

**1999 Fall Meeting****Search Results:**

Your query was:

**volcano thompson**-----  
HR: 1330hAN: **V32A-03**TI: [The Reduced Displacement \( \$D\_{\{R\}}\$ \) of large explosive eruptions at Soufriere Hills Volcano, Montserrat, West Indies, using broadband seismic data](#)AU: \* **Jolly, A D**EM: [art@mvomrat.com](mailto:art@mvomrat.com)AF: *Montserrat Volcano Observatory, Mongo Hill , Montserrat*AU: **Young, S R**EM: [simon@mvomrat.com](mailto:simon@mvomrat.com)AF: *Montserrat Volcano Observatory, Mongo Hill , Montserrat*AU: **Cabey, L A**EM: [mvo@candw.ag](mailto:mvo@candw.ag)AF: *Montserrat Volcano Observatory, Mongo Hill , Montserrat*AU: **Thompson, G**EM: [glenn@giseis.alaska.edu](mailto:glenn@giseis.alaska.edu)AF: *Alaska Volcano Observatory, Geophysical Institute University of Alaska, Fairbanks, AK 99775 United States*

AB: The reduced displacement ( $D_{\{R\}}$ ) was measured for 6 of the 7 largest explosive events at the Soufriere Hills volcano for the 1995–99 period. The volumes of eruptive materials were estimated by the MVO from volume lost in dome collapse scars and by measurement of ash and pyroclastic flow deposits. The 6 station MVO broadband network provided the associated on scale eruption tremor data for stations located 1.9–7.3 km from the volcanic edifice. For each station, the reduced displacement was determined by calculating 512 sample (6.82 second) amplitude spectra in a 128 sample (1.70 second) moving time increment. Each incremental spectra was corrected for both the instrument response and geometrical spreading of surface waves. The maximum  $D_{\{R\}}$  for an eruption was determined from the average of the maximum reduced displacements for all available stations in the frequency range 0.7–5 Hz. For the 6 explosive eruptions, 2 to 5 stations were available for the  $D_{\{R\}}$  calculations. The largest eruption occurred on Boxing Day, 26 December 1997 and had a  $D_{\{R\}}$  of  $223 \text{ cm}^2$  for an eruptive volume of  $\sim 45 \times 10^6 \text{ m}^3$ . The 3 July 98 eruption had an eruptive volume of  $\sim 12 \times 10^6 \text{ m}^3$  and a  $D_{\{R\}}$  of  $150 \text{ cm}^2$ . Events on the 4th and 6th of November 1997 each had volumes of  $\sim 8 \times 10^6 \text{ m}^3$  and  $D_{\{R\}}$ s of  $135 \text{ cm}^2$  and  $150 \text{ cm}^2$  respectively. The 25 June 97 eruption had an eruptive volume of  $\sim 5 \times 10^6 \text{ m}^3$  and a  $D_{\{R\}}$  of  $49 \text{ cm}^2$ . The smallest event analyzed occurred on 20 July 99 and had an eruptive volume of  $\sim 3 \times 10^6 \text{ m}^3$  and a  $D_{\{R\}}$  of  $115 \text{ cm}^2$ . As expected, the Montserrat data show that increased eruptive volumes yield higher reduced displacements. Data for the six events and three smaller explosions follow a power law relation with  $D_{\{R\}} = 0.91($

DE: 7280 Volcano seismology (8419)

DE: 8419 Eruption monitoring (7280)

SC: V

MN: 1999 AGU Fall Meeting

---

[New Search](#)

[AGU Home](#)