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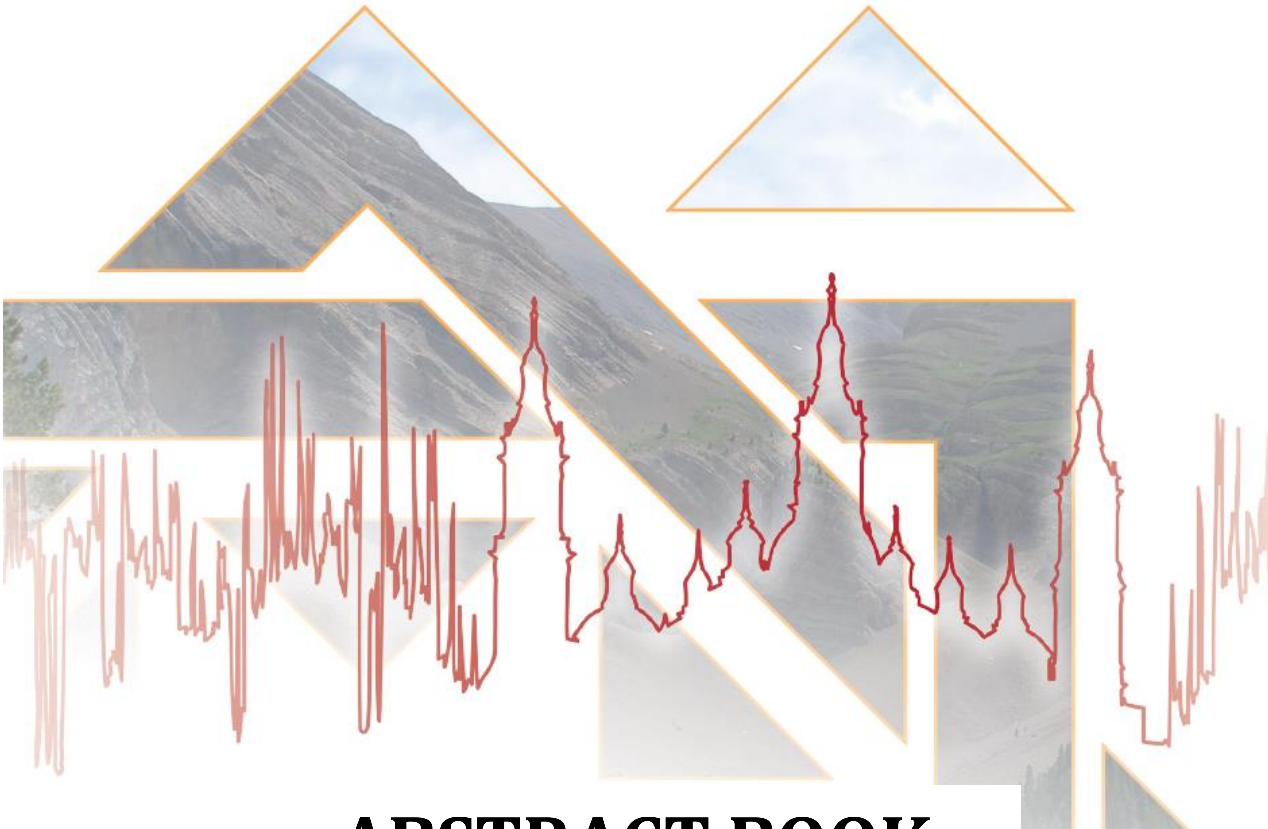

ABSTRACT BOOK

MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

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Was a cold/arid spell driving the collapse of the Terramare culture in the late Bronze Age of Northern Italy?

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A geoarchaeological and archaeobotanical investigation on the Terramara Santa Rosa di Poviglio archaeological site in the central Po Plain (Northern Italy) suggested a possible nexus between the societal collapse of the Terramare culture of the Bronze Age and a rapid climate change (RCC). The Terramare are archaeological remains of banked and moated villages, located in the central alluvial plain of the Po River. The sedimentary infilling of the moat surrounding the site of Santa Rosa di Poviglio was analysed in order to obtain palaeoenvironmental inferences from sediments and pollen assemblage. The relationships between Late Holocene regional environmental vicissitudes and land-use changes were investigated focussing on adaptive strategies of the Terramare people during the Middle/Recent Bronze ages (1550–1170 yr. BC). Pedosedimentary features and biological records from the moat demonstrate that, at the beginning of the formation of the sedimentary sequence, shallow water was permanent, and its level dropped during the last phase of life of the site. Pollen showed continuous transformation in flora composition and communities, suggesting a dynamic agricultural economy, based on wood management and crop fields. At the top of the sequence, in correspondence with the drying of the moat system, a dramatic decrease of woods may have had twofold causation: aridity and intensive land-use might have played a fairly synchronous action on vegetation. Data suggest a scenario of an impoverished plant landscape at the end of the life of the Poviglio Santa Rosa village, and connected with the collapse of the Terramare culture. The cold/dry RCC is also evident in regional and global climatic records and has been now identified also in the speleothems-based reconstruction (Rio Martino Cave) for climate changes in the Po Plain.

ID: 01631, 24.- Regional versus global in past monsoon dynamic: disentangling wind and precipitation proxies., (Poster)

ENSO and tropical monsoon variability througouh the ice ages

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This contribution documents the sensitivity of tropical interannual variability in HadCM3 over ice ages, based on two series of 60 experiments with HadCM3. The output of these experiments is synthesised under the form of statistical meta-models (Gaussian process emulators) with the following objectives : (a) detect which aspects of tropical variability is actually sensitive to changes in the level of glaciation, CO2 concentration and astronomical forcing (b) explore relationships between variability in sea-surface temperature and atmosphere dynamics (c) determine whether the well-known relationship between ENSO events and the weakening of sub-tropical monsoon westerlies in the Northern Hemisphere is maintained across the glacial cycle.

We find that climate precession is generally the main causes of changes in tropical variability in the Pacific, with maximum interannual variability with the perihelion is reached between December and March, followed by the level of glaciation. Precession and glaciation have different signatures on wind stress. Furthermore the glaciation effect itself combines two opposite effects: the ice sheet albedo increases wind stress and reduces tropical variability ; the topographic growth does the opposite. Finally, the negative correlation between NINO3.4 temperatures and tropical monsoon is maintained throughout the ice age and is not significantly alterned.

ID: 02055, 02.- Quaternary climate and environmental change in the Southern Hemisphere, (Poster)

CO2 drawdown via Southern Ocean stratification at the onset of the last glacial period

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The magnitude and pacing of CO_2 change during glacial cycles over the past 800,000 years suggests a major role for the deep ocean. The Southern Ocean has been a focal point for research in this area as 1) it is an important region of deep water ventilation and 2) CO_2 change is tightly coupled with Antarctic air temperature. In the modern Southern Ocean, the upwelling of carbon-rich deep waters coupled with incomplete nutrient consumption at the surface results in a leak of CO_2 to the atmosphere. Stemming this leak by imposing a physical barrier to the upwelling and outgassing of CO_2-rich deep water offers a potential mechanism to lower glacial pCO_2. Both greater sea-ice cover and enhanced surface stratification in the