

EGU2020-19745

<https://doi.org/10.5194/egusphere-egu2020-19745>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



The continuing inflation of Montserrat – and the end of the intrusion

Jurgen Neuberg¹ and Karen Pascal²

¹University of Leeds, Institute of Geophysics & Tectonics, School of Earth & Environment, Leeds, United Kingdom
(j.neuberg@leeds.ac.uk)

²University of the West Indies, Montserrat Volcano Observatory, Montserrat, West Indies

Soufrière Hills volcano on Montserrat in the West Indies showed five episodes of magma extrusion and as many pauses in its 25years of volcanic activity. This eruptive behaviour exhibited cyclic deformation pattern where extrusive “phases” showed island-wide deflation and all “pauses” have been linked to inflation, the last of which remains ongoing. Several models have been developed over the years; all based on magma intrusion and extrusion, into, or from one or several reservoirs, respectively. Using the entire eruptive history, we demonstrate that both, pauses and phases can be linked to a single magma body. Through extensive numerical modelling, we explore in this presentation some alternative routes to magma intrusion, considering several magmatic processes. These range from crystallisation of magma (second boiling) to pressurisation through a free gas phase, to the extreme case where intrusion of fresh magma has ceased years ago, while the inflation is continuing.