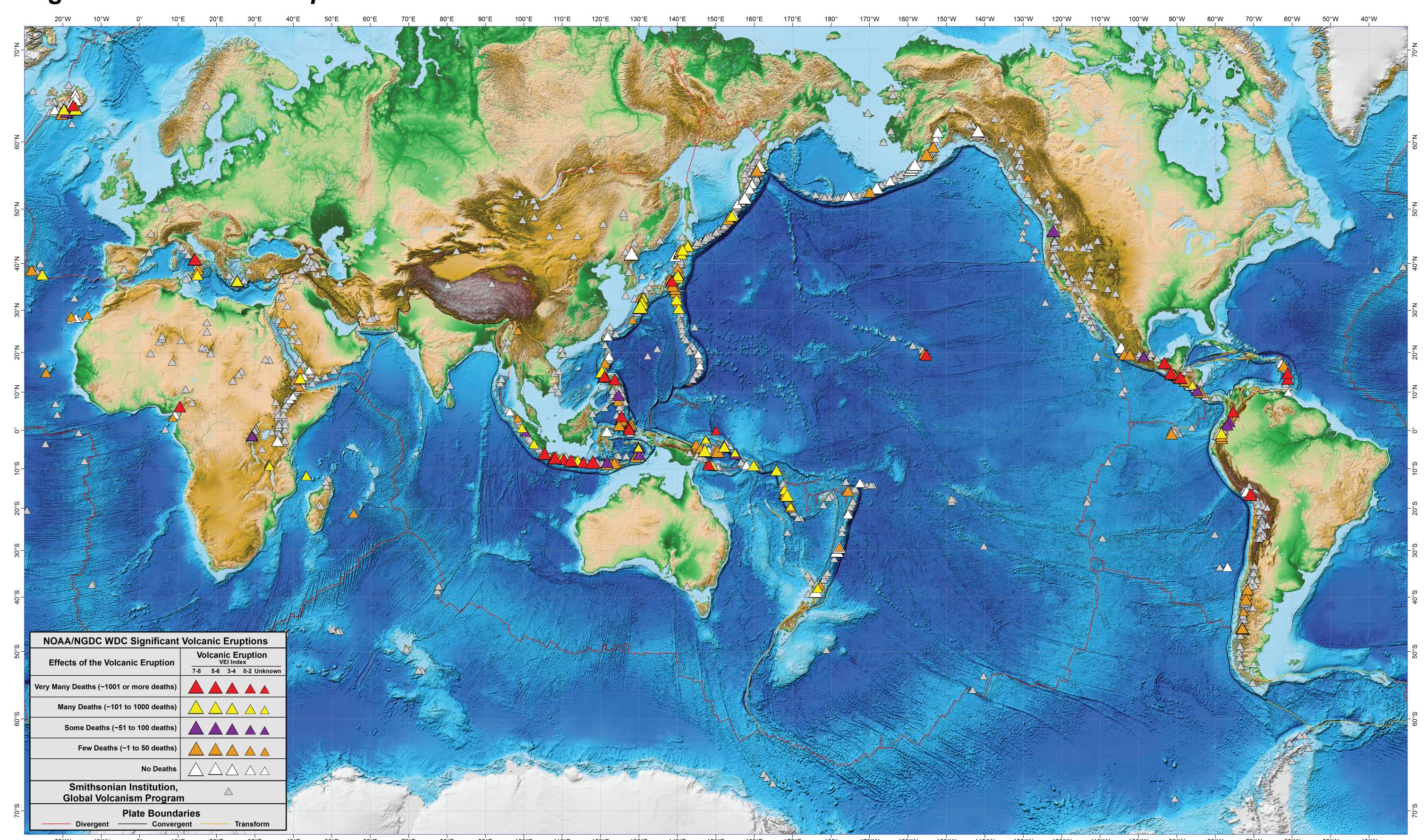
Significant Volcanic Eruptions 4360 B.C. to A.D. 2013



NOAA's National Geophysical Data Center (NGDC) and co-located World Data Center (WDC) for Geophysics and Marine Geology and the International Tsunami Information Center (ITIC), a UNESCO/IOC-NOAA partnership, have collaborated to produce a map showing significant volcanic eruptions. The information comes from the NGDC Significant Volcanic Eruptions Database which includes destructive volcanic eruptions from 4360 B.C. to A.D. 2013 meeting at least one of the following criteria: resulted in moderate damage (approximately USD \$1 million or more), caused fatalities, produced a large eruption with a volcanic explosivity index (VEI) of 6 or larger, generated a tsunami, or was associated with a major earthquake. VEI is a simple 0-8 index of increasing explosivity that combines quantitative data with descriptions from observers (Newhall and Self, 1982).

There are currently more than 630 eruptions in the database. The global distribution of these eruptions is 39% Central and South Pacific, 17% Europe, 17% East Asia, 7% Central America and the Caribbean, 7% North America and Hawaii, 6% South America, 3% Africa, 2% Kamchatka and the Kuril Islands, 1% Middle East, and 1% Southern Asia. The majority of the volcanic eruption information comes from eyewitness observations that are now enhanced with satellite data. Dating methods (e.g., radiocarbon and tephrochronology) are used when there is an absence of human observations.

The total number of deaths due to volcanic eruptions is over 300,000 and the total damage is over USD \$2 billion. These numbers are probably underestimates, however, since the actual numbers are unknown for many events. Tables 1 and 2 list the deadliest and largest (VEI ≥ 6) eruptions in the last 4,000 years. Eruptions can also generate deadly tsunamis (Table 3). For example, most of the 36,000 deaths from the 1883 Krakatau explosion resulted from the tsunami.

The events in the NGDC Significant Volcanic Eruptions Database were gathered from the Smithsonian Institution's Global Volcanism Program (GVP), the U.S. Geological Survey, volcano catalogs, national and government databases and reports, post-event reconnaissance reports, journal articles, newspapers, internet sources, email, and other documents. For a complete listing of references used to compile the database, please visit: http://www.ngdc.noaa.gov/hazard/

Triangles on the map represent the location, VEI, and number of deaths for significant volcanic eruptions. Gray triangles represent all volcanoes that did not cause death or damage based on the GVP catalog.

The data in the NGDC Significant Volcanic Eruptions Database are continually being updated and reviewed for accuracy. Please contact NGDC (paula.dunbar@noaa.gov) with any changes, additions, or comments.

References:

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Volca Date				Deaths		
Year	Mon	Day	Name, Location	*VEI	Eruption	Tsunar
79	8	24	Vesuvius, Italy	5	3,500	
450			llopango, El Salvador	6	30,000	
1586			Kelut, Java, Indonesia	5	10,000	
1600	2	19	Huaynaputina, Southern Peru	6	1,400	
1631	12	16	Vesuvius, Italy [™]	4	4,000	
1638			Raung, Java, Indonesia	3	1,000	
1660			Long Island, Papua New Guinea ^T	6	2,000	
1672	8	4	Merapi, Java, Indonesia	3	3,000	
1711	12	10	Awu, Sangihe Is, Indonesia	3	3,000	
1760	9	22	Makian, Halmahera Is, Indonesia	4	2,000	
1772	8	12	Papandayan, Java, Indonesia	3	2,957	
1775	8	20	Gamalama, Halmahera, Indonesia	3	1,300	
1783	7	26	Asama, Honshu, Japan	4	1,491	
1784	4		Grimsvotn, Iceland	4	9,350	
1790	11		Kilauea, Hawaii, United States	4	5,405	
1814	2	1	Mayon, Luzon, Philippines	4	1,200	
1815	4	5	Tambora, Lesser Sunda Is, Indonesia ^T	7	**117,000	
1822	10	8	Galunggung, Java, Indonesia	5	4,011	
1845	2	19	Ruiz, Colombia	2	1,000	
1856	3	2	Awu, Sangihe Is, Indonesia ^T	3	2,806	***
1883	8	27	Krakatau, Indonesia ^T	6	2,000	36,000
1892	6	7	Awu, Sangihe Is, Indonesia ^T	3	1,532	
1902	5	7	Soufriere St. Vincent, West Indies ^T	4	1,680	
1902	5	8	Pelee, Martinique ^T	4	28,000	
1902	8	30	Pelee, Martinique ^T	4	1,000	
1902	10	24	Santa Maria, Guatemala	6	1,500	
1911	1	30	Taal, Luzon, Philippines ^T	4	1,335	50?
1919	5	19	Kelut, Java, Indonesia	4	5,110	
1930	11	25	Merapi, Java, Indonesia	3	1,369	
1951	1	15	Lamington, New Guinea	4	2,942	
1963	3	17	Agung, Lesser Sunda Is, Indonesia ^T	4	1,028	
1982	3	28	El Chichon, Southern Mexico	5	1,879	
1985	11	13	Ruiz, Colombia	3	23,080	
1986	8	21	Oku Volcanic Field, Cameroon, Africa	3	1,700	
2006	7	13	Mayon, Luzon, Philippines	1	1,266	

	Date Mon	Day	Name, Location	*VEI	Deaths Eruption Tsuna	
-1650		Du,	Santorini, Greece ^T	6	ы ирич.	100
-1645			Aniakchak, Alaska Peninsula, USA	6		
-1460			Taupo, New Zealand	6		
-1370			Pago, New Britain	6		
-1050			Pinatubo, Luzon, Philippines	6		
-250			Raoul Island, Kermadec Is, New Zealand	6		
-100			Okmok, Aleutian Is, Alaska, USA	6		
-50			Apoyeque, Nicaragua	6		
50			Ambrym, Vanuatu	6		
60			Bona-Churchill, Eastern Alaska, USA	6		
230			Taupo, New Zealand	6		
240			Ksudach, Kamchatka	6		
450			Ilopango, El Salvador	6	30,000	
540			Rabaul, New Britain	6		
710			Pago, New Britain	6		
800			Dakataua, New Britain	6		
800			Bona-Churchill, Eastern Alaska, USA	6		
930			Ceboruco, Mexico	6		
1000			Changbaishan, Eastern China	7		
1280			Quilotoa, Ecuador	6		
1452			Kuwae, Vanuatu	6	**	
1477			Bardarbunga, Iceland	6		
1600		19	Huaynaputina, Peru	6	1,400	
1660			Long Island, Papua New Guinea ^T	6	2,000	
1815	4	5	Tambora, Lesser Sunda Is, Indonesia ^T	7	***117,000	
1883		27	Krakatau, Indonesia ^T	6	2,000	36,0
1902	10	24	Santa Maria, Guatemala	6	1,500	
1912	9	6	Novarupta, Alaska Peninsula, USA	6	2	
1991	6	15	Pinatubo, Luzon, Philippines	6	350	
	tion ae		d a tsunami			

*Deaths, but the actual number is not known

which includes 10,000 from the pyroclastic flow

**Tsunami and eruption deaths could not be separated

						•	Table	
			Volcanic eruptions that generat	ed dea	dly tsuna	mis		
	Date				Deaths			
Year	Mon	Day	Name, Location	*VEI	Eruption	Tsunami	Total	
1650			Santorini, Greece	6		**	**	
766	7	20	Sakura-jima, Kyushu, Japan	3	**	**	**	
1640	7	31	Komaga-take, Hokkaido, Japan	5		700	700	
1741	8	23	Oshima-Oshima, Hokkaido, Japan	4		1,475	1,475	
1781	4	11	Sakura-jima, Kyushu, Japan	4	23	15	38	
1792	5	21	Unzen, Kyushu, Japan	2		14,524	14,524	
1856	3	2	Awu, Sangihe Is, Indonesia	3	2,806	**	2,806	
1871	3	3	Ruang, Sangihe Is, Indonesia	2		400	400	
1883	8	27	Krakatau, Indonesia	6	2,000	36,000	36,000	
1888	3	13	Ritter Island, New Guinea	3		**	**	
1911	1	30	Taal, Luzon, Philippines	4	1,335	50?	1,335	
1928	8	4	Paluweh, Lesser Sunda Is, Indonesia	3	98	128	226	
1930	9	11	Stromboli, Italy	3	5	1	6	
1937	5	29	Rabaul, New Britain, Papua New Guinea	4	507	**	507	
1965	9	28	Taal, Luzon, Philippines	4	355	355	***355	
olcani	c Explosi	vity Inde	ex: 2 = small, 3 = moderate-large, 4 = large, <u>></u>	5 = very l	arge			
Deaths, but the actual number is not known								