



## **Paleoenvironmental reconstruction in the north-western South China Sea over the last glacial-interglacial cycle.**

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Reconstruction of climatic events and changes in the Late Quaternary is vital for the understanding of the current climate system and for future projections. Climatic evolution and associated sea-level changes with special emphasis on the monsoon dynamics and corresponding oceanographic conditions that prevailed during the Late Pleistocene and Holocene in the north-western continental margin of the South China Sea (SCS) were investigated within the Chinese - Polish SECEB project (Sedimentary environment and climate evolution since the Late Pleistocene in the Beibu Gulf and adjacent area). For that purpose two sediment cores (83PC & 111PC) were selected to serve as a proxy-data source for paleoceanographic and paleoclimatic reconstructions. Both cores of ca. 8.6 m length were retrieved by the GMGS at the continental slope ensuring constant records and calm depositional environment. Their sedimentary facies were interpreted by multi-proxy approaches considering micropaleontological, sedimentological and geochemical analyses.

Developed age models indicate the age of these cores up to ca. 105 ka BP and 140 ka BP respectively and helped correlation of paleoenvironmental data with other records within the SCS. Alkenones, the Mg/Ca ratio and microfossils serve as proxies for paleo-SST curves and monsoon variability reconstructions. The SST difference between glacial and interglacial periods reached 5.4°C and using the advances of these proxies, it's possible to make assumptions about seasonality. Isotopic signatures of  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  indicate nutrient supply to the marine environment, which despite the low sea level was most of the time of marine origin (DOC), suggesting existing of an upwelling zone along the northern continental margin of the SCS. Diatomological analyses outlining the environmental evolution and interrelations between their parameters during the Last Glacial Cycle (LGC) pointed at the relatively high variability of phytoplankton and water masses exchange.

In addition, further interpretation of seismic records did lead to the identification of a submarine paleo-delta southwest of Hainan Island. For further studies, a new core ZBW was drilled (100.5 m length) penetrating the delta sediments within the frame of a bilateral Chinese-Polish research project ERES (Evolution of the "Hainan delta" as a response to changes in palaeoenvironment since late Pleistocene). The main goal of the project is to develop a high-resolution sequence-stratigraphic model of the South China Sea shelf west and southwest of the island of Hainan (Beibu Gulf), to reconstruct paleomorphodynamic changes as a result of sea-level and climate fluctuations during Marine Isotopic Stages MIS4 to MIS3.

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