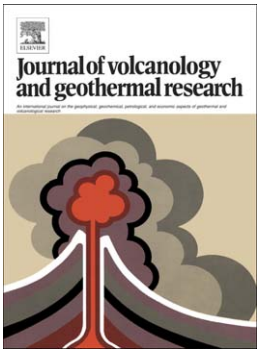

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Maya Coussens, Michael Cassidy, Sebastian F.L. Watt, Martin Jutzeler, Peter J. Talling, Dan Barfod, Thomas M. Gernon, Rex Taylor, Stuart J. Hatter, Martin R. Palmer

PII: S0377-0273(17)30012-4
DOI: doi:10.1016/j.jvolgeores.2017.01.003
Reference: VOLGEO 5982

To appear in: *Journal of Volcanology and Geothermal Research*

Received date: 12 February 2016
Revised date: 15 December 2016
Accepted date: 2 January 2017

Please cite this article as: Coussens, Maya, Cassidy, Michael, Watt, Sebastian F.L., Jutzeler, Martin, Talling, Peter J., Barfod, Dan, Gernon, Thomas M., Taylor, Rex, Hatter, Stuart J., Palmer, Martin R., Long-term changes in explosive and effusive behaviour at andesitic arc volcanoes: Chronostratigraphy of the Centre Hills Volcano, Montserrat, *Journal of Volcanology and Geothermal Research* (2017), doi:10.1016/j.jvolgeores.2017.01.003

Long-term changes in explosive and effusive behaviour at andesitic arc volcanoes: chronostratigraphy of the Centre Hills Volcano, Montserrat

Maya Coussens
School of Ocean and Earth Science, National Oceanography Centre, University of Southampton, European Way, Southampton, SO14 3ZH, UK (maya.pratt@mail.com)

Michael Cassidy
Institute of Geosciences, Johannes Gutenberg, University Mainz, J- J- Becher- Weg 21, D-55128, Mainz, Germany (mcassidy@uni-mainz.de)

Sebastian. F. L. Watt
School of Geography, Earth and Environmental Sciences, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK (s.watt@bham.ac.uk)

Martin Jutzeler
School of Physical Sciences and Centre of Excellence in Ore Deposits (CODES), University of Tasmania, Hobart TAS 7001, Australia (jutzeler@gmail.com)

Peter. J. Talling
National Oceanography Centre, Southampton, University of Southampton, Southampton S014 3ZH, UK (peter.talling@noc.ac.uk)

Dan Barfod
Scottish Universities Environmental Research Centre, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, G75 0QF, UK (Dan.Barfod@glasgow.ac.uk).

Thomas. M. Gernon, Rex Taylor, Stuart. J. Hatter, Martin. R. Palmer
School of Ocean and Earth Science, National Oceanography Centre, University of Southampton, European Way, Southampton, SO14 3ZH, UK (Thomas.Gernon@noc.soton.ac.uk), (rex@noc.soton.ac.uk), (sjh1e13@soton.ac.uk), (m.palmer@noc.soton.ac.uk)

and the Montserrat Volcano Observatory
Mongo Hill, Montserrat, PO Box 318, Flemmings, Montserrat, West Indies

Abstract
Volcanism on Montserrat (Lesser Antilles arc) has migrated southwards since the formation of the Silver Hills ~2.5 Ma, and has formed three successively active volcanic centres. The Centre Hills volcano was the focus of volcanism from ~1–0.4 Ma, before activity commenced at the currently active Soufrière Hills volcano. The history of activity at these two volcanoes provides an opportunity to investigate the pattern of volcano behaviour on an andesitic arc island over the lifetime of individual volcanoes. Here, we describe the pyroclastic stratigraphy of subaerial exposures around central Montserrat; identifying 11 thick (>1 m) pumiceous units derived from sustained explosive eruptions of Centre Hills from ~0.8–0.4 Ma. Over 10 other, less well- exposed pumiceous units have also been identified. The pumice-rich units are interbedded with andesite lava breccias derived from effusive, dome-forming eruptions of Centre Hills. The stratigraphy indicates that large (up to magnitude 5) explosive eruptions occurred throughout the history of Centre Hills, alongside effusive activity. This behaviour at Centre Hills contrasts with