



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 avalanched down the volcano flanks and were deposited into the ocean. The coarse components (pebbles to boulders) are deposited from 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 ~350,000 years. Using foraminiferal biostratigraphy and stable isotope stratigraphy we have identified significant eruptive events at 330,000 years b.p., 240,000 years b.p., 182,000 years b.p., 137,500-120,000 years b.p., 77,500 years b.p. and 20,000 years b.p.. The most interesting record is the 17,500 years of eruption activity between 137,500 and 120,000 years b.p., which agrees with the origin of the Soufrière Hills volcanic centre. This series of basaltic ashes is quite distinct and can be located in a number of the marine cores. Work on the marine cores is on-going and will provide further information on the foraminiferal biostratigraphy, the impact of the volcanic sedimentation on the benthonic community and a detailed analysis of the pteropods (holoplanktonic gastropods) that are abundant in all the marine samples.