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West Mediterranean rapid climatic variability during the last 25 000 years from high resolution vegetation record (ODP site 976, Alboran Sea).

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High-temporal resolution pollen record, pollen-based quantitative climate reconstruction and biomisation from the Alboran Sea ODP Site 976, show that Mediterranean vegetation changes have been clearly driven by short and long term variability along the last 25 000 years. The quantitative climate reconstruction reliability has been tested on marine pollen spectra from 22 Mediterranean marine core-top samples. Although the MAT seems to slightly underestimate the winter temperatures and overestimate the winter precipitation, the present-day observed and MAT estimations show an adequate consistency, in particular for summer temperatures and annual and summer precipitation. According to these results, the MAT appears as a valuable approach to quantify the past climatic changes on land from marine Mediterranean pollen records (Combourieu Nebout et al., 2009).
The ODP Site 976 pollen record and climatic reconstruction confirm that Mediterranean environments have a rapid response to the climatic fluctuations during the last Termination and Holocene (Combourieu Nebout et al., 2009 ; Dormoy et al., 2009). The western Mediterranean vegetation response appears nearly synchronous with North Atlantic variability during the last deglaciation as well as during the Holocene (Combourieu Nebout et al., 2009 ;).. High-resolution analyses show two warm episodes bracketing a cooling event during the Bölling/Allerød period that represent the Bölling-Older Dryas-Allerød succession. In contrast to the general warming climatic trend shown in Greenland and north European records (Rasmussen et al., 2006, 2007; Lowe et al., 2008; von Grafenstein et al., 1999), the ODP Site 976 pollen record shows a cooling trend during the Bölling/Allerød period. such as previously shown in speleothem record from France (Genty et al., 2004). During the Holocene, recurrent forest cover declines occur over the Alboran Sea borderlands (southern Spain and northern Morocco) and indicate repetitive climate events. They correlate well with several events of increased Mediterranean dryness observed on the continent (Jalut et al.. 2002) and with Mediterranean Sea cooling episodes detected by foraminifers and alkenone -based sea surface temperature reconstructions from other Mediterranean cores (Cacho et al., 2001; Frigola et al., 2003). These events clearly reflect the response of the Mediterranean vegetation to the North Atlantic Holocene cold events (Bond et al, 2001).