

Abstract

This study constitutes the first reconstruction of Pleistocene palaeoenvironmental change from the Gordano Valley, a low-lying valley marginal to the Severn Estuary in southwest England. The valley lies at the limit of Pleistocene glacial expansion and the threshold of terrestrial, marine and fluvial environments. An axial alignment opposite to that of the Severn Estuary provides a regionally unique preservational environment for valley floor Pleistocene sediments. These sediments potentially contain an important archive of palaeoenvironmental information yet they have received limited attention from previous researchers.

Data from 489 manual cores are used to determine the aerial extent, surface morphology and geometry of the uppermost minerogenic sediments. These reveal a patchwork of sands, silts and gravels with a hummocky surface topography and a central basin or channel. Stratigraphic, sedimentological and palaeontological analysis of eight percussion cores reveals thinly bedded, very poorly sorted gravel, silt and sand units with an altitude range of *c.* -2.5 to +3 m OD. Two units record abundant temperate freshwater and intertidal fossil material. Using a multi-faceted methodology, detailed analysis of relatively small volumes of material from core samples of the Gordano Valley's minerogenic sediment archive has identified complex sequences of depositional and post-depositional environmental change. The sediments are characterised as representing a range of Pleistocene palaeohydrological environments interspersed with a number of periods of non-deposition, and involving a number of processes (aeolian, colluvial, pedogenetic, various fluvial, intertidal). Radiocarbon and optically stimulated luminescence dating and amino acid geochronology indicate Mid-to-Late Pleistocene deposition. A revised model of the Pleistocene Gordano Valley, presented here, suggests a landscape in which alluvial fans formed close to the valley margins and freshwater streams and interconnected pools which were open to tidal influence formed along the valley axis. The elevation of intertidal deposits appears to provide terrestrial validation for a low late-MIS 7 sea-level, in terms of known global sea-level, without recourse to a regional uplift model.

This thesis has demonstrated the potential to produce high-resolution reconstructions of environmental change from relatively small volumes of material, contributing an enhanced geochronology of landscape response to Mid-to-Late Pleistocene

climate change in the Bristol Channel/Severn Estuary region that has wider national importance in the context of coastal lowlands.