



The Global Climatic Effects Of

**Plinian
Eruptions**

By

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Climate Focal Point

Credit: USGS/Cascades Volcano Observatory

Examples:

=> Mount Vesuvius: 79 AD

***Prototypical**

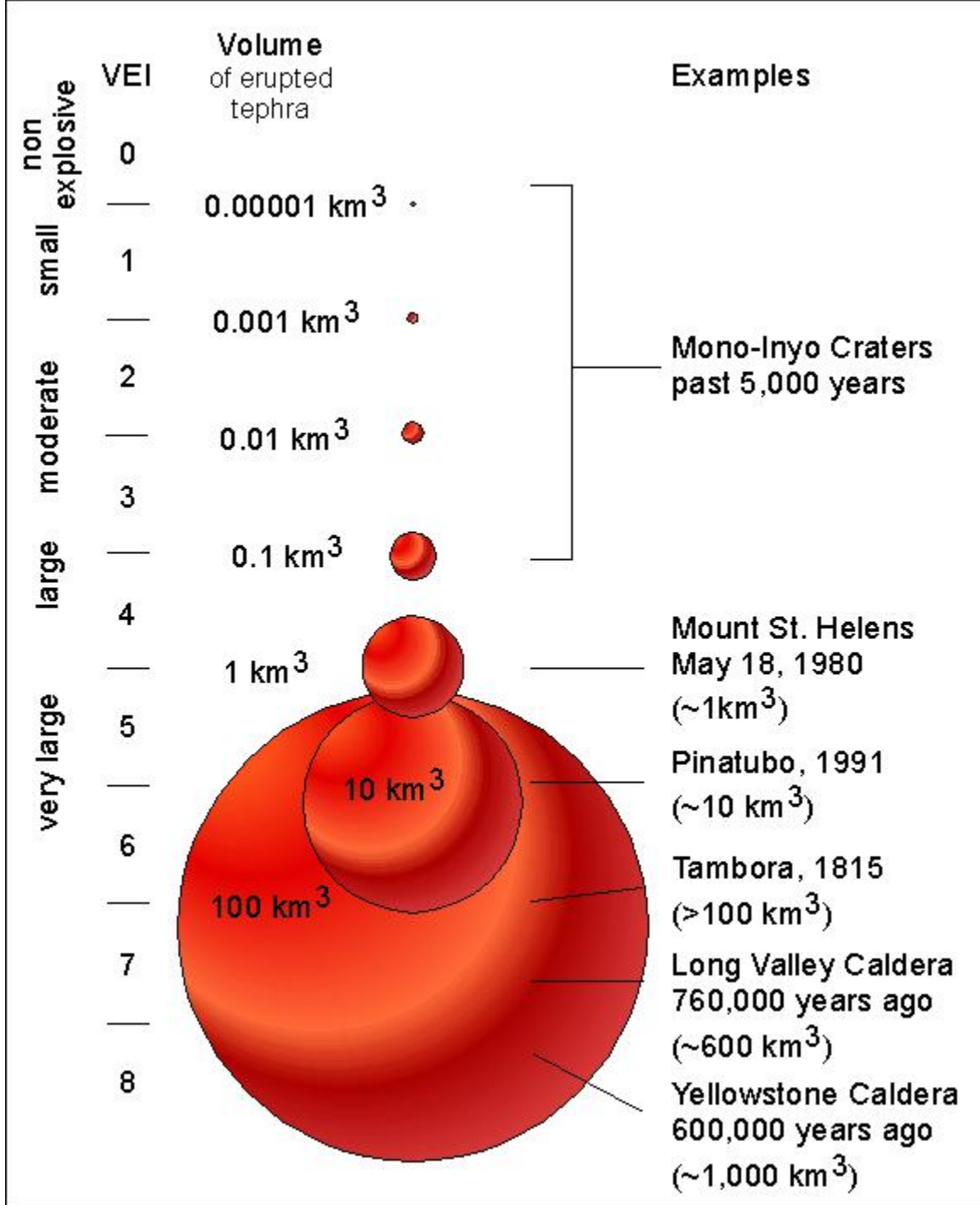
=> Mount St. Helens: May 1980

=> Eyjafjallajökull: Iceland

Lascar Volcano, Northern Chile

Photo: Courtesy Durham University, Earth Sciences Department

**The
Volcanic
Explosivity
Index (VEI):
Plinian Eruptions:
Rated:
VEI 5 Or Greater**



This Presentation Will Feature:



=> Laki (Iceland) June 1783-Feb. 1784

=> Mount Tambora: April 5-11, 1815

=> Krakatau/Krakatoa: Aug. 26-27, 1883

Photo: Paricutin Volcano; Courtesy K. Segerstrom

Laki Volcano:

A large-scale volcanic eruption is shown, with a thick, billowing plume of white ash and smoke rising vertically from a mountain range. The plume is dense and textured, with many smaller clouds and wisps of ash. The sky is a clear, bright blue. In the foreground, the dark silhouettes of trees and hills are visible against the base of the volcano.

Eruption Statistics:

=> **Dates:** June 1783-February 1784

=> **Altitude:** ~10 Miles

=> **VEI 6 (Ultra Plinian)**

=> **Ejecta:** ~14 Cubic Kilometers

Laki Volcano:

Climate Effects:

=> Lowered Temperatures:

* Northern Hemisphere: 2-3F

* Below Normal 2-3 Years

Laki Volcano:

Climate Effects:

=> Temperatures:

* Eastern U.S.: Lowered 4.5-5.0C!

* Enhanced by a Negative NAO

Laki Volcano:

Climate Effects

=> Precipitation:

- * **Snowfall:** *Much Above Normal*

- * **Acid Rains**

- * **Prolonged Dry Fogs**

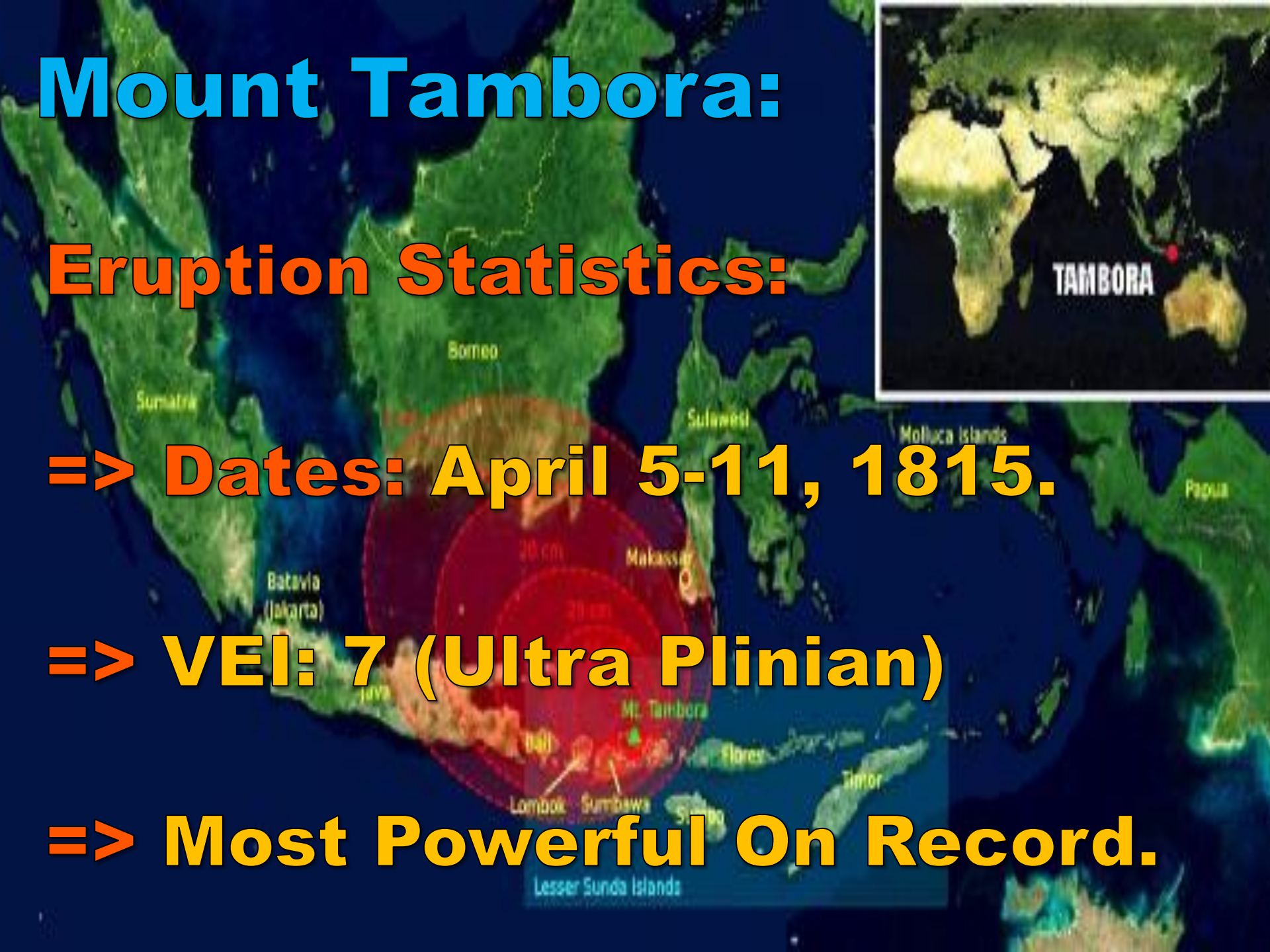
Mount Tambora:

Eruption Statistics:

=> **Dates: April 5-11, 1815.**

=> **VEI: 7 (Ultra Plinian)**

=> **Most Powerful On Record.**



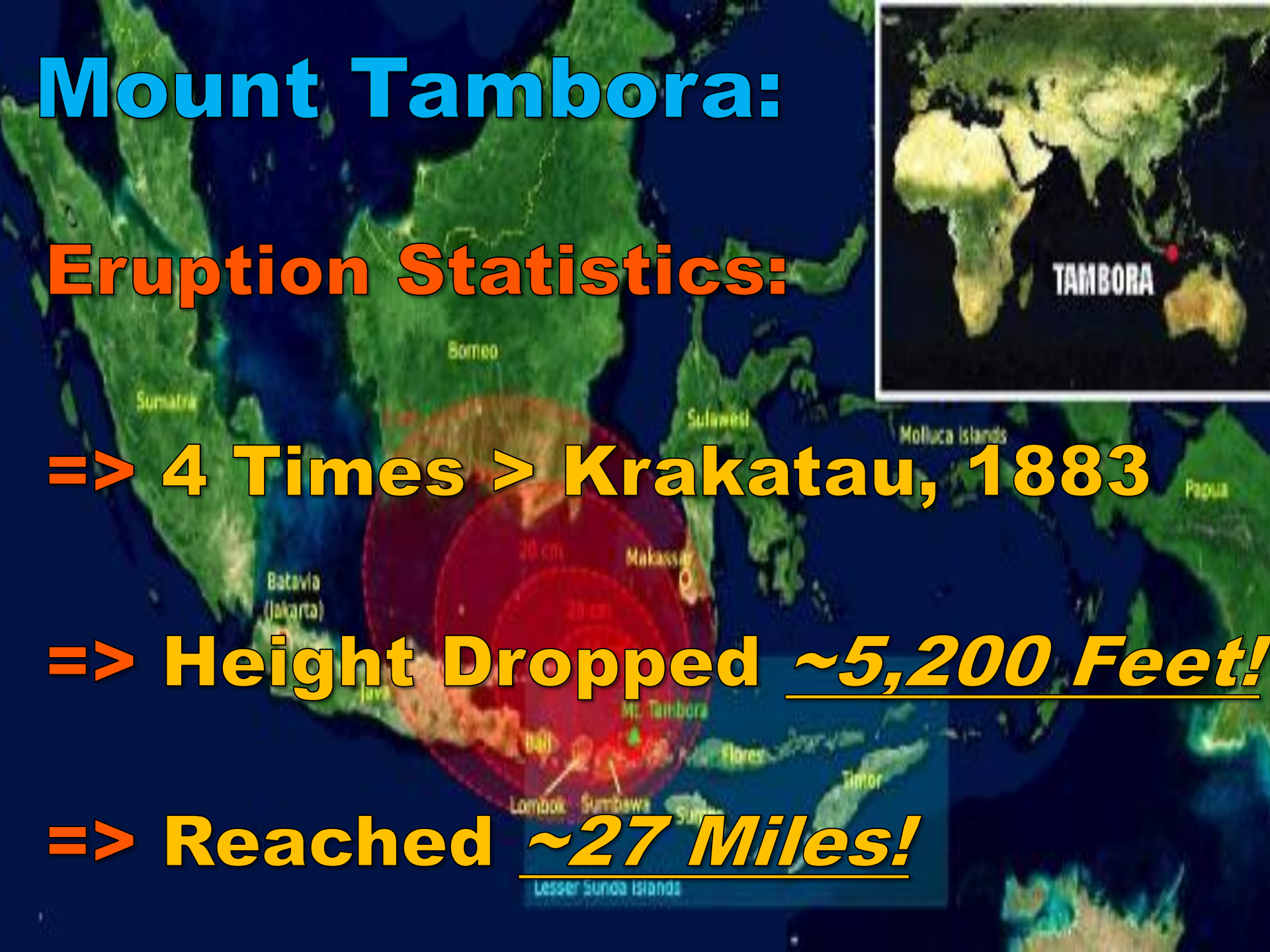
Mount Tambora:

Eruption Statistics:

=> 4 Times > Krakatau, 1883

=> Height Dropped ~5,200 Feet!

=> Reached ~27 Miles!

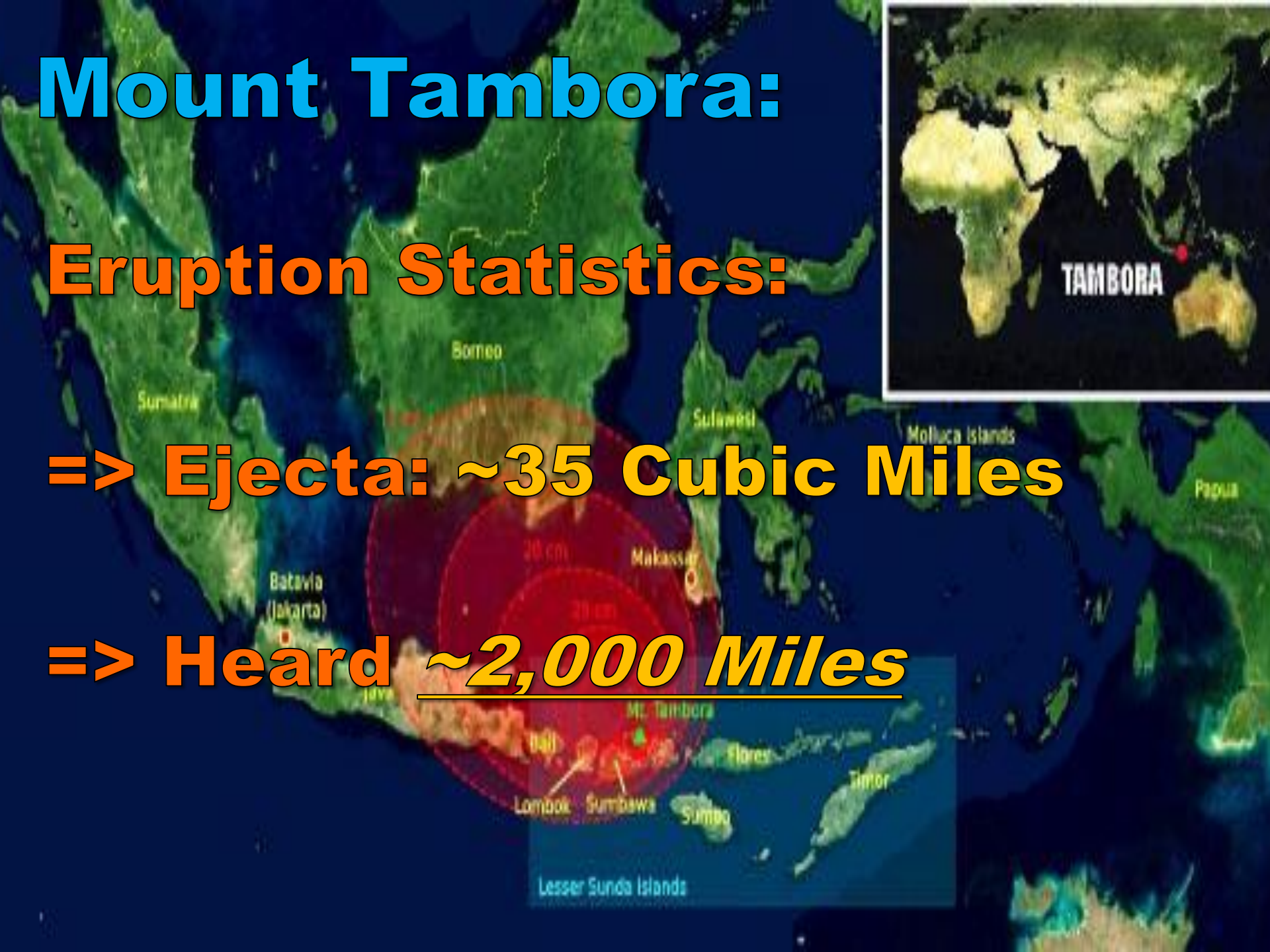


Mount Tambora:

Eruption Statistics:

=> Ejecta: ~35 Cubic Miles

=> Heard ~2,000 Miles



Mount Tambora:

Climate Effects:

=> 1816: “Year Without A Summer”

=> 1816: 2nd Coldest On Record

=> 1817: 5th Coldest On Record

=> Decade 1810-1819:

**Coldest in 500 YEARS!*

Mount Tambora:



Climate Effects:

=> **Northeast U.S. (Summer 1816)**

- * **Frost**

- * **Snow (Up To 12 Inches!)**

Krakatau (A.K.A. Krakatoa):



Eruption Statistics:

=> Dates: August 26-27, 1883

=> VEI 6 (Ultra Plinian)

=> Equivalent: ~200 Megatons TNT

=> Heard ~3,000 Miles!

=> Altitude: ~50 Miles!

Krakatau (A.K.A Krakatoa):

Eruption Statistics:

=> Actually 4 Violent Eruptions

=> 4th Most Violent

=> Equivalent ~200 Megatons TNT

=> Ejecta: 10-12 Cubic Miles!







Krakatau/Krakatoa:



Climate Effects:

=> Temperatures:

- * Lowered ~2.2F/1.2C

- * Below Normal Temperatures

- * *4-5 Years After Eruption!*

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Krakatau/Krakatoa:



Climate Effects:

=> First Indication of Jetstream

=> Prolonged Haze: 3-4 Years

=> Altered Monsoons

Questions?

