

Winter climate variability in Europe during the Medieval Warm Period (MWP) and Little Ice Age (LIA)

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Knowledge of climate variability is necessary in order to forecast it in the future, both in the short and long term. In the last millennium, the climate of Europe showed important variations, especially during the winter. In this study we present the variability of the winter climate based on high-resolution paleoclimate records (ice caves, speleothems, lake sediments, tree rings and historical evidence). The analysis on various proxy indicators indicates that the MWP was a warm and dry period in its first part (until AD 900), followed by a warm and humid phase in the second part (AD 900-1250) in Romania, the same warm and humid trend was also observed in Central and South-Western Europe. Moreover, hydroclimate analysis during the MWP reveals a warm and humid climate in Central Europe (Bunker Cave), South-Western Europe (Lake Montcortes) and the Middle East (Jeita Cave), then a humid climate in Western Asia (Bir Uja Cave) and hot and dry in North Atlas Mountains, Africa (Lake Sidi – Ali). Instead, the analysis of the climatic conditions during the LIA indicates the predominance of a cold and dry climate throughout Europe, but also in distant regions such as North Africa, the Middle East and Western Asia. In our presentation we will discuss the links to large-scale circulation patterns in Europa, (e.g. NAO, EA) and the possible forcing mechanism of climate changes.

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