



## **Palynological records of climate and oceanic conditions in late Pleistocene and Holocene sediments of the Nile cone, southeastern Mediterranean**

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variations in palynomorph concentrations and relative abundances, including pollen and spores, organic-walled dinoflagellate cysts, and Amorphous Organic Matter (AOM), were studied in a sediment core, NC Core 2, from the upper slope (1030 m water depth) of the Nile Cone, southeastern Mediterranean, Egypt. Each sample represents palynomorph deposition for intervals of ca. 500-1,000 years and provides the first detailed palynological record for the Nile Cone. The dinocyst assemblages and AOM production reflect changes in surface water temperature and river discharge in response to climate forcing as marked by variations in pollen and spore indicators of semi-desert vegetation and tropical Monsoon intensity. The basal sediments (ca. 14600 – 9500 yr BP) contain high concentrations and relative abundances of *Spiniferites elongatus*, *Polysphaeridium zoharyi* and other *Polysphaeridium* and *Spiniferites* species during the transition from postglacial to interglacial conditions. Variations in these taxa and total *Impagidinium* species suggest a gradual temperature increase, interrupted by a pre-Holocene cool interval around 11000 yr BP. The high African monsoon index for this pre-Holocene time corresponds with pollen evidence of relatively high Nile discharge. The organic-rich S1 sapropel sediments, dated ca. 9500 – 6270 yr BP, were deposited several thousand years later, during a time of lower Monsoon index, warmer surface water and increased dinocyst production. This was accompanied by moderate Nile flooding and oxygen-deficient or anoxic bottom water on the upper Nile Cone, mainly supporting the increased production and carbon import hypothesis for Eastern Mediterranean S1 formation. Dinocyst assemblages in the Nile Cone S1 differ from those of the deeper, more northern Levantine and Cretan basins in the near absence of heterotrophic protoperidinioid cysts, despite the uniformly high organic S1 carbon content. The prevailing climate during the formation of sapropelic sediments in the Southeastern Mediterranean was tropical to subtropical, but was interrupted by an early cooler interval with reduced humidity, as marked by re-appearance of *Spiniferites elongatus* and increased *Ephedra* pollen. The carbonate-rich surface layers were probably deposited under warm dry climatic conditions with minimum Nile input, but evidence of oxidation prevents detailed interpretation.

Key words: dinocysts; pollen; spores; Nile Cone; Amorphous Organic Matter; sapropel S1; Late Pleistocene; Holocene.