



Terrestrial and limnic response to rapid climate variability between 20-60 kyr BP – the Les Echets sequence

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The last glacial period was characterized by centennial-millennial scale climatic instabilities, which involved rapid changes in oceanographic conditions and in atmospheric temperature over different continental regions of the Northern Hemisphere. These Dansgaard-Oeschger cycles, which are most pronounced between 20-60 kyr BP, are a prominent feature in ice core and marine records, but have only rarely been documented from terrestrial records. Several hypotheses have been brought forward to explain the observed fluctuations, but understanding the relationship between different mechanisms is hampered by large dating uncertainties and insufficient sampling resolution to perform detailed correlations between different archives.

One of the few European terrestrial sequences, with adequate sedimentation rates to record this rapid climate variability is the site Les Echets (45°54'N; 4°56'E) in south-central France. The strategic location of the site, south of the large ice sheets, at some distance from the North Atlantic and north of the Mediterranean region, fills an important gap in determining the spatial variability and environmental impact of these

fluctuations. New sediment cores were obtained at Les Echets in autumn 2001 and are currently analysed for a variety of different climatic and environmental proxies (tephra, mineral magnetism, grain-size, LOI, carbonates, C/N ratio, $\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{18}\text{O}$, biogenic silica, biomarkers, pollen, macrofossils, charcoal, chironomids, diatoms, ostracods). High-resolution sampling (<50 yrs) and detailed age control (AMS ^{14}C , OSL) provides the necessary framework for assessing rapid environmental changes and allows creating an independent time scale. The proxy data sets analysed so far give clear evidence that the limnic and terrestrial environment underwent dramatic changes, which resemble the high-frequency climate oscillations seen in ice cores and marine sediments.