Workshop IODP-Italia "Lo stato delle proposte di perforazione nell'area mediterranea"
Scientific Drilling in the Mediterranean Sea
Roma, 15-16 gennaio 2018

Abstract

I giovani ricercatori italiani nell'ambito dei programmi internazionali di perforazione scientifica

Climate fluctuations over the last deglaciation: a high resolution record from the western Mediterranean

PIETRO BAZZICALUPO (*[1]), PATRIZIA MAIORANO (1), ANGELA GIRONE (1) , MARIA MARINO (1), NATHALIE COMBOURIE-NEBOUT (2), ALESSANDRO INCARBONA (3)

(*[1]) Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari Aldo Moro, via E. Orabona 4, 70125, Bari, Italy
(2) UMR 7194 MNHN, Institut de Paléontologie Humaine, Paris, France
(3) Dipartimento di Scienze della Terra e del Mare, Università di Palermo, Via Archirafi 22, 90134 Palermo, Italy

Marine and continental proxies, Climate phases, Termination 1

Argomento della ricerca nella perforazione scientifica

Climate modification in the last 20000 years as recorded in Mediterranean deep sea sediments

The last deglaciation is marked by well documented, short-term vigorous climate fluctuations. The Alboran Sea (western Mediterranean), at the junction of the Atlantic-Mediterranean water mass exchange, is a key location to explore in detail the climate evolution across Termination I. In this framework, a high resolution study, at a hundred-year scale, has been performed on the calcareous plankton assemblage at Ocean Drilling Program Site 976. An extremely detailed (multi-decadal scale) alkenone-based sea surface temperature (SST) record is available at the site, as well as an accurate chronological record (Martrat et al., 2014), allowing a reliable comparison with the global record, and the recognition of several climatic intervals. Sea surface water proxies are compared with pollen-based climate reconstruction (Combourieu-Nebout et al., 2009) in order to improve the land-sea perspective. Heinrich Stadial 1 (**HS1**) is a composite event marked by three phases, well recorded, not only in the SST pattern but in the calcareous plankton behavior as well; and specifically: HS1a: extremely cold/relatively wet; HS1b: cool/dry; HS1c: relatively warmer/dry. The Bølling-Allerød (**B-A**) event records a surface water temperature increase and precipitations intensification; calcareous plankton identifies higher frequency changes in hydrographic conditions apparently in relation with Greenland Interstadial I (**GI-I**) high variability. Younger Dryas Stadial (**YD**) is characterized by a refunding cold and dry conditions although not as severe as during HS1. The rapid shifts in climate sensitive taxa support the hypothesis that each of the climate phases-sub/phases is characterized by a complex pattern forced by strong interaction between ice-sheet instability, melt water discharge entering the Gibraltar Strait, North Atlantic westerlies and moisture availability, clearly impacting over surface water temperature, productivity and land masses.

Combourieu Nebout, N., Peyron, O., Dormoy, I., Desprat, S., Beaudoin, C., Kotthoff, U., Marret, F. 2009. Rapid climatic variability in the West Mediterranean during the last 25000 years from high resolution pollen data. *Clim. Past.,* 5: 503-521.

Martrat, B., Jimenez-Amat, P., Zahn, R., Grimalt, J.O. 2014. Similarities and dissimilarities between the last two deglaciations and interglaciations in the North Atlantic region. *Quat. Science Rev.*, 99: 122-134.