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# UNIT 2: EARTH SURFACE

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# 1. In this unit...

**This chapter is about the Earth's surface. We will explore the landscape and coastline in different parts of the world. We'll also find about what Earth is made of and why the surface is always changing.**

# 1.2 On the surface

The Earth's surface is not flat; some parts are higher than others.

- The lower areas are covered by water - these are the **seas** and **oceans**
- The higher areas form the **land**. This is divided into **continents**
  - There is more water than land

The coast or coastline is where the land meets the sea or ocean.



Para el próximo día  
hay que saberse los  
continentes y los  
océanos de la Tierra



# OCEANS AND CONTINENTS

## OCEANS (71%)

Pacific Ocean

Atlantic Ocean

Indian Ocean

Southern Ocean

Arctic Ocean



## LAND (29%)

Asia

Africa

North America

South America

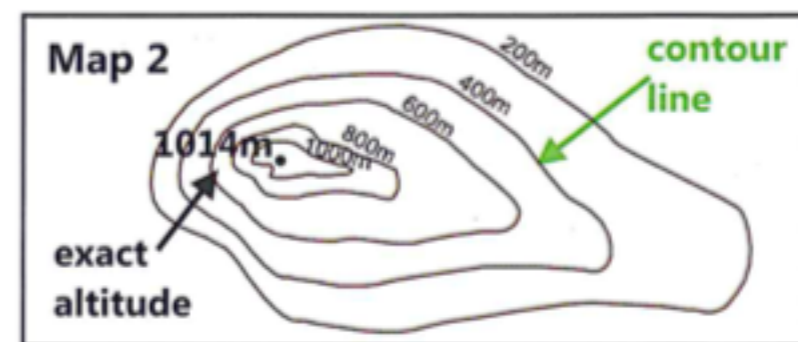
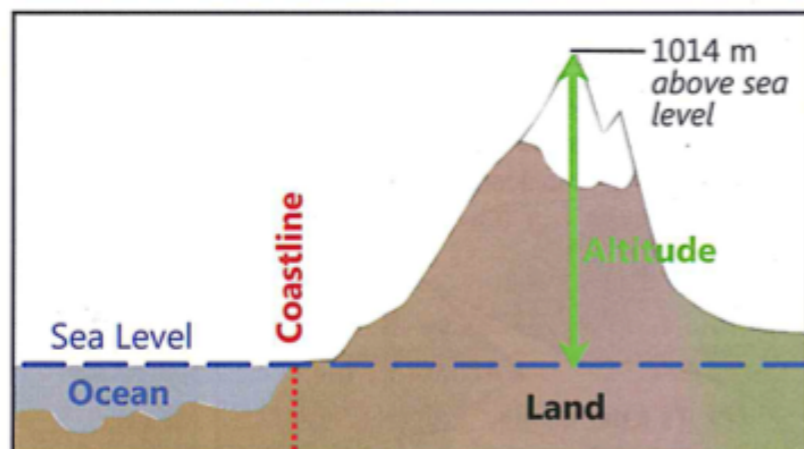
Antarctica

Europe

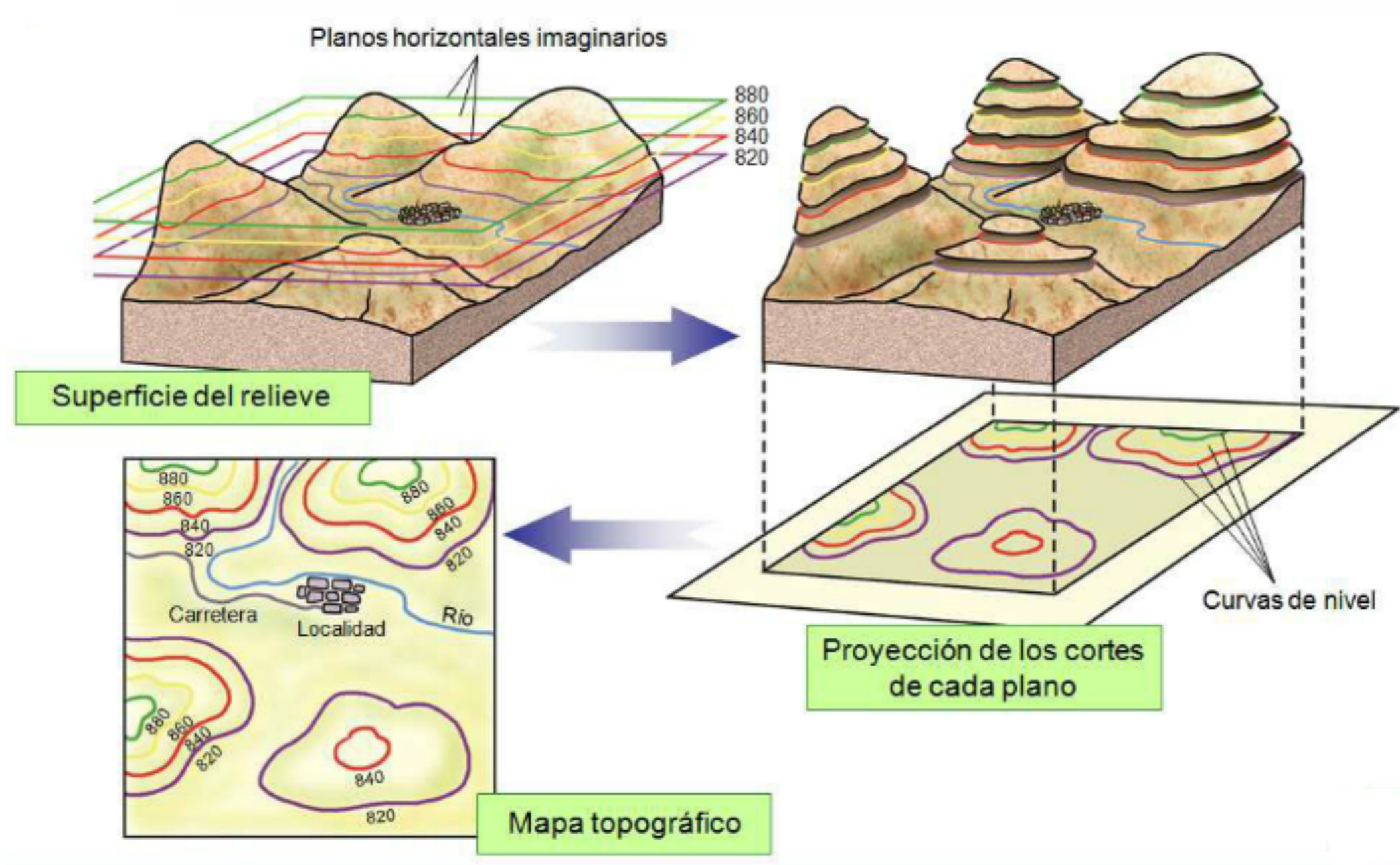
Oceania

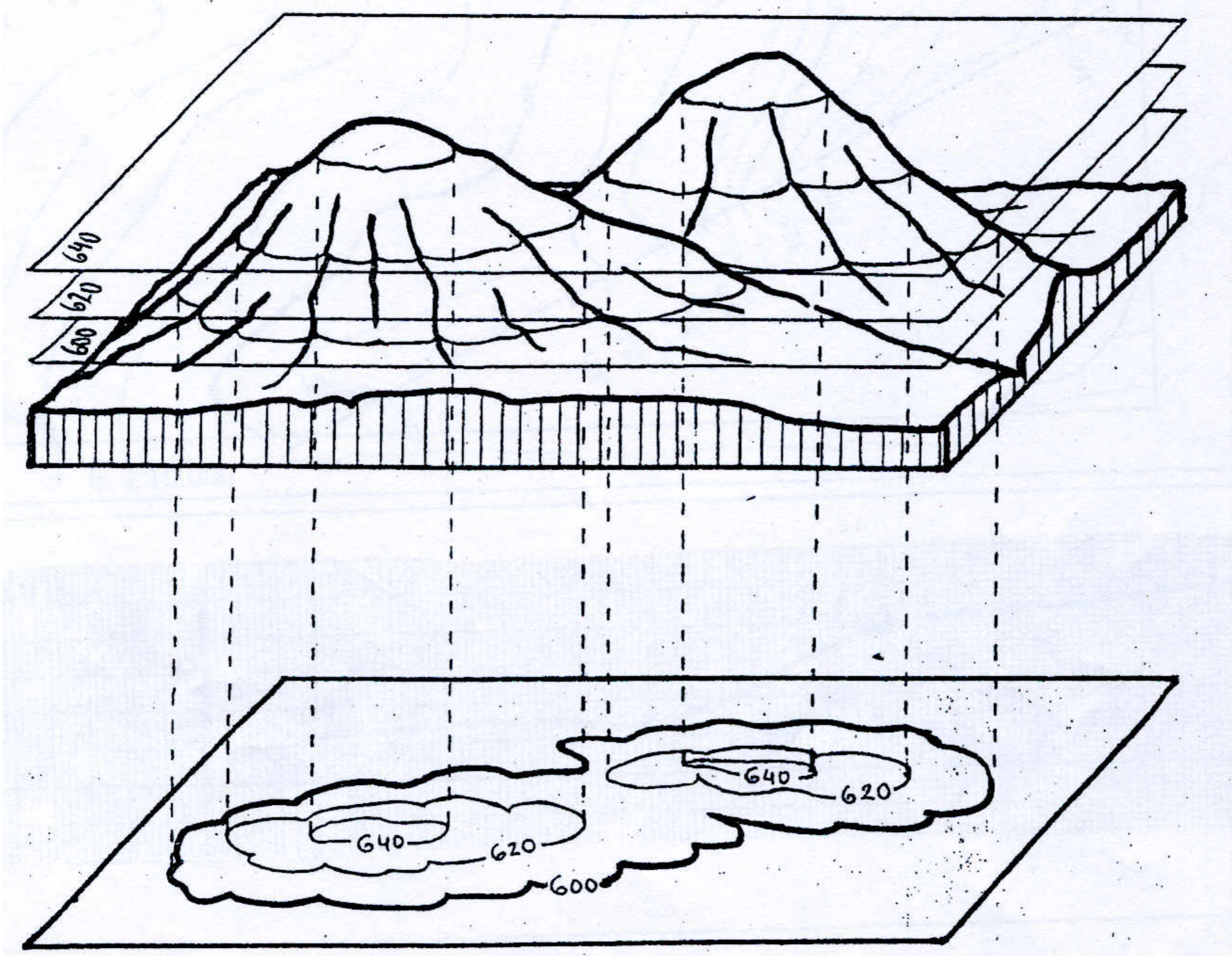


- **ALTITUDE:** Normally, we measure heights from the surface of the sea (called the sea level). Altitude (or elevation) is the vertical distance above sea level
- **Topographic maps** show the shape of the Earth's surface. They tell us which areas are higher and which areas are lower. Topographic maps can also be called relief maps.
- Altitudes are normally shown on maps using colours or lines. The lines used on maps to show altitude are called **contour lines**. They connect points with the same altitude
- Sometimes the **exact altitude** of the highest point is shown

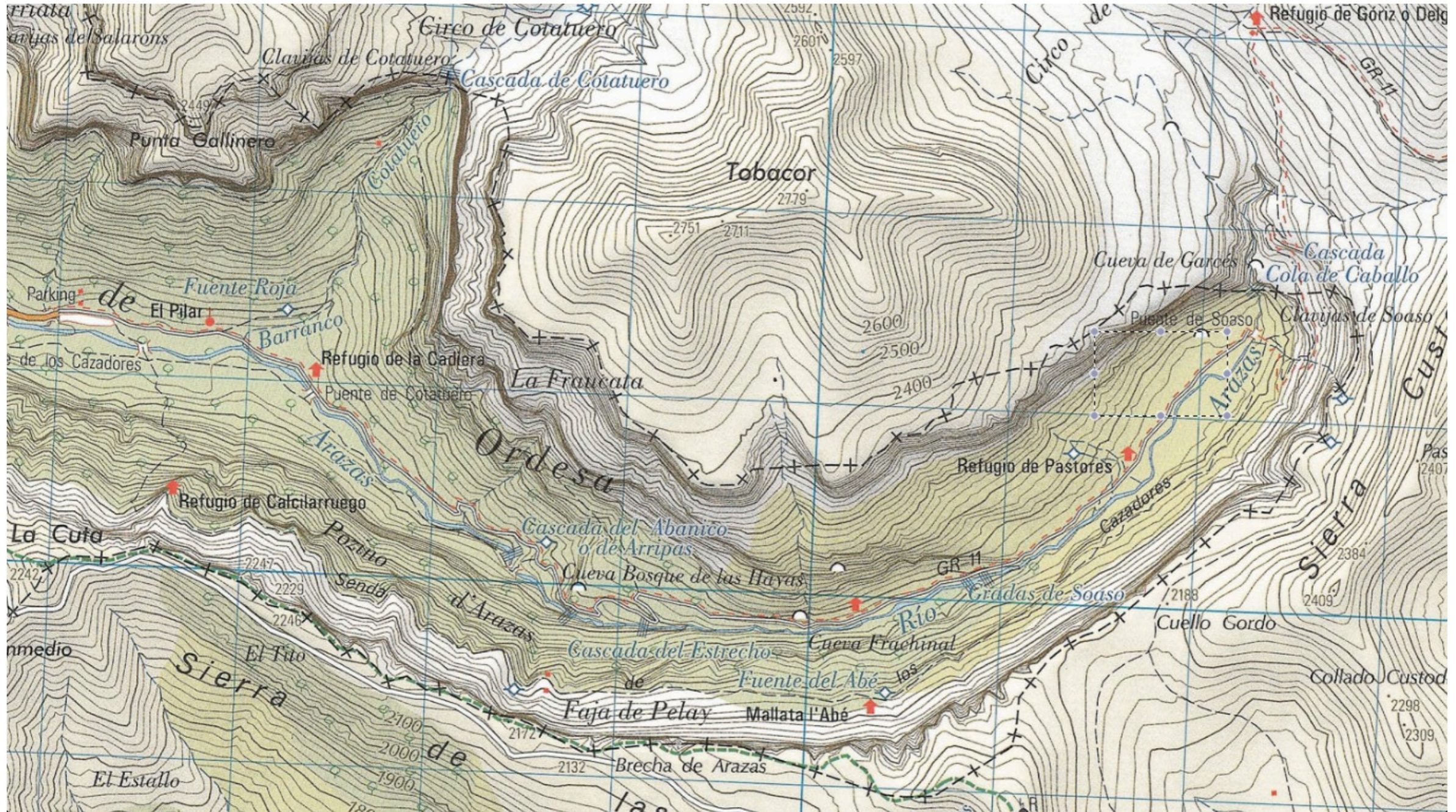


# ELABORACIÓN DE UN MAPA TOPOGRÁFICO

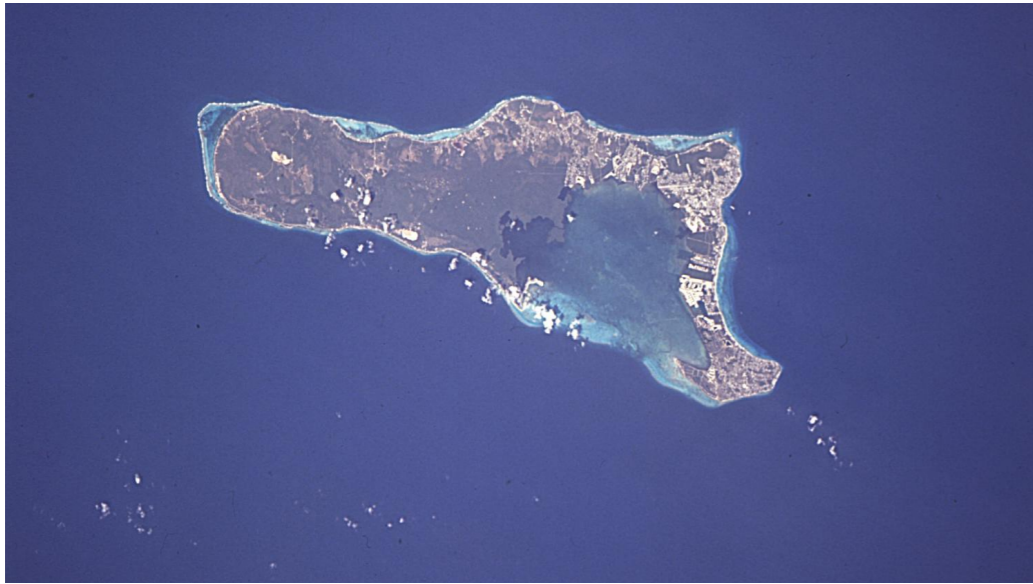








## 2. THE COASTLINE



- An **island** is an area of land completely surrounded by water
- A group of islands, like New Zealand is called an **archipelago**.
- An **isthmus** is a narrow neck of land between two larger pieces of land
- A **peninsula** is almost like an island. It is surrounded by water on all sides except one





- In a **bay**, the land partly surrounds the sea. A large bay is sometimes called a **gulf**.
- A **beach** is a part of the coastline where there is sand or pebbles (small stones)
  - A **cliff** is a steep wall of rock
  - Un **cabo** es una porción de tierra que entra en el mar
- A **headland** or point is a piece of land that sticks out into the sea
  - A large headland is called a **cape**



# Trabajar en la libreta:

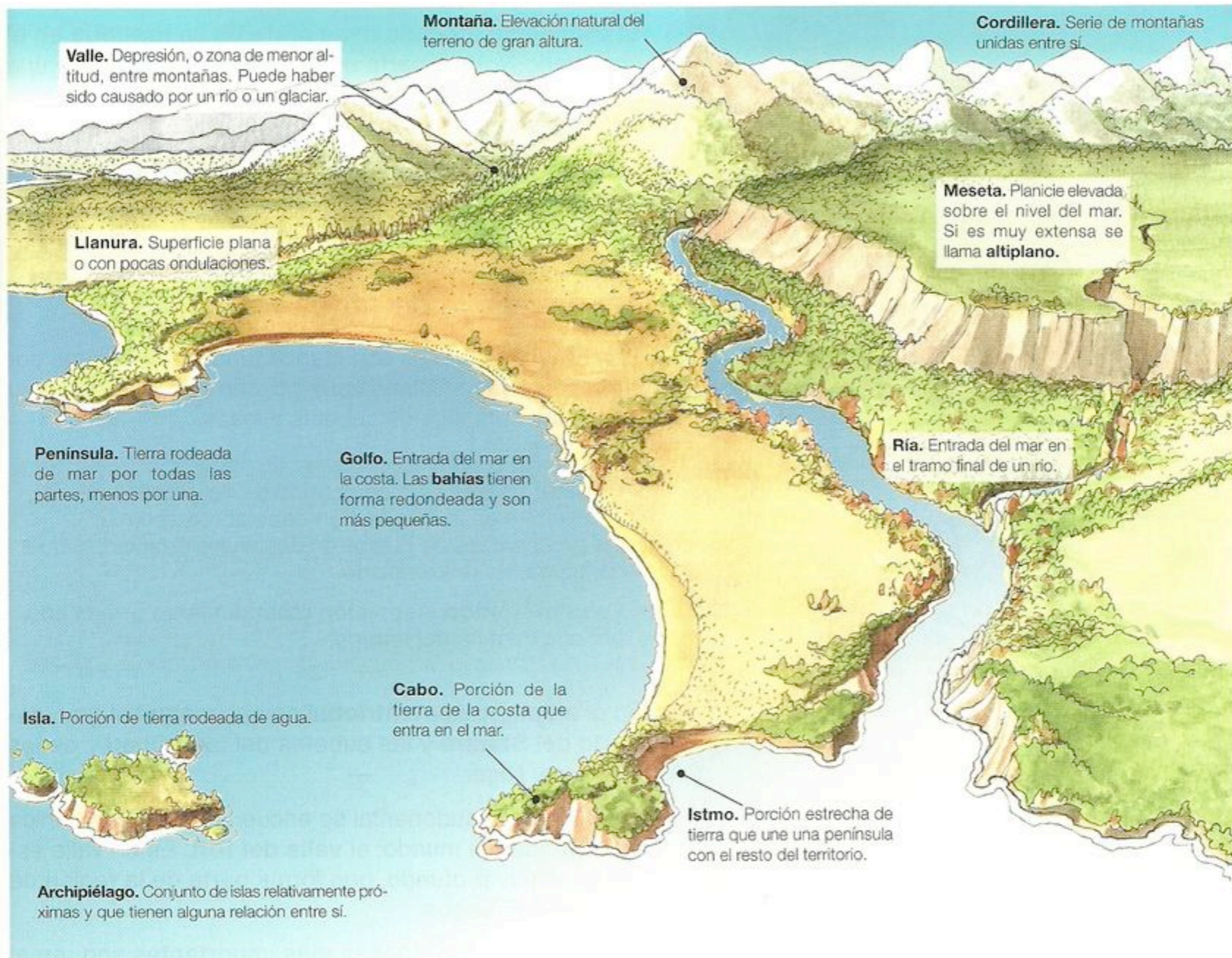
Para la próxima clase hay que tener copiados todos lo que hemos visto hasta ahora mismo en la libreta. Hay que saberse los continentes y océanos además de las definiciones nuevas que hemos visto, lo preguntaré en clase.



# 3. EL PAISAJE

- A **mountain range** is a group of mountains
- A single mountain is called a **peak**
- A **valley** is the area between two mountains.
- A **hill** is like a mountain, but smaller and less steep
- **Plains** are low, flat areas, often close to the sea
- At higher altitudes, flat areas are called **plateaus**
- A **canyon** or **gorge** is a deep channel cut out by a river
- A **basin** is a low area of land, which can even be below sea level. Another name for a basin is a depression.





# 3.1 Under the Ocean

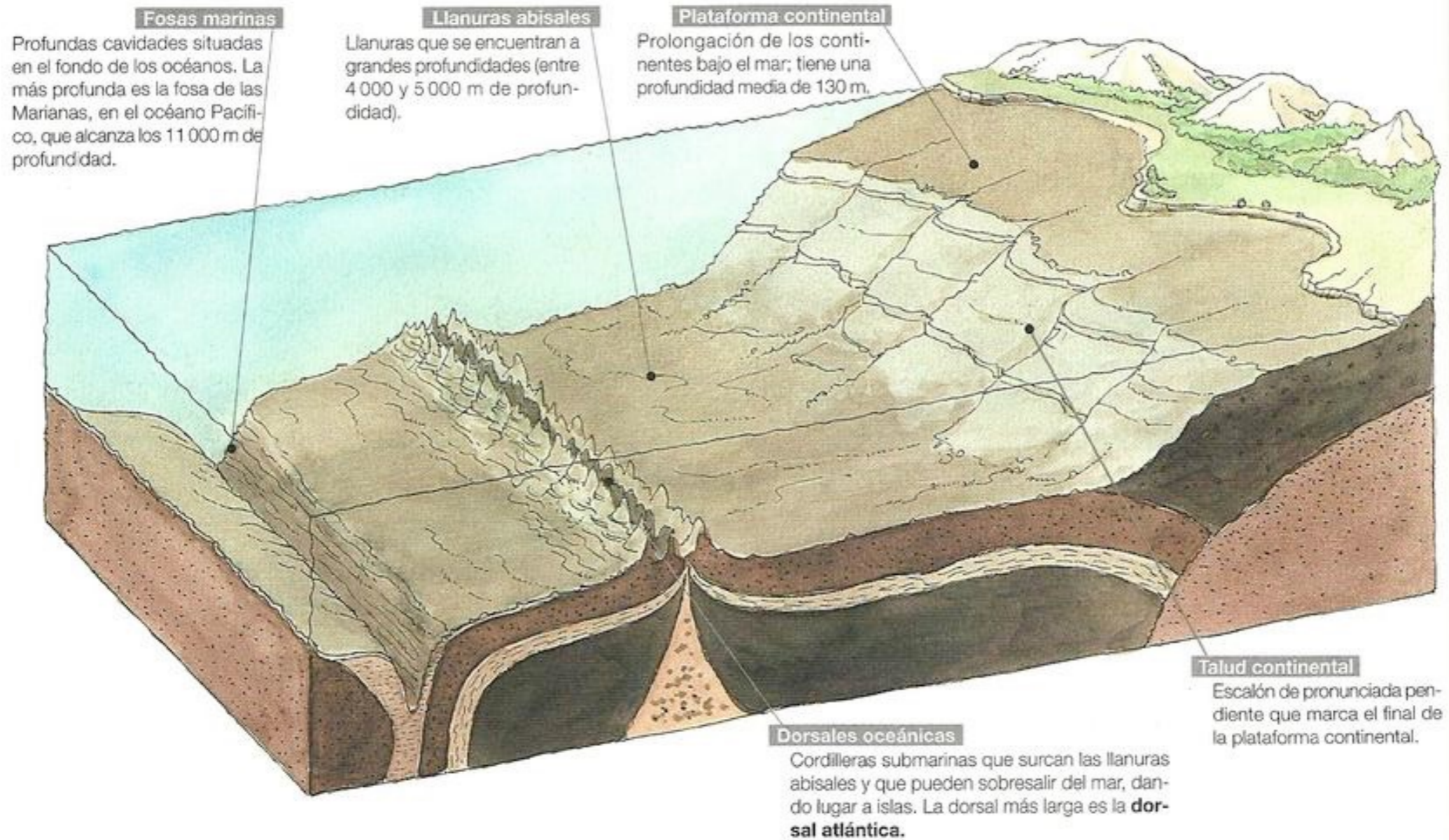
- The bottom of the ocean is not flat. It's a bit like the land:
- The **ocean ridges** are underwater mountain ranges. If they are very high they stick out above the sea and form islands
- Continental shelves are flat areas like underwater plateaus
- Ocean trenches are deep channels in the bottom of the ocean, like canyons
- An abyssal plain is an underwater plain on the ocean floor. They are usually very deep - 3,000 - 6,000m below sea level





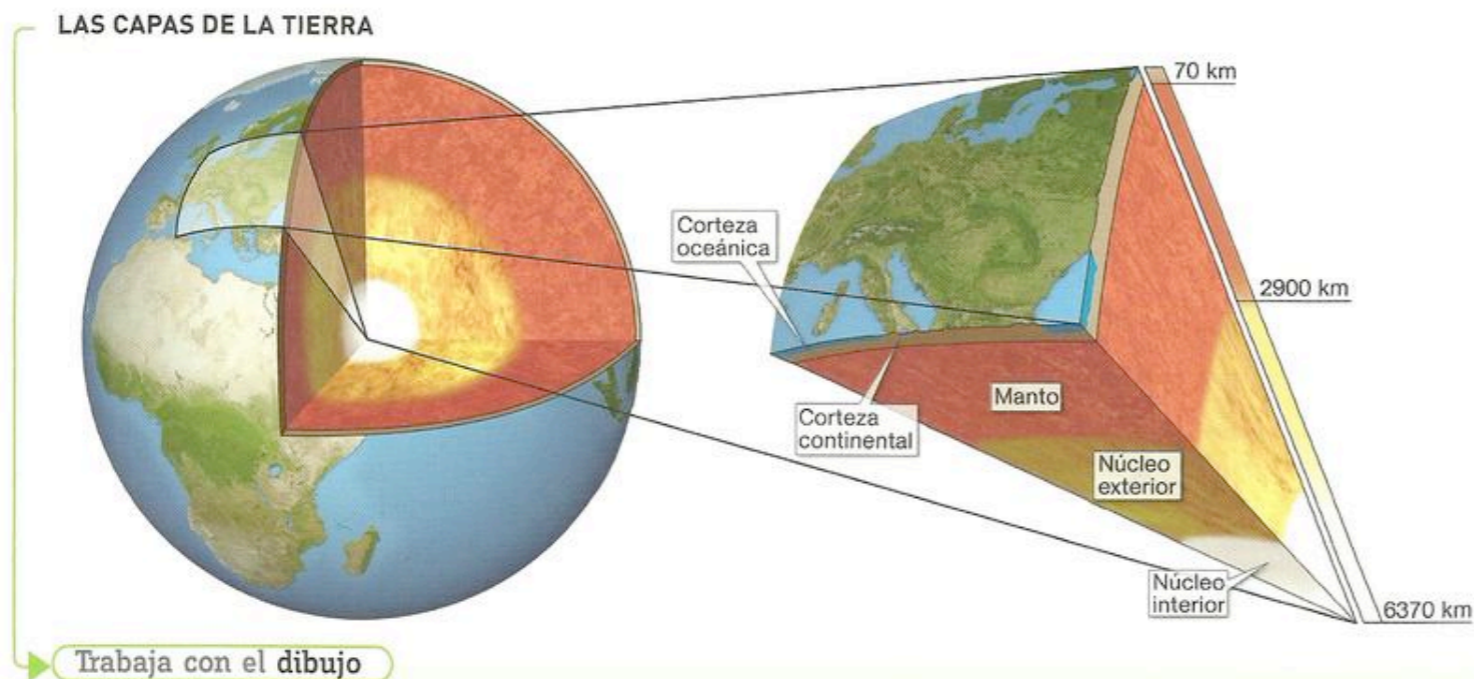
## El relieve submarino

El fondo de los océanos presenta un relieve muy accidentado:



# 4. What is the Earth made of?

- The Earth is made of three layers:
  - The **crust** is the surface of the Earth. It is a thin layer made of solid rock
  - The **mantle** is a much thicker layer made of magma. Magma is molten (liquid) rock
  - The **core** is the bit in the centre of the Earth. It is part solid and part liquid. The core is very hot. It is approximately  $4000^{\circ}\text{C}$ . The highest temperature ever recorded on the surface of the Earth is  $58^{\circ}\text{C}$



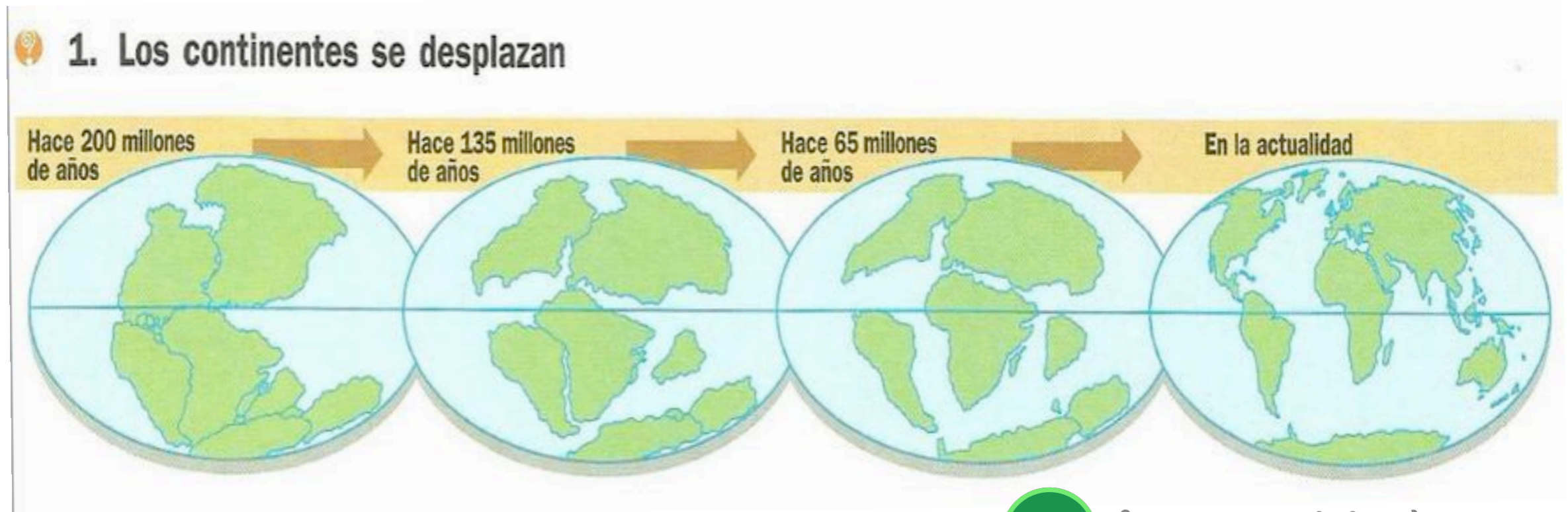
# Trabajar en la libreta

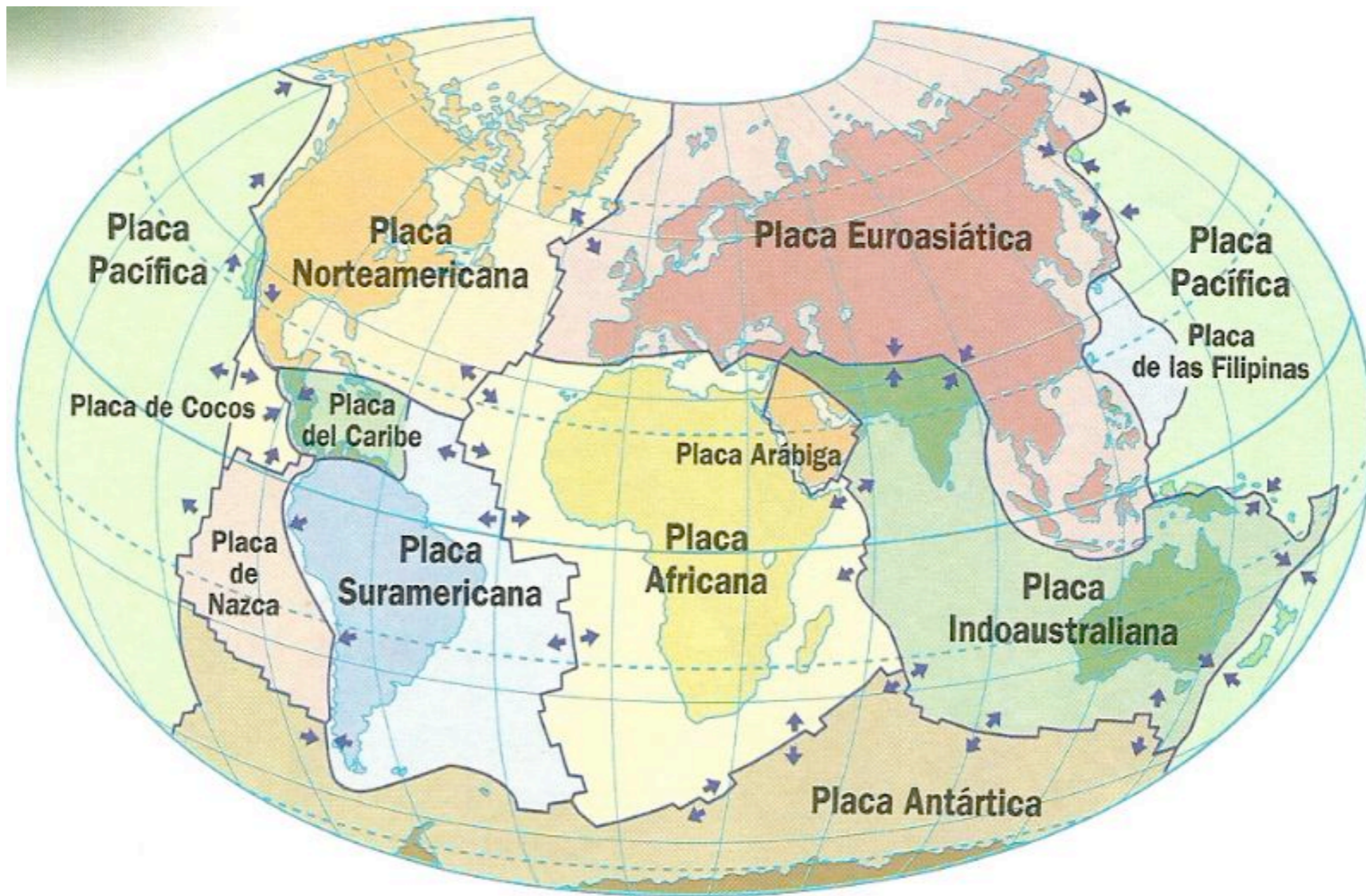
Para el próximo día copia todos los apuntes que hemos visto en clase hasta hoy y realiza un dibujo de las capas de la Tierra y señala sus partes. El dibujo hay que colorearlo y hacerlo bien.



# 5. PLATE TECTONICS

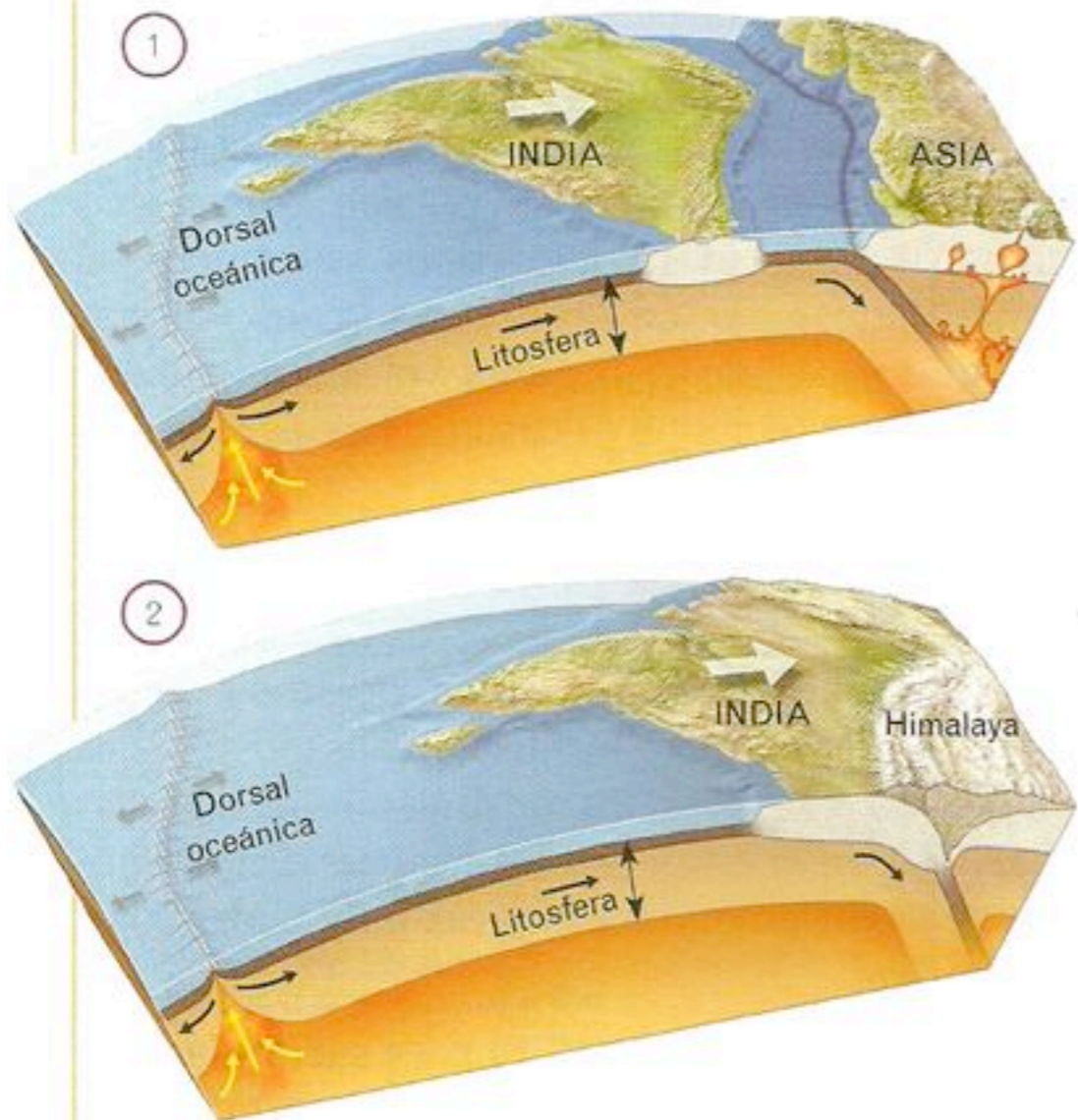
- The Earth's crust is not just one big piece of rock. It is divided into smaller pieces called tectonic plates. The plates move because the mantle underneath them is moving, but they only move very slowly.
- The places where the plates meet are called boundaries or plate margins





## El origen de las montañas

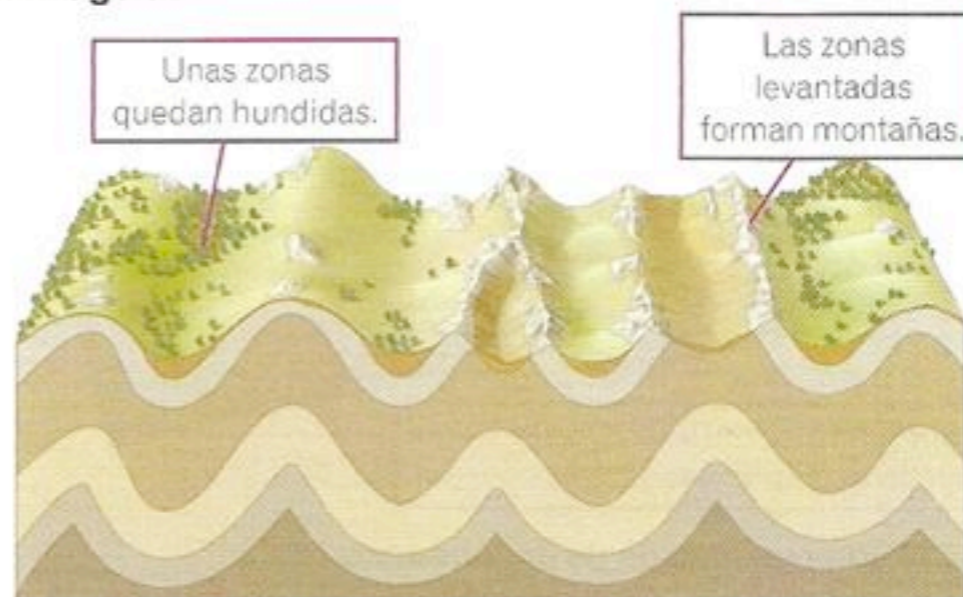
### Choque de placas



Docs. 12 y 13 (1) Las placas Indoaustraliana y Euroasiática se fueron aproximando. (2) Hace 45 millones de años chocaron, la placa Indoaustraliana se desplazó bajo la Euroasiática, que se elevó, y los materiales de los bordes de las placas se deformaron. Así se formó el Himalaya.

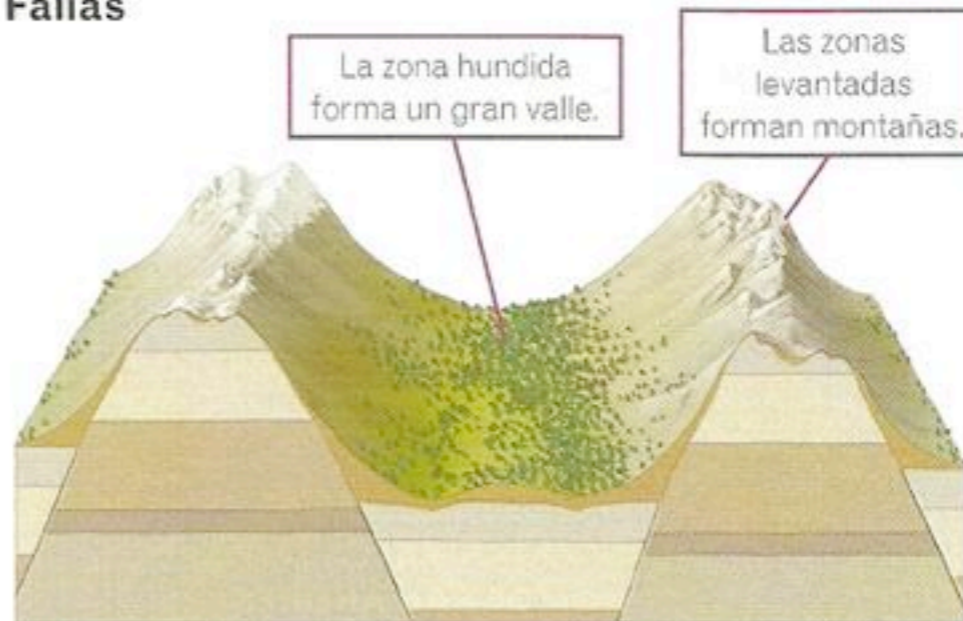
## EN PROFUNDIDAD

### Pliegues



Doc. 14 Paisaje originado por pliegues.

### Fallas

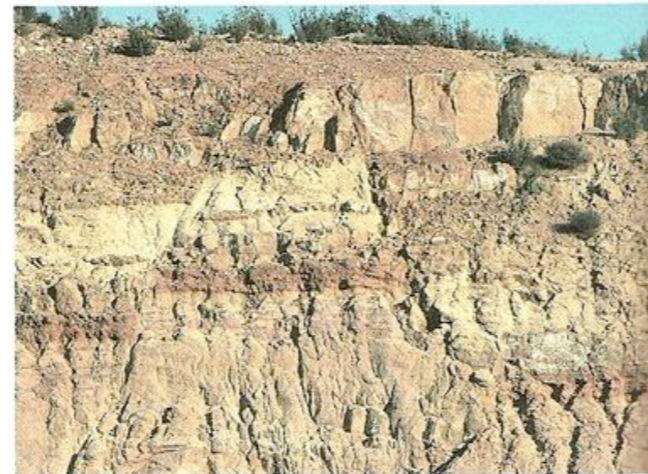
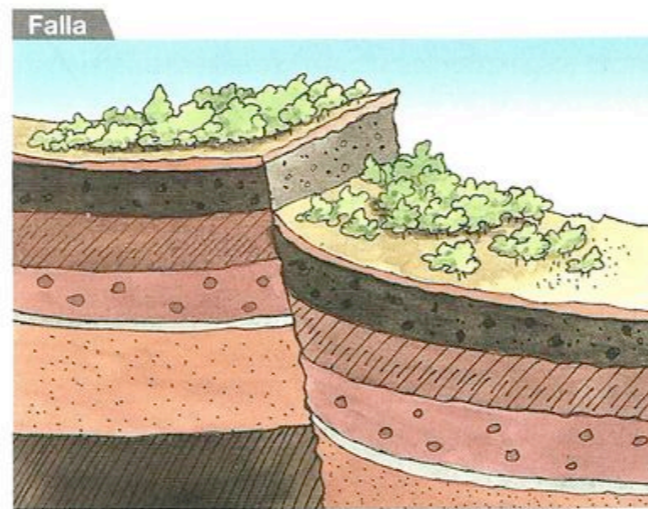
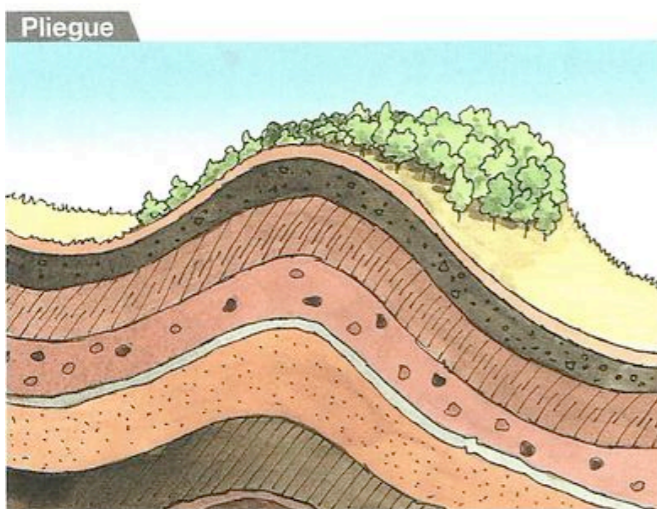


Doc. 15 Paisaje originado por fallas.



# 5.1 What happens when the plates move?

- When the plates move, this causes dramatic changes in the Earth's surface near the plate boundaries. What kind of changes can happen?
  - **FOLD MOUNTAINS:** When two plates move towards each other the Earth's surface is forced upwards or folded into fold mountains. This happens very slowly.



- **FAULTS:** when the plates move against each other, pressure can build up. Sometimes this causes the rock to split, making a fault in the rock. On one side of the fault, the ground rises, and on the other side it falls

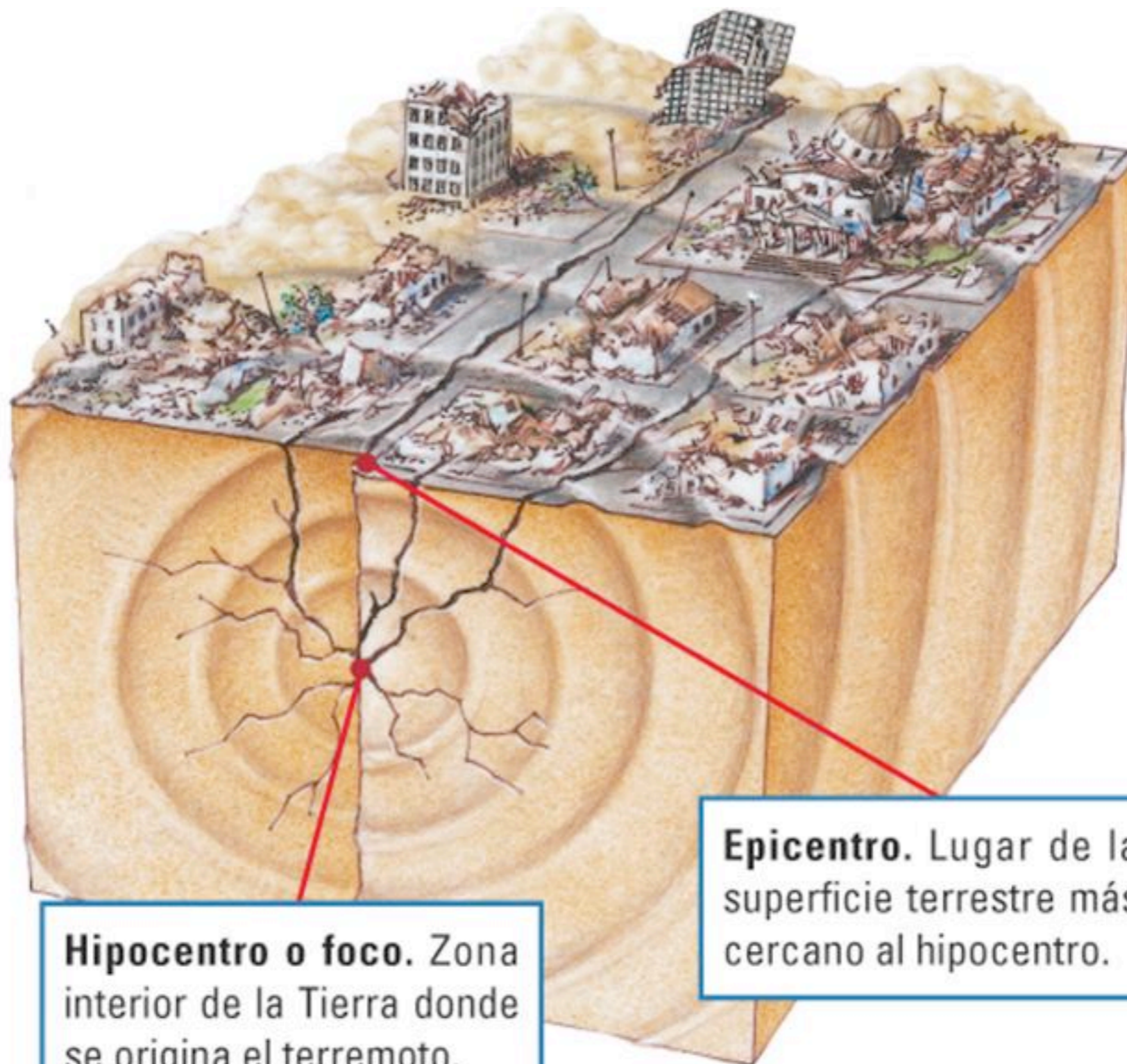


# 5.1 What happens when the plates move?

- **EARTHQUAKES:** Sometimes the increase in pressure at a plate boundary can cause a release of energy that makes the ground shake. This is called an earthquake.
  - The point in the ground where the earthquake starts is called the focus
  - Shock waves are vibrations that spread out from the focus
  - The epicentre is the point of the Earth's surface above the focus
  - We measure the strength of an earthquake using the Richter Scale







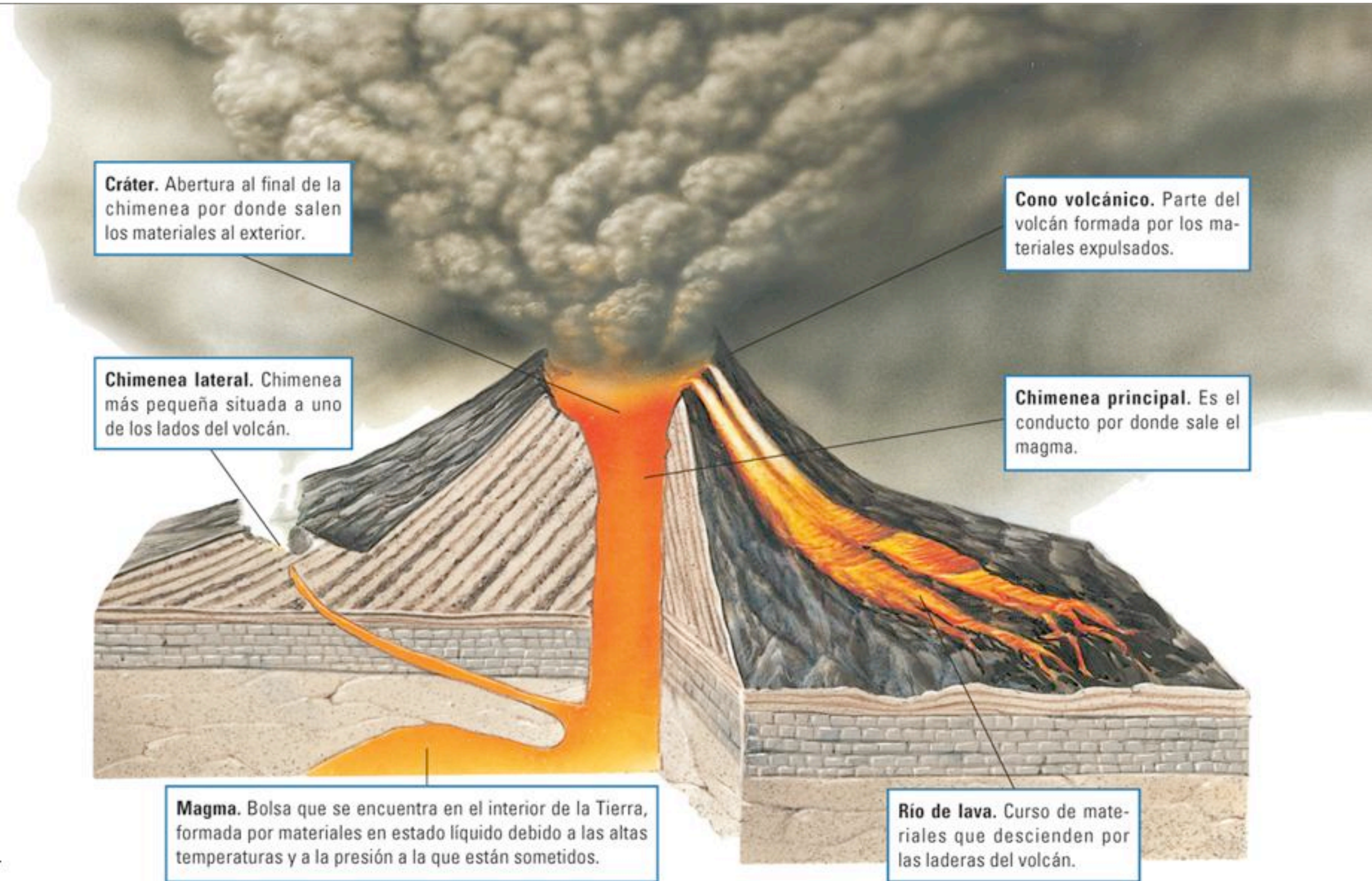
**Hipocentro o foco.** Zona interior de la Tierra donde se origina el terremoto.

**Epicentro.** Lugar de la superficie terrestre más cercano al hipocentro.

# 5.1 What happens when the plates move?

- **VOLCANOES:** Volcanoes erupt when high pressure forces out magma from the Earth's mantle
  - Active volcanoes are ones that erupt quite often
  - If a volcano does not erupt for a long time, it is called a dormant volcano (dormant means sleeping)
  - Magma from the mantle is forced upwards through a hole in the Earth's crust and rises through the vent
  - The magma comes out through the crater at the top of the volcano. when the magma comes out it is called lava
  - The eruption also produces ash and gases
  - The shape of a volcano is called a cone. The cone is made of lava from previous eruptions





**Cráter.** Abertura al final de la chimenea por donde salen los materiales al exterior.

**Cono volcánico.** Parte del volcán formada por los materiales expulsados.

**Chimenea lateral.** Chimenea más pequeña situada a uno de los lados del volcán.

**Chimenea principal.** Es el conducto por donde sale el magma.

**Magma.** Bolsa que se encuentra en el interior de la Tierra, formada por materiales en estado líquido debido a las altas temperaturas y a la presión a la que están sometidos.

**Río de lava.** Curso de materiales que descienden por las laderas del volcán.



- **Tsunamis:** If earthquakes and volcanic eruptions happen in or near the sea, they can displace sea water, and this causes a tsunami. A tsunami is a series of enormous waves. They can be up to 40m high, and can cause a lot of damage to coastal areas

### Por qué se produce un maremoto

Generalmente los maremotos o *tsunamis* se generan por un deslizamiento de las placas tectónicas bajo el agua.

Levantamiento de la placa

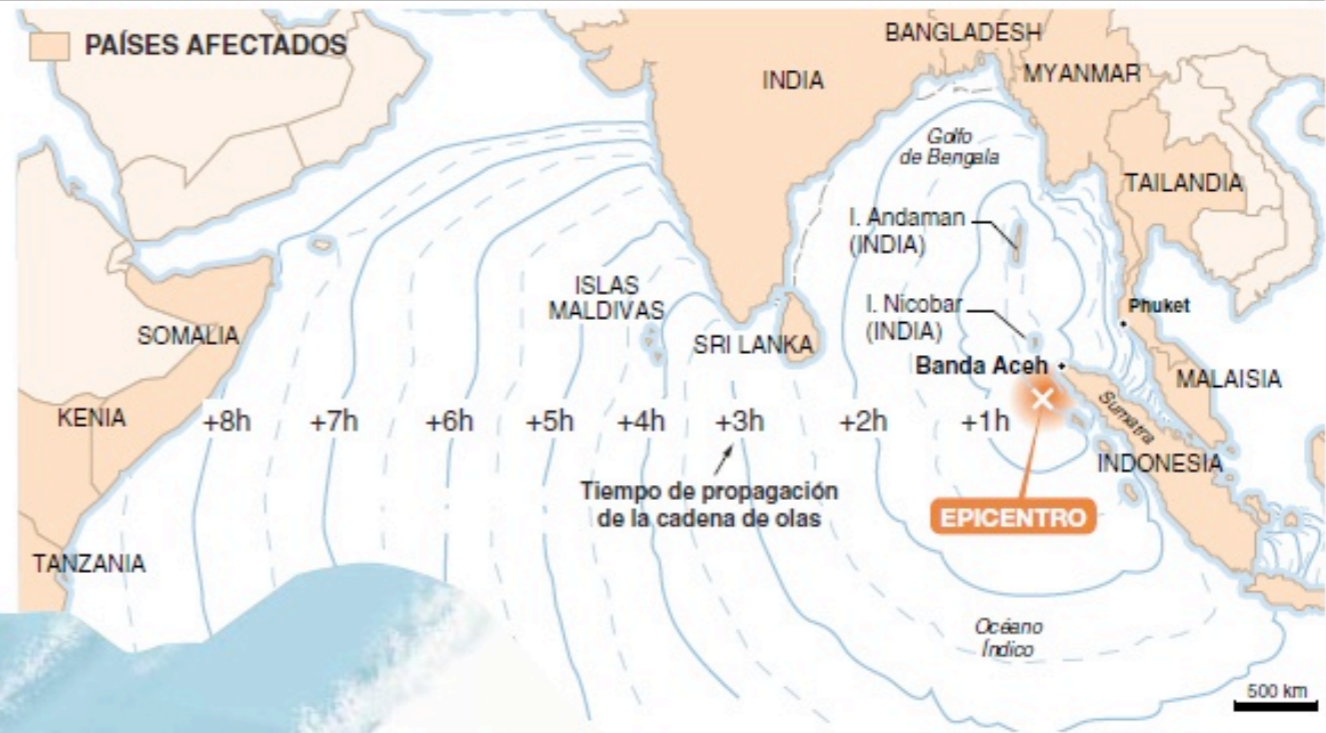


Hundimiento de la placa



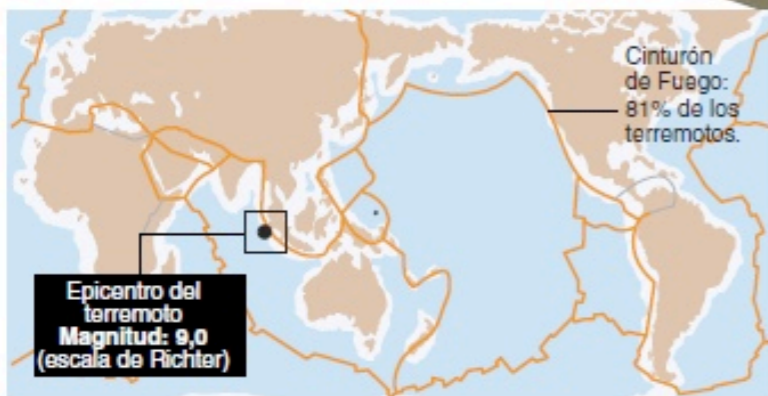
Cuando el agua desplazada tiende a nivelarse, se generan las olas.

El movimiento del lecho marino desplaza una enorme cantidad de agua hacia arriba.



La fuerza de las olas hace que el agua penetre varios cientos de metros en la costa, inundando todo lo que encuentra a su paso.

### LAS PLACAS TECTÓNICAS TERRESTRES



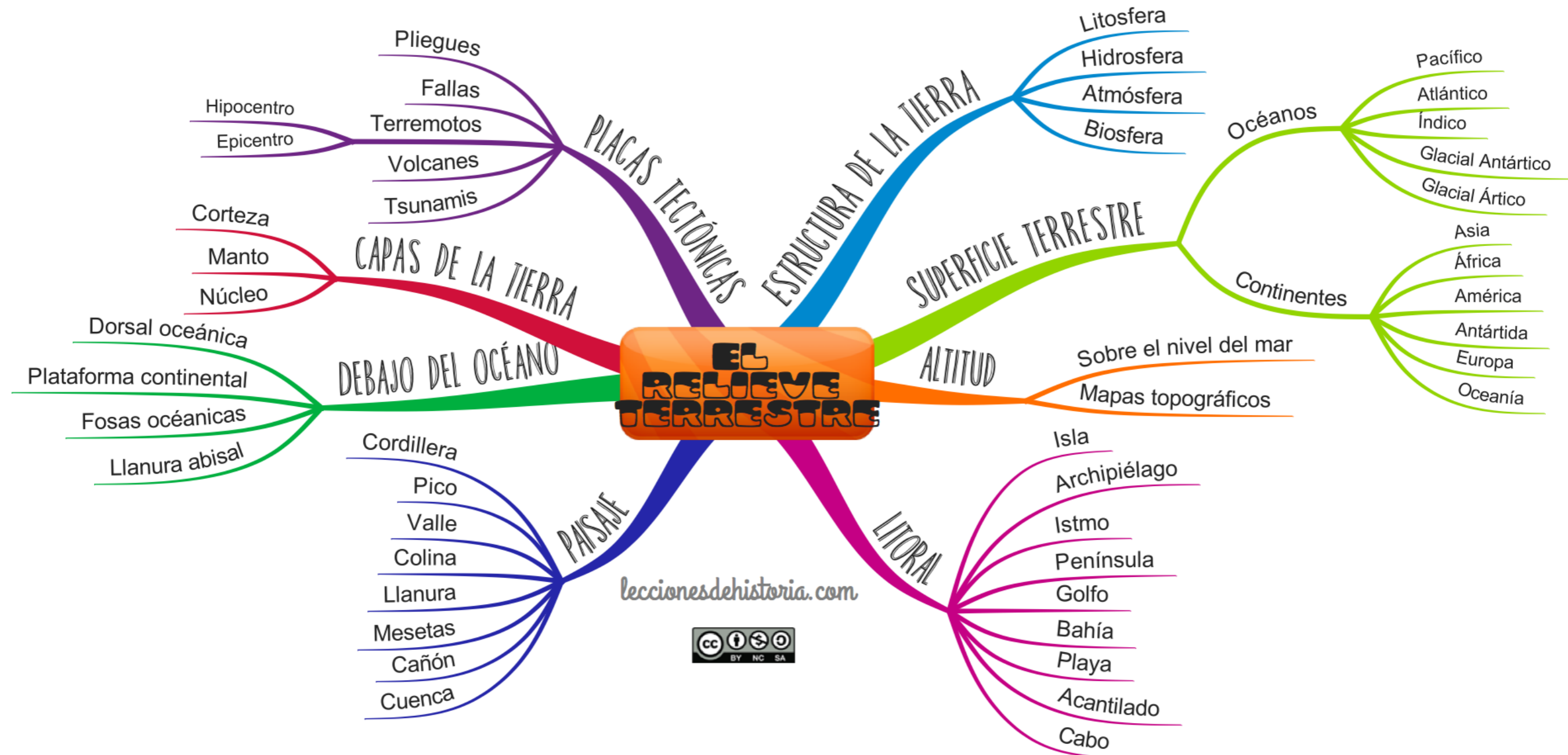
Si el relieve de la costa es escalonado contribuye a frenar la velocidad de las olas.

La zona donde se produjo el maremoto, no disponía de un sistema sísmico de vigilancia.

**OLAS GIGANTES**  
Las olas pierden velocidad según se van acercando a la costa y ganan altura a medida que disminuye la profundidad del fondo.

En costas poco profundas pueden llegar a superar los 30 metros de altura, por lo que son completamente destructivas.

# MAPA CONCEPTUAL DEL RELIEVE TERRESTRE



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# Trabajo en la libreta

Para el próximo día hay que traer copiados todos los apuntes en la libreta que hemos visto hasta hoy y realizar un dibujo de un volcán y sus partes, coloreando el dibujo y bien hecho.



# Ejercicio en el blog:

Para la fecha que indique la profesora, hay que realizar el siguiente ejercicio en el blog:

- Investiga en internet y publica una entrada hablando sobre algún riesgo natural que haya ocurrido y descríbelo (Máximo 10 líneas)

**Recuerda:** Adjunta imágenes para que quede el blog completo y elegante.



# Glossary

<http://www.students.linguaframe.com/gh1-audio-glossary>

Ocean, Sea, Continent, Altitude, Contour, Coast, Coastline, Cliff, Beach, Isthmus, Sea level, Gulf, Cape, Island, Headland, Peninsula, Mountain, Valley, Plain, Gorge, Mountain range, Peak, Basin / Depression, Plateau, Earthquake, Epicentre, Focus, Tsunami, Volcano, Cone, Crater, Lava, Erupt/ Eruption, Fault



# Glosario

(copia estas palabras y defínelas en tu libreta)

Océano, mar, continente, altitud, contorno, costa, acantilado, playa, istmo, nivel del mar, golfo, cabo, isla, península, archipiélago, montaña, valle, meseta, garganta, cordillera, pico, valle, terremoto, epicentro, foco, tsunami, volcán, cono, cráter, lava, erupción



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