

Dendrochronology, 14C time-scale and mechanism of rapid climate change during the last deglaciation (FP14)

We propose to create an absolutely dated time frame, of annual resolution and accuracy, for the deglaciation and Late Glacial interval, based on dendrochronologically dated tree-ring chronologies. The extension will come from linking already existing, but floating, Late Glacial pine chronologies to the absolutely dated chronologies of the Hohenheim tree-ring laboratory, using individual sections already filling the gaps, from undated pine sections already collected, and extensive new fieldwork, predominantly in South-eastern and Southern Europe. High-precision (± 25 year) ^{14}C analyses of decadal samples will extend the terrestrial ^{14}C calibration into this crucial time interval, leading to a common time frame for important climate archives, dated by ^{14}C . From the ^{14}C data the fluctuations of the atmospheric ^{14}C level is reconstructed, yielding information of solar variability and ocean ventilation changes. To separate solar, geomagnetic and oceanic forcing we use ^{10}Be data from ice cores and geomagnetic intensity data, obtained in associated and ongoing projects. As ^{14}C and ^{10}Be fluctuations share a common cause (production changes) we can transfer the tree-ring time scale to ice-cores which will improve substantially the potential of ice cores as climate archives. Using well established climate proxies in tree-rings we will provide terrestrial climate information for the deglaciation and Late Glacial period.

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