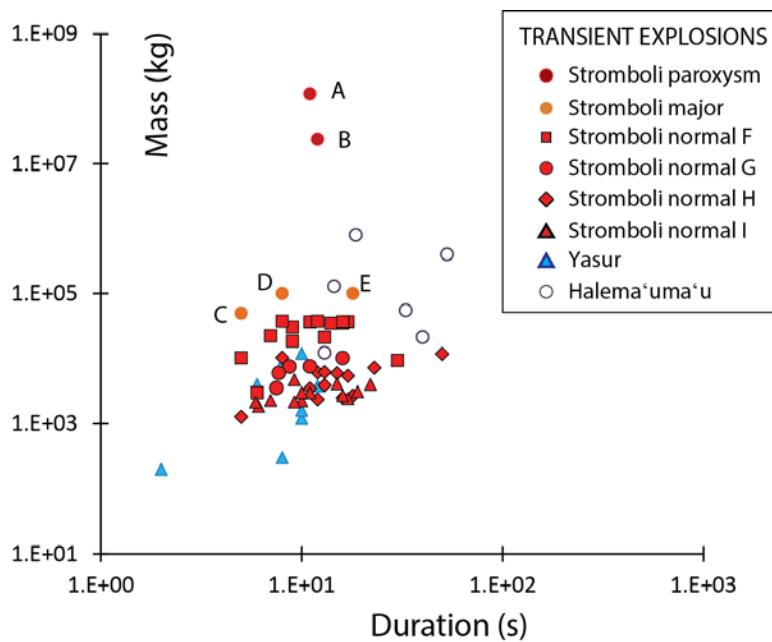


Stronger or longer: Discriminating between Hawaiian and Strombolian eruption styles

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DATA USED IN FIGURE 1

Figure 1 and Supplementary Figure DR1 combine estimates of erupted mass derived from measurement of the explosion products on the grounds for most categories of eruption, with estimates based on forward looking infrared imagery to detect and measure particles down to 5.3 cm (Bombrun et al., 2015) and visible/near-infrared down to 10 cm (Gaudin et al., 2015) for normal Strombolian explosions. As such these estimates will be slightly lower than the total erupted mass but, as documented by Gurioli et al., (2013), these size fractions dominate pyroclast populations during Strombolian explosions. These approaches have given us our first good erupted mass data for such explosions, as the products of normal Strombolian activity are typically (1) confined to less than 200 m from vent, (2) buried by and mingled with the products of subsequent explosions on time scales of minutes to hours and (3) deposited in a highly dangerous environment where it is not possible to make direct measurements of the ejecta safely. Eruption durations were either observed directly or inferred from web cam records.



Supplementary Figure DR1: Enlargement of the short-duration, small mass portion of Figure 1 to ascribe data points to source references: see below.

- A 5 April 2003 paroxysm at Stromboli: Rosi et al., (2006), Pistoletti et al., (2008)
 - B 15 March 2007 paroxysm at Stromboli: Andronico et al., (2007), Pistoletti et al., (2011)
 - C 3 May 2009 major explosion at Stromboli: Andronico et al., (2010)
 - D 8 November 2009 major explosion: Andronico et al., (2010)
 - E 24 November 2009 major explosion at Stromboli: Andronico et al., (2010)
 - F 14 normal Strombolian explosions from the SW and NE craters in 2014: Gaugain et al., (2015)
 - G 13 normal Strombolian explosions from the SW crater in 2012: Bombrun et al., (2015)
 - H 13 normal Strombolian explosions from the SW crater in 2014: Bombrun et al., (2015)
 - I 5 normal Strombolian explosions from the NE crater in 2014: Bombrun et al., (2015)
- Yasur 8 normal Strombolian explosions at Yasur in 2011: Gaudin et al., (2015)
- Halema‘uma‘u 7 externally-triggered explosions in 2008: Houghton et al., (2011). Data added at a referee’s request to show the occurrence of transient explosive activity at Kīlauea.

SOURCES OF DATA USED IN FIGURES 1, 2, 4

Figure 1: Andronico et al. (2008); Andronico and Pistoletti (2010); Bombrun et al. (2015); Gurioli et al. (2013); Macdonald et al. (1986), Patrick et al. (2007); Pistoletti et al. (2008; 2011); Richter et al. (1970); Rosi et al. (2006); Swanson et al. (1979) and Wolfe et al. (1988).

Figure 2: Taddeucci et al. (2012) Taddeucci et al. (2013) and Gaudin et al. (2014)

Figure 4: 1. Patrick et al. (2007), 2. Dibble et al. (2008) and P. Kyle (pers. com. 2015). 3. Gurioli et al. (2008), 4. Richter et al. (1970), 5. Swanson et al. (1979), 6. Wolfe et al. (1988), 7. Alparone et al. (2003), 8. D’Agostino et al. (2013), (see supplementary material).

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