Provenance and chronology of the Barcavecchia Tufa, Southwest Etna, Sicily

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ABSTRACT

The palaeoenvironmental history of a ~0.1 km2 delta-shaped tufaceous spring mound at Barcavecchia, on the southwest flank of Etna, is investigated using biota assay, sedimentology and geochemistry. Dating control has been provided by radiocarbon and optically stimulated luminescence (OSL). The Barcavecchia sediments, comprising a lower lacustrine unit, and an upper marsh unit, provide a late Quaternary history of local conditions following drainage disruption of the Simeto river by hawaiite lavas and the outflow of carbonate rich groundwater from the Adrano Escarpment after 24 ka. Initially a small, saline lake formed before 17 ka, which dried out around 14 ka leaving a depositional hiatus. Subsequent sedimentation in a saline marsh environment preserved a sequence of tephra layers of local, hawaiite origin, of which the lowest (and thickest) was deposited between 8-6 ka, coincident with the recurrent activity of the Leone eruptive center. The upper sections preserve further tephra layers and a discontinuous pollen record, and probably terminates around 3-2 ka. These ages accord well with those obtained by ROMANO *et alii* (1987) from radiometric dating. The Holocene vegetation of the site mirrors that of the contemporary upper marsh, although tree species largely disappeared in the late Holocene.

KEY WORDS: *Mt Etna, tephrostratigraphy, palaeoenvironment, luminescence dating, late Quaternary.*