INTERDISCIPLINARY STUDY OF THE NILE DEEP SEA FAN FINE-GRAINED SEDIMENTS

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The Nile deep-sea fan is the most important sedimentary accumulation within the eastern Mediterranean. Seven piston cores have been collected in the different geomorphological settings of the eastern, central and western provinces during the Fanil cruise (October 2000): Eratosthenes escarpment, graben, mud volcanoes, channel and lobe of the western part of the deep-sea fan. As a consequence, the sediments recovered display a great variability of lithologic facies: pelagic and hemipelagic muds, turbidites, debrites and volcanoes muds. Furthermore, the eastern Mediterranean basin is characterized by episodic deposition of organic-rich dark pelagic and hemipelagic layers called sapropels. The objective of this study is to characterize the lithologic facies by granulometry, X-ray, clay mineralogy, organic carbon, mineral carbon and sulfur contents in order to improve the understanding of the sedimentary processes and their variability. Preliminary results show gravity flow deposits such as debrites and fine-grained turbidites. Cores taken in a channel and related lobe show a clear coarsening and thickening up trend over approximately twenty turbidite sequences. One of the main difficulties is the distinction between sapropels generally recovered in pelagic sediments but with lower carbonate content than classical ones, and fine-grained turbidites. These two facies could have very similar lithologies and need detailed studies. On the base of three geochemical parameters mineral carbon (biogenic carbonates supply), organic carbon (organic matter preservation) and total sulfur (sulfate reduction and early diagenesis) we propose a new ternary diagram as a tool for fine-grained
sediments characterization.