



Holocene palaeo-environments on the western coast of the Nile Delta: local and basin-wide forcing factors

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The Canopic branch, which is today either silted up and cultivated or re-used in the modern drainage network, was the main channel for the western Nile Delta during Antiquity. Ancient Canopic flow used to supply the water network on the deltaic margin, including secondary tributaries, the Maryut lake, and irrigation agriculture and urban needs.

We present new data obtained from a sediment core taken close to the palaeo-Canopic channel. Lead (Pb) isotopic analyses of bulk sediments, together with sedimentology, macro- and micro-fauna assemblages, magnetic susceptibility and radiocarbon dates provide evidence for environmental changes at the Canopic mouth in addition to changes in Nile sediment sources during the last 6000 years. Alternation of estuarine to lagoonal and peaty biofacies have recorded stages of transgression and progradation. $^{206}\text{Pb}/^{207}\text{Pb}$ analyses suggest a change in dominant sediment load from the White Nile to Blue Nile between 6000 and 5000 years cal. BP.

The dataset is then compared and contrasted with previous studies, including: (1) a dense grid of dated bio-sedimentological cores data from the northwestern Nile Delta; (2) strontium isotope records of water and sediment fluxes on the delta; and (3) geochemical records from offshore sediment cores.

Our analysis attempts to date and discriminate between basin-wide and regional to local forcing agents driving environmental changes at the mouth of the Canopic. The three main factors discussed will include climatic forcing of Nile flow and load changes, relative sea-level variations, and human impacts on the Canopic flow.