

**Similar cyclic behaviour observed at
two lava domes: Volcán de Colima
(Mexico) and Soufrière Hills volcano
(Montserrat)**

OLIVER D. LAMB^{1,2*}, NICK R. VARLEY³,
TAMSIN A. MATHER¹, DAVID M. PYLE^{1,2},
PATRICK J. SMITH^{4,5}, EMMA J. NICHOLSON⁶

¹Dept. Earth Sciences, University of Oxford, UK.

²Dept. Earth, Ocean, Ecological Sciences, University of
Liverpool, UK
(o.lamb@liverpool.ac.uk)

³Fac. de Ciencias, Universidad de Colima, Mexico

⁴Montserrat Volcano Observatory, Montserrat, W.I.

⁵Seismic Research Centre, University of West Indies,
W.I.

⁶School of Earth Sciences, University of Bristol, UK.

Cyclic behaviour on a range of timescales is a well-documented feature of many dome-forming volcanoes, but has not previously been identified in high resolution data at Volcán de Colima (VdC; Mexico). Using daily seismic count time-series from VdC and Soufrière Hills volcano (SHV; Montserrat), this study explores parallels in the long-term behaviour of seismicity at two long-lived systems. Using a suite of analytical techniques provides a greater understanding of sub-surface processes.

Patterns of seismicity at both systems reveal broadly similar cycles with characteristic timescales on the order of 50-200 days. The results are consistent with previously published studies at SHV, in which the cycles have been attributed to variations in the movement of magma in the systems. Both volcanic systems also show long-term cycles in persistence on the scale of 1- to 2-years. At VdC, analysis of repose intervals between seismic events shows long-term behaviour that correlate with variations in activity at the system.

Similar behaviour in both volcanic systems suggests a common underlying process or processes, but their nature is unclear from these results alone. Future attempts to model conduit processes at each system must account for their similarities and differences in signals and activity.

Future work will incorporate analysis of seismic datasets from Bezymianny (Russia) and Mt. St. Helens (USA) to place existing results from VdC and SHV in a global context.