Geophysical Research Abstracts, Vol. 8, 01948, 2006
SRef-ID: 1607-7962/gra/EGU06-A-01948

First insights on the South Cretan Margin: Structure, depositional processes and future importance to the HERMES project

T. Alves (1), V. Lykousis (1), D. Sakellariou (1), S. Alexandri (1), P. Nomikou (1)

(1) Institute of Oceanography, Hellenic Centre of Marine Research, Km.47 Athens-Sounio Road, Anavissos, 19013-712, Attiki, Greece (Email: talves@hcmr.gr - Fax: +302291076323).

Three HERMES research cruises undertaken in 2005 permitted the surveying of post-Miocene tectonic troughs located south of Crete, East Mediterranean. Distinct types of geophysical and stratigraphic data are being currently used to characterize the depositional and structural settings of the study area: Swath bathymetry, acoustic backscatter information, chirp (3.5 kHz) profiler, OKEAN (9.5 MHz) sidescan sonar imagery, single-channel airgun profiles of high resolution, gravity and box cores. Similar data sets have been successful in exploring turbidite systems in active and passive margins. In parallel, CTD casts have been deployed together with (6+6 month) current meters and sediment traps in order to undertake time-dependent particle flux measurements on the South Cretan margin. The new data on the South Cretan margin prompted the discovery of a new submarine canyon (Samaria canyon) and the analysis of two topographically confined troughs where, in the last 5 Ma, turbidite units were deposited. Hinterland denudation processes occurring on Crete in response to tectonic uplift of the island have been responsible for high sedimentation rates on the South Cretan Margin. This has been accompanied by direct inflow of sediment from alluvial-fan systems and incising mountain rivers onto the continental slope bordering Crete, where significant sediment instability processes occur at present. Seismic reflection data reveal that significant changes to the modern depositional setting occurred in the past in association with the major post-Miocene tectonic and eustatic episodes affecting Crete and the Eastern Mediterranean. Subsequent research cruises on the South Cretan margin (2006 and beyond) will aim to relate the latter (modern) depositional settings with the occurrence of biological hot-spots.