Geophysical Research Abstracts
Vol. 16, EGU2014-4149, 2014
EGU General Assembly 2014

The Holocene separation of Jersey from France: the microfossil evidence

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More than fifty marine boreholes have been drilled into the sea bed between France and the east coast of Jersey and these are being used to plan the route of a new electricity cable. The cores provide a comprehensive coverage of an Holocene sedimentary succession and core OVC-18 is being used as a reference because it contains a near-complete record of the transition from a terrestrial environment, with peats and plant beds, to inter-tidal mud flats and, eventually, marine sediments with abundant marine fossils and highly significant occurrences of the calcareous red alga known as maërl. This core, therefore, contains a near-complete record of mid–late Holocene sea level rise through to the invasion of the slipper limpet Crepidula in 1962. Almost all of the samples contain well-preserved assemblages of foraminifera and ostracods that allow the reconstruction of a range of sub-environments through to fully marine. Below the terrestrial sediments in core OVC-18 is a thickness of carbonate-rich, fossiliferous, marine sands that may be of mid-Eocene age or derived from pre-existing Eocene sediments.

The Baie du Mont-St-Michel, in which Jersey is located, is macro-tidal with an exceptionally large tidal range which probably developed quite early in the Holocene. The large tides are responsible for the significant numbers of transported marine foraminifera that are found in samples of saltmarsh and estuarine sediments. The upper saltmarsh environment is represented by the first 15–20 cm of muds immediately overlying a well-developed peat and contain a diagnostic benthic assemblage that includes Trochammina inflata and Jadammina macrescens. The overlying estuarine sediments are characterised by an assemblage dominated by Elphidium spp. and Ammonia spp.. The dating of this Holocene peat and the overlying marine sediments provides an accurate chronology of sea level rise around Jersey, although a crustal subsidence rate of -4 mm/year must be used to increase the impact of the sea level rise and development of the present tidal regime.