



Foraminifera, stable isotopes and the tephrochronology of marine sediments around the island of Montserrat, Lesser Antilles Volcanic Arc

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The Soufrière Hills volcano, Montserrat, has undergone cyclic dome growth and collapse events since the present phase of eruption began in 1995. Over 90% of the pyroclastic deposits have been avalanched down the flanks of the volcano and deposited in the surrounding ocean. The coarse components (pebbles to boulders) are deposited in dense slurries to form steep-sided, near linear ridges proximally that intercalate and amalgamate to form a submarine fan. The finer ash grade components are mixed into the overlying water column to form turbidity currents that flow distances in excess of 30 Km from source. The present on-going eruption began in 1995 but marine sediment coring has recovered a record of intermittent volcanic activity over the last ~250,000 years. Using foraminiferal biostratigraphy (*Globorotalia menardii* ratios, etc.) and stable isotope stratigraphy we have identified a number of eruptive events, the most significant being a basaltic eruption between 137,500 and 120,000 years before present. This period of 17,500 years agrees with the known date for the origin of the Soufrière Hills volcanic centre and on-shore Ar-Ar radiometric dates.

Work on the marine cores is on-going and will provide further information on the distribution of both planktic and benthic foraminifera, the impact of the volcanic sedimentation on the benthic faunas and a detailed analysis of the pteropods distribution in the samples; this record provides interesting data on climate change as well as the migration of the Aragonite Compensation Depth (ACD) in the water column. Calcareous turbidites have also been recorded which appear to preserve a record of carbonate

platform erosion during glacial lowstands.