanic plate sinks beneath continental plate.	Mountain ranges and a subduction zone are formed with a deep trench. Earthquakes and volcanic activity are found here.	Nazca and South American plate boundary (Figure 2.5a) Andes Mountains Peru-Chile Trench
Convergent	Ocean-ocean	Older, denser, oceanic plate sinks beneath the younger, less dense oceanic plate.	A subduction zone is formed with a deep trench. Earthquakes and volcanic activity are found here.	Fiji plate (Figure 2.5a) Fiji Islands
Convergent	Continent-continent	Neither plate is dense enough to sink into the asthenosphere; compression results.	A large, high mountain chain is formed, and earthquakes are common.	Indo-Australian and Eurasian plate boundary (on land) (Figure 2.5a) Himalaya Mountains
Transform	Ocean-ocean or continent-continent	The plates slide past one another.	Earthquakes are common and may result in some topography.	North American and Pacific plate boundary (Figure 2.11) San Andreas fault

Márgenes Divergentes



Rift Continental

fase I → cadena de valles y montañas lineales



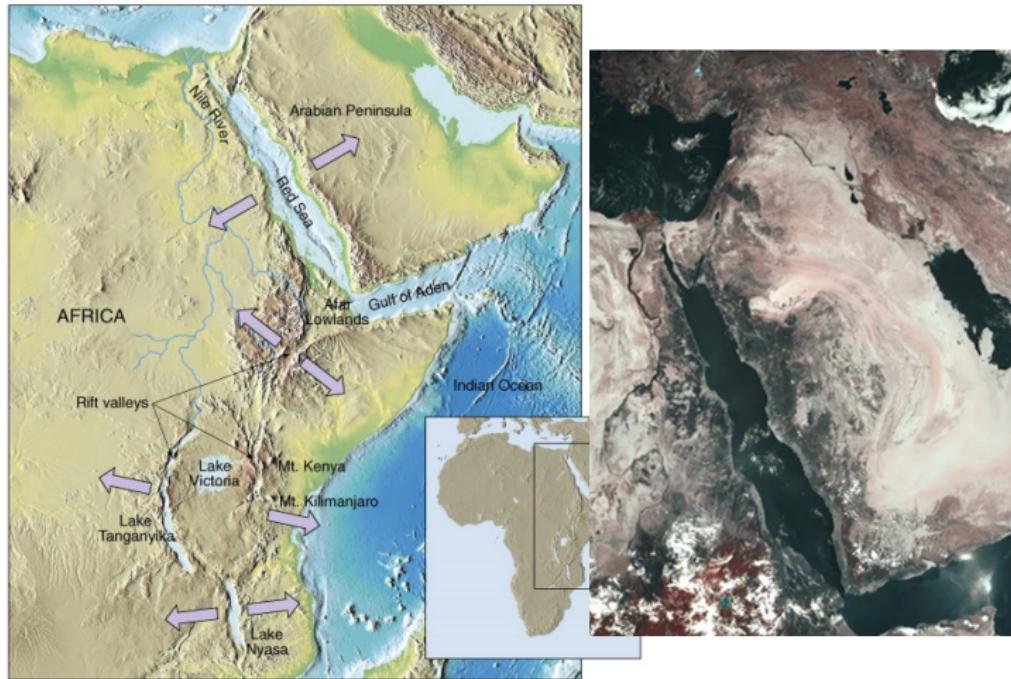
Rift Continental

fase II → cuenca continental



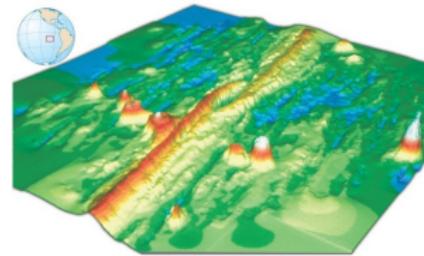
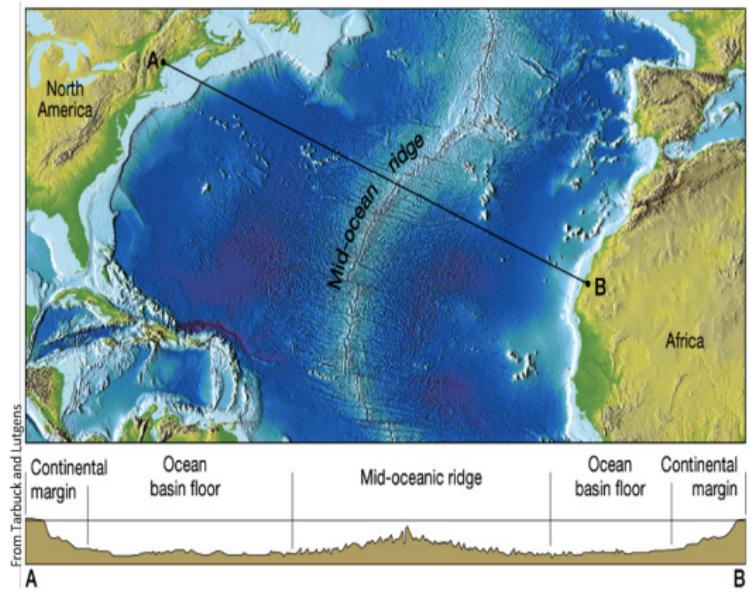
Rift Continental

fase III → rift oceánico

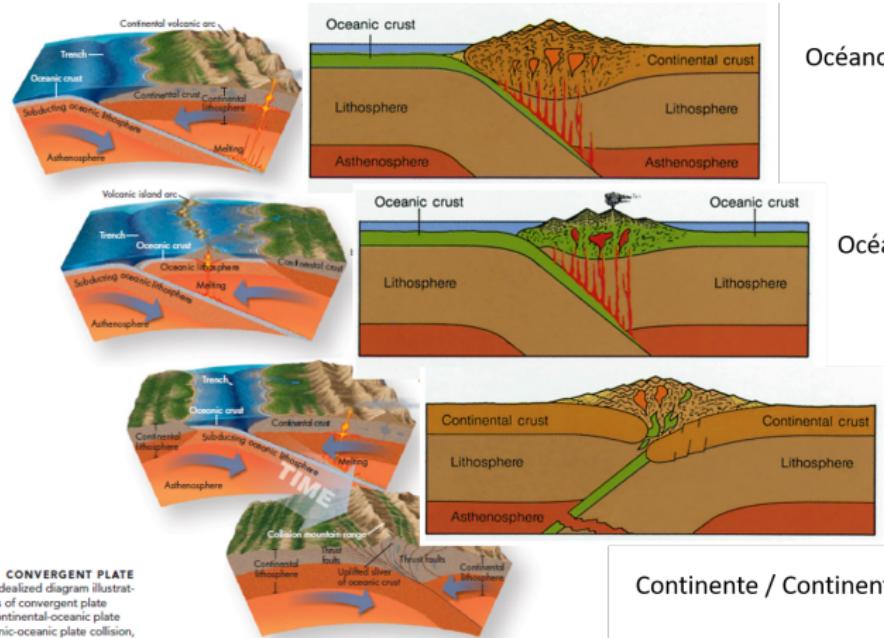


Rift Continental

fase IV → rift oceánico



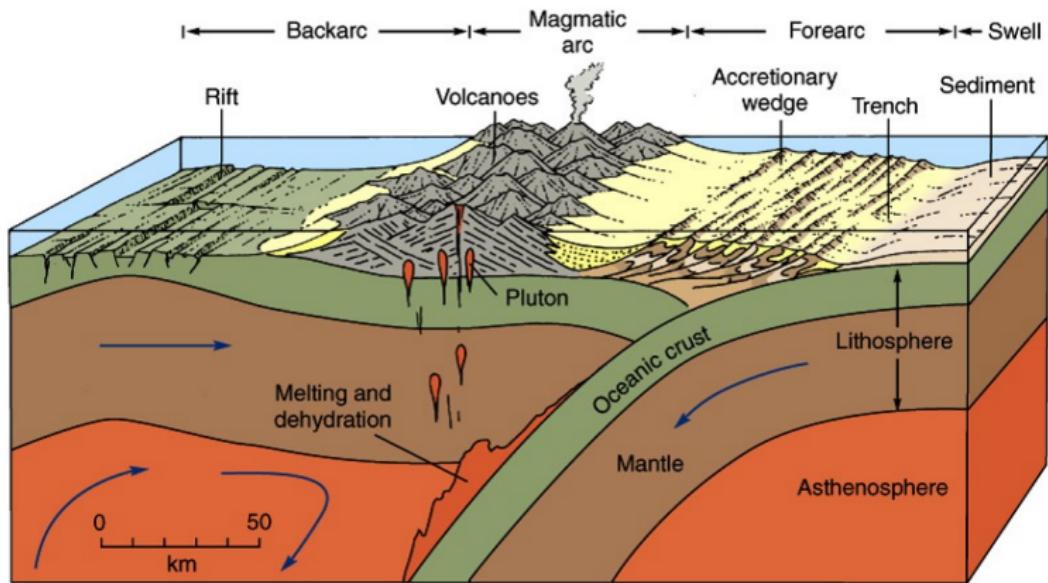
Márgenes Convergentes



2.9 CONVERGENT PLATE
ES Idealized diagram illustrating
a) continental-oceanic plate
b) oceanic-oceanic plate collision,

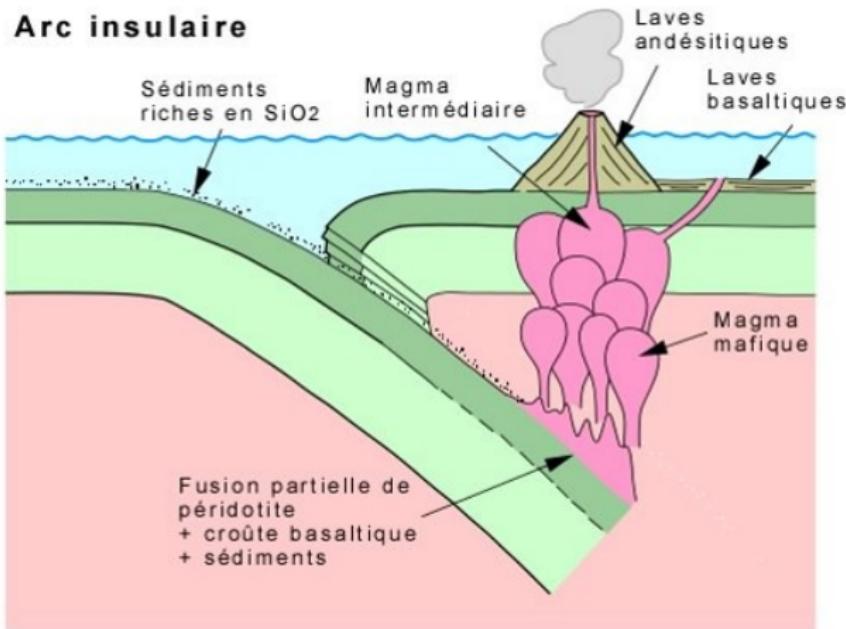
Oceano / Oceano

Ejemplos: Japón, Aleutians

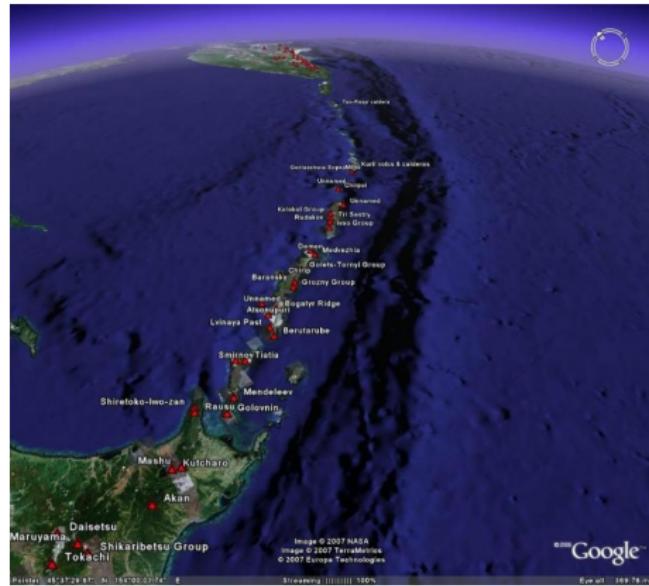


Oceano / Oceano

Arco Volcánico Insular

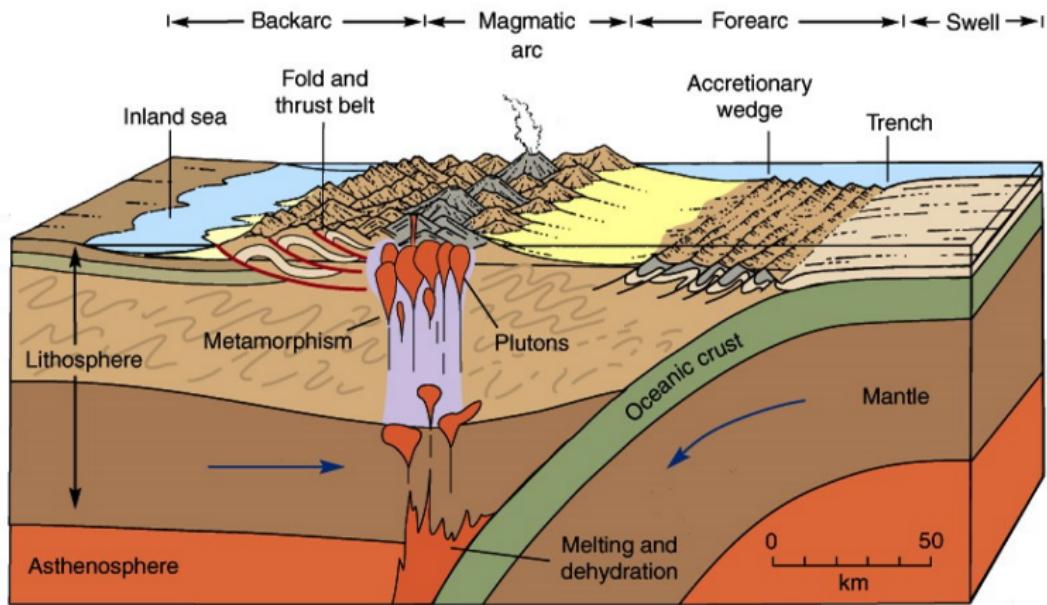


Oceano / Oceano

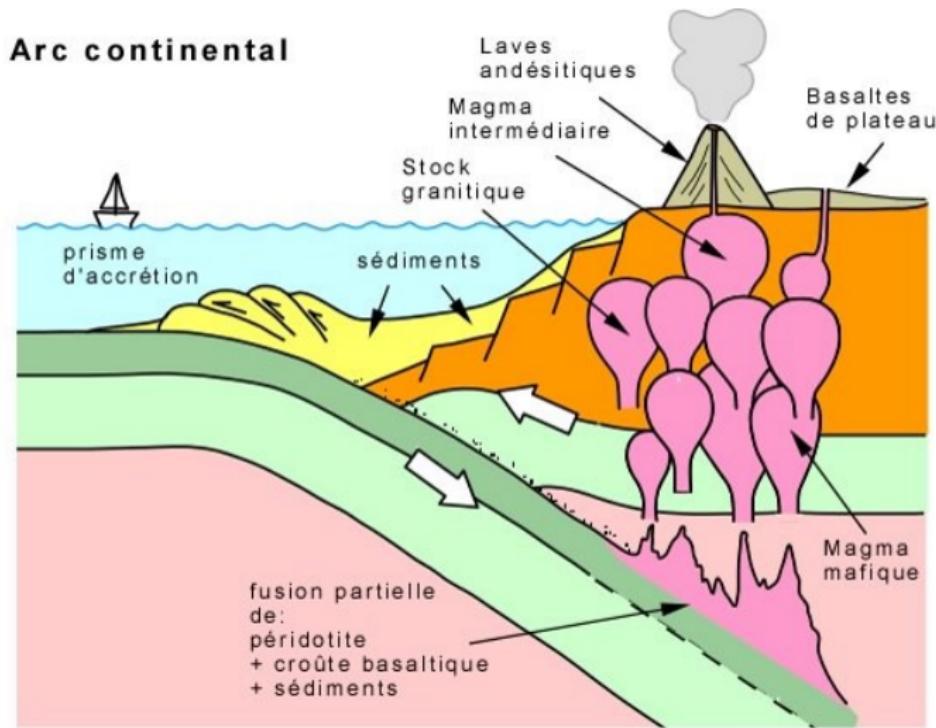


Oceano / Continente

Andes, Cascadearcocontinental

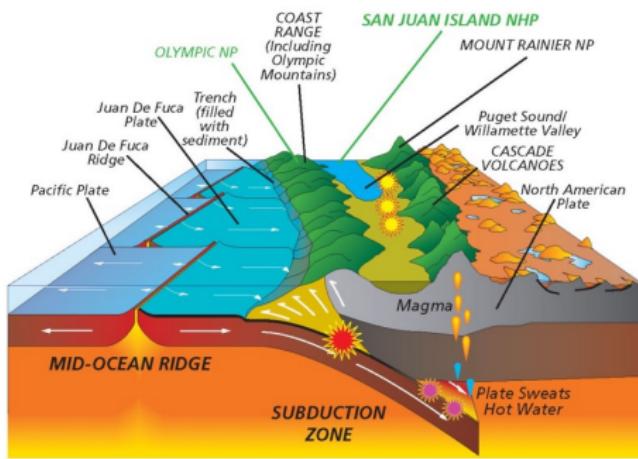


Arco Volcánico Continental



Arco Volcánico Continental

Cascade



Cascadia earthquake sources

Source	Affected area	Max. size	Recurrence
Subduction Zone	West. WA, OR, CA	M 9	500-600 years (1700)
Deep Juan De Fuca Plate	West. WA, OR	M 7+	30-50 years (1949, 1965, 2001)
Crustal faults	WA, OR, CA	M 7+	hundreds of years? (CE 900, 1872)



Arco Volcánico Continental

Cascade



Figure: Olympic National Park (NW USA)tcont.

Continente / Continente

Ejemplos: Himalaya, Alpes, Apalaches

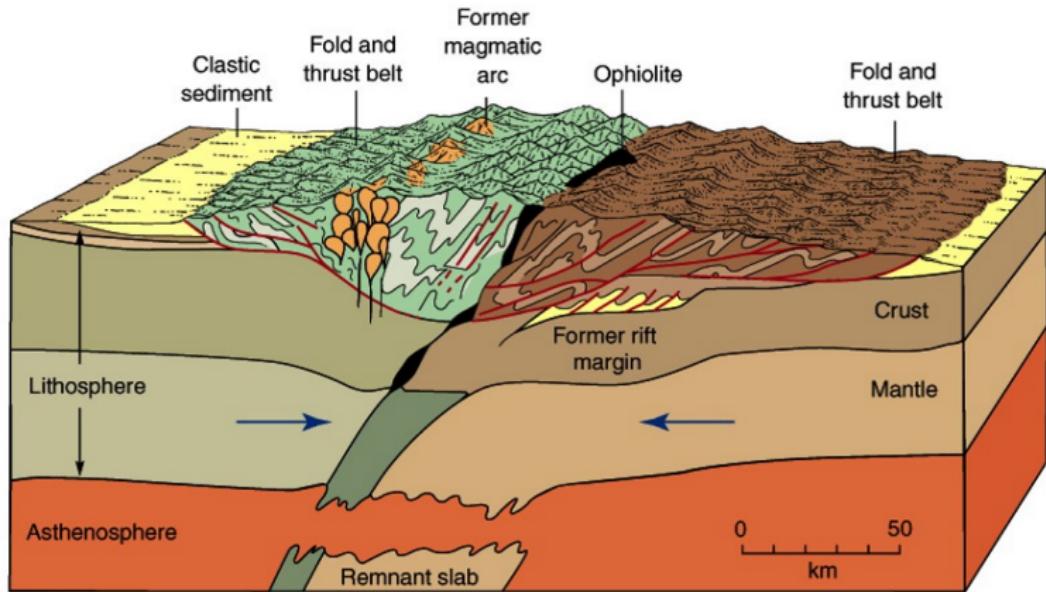
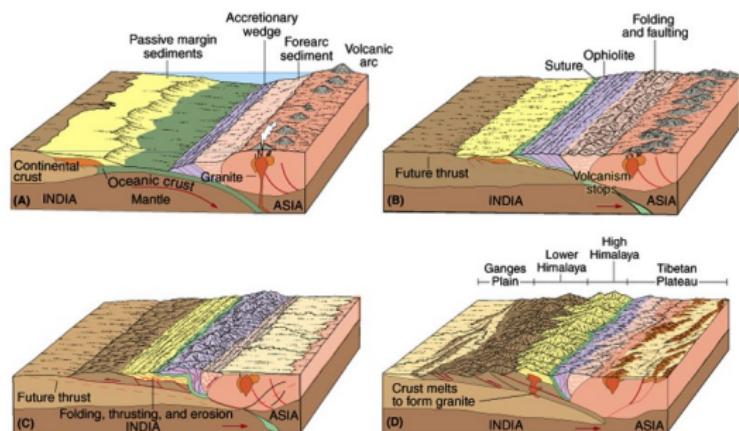
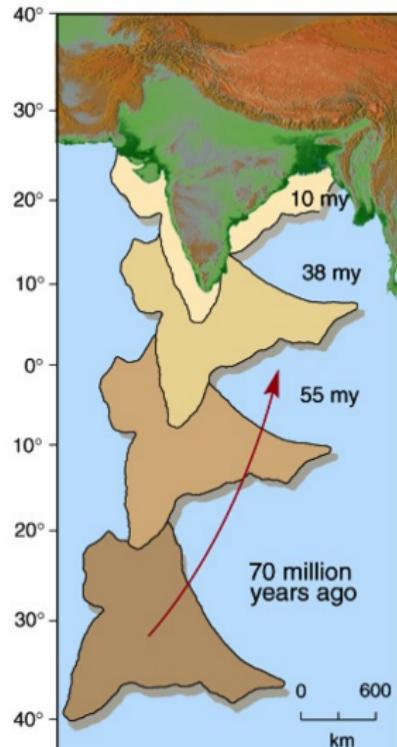


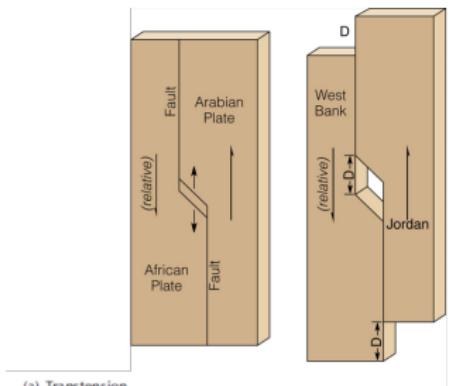
Figure: Olympic National Park (NW USA)tcont.

Continente / Continente

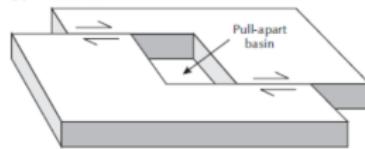
Himalaya



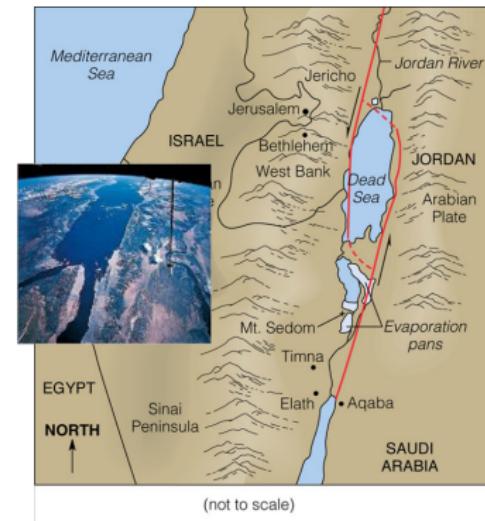
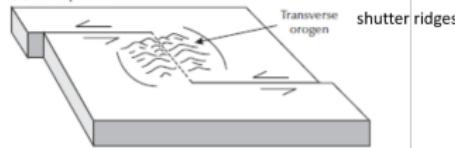
Márgenes Transformantes



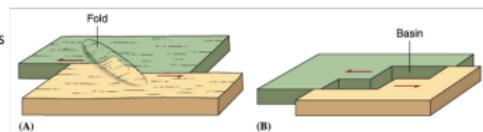
(a) Transtension



(b) Transpression

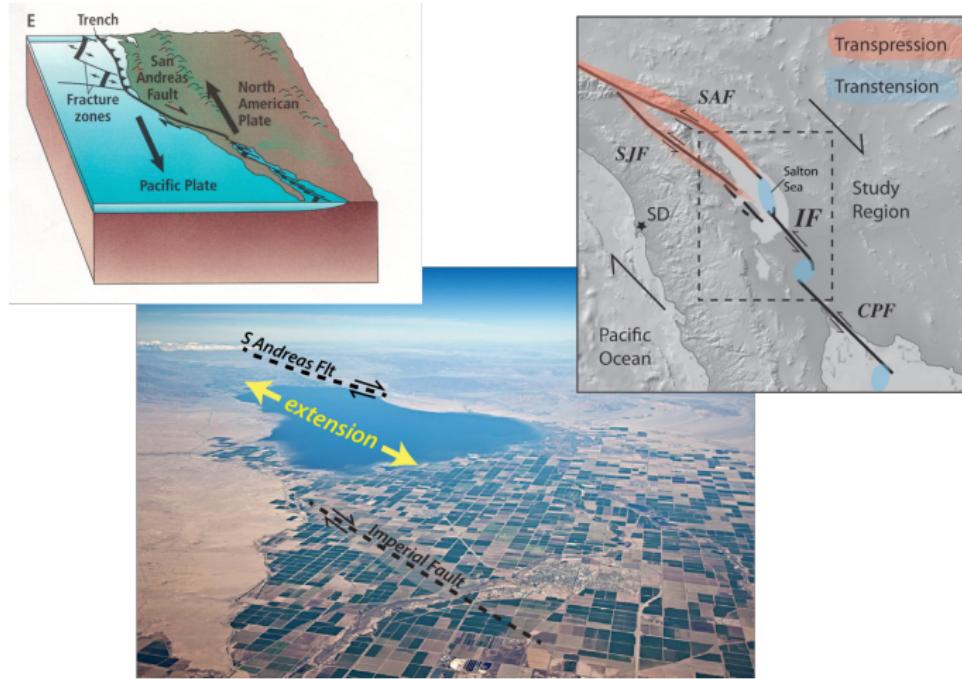


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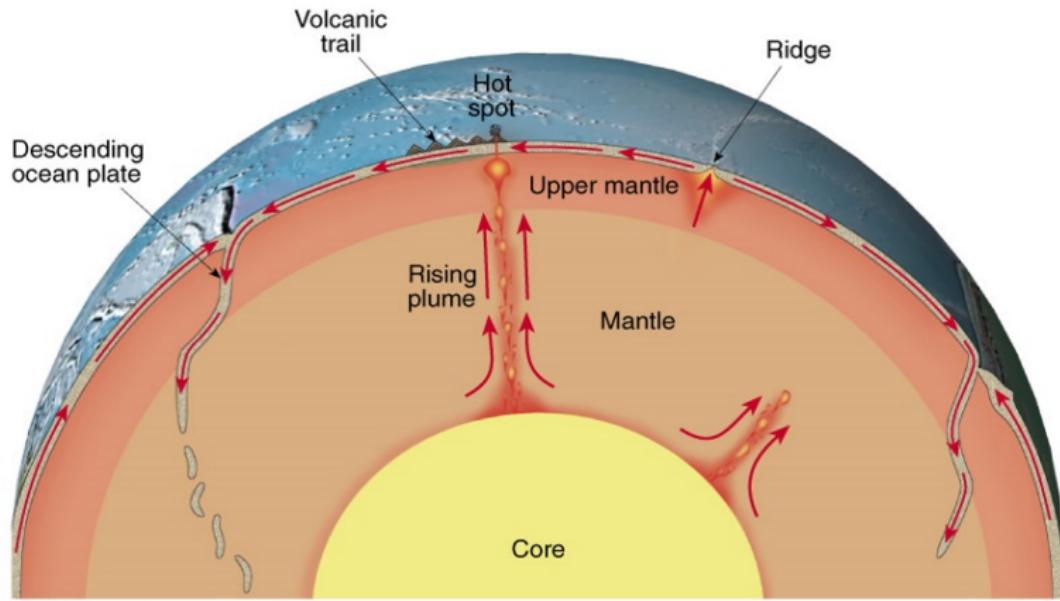


Márgenes Transformantes

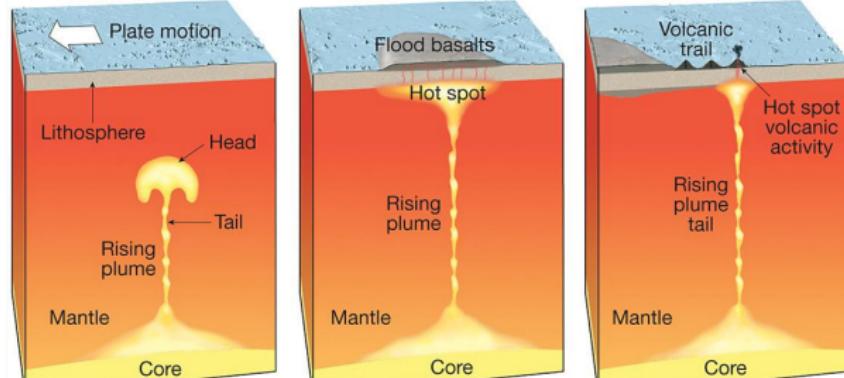
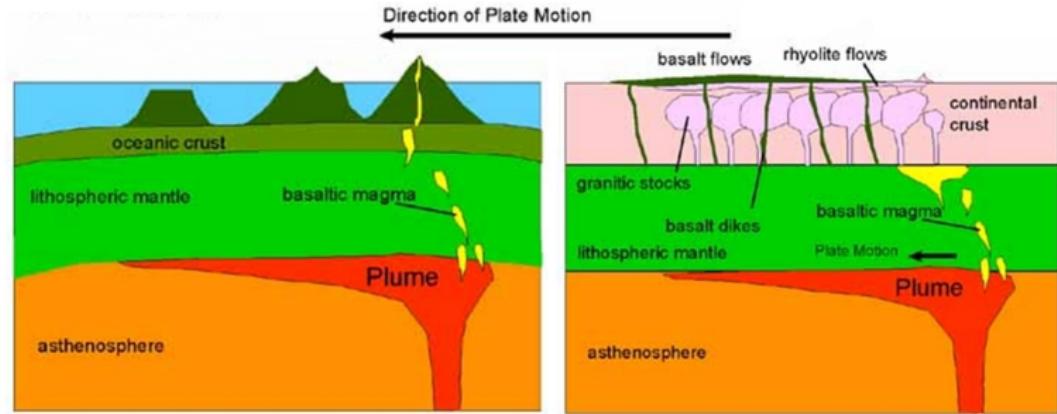
Falla San Andrésotspots



Plumas del Manto (*hotspots*)



Continental *flood basalts*





Cadena Islas Volcánicas

