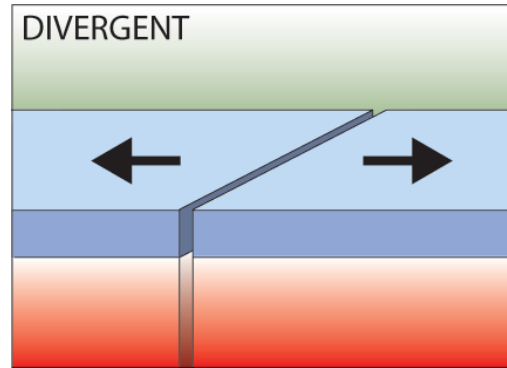


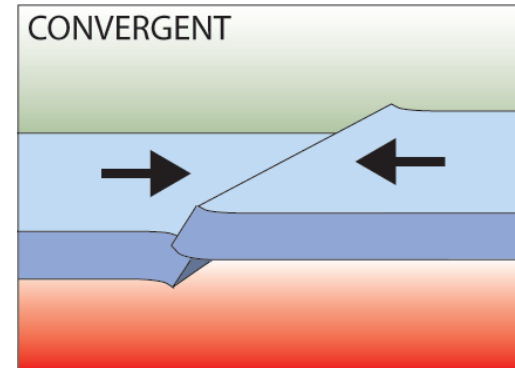
# Three types of plate boundary

- **Divergent**

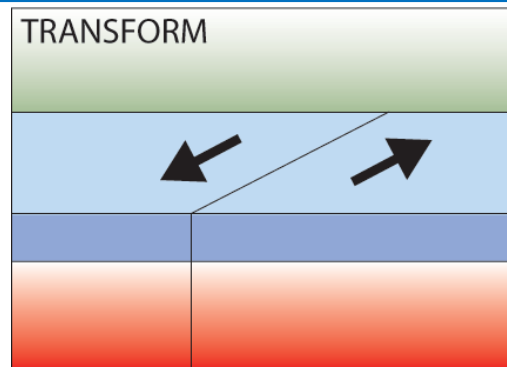


*our focus today*

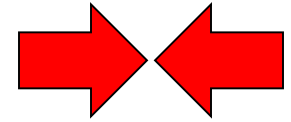
- **Convergent**



- **Transform**

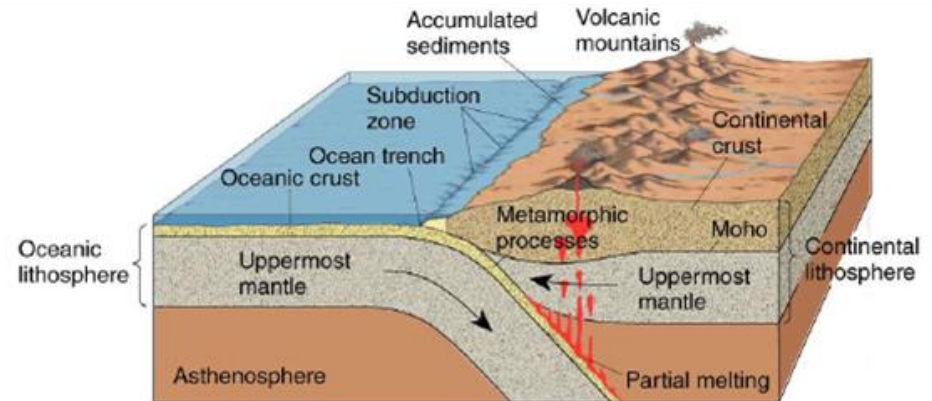


# Convergent Boundaries

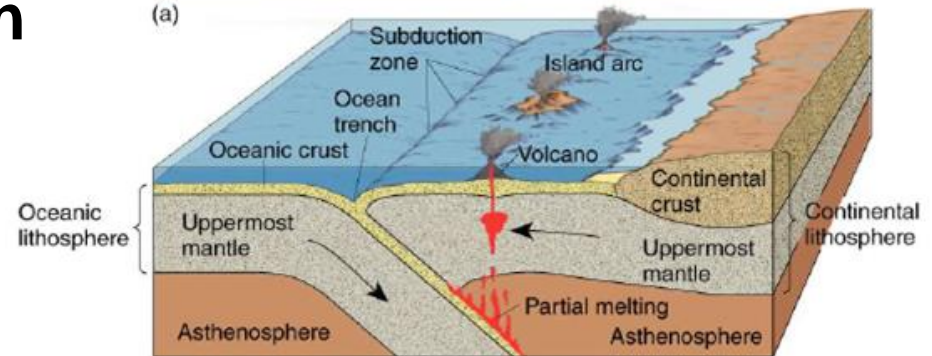


Three types:

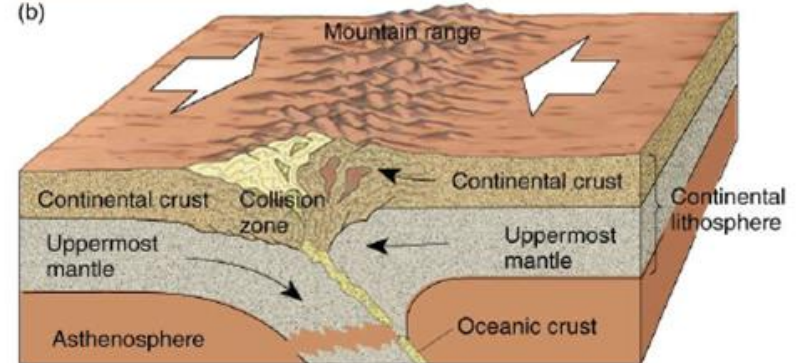
- a) **Continent-oceanic** crust collision
- b) **Ocean-ocean** collision
- c) **Continent-continent** collision



(a)



(b)



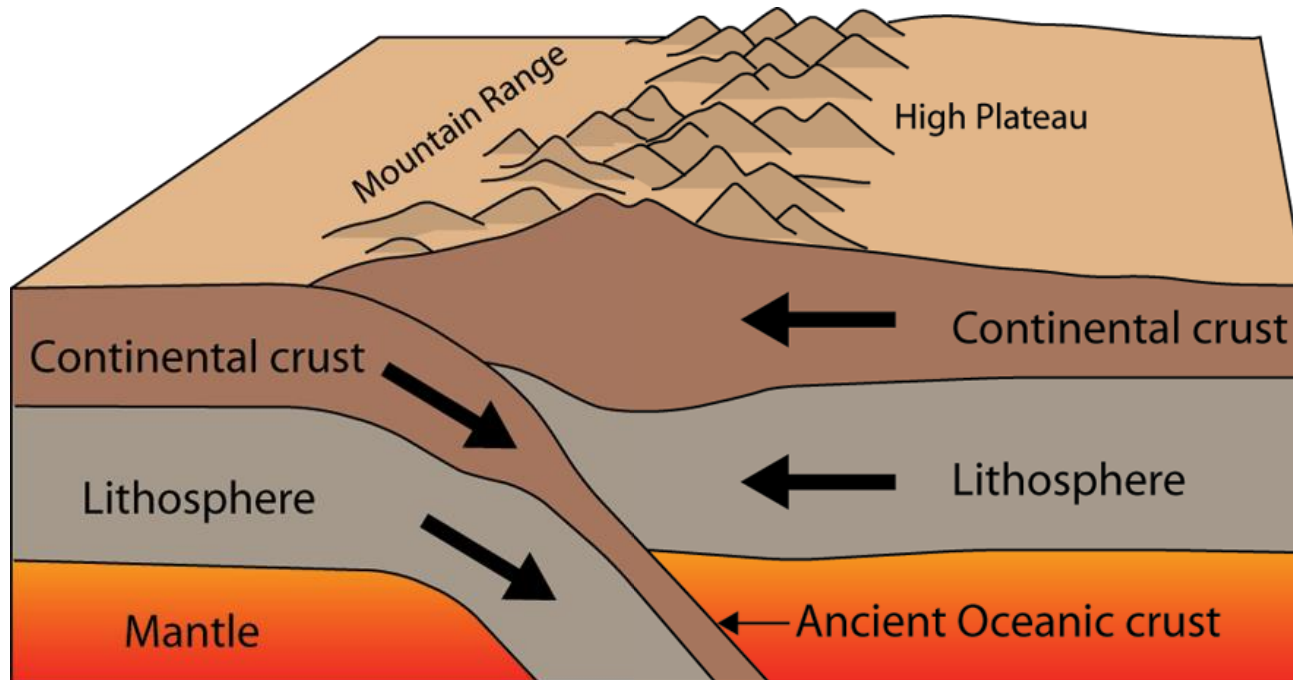
(c)

**Convergent boundaries are also called destructive plate boundaries.**

**Why?**

# Continent-Continent Collision

- Plates push against each other



- **Forms mountains** (European Alps, Himalayas)

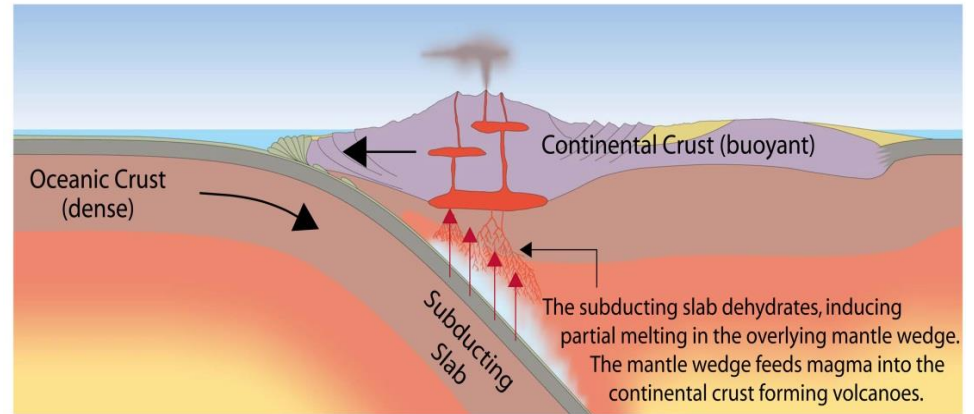
# Himalayas

Himalayan range is home to more than **one hundred mountains exceeding 7,200 m (23,600 feet)** in elevation, and **all the planet's peaks exceeding 8,000 m**, including the highest, Mount Everest.



# Continent-Oceanic Crust Collision

## “Subduction”

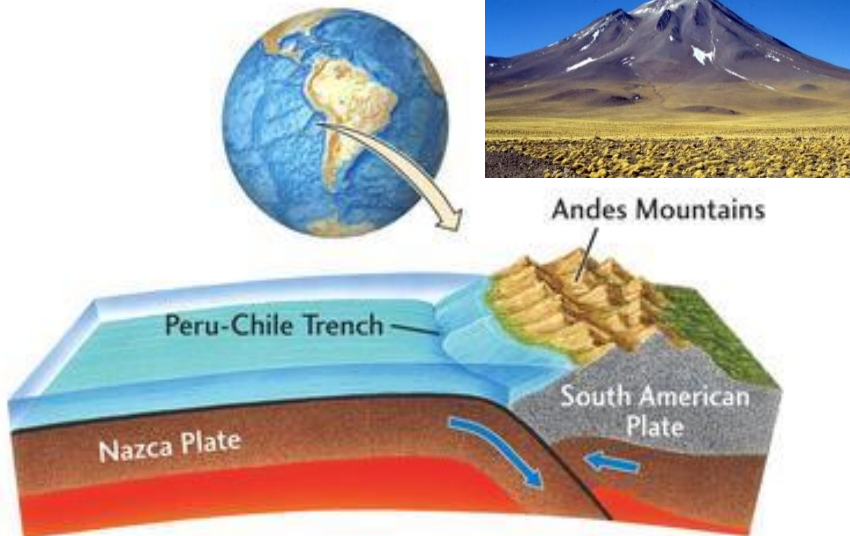


- **Oceanic** lithosphere subducts underneath the **continental** lithosphere.

- As it subsides, oceanic lithosphere heats and dehydrates.

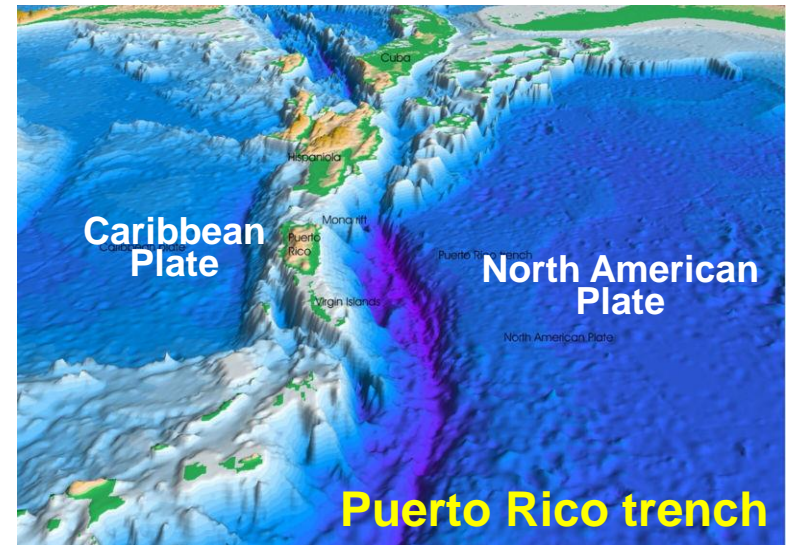
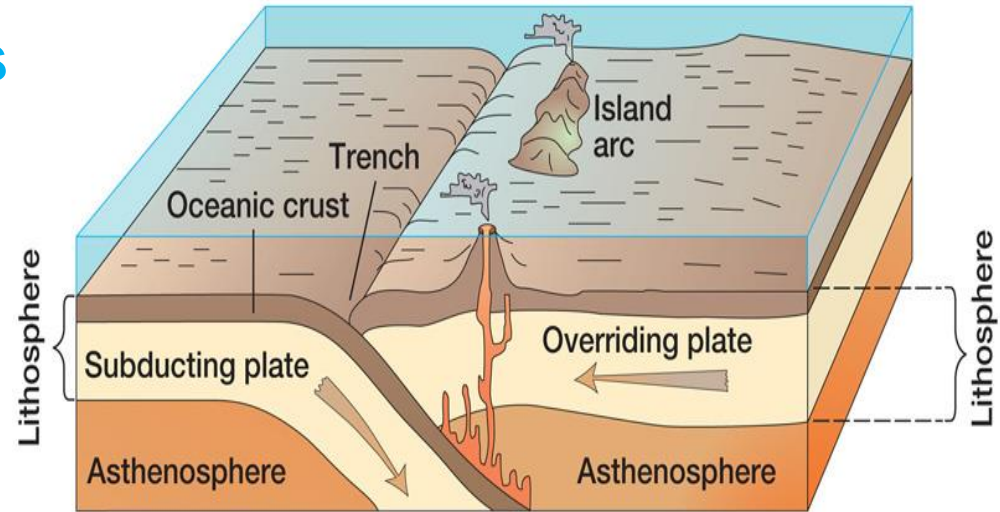
- The melt from mantle rises forming **volcanism**.

- Example: the Andes.



# Ocean-Ocean Plate Collision

- When **two oceanic plates** collide, the **younger one runs over the older one** which causes it to sink into the mantle forming a **subduction zone**.
- The subducting plate is bent downward to form a **very deep depression** in the ocean floor called a **trench**.
- **Volcanic island arc** is usually formed fairly close to, but not right next to, the trench.  
(ex: Mariana Islands, Aleutian Islands, Solomon Islands, Lesser Antilles)

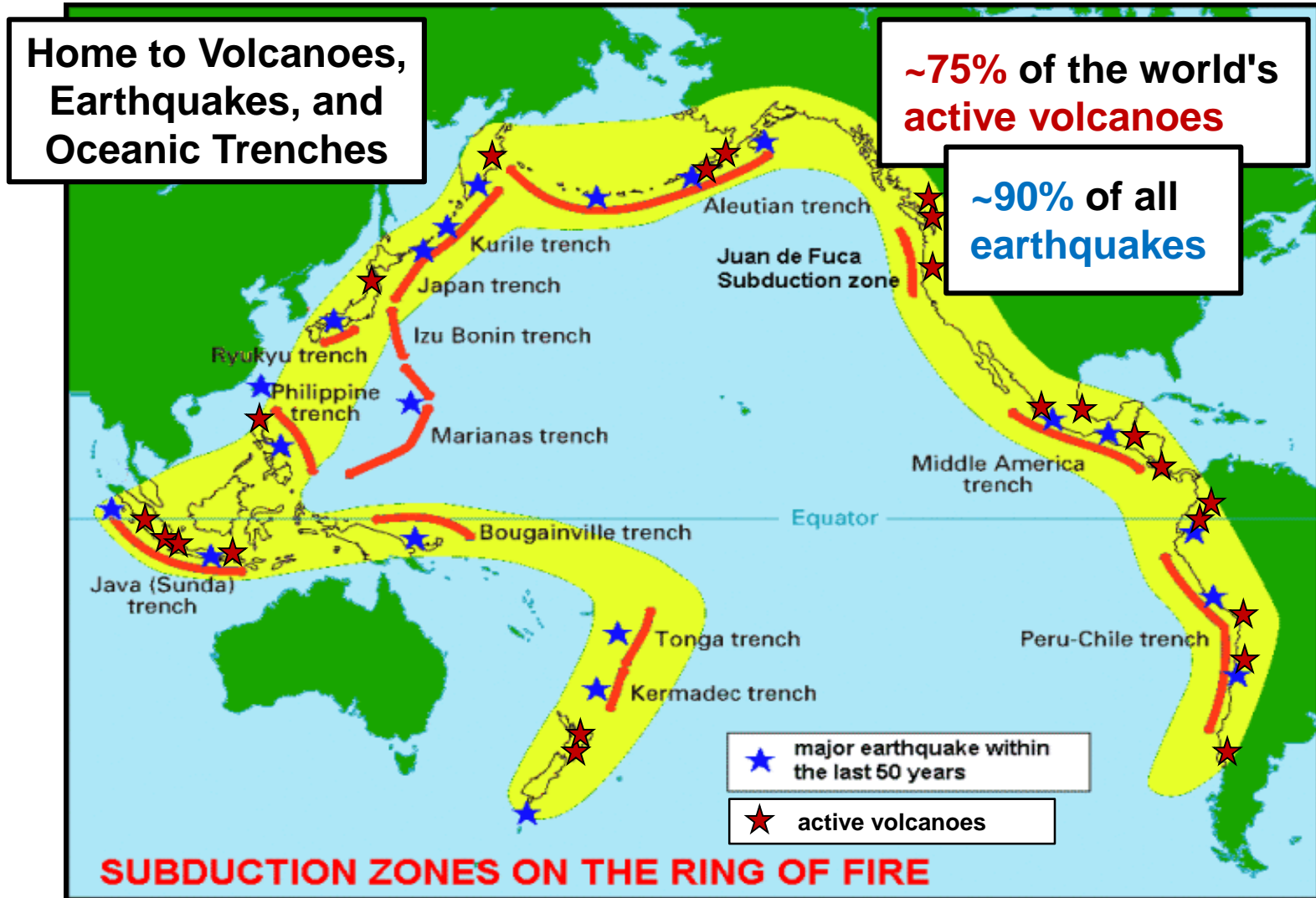


# What are the consequences of the tectonic plates movement?

- **Landscape formation**
- **Volcano formation**
- **Orogeny (mountain formation)**
- **Earthquakes**
- **Tsunami formation**



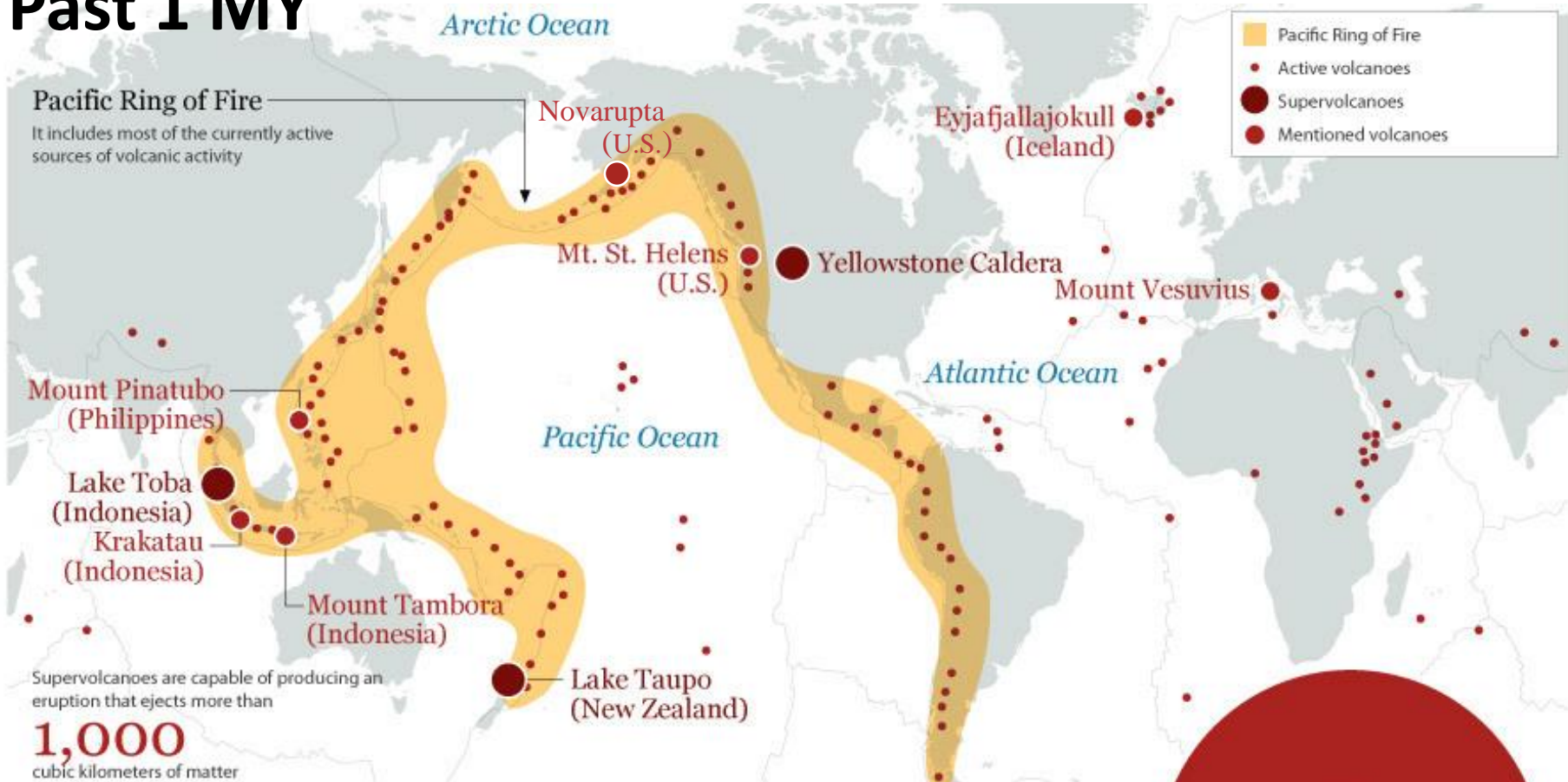
# The Pacific Ring of Fire





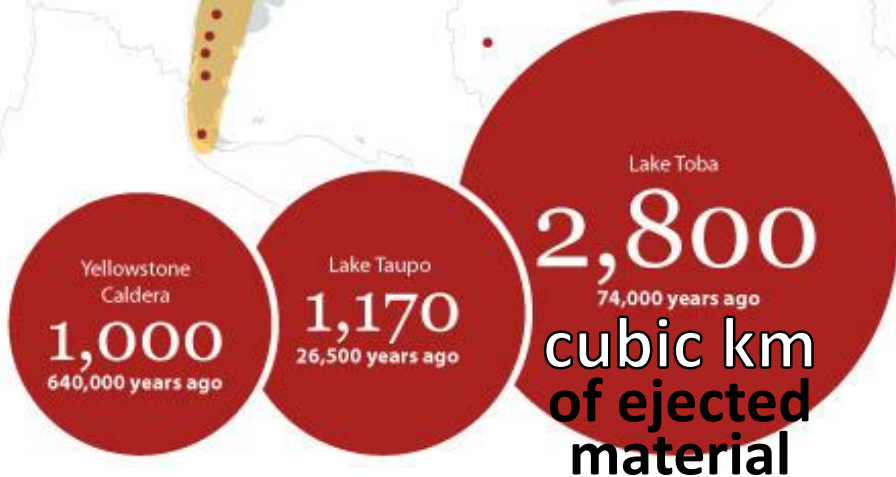
# Greatest Volcanic Eruptions

Past 1 MY



The largest volcanic eruptions in human history and in the last million years

(given in cubic kilometers of ejecta)



# Notable Volcanoes

- **Mt. Etna, Italy**  
Continuous eruption  
for almost 110 years!



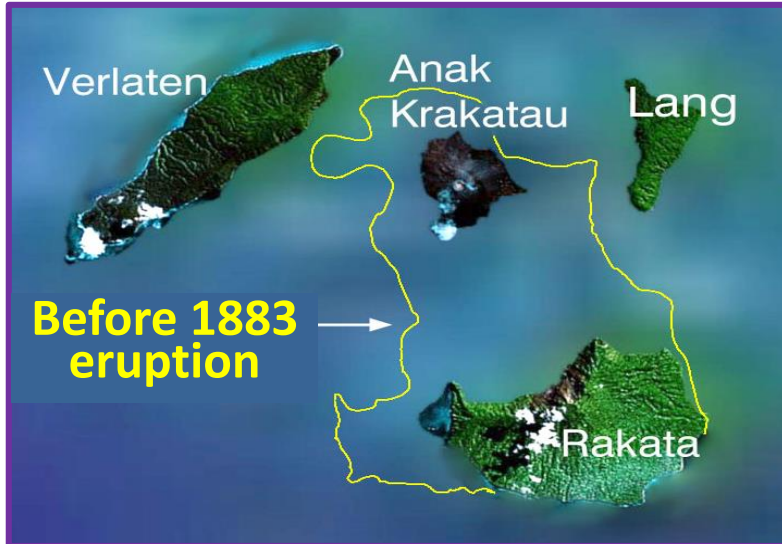
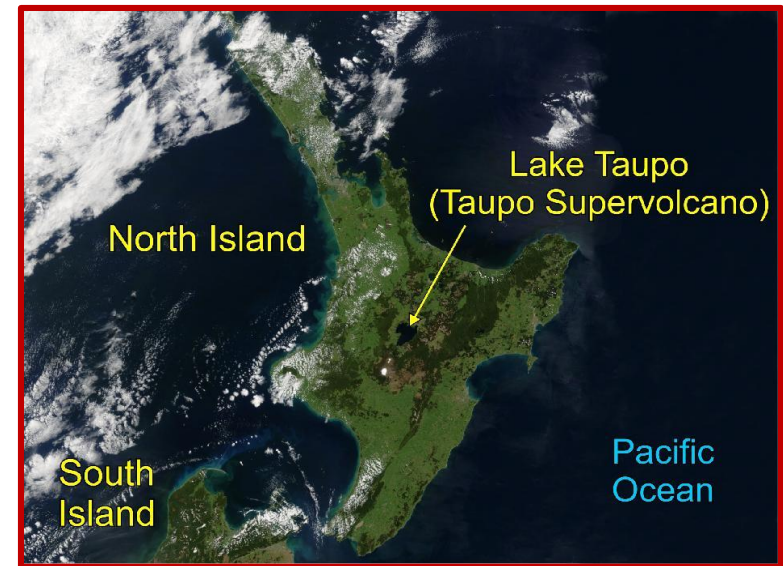
- **Kilauea, Hawaii**  
Largest observed lava lake



# Notable Volcanoes

- **Taupo, New Zealand**

Largest known supervolcano eruption in the past 50,000 years.



**NOW** ←

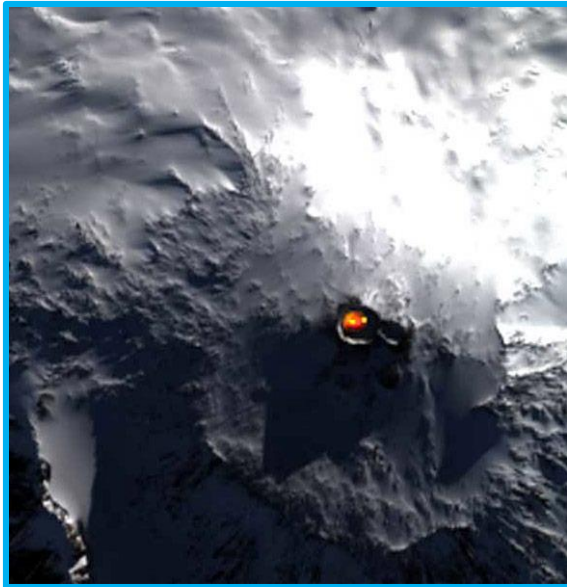
**THEN** →

- **Krakatoa, Indonesia**

1883 explosive eruption produced huge tsunamis as well as loudest sound ever heard in modern history.



# Notable Volcanoes



- **Mt. Erebus, Antarctica**  
Southernmost active volcano on Earth.



- **Mt. Pinatubo, Philippines**  
Second largest eruption of the 20<sup>th</sup> century, June 1991.

