Rapid climatic and environmental shifts during oxygen isotope stages (OIS) 2 and 3 - linking high-resolution terrestrial, ice core and marine archives (RESOLuTION, FP33)

Understanding the complex palaeoenvironmental behaviour associated with the rapid centennial- to millennial-scale climate instabilities (Dansgaard-Oeschger oscillations; Heinrich events) during the last glacial period, is one of the major issues in paleoclimate research at present. These dramatic changes, seen in ice-core and marine archives, have rarely been recognized on land. The scarcity of terrestrial records, which allow documenting these instabilities as well as large dating uncertainties prevent detailed, time-synchronous correlations between land, ocean and ice core archives, which are necessary if the roles played by the different parts of Earth's environmental system are to be understood. RESOLuTION will address these issues by linking high-resolution, multi-proxy marine, terrestrial and ice-core records through detailed geochronology and timesynchronous tephra horizons. It will explore the impact of abrupt climatic changes on Paleolithic populations in Europe and perform transient simulations with a coupled atmosphere-oceanvegetation model to simulate realistic Dansgaard-Oeschger stadial-interstadial changes. RESOLuTION will finally propose a scenario which could explain a possibly different timing and impact of Dansgaard-Oeschger climate variability on the Atlantic Ocean and the adjacent European regions and will thus contribute significantly to the discussion on underlying mechanisms of suborbital climate variability.

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