

Eruption - ignimbrite	Age, date	PDC runout distance	
		R (km)	range (km)
<b>Mass discharge rate known</b>			
<i>Concentrated PDC</i>			
Bandelier Tuff (lower member)	1.60 Ma	21	16-25
Bishop Tuff	764.8 ka	30	23-37
Calbuco	AD 2015	6	
Cerro Blanco	4.2 ka	35	
Crater Lake	5783±49 BP	33	
El Chichon (B-F2)	4/4/1982 (1.35 am)	5.8	5.5-6
Katmai	AD 1912	19	
Kelud	13/2/2014	4.9	4-5.8
Kos (Unit E)	161.3 ka	28	23-33
Ksudach	AD 240	14	9.7-17.3
Llopango (unit F)	AD 270-535	33	23-40
Mount St. Helens (IV)	18/05/1980	7.8	7.6-8
Okmok II	2050 BP	15	
Peach Spring Tuff	18.8 Ma	117	72-175
Pinatubo	15/6/1991	14.5	12-16
Quizapu	10-11/4/1932	8.6	
Reventador	3/11/2002	6.5	4-9
Soufrière Hills	Aug-Oct 1995	3.5	3-4.5
Spurr	18/8/1992	3.2	
Tambora	AD 1815	25	22-28
Tungurahua 1916	AD 1916	10.2	9.7-10.8
Tuscalano Artemisio	0.48 Ma	23	20.5-25.5
Toba (Young Tuff)	75 ka	82	68-90
Vesuvius - Pomici di base	18.3-22.5 ka	6	
Vesuvius - Pollena	AD 472	9	8-10
Vesuvius AD 1631	AD 1631	9	8-10
<i>Dilute PDC</i>			
Campanian	39.85 ka	61	58-66
Cordon Caulle	5/6/2011	12	
El Chichon (B-S2)	4/4/1982 (1.35 am)	6.3	5.8-7.1
H ash flow (Los Chocoyos)	84 ka	125	
Ito	29 ka	48.5	41-57
Ksudach	AD 240	27	
Llopango (unit E)	AD 270-535	18.2	15-27
Okmok II	2050 BP	21	
Tosu - Aso 4II-1	87 ka	84	61-108
Vesuvius - Greenish pumice	16 ka	6.2	
Vesuvius - Pomici di mercato	8000 BP	8.3	8-10
Vesuvius - Pomici de Avellino	3760 BP	25	
Vesuvius - AD 79	AD 79	20.5	
Taupo 232 AD	AD 232	80	75-85
<b>Mass discharge rate inferred *</b>			
<i>Concentrated PDC</i>			
Aniakchak	3.6 ka	42.5	39-46
Aso 4I-3	87 ka	14	
Aso 4II-2	87 ka	19	
Aso 4II-3	87 ka	9	
Atana	4 Ma	46	44-48
Bandelier Tuff (upper member, Tshirege)	1.24 Ma	21	16-25
Campo de la Piedra Pómez ignimbrite	<73 ka	25	
Cerro Galan	2.08 Ma	55	40-80
Cerro Panizos	6.7 Ma	32	
Changbaishan-Tianchi	CE 946	55	50-60
Coranzuli (unit 2)	6.6 Ma	28.5	22-41

<b>Fisher tuff</b>	9.4 ka	50	
<b>Huichapan</b>		55	
<b>Kidnappers</b>	1.01 Ma	185	180-190
<b>Kurile Lake</b>	7.6 ka	44.5	42-47
<b>Lascar</b>	AD 1993	6.8	4.7-8.8
<b>Loma Seca (unit S)</b>	150 ka	17.4	16.1-18.7
<b>Loma Seca (unit V)</b>	300 ka	23.2	15.7-27.9
<b>Rattlesnake Tuff</b>	7.05 Ma	163	156-167
<b>Toba (Middle Tuff)</b>	501 ka	18	
<b>Toba (Old Tuff)</b>	788 ka	40	30-50
<b>Toconao</b>	4-5 Ma	38	28-48
<b>Toya (unit 2c)</b>	110 ka	38	35-42
<b>Whakamaru</b>	349 ka	49	48-51
<b>Xáltipan</b>	164 ka	33	30-40
<b>Yellowstone (Huckleberry Ridge Tuff, member A)</b>	2.08 Ma	50	38-63
<b>Yellowstone (Huckleberry Ridge Tuff, member B)</b>	2.08 Ma	78	63-84
<b>Yellowstone (Huckleberry Ridge Tuff, member C)</b>	2.11 Ma	46	42-51
<b>Yellowstone (Mesa Falls Tuff)</b>	1.27 Ma	23	18-29
<b>Yellowstone (McMullen Creek)</b>	8.99 Ma	78	73-83
<b>Yellowstone (Grey's Landing)</b>	8.72 Ma	92	
<i>Great Basin Ignimbrite Province (USA)</i>			
<b>Bauers</b>		75	55-106
<b>Caetano</b>	34.0 Ma	36	
<b>Cottonwood Wash</b>		64	43-95
<b>Coyote Summit Tuff Member</b>	26.98 Ma	87	77-98
<b>Egan Tuff Member</b>	26.36 Ma	110	82-171
<b>Hancock Tuff Member</b>	26.82 Ma	55	48-65
<b>Harmony Hills</b>		60	48-78
<b>Hiko</b>		39	35-46
<b>Isom (undivided)</b>		77	49-101
<b>Leach Canyon</b>		63	45-88
<b>Lund</b>		49	35-80
<b>Monotony tuff</b>	27.57 Ma	61	55-73
<b>Racer Canyon</b>		27	23-31
<b>Tikaboo Tuff Member</b>	26.77 Ma	84	77-89
<b>Wah Wah Springs</b>		117	84-155
<b>Dilute PDC</b>			
<b>Aso 4I-1</b>	87 ka	88	69-119
<b>Aso 4I-2</b>	87 ka	47	
<b>Ata</b>	108 ka	85	70-100
<b>Neapolitan Yellow Tuff (lower member)</b>	12 ka	34	

## Footnotes

(a) Total volume of eruption, dense rock equivalent (DRE)

(b) Volume of outflow ignimbrite (DRE or bulk; conversion done assuming magma density of  $\rho=2500 \text{ kg/m}^3$ )

(c)  $M=\log_{10}[V_{t, \text{DRE}}(\text{m}^3)\times\rho]-7$  (Pyle 2000)

(d) Equivalent diameter

(e) Area

(f) Mean thickness

(g) Aspect-ratio

\* Mass discharge rate inferred from bulk volume of outflow ignimbrite (ranges are 95% confidence intervals)

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Mass discharge rate		Volume			Magnitude
Q (kg/s)	range (kg/s)	$V_{t,DRE}$ (km <sup>3</sup> ) <sup>(a)</sup>	$V_{DRE}$ (km <sup>3</sup> ) <sup>(b)</sup>	$V_{bulk}$ (km <sup>3</sup> ) <sup>(b)</sup>	M <sup>(c)</sup>
2.7E+09		216-550	89	171	7.7-8.1
1.1E+10		625	200	385	8.2
3.7E+08		0.15	0.008	0.015	4.6
1.8E+10	1.4-2.1E+10	75	8.5	15	7.3
2.7E+10		50	13	25	7.1
5.0E+07		1.1	0.04	0,08	5.4
1.2E+09	9.5-14E+08	13	3.6-7.8	7-15	6.5
6.5E+07	3-10E+07	0.14-0.28	0.004-0.01	0.007-0.02	4.5-4.8
4.7E+09	2.6-3.8E+09	60	30	48	7.2
1.7E+09	7.2-26E+08	8	1.6	3	6.3
1.0E+10		30	9.1	14	
2.2E+08	1.8-2.7E+08	0.44	0.05	0.14	5.0
2.6E+09		29	14	24	6.9
2.4E+11	9.6-38E+10	1300	640	1231	8.5
4.1E+09	2.7-5.4E+09	7.5-8.7	2.7	5-6	6.3
2.0E+09	1.4-2.3E+10	4,1	0.005	0.01	6.0
1.4E+08		0.026	0.026	0.05	3.8
1.7E+07	1.4-2.1E+07		0.00019	0.00037	
4.1E+07		0.0002	0.0002	0.0004	1.7
5.3E+09	3.8-6.8E+09	41	18	35	7.0
1.1E+09		0,04	0.04	0.077	4.0
2.2E+09	4-40E+08	100	17	34	7.4
5.9E+10	1.5-10E+10	5300	1500	2885	9.1
3.4E+08		0.09	0.09	0.18	4.4
2.8E+08	9.5-46E+07	0.2	0.2	0.39	4.7
6.5E+08	2-11E+08	0.1	0.1	0.2	4.4
1.0E+10	0.6-13E+09	180-280	145	280	7.7-7.8
2.1E+08	2.7-38E+07	0.75	0.04	0.08	5.3
5.0E+07		1.1	0.02	0.045	5.4
2.5E+10		611	120	231	8.1
7.8E+09		366	90	206	8.0
1.7E+09	7.3-26E+08	8			6.3
1.0E+09		30	0.3	0.5	6.9
2.6E+09		29	0.028	0.048	6.9
1.1E+10	7.5-15E+09	200	5.2	10	7.7
2.4E+08	2-2.7E+08	0.01	0.01	0.02	3.4
3.7E+08	2.4-5E+08	0.12	0.12	0.23	4.5
1.5E+09	7.7-23E+08	0.54	0.54	1.04	5.1
1.6E+09	1.1-2E+09	0.43	0.43	0.83	5.0
5.3E+10	3.2-7.5E+10	13.4	16	31.5	6.5
7.1E+09	3.9-12.9E+09	27	27	52	6.8
8.3E+08	5.2-13.5E+08		0.26	0.5	
2.4E+09	1.5-3.9E+09		2.6	5	
5.5E+08	3.3-9.2E+08		0.1	0.2	
1.4E+10	0.7-2.9E+10	1600		240	8,6
		300			7.8
4.1E+09	2.4-6.9E+09		8	16	
2.2+10	1.0-4.9E+10	630	315	606	8.2
2.7E+10	1.2-6.2E+10	652		475	8.2
		30			6.9
		340			7.9

9.4E+09	5.0-17.9E+09	100	50	96	7.4
9.9E+09	5.2-19.1E+09		69	108	
1.9E+10	0.9-4.1E+10	1200	200	450	8.4
6.3E+09	3.5-11.3E+09	75	21	40	7.3
1.4E+10	0.7-2.8E+10			213	
1.5E+10	0.7-3.2E+10			275	
2.1E+10	0.9-4.6E+10	280	280	538	7.8
7.6E+09	4.1-14.0E+09	60	31	60	7.2
2.7E+10	1.2-6.3E+10	2300	500	962	8.8
1.3E+10	0.6-2.5E+10			180	
5.2E+09	3.0-9.2E+09	88		27.2	
2.4E+10	1.1-5.5E+10	1500-2000	960-1920	500-1000	8.6-8.7
1.7E+10	0.8-3.5E+10	>580 ?	290	330	
1.8E+10	0.9-3.9E+11	939	213	410	8.4
2.3E+10	1.0-5.1E+10	939	348	670	
1.1E+10	0.6-2.2E+10	126	75	145	7.5
1.1E+10	0.6-2.2E+10	>280	73	140	
3.1E+10	1.3-7.3E+10	1700	1240	1261	8.6
4.1E+10	1.7-10.3E+10	2800	2340	2380	8.8
4.6E+10	1.8-11.9E+10		1600	3077	
2.8E+10	1.2-6.6E+10		550	1058	
3.7E+10	1.5-9.2E+10		1000	1923	
3.6E+10	1.5-8.8E+10	980-1820	930	1788	8.4-8.7
3.4E+10	1.4-8.2E+10	980-1820	821	1579	8.4-8.7
2.7E+10	1.2-6.3E+10	550-1650	499	960	8.1-8.6
3.9E+10	1.6-9.7E+10		1100	2115	
3.5E+10	1.4-8.4E+10		850	1635	
5.2E+10	2.0-13.8E+10		2100	4038	
4.9E+10	1.9-12.7E+10		1800	3462	
5.4E+10	2.1-14.2E+10		2200	4231	
5.1E+10	2.0-13.5E+10	3600-5400	1993	3833	9.0-9.1
2.8E+10	1.2-6.6E+10		550	1058	
3.2E+10	1.4-7.8E+10	850-2550	735	1413	8.3-8.8
6.1E+10	2.3-16.7E+10		2900	5673	
1.1E+10	0.4-2.9E+10		31.2	60	
2.9E+09	1.5-5.8E+09		2.1	4	
1.4E+10	0.5-3.9E+10	146	50	200	7.6
3.7E+09	1.8-7.5E+09	20.8	10	6.4	6.7

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**Other ignimbrite characteristics**

<b>D (km)</b> <sup>(d)</sup>	<b>A (km<sup>2</sup>)</b> <sup>(e)</sup>	<b>h (m)</b> <sup>(f)</sup>	<b>AR</b> <sup>(g)</sup>
42	1385	124	2.9E-03
60	2826	136	2.3E-03
	0.65	15	
70	1923	7.8	1.1E-04
65	3278	7.6	1.2E-04
15	180	61	3.2E-03
2	3	4.5	2.3E-03
56	2462	19	3.5E-04
16	200	15	9.4E-04
66	3419	4	6.2E-05
15	35	4	2.6E-04
30	707	34	1.1E-03
202	32000	38	1.9E-04
29	660	8.3	5.7E-04
4	12	4.2	1.1E-03
79	4945	7	8.8E-05
46	1600	21	6E-04
160	20000	144	9E-04
12	113	1.6	1.3E-04
18	254	1.5	8.5E-05
18	254	0.8	4.4E-05
122	30000	9.3	7.7E-05
11	87	0.9	8.7E-05
11	104	0.4	3.8E-05
250	49063	10	3.9E-05
83	5447	38	4.5E-04
54	2289		
36	1040	0.5	1.3E-05
168	11078	0.9	5.4E-06
12	121	0.2	1.3E-05
17	216	1.1	6.4E-05
50	1963	0.5	1.1E-05
41	1320	0.6	1.5E-05
160	20096	1.6	9.8E-06
85	2500	20.8	2.4E-04
28	308	1.6	5.8E-05
38	567	8.8	2.3E-04
18	127	1.6	8.7E-05
82	5300	35	4.3E-04
29	680	23	7.7E-04
110	2400	45	4.1E-04
79	4850	200	2.5E-03
110	9499		
57	2550		

46	1680	57	1.2E-03
96	2460	44	4.6E-04
385	45000	10	4.2E-05
89	3109	13	1.4E-04

326	35000	15	4.7E-05
23	400	150	6.6E-03
80	5024	191	2.4E-03
54	2300	8	1.4E-03
37	1089	25,0	6.7E-04
99	7694	97	2.0E-03
75	4400	75	1.0E-03
89	6280	65	1.3E-03
140	15400	44	5.6E-04
69	3690	39	8.5E-04
59	2700	52	2.3E-03
124	12000	105	1.3E-03
171	23000	103	1.1E-03

170	23000	134	7.9E-04
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120	12000	160	1.3E-03
163	20952	85	5.2E-04
187	27356	58	3.1E-04
115	10409	92	8.0E-04
130	13000	163	1.3E-03
100	8000	204	2.0E-03
160	21000	192	1.2E-03
150	18000	192	1.3E-03
120	12000	353	2.9E-03
172	23331	164	9.6E-04
70	3500	302	4.3E-03
145	16505	86	5.9E-04
200	32000	177	8.9E-04

176	12158	4.9	2.8E-05
94	3468	1.2	1.2E-05
170	22687	8.8	5.2E-05
68	1000	6.4	9.4E-05

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