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KRAKATAU – 535 A.D.

This Super-Explosive Volcano Darkened the Sun,
Producing Sudden Global Climate Changes and Causing Catastrophes

Did It Cause the Dark Ages?

Introduction

A Syrian bishop, John of Ephesus, wrote of certain extraordinary events that occurred in 535-536 A.D., as follows:

> There was a sign from the Sun, the likes of which had never been seen or reported before. The Sun became dark, and its darkness lasted for about 18 months. Each day, it shown for about four hours and still this light was only a feeble shadow. Everyone declared that the Sun would never recover its full light again.[1]

Thus the 535-536 interval began with significant solar darkening and a sudden, significant worldwide temperature decline. Floods and droughts, crop failures, plagues, and famines followed this global cooling of the climate. Trees the world over stopped growing. Perhaps this is why Cayce readings 3620-1 (January 27, 1944) and 257-254 (December 18, 1943) say that "*anyone who can should buy a farm, and buy it if you don't want to grow hungry in some days to come,*" for "*the hardships for [America] have not yet begun, so far as the supply and demand for foods are concerned.*"

Bubonic plague occurred due to the cooler temperatures. This plague massively reduced populations.[2] Traces of sulfate ions, presumably from sulfuric acid produced by a volcanic eruption, are found in ice cores from Greenland and Antarctica. While a proposal has recently been made that a comet impact produced the Sun-darkening dust,[3] the sulfate ions appear to rule out asteroid or comet impacts as the cause. Whatever the cause, no wonder that the term Dark Ages is used to describe the physical and societal situations that developed beginning in 535 A.D.

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[1] Quoted from *Catastrophe!* by David Keys, a 120-minute video from the PBS Series entitled "Secrets of the Dead," PBS Family Video Productions, P.O. Box 2284, South Burlington, VT 05407 (ISBN 07806-3190-0). See also Keys, *Catastrophe: An Investigation into the Origins of the Modern World*, New York: Ballantine Books, 2000.

[2] Bubonic plague hit Constantinople in 542, lasting for four months. In 558 in the Plague of Justinian, a "bubonic plague and smallpox pandemic killed millions." *Encyclopedic Almanac 1970*, New York: The New York Times, 1970, 388.

[3] Emma Rigby, Melissa Symonds and Derek Ward-Thompson, 2004, "A comet impact in AD 536?," *AAG* 45(February):1.24-1.26.

Only equatorial volcanic eruptions can spread atmospheric dust in both hemispheres. Thus, the big Indonesian volcanoes such as Krakatau (left center of Fig. 1; see de Boer and Sanders[4]) are suspect for the 535 eruption. Currently, on The Hutton Commentaries website, Krakatau is monitored as a potentially super-explosive volcano, along with Pago, in Papua New Guinea. Both of these volcanoes have a history of massive ash explosions, which means that they are capable of producing eruptions with VEIs (Volcano Explosivity Indexes) of between 6 and 8 (a 6 is termed colossal; an 8 is the highest VEI possible and is termed mega-colossal, ejecting 1000s of cubic km of material).

Krakatau as the Culprit

British researcher David Keys believes that an enormous eruption of an Indonesian volcano in 535 A.D. caused the catastrophic changes to Earth's climate.[5] He concluded that the guilty volcano was Krakatau.[6] The date was fixed by historical sources, tree-ring dating, ice cores, and radiometric dating.

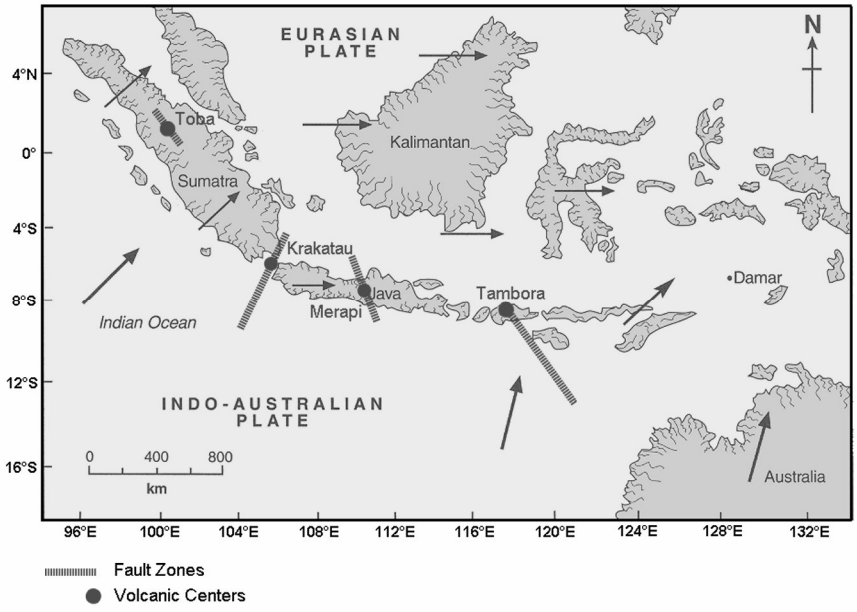

Fig. 1. Tectonic setting of Indonesian islands, showing present-day motion of the Indo-Australian plate relative to the eastward moving Eurasian plate and the dangerous volcanic centers of Krakatau, Tambora, Toba, and Merapi. Adapted from Fig. 6-1, Zeilinga de Boer and Sanders, 2002.

Keys refers to one of the historical sources for his conclusions about Krakatau (our explanatory comments are in brackets):

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[4] Jelle Zellinga de Boer and Donald Theodore Sanders, *Volcanoes in Human History: The Far-Reaching Effects of Major Eruptions*, Princeton, NJ: Princeton Univ. Press, 2001.

[5] *Ibid.*

[6] Spelled "Krakatoa" by Keys, but erroneously so. See footnote on p. 162 of de Boer and Sanders. Sometimes the volcano is referred to as Anak, which means "child of" Krakatau. This name is used by only a few volcanologists. Most simply use Krakatau, as we have done.

> Bearing in mind that the eruption [that produced the catastrophe] had to have occurred in the southern tropics, the area pinpointed by the Chinese account [of a blast heard thousands of miles away to the southwest of China] narrows the field to the southern Sumatra/western Java part of the Samoa-Sumatra volcanic chain.
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> Significantly, there is only one known caldera of appropriate size and vintage in that relatively small (six-hundred-mile-long) area. It surrounds the site of the notorious volcano named Krakatau, the island mountain that brought death and destruction to Java and Sumatra in the 1880s. Could an earlier, bigger eruption of Krakatau have been responsible for the catastrophe that tormented the world in the mid-sixth century A.D. and changed its history forever?
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> Here the evidence takes a fascinating turn. For buried deep in a little known and normally ignored Indonesian chronicle is an extraordinary passage that may well describe the 535 super-eruption itself.
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> Describing a huge volcanic event in the Sunda Straits area (between Sumatra and Java), where Krakatau is located, the chronicle says that a "mighty roar of thunder" came out of a local mountain (Mount Batuwara, now called Pulosari).
>
> "There was a furious shaking of the earth, total darkness, thunder and lightning."
>
> "Then came forth a furious gale together with torrential rain and a deadly storm darkened the entire world."
>
> The chronicle – known as the *Pustaka Raja Purwa,* or *The Book of Ancient Kings*, goes on to state that "a great flood then came from Mount Batuwara and flowed eastwards to Mount Kamula (now called Mount Gede)." It then claims that the eruption was so massive that large areas of land sank below sea level, creating the straits that currently separate Sumatra and Java.
>
> Claiming to describe the dramatic course of events, the chronicle says that "when the waters subsided it could be seen that the island of Java had been split in two, thus creating the island of Sumatra."[7]

The size of this apparent eruption would have been more than sufficient to produce all of the climatic and other effects of the year 535 A.D. Keys catalogued these effects. They included:

> [the] end of the super-cities of the ancient world; the end of ancient Persia; the transmutation of the Roman Empire into the Byzantine Empire; the end of South Arabian civilization; the end of Catholicism's greatest rival, Arian Christianity; the collapse of the greatest ancient civilization in the new World, the metropolis state of Teotihuacán; the fall from power of the great Maya city of Tikal; and the fall of the enigmatic Nasca civilization of South America.[8]

All of these events were triggered in 535-536 A.D., when mankind was hit by one of the greatest natural disasters ever to occur. The disaster suppressed much of the light and heat of the Sun for about 18 months, causing the global climate to cool dramatically. Evidence of super eruptions can be found in layers of acid snow deposition in the arctic and antarctic ice sheets. Because the deposition of acid snow in 535-540 A.D. was roughly twice as long in Antarctica as in Greenland, this is taken as strong evidence that the eruption that darkened the Sun took place primarily in the southern rather than in the northern tropics.

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[7] Keys, 253.
[8] *Ibid.*, 3.

What an American Volcanologist Says About 535 A.D.

Volcanologist K. Wohletz at the Los Alamos National Laboratory contributed to David Keys's research on the eruption of Krakatau and the great climatic cooling of the mid sixth century. The abstract of Wohletz' report entitled "Were The Dark Ages Triggered by Volcano-Related Climate Changes in the 6th Century?" is in the THC article "Scientists, In Their Own Words ... ."[9] There is also an article on the Los Alamos National Laboratory website by the same name in which Wohletz gives an expanded technical analysis of the presumed 535 eruption. The article includes pictures of a computer simulation carried out by Wohletz.

Is Krakatau as Dangerous Today as It Was in 535 A.D.?

The short answer to the above question, from the standpoint of Cayce reading 3976-15 (January 19, 1934), is "most definitely yes." Krakatau sits astride two fault zones that define a very weak spot in an area of Earth's crust that is under tension (see Fig. 2). Extension in the Sunda Strait, where Krakatau is located, is caused by differences in the tectonic motions of Java and Sumatra (see Fig. 1). In Indonesia, this sort of geologic setting is a recipe for super-explosive eruptions. Such an eruption at Krakatau today would be a strong function of stresses induced by a shift of Earth's poles of rotation, as predicted in Cayce readings 3976-15, 826-8 (August 11, 1936), and 378-16 (October 29, 1933).

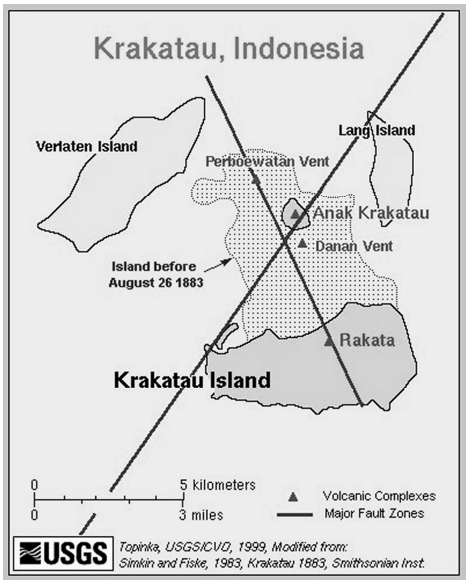

Fig. 2. Fault zones of Anak Krakatau, the outline of the original island, and the submerged caldera that formed in 1883 (dotted area). The line joining the volcanic centers is an inferred fault zone. Adapted from Zeilinga de Boer and Sanders, 2001.

If there is no pole shift, we may expect only more of the ongoing eruptions of the type that have already occurred, a series of 32 or so since the re-appearance of the island of Krakatau in 1927-1930. Figure 3 shows an eruption in 1960[10] during an episode of activity from 1959 to 1963. The most recent eruption occurred in March 2001.

The recent eruptions of Krakatau have had VEIs of mostly 1 and 2. Explosive lava-flow activity in the volcano's crater characterized most of the eruptions.[11]

Violent eruptions of Krakatau are of the type called Plinian eruptions, involving great releases of magma and gas at high velocity. The name is derived from Pliny the Younger, who wrote of his father's death in the eruption of Vesuvius in 79 A.D.

Unfinished Business

Krakatau in 535 A.D. was not its most well-known eruption. Most people interested in volcanoes are more familiar with its eruption on August 27, 1883. That explosion was heard in Australia at a

[9] http://www.huttoncommentaries.com/ECNews/OwnWords/InTheirOwnWords2.htm. See also http://www.hi.is/~joner/eaps/ds_darka.htm and http://www.hbci.com/~wenonah/history/535ad.htm.

[10] Robert Decker and Djajadi Hadikusumo, 1961, "Results of the 1960 expedition to Krakatau," *Journ. Geophys. Res.* 66(10):3497-3511.

[11] See T. Simkin and L. Siebert, *Volcanoes of the World,* Tucson, AZ: Geoscience Press, Inc., 1994, 68.

distance of 4800 km. It blew off the mountain formed by previous eruptions, ejecting 25 cubic km of material, and left a caldera (*i.e.*, cavity) 6 km across. Ocean water rushed in to fill the void. The resulting tidal wave, as high as 37 m, drowned 36,000 thousand people in Java and Sumatra. The dust cloud reached a height of 30-40 km. Ash circulating the globe for 2 years at high altitude produced brilliant sunsets in far away places.

We await the next eruption of Krakatau. Hundreds of years may pass between large eruptions of volcanoes like Krakatau. The Southwest Volcano Research Centre predicted, with greater than 95 percent probability, the eruption of Krakatau in 2004.[12] Hopefully the eruption will be minor.

Fig. 3. Krakatau erupts in 1960. Photo copyright by Robert Decker.

[12] Southwest Volcano Research Centre, Apache Junction, AZ. http://www.swvrc.org/forecast.htm.