

***Climate fluctuations and human impact during the late Holocene in a multi-proxy marine record from the Gulf of Gaeta (Tyrrhenian Sea, central Italy)***

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A new high resolution pollen and planktonic foraminiferal record from a shallow water coastal marine core (water depth 83 meters) collected in the Gulf of Gaeta (Tyrrhenian Sea, central Italy), provides information on the complex relations among natural vegetation development, climate changes, and human impact on ecosystems in an historically densely populated region of the central Mediterranean during the last 3700 years. This under-investigated period is actually of crucial interest for a better understanding of the human adaptation strategies to climate pressures in the way towards the development of the modern Mediterranean civilizations. The pollen record is characterized by two phases of human impact on the landscape. A first phase, 3500 to 2900 cal. BP, suggests management and exploitation of *Olea* and *Vitis*. A second phase, from 2300 BP to the present, highlights cultivations of *Olea*, cereals, *Juglans*, *Castanea*, *Vitis* and Cannabaceae. In spite of these clear signs of human activity, the pollen data outlines oscillations in the broadleaved forest cover that can be influenced by the main warm and cold climate changes occurred in historical times. Planktonic foraminifera indicate, between 3700 and 2700 cal. year BP, a phase characterized by acme abundance of *Globigerinoides quadrilobatus* (warm water and oligotrophic species), while during the last two millennia the planktonic foraminiferal assemblages record an alternation of short-term warm-wet and cold-dry climatic phases. The warm phases are documented by increases in the planktonic foraminiferal species *G. quadrilobatus* and *Globigerinatella siphonifera*. Conversely, the cold periods are dominated by the foraminiferal species *Globorotalia scitula* and *Neogloboquadrina pachyderma*.

We acknowledge financial support from the Italian Project of Strategic Interest NEXTDATA (<http://www.nextdataproyect.it>) A national system for recovery, storage, accessibility and dissemination of environmental and climatic data from mountain and marine areas.

