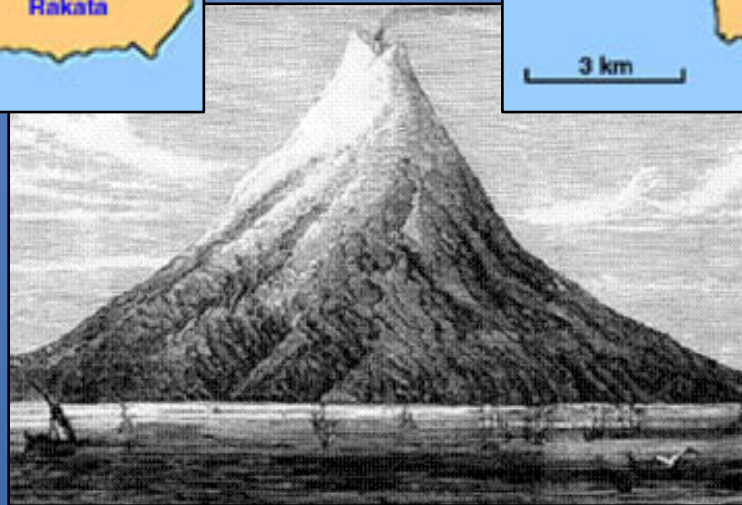
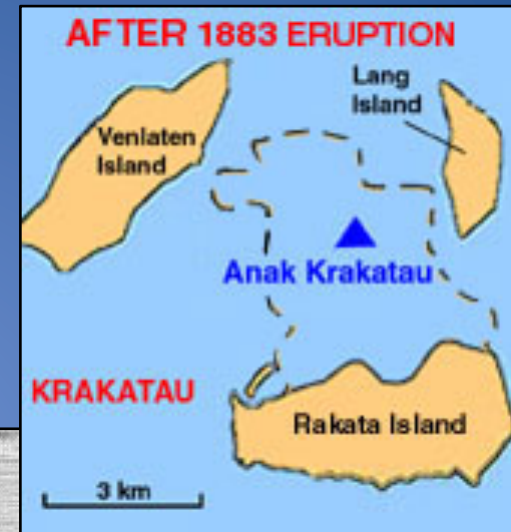


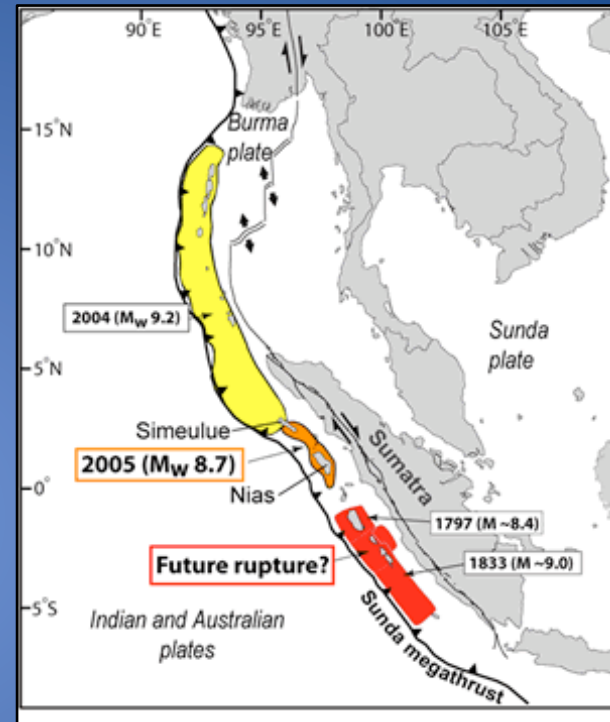
# Krakatau, Indonesia



Eruption of August 26<sup>th</sup> to the 28<sup>th</sup>, 1883

Kristina Shoemake

# Tectonic Setting



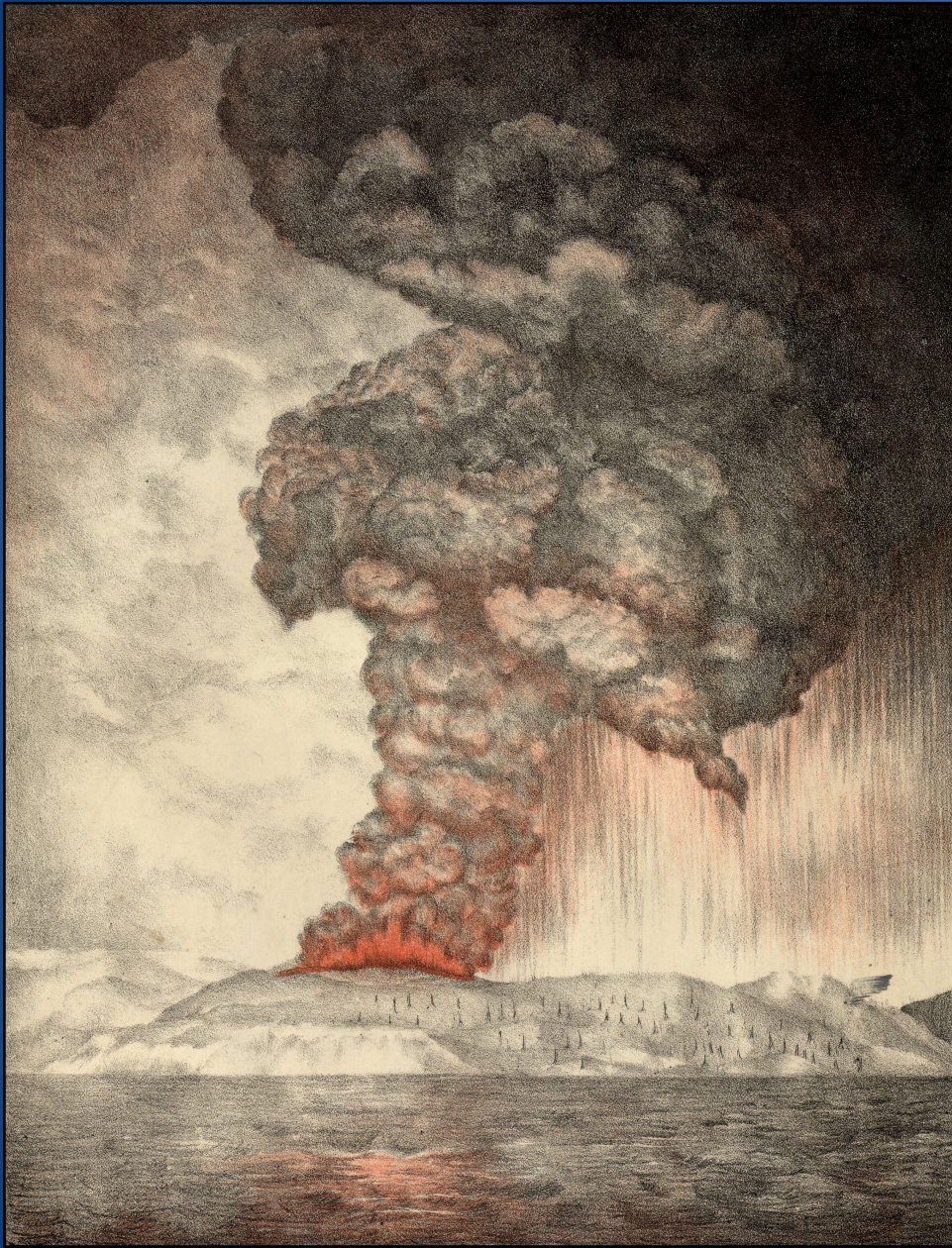
Indonesia has over 130 active volcanoes, the most of any nation. It is set in the Indonesian island arc system, which was produced by northeastward subduction of the Indo-Australian Plate.

Krakatau is directly above the subduction zone where the Eurasian Plate and Indo-Australian Plate meet creating a strato-volcano chain. The plate boundaries make a sharp change of direction, possibility resulting in an unusually weak crust in the region.

# Subduction Zone Volcanism

- Mainly made up of strato-volcanoes.
- Explosive volcanism.
- Pyroclastic flows, ash clouds, and tephra.
- Steep sides.
- Felsic magma, with an intermediate amount of Silica.
- Rhyolite, dacite, and andesite are common.



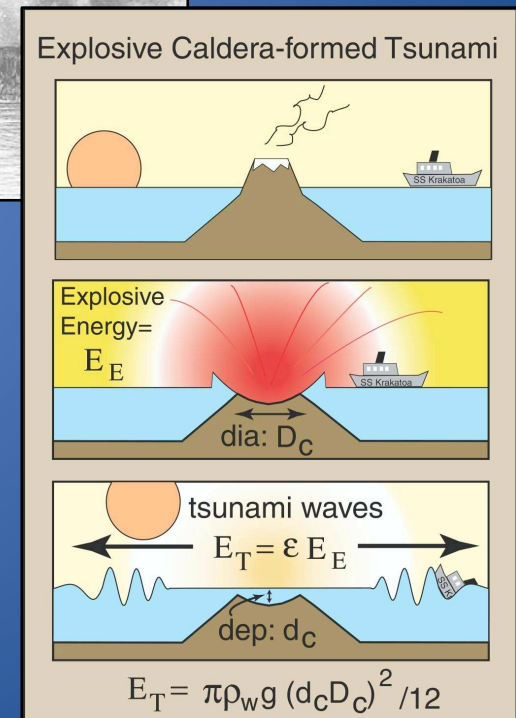
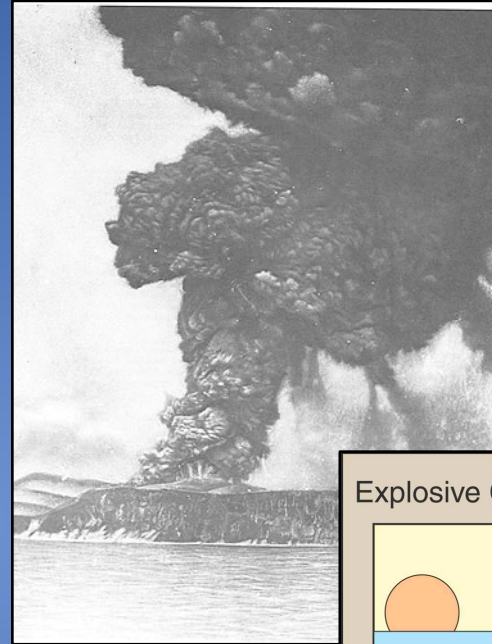


## Eruption Facts

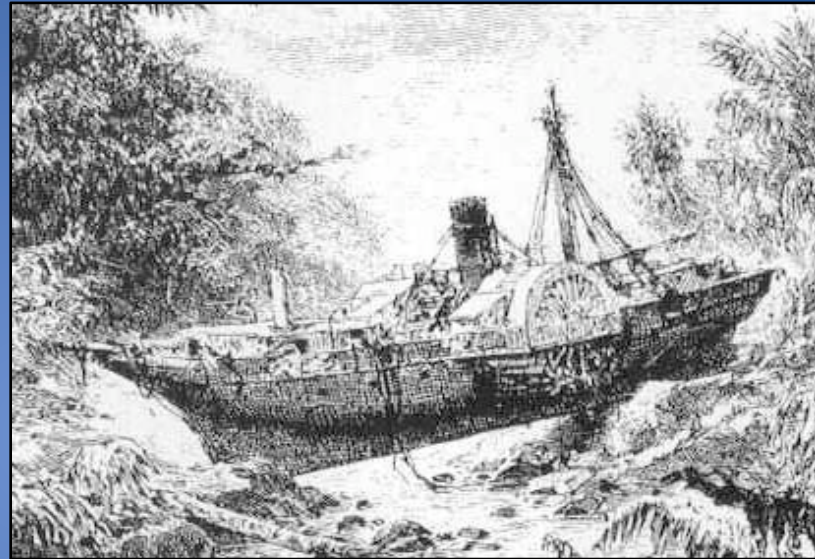
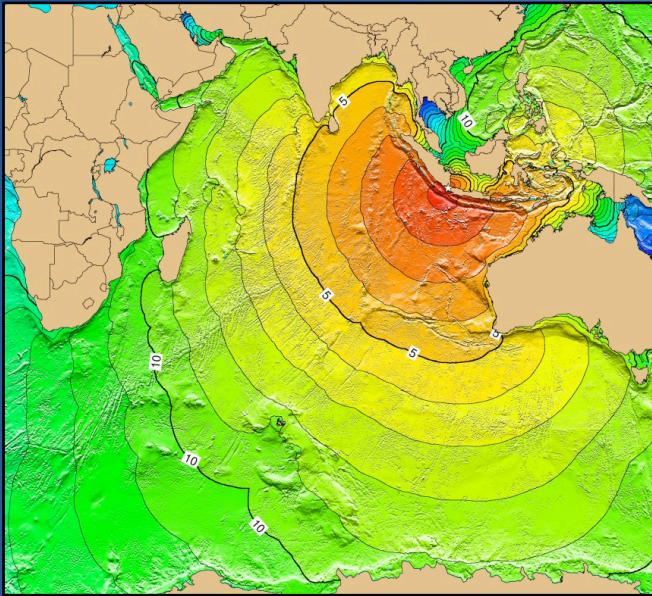
- Eruption included both massive pyroclastic flows and ejecta.
- VEI of 6.
- Ejected  $21 \text{ km}^3$  of rock, ash, and pumice.
- Blast heard as far as 5000km away.
- Eruption followed by massive tsunami.
- 36,417 people died.

# Eruption Timeline

- Aug. 26<sup>th</sup>: Climactic eruption that would last throughout the evening of August 27. The initial blast generated an ear-shattering noise accompanied by a black churning cloud of volcanic debris that rose quickly to 25 km above the island. Over the next several hours, it would widen dramatically to the northeast, rising to a height of at least 36 km.
- Aug. 27<sup>th</sup>: The culminated in a series of at least 4 massive eruptions that began at 5:30 a.m., climaxing in a colossal blast that literally blew Krakatau apart. The noise was heard over 4600 km away. Two-thirds of the island collapsed beneath the sea into the underlying, partially vacated magma chamber.



# Eruption Timeline Continued



- Post Eruption: The cataclysmic blasts of August 27 generated mountainous tsunamis, up to 40 m tall. Many of the closest islands were completely submerged. Low-lying islands nearby, thought to be safe, were buried by at least 2 m of seawater and their inhabitants had to save themselves by climbing trees. Think of the tsunami of 2004.

# Atmospheric Effects



Tephra from the eruption fell as far as 2,500 km downwind in the days following the eruption. However, the finest fragments were propelled high into the stratosphere, spreading outward as a broad cloud across the entire equatorial belt in only two weeks. These particles would remain suspended in the atmosphere for years, propagating as far north as England before finally dispersing.

# Current Volcanism



- A new island volcano, named **Anak Krakatau** ("Child of Krakatoa"), rose above the waterline in 1927. The eruptions were initially of pumice and ash, and that island and the two islands that followed were quickly eroded away by the sea. Eventually a fourth island named Anak Krakatau broke water in August 1930 and produced lava flows faster than the waves could erode them.
- It now grows at about 6.8 m per year. The island is still active, with its most recent eruptive episode having begun in April of 2009 and is still going. Quiet periods of a few days have alternated with almost continuous strombolian eruptions since then, with occasional much larger explosions.



# References

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