

Session title: **Crossing Time Scales: From Paleo Records to Present Day Change**

Convener: Achim Brauer (GFZ), Andreas Lücke (FZJ)

Keynote speaker: Bas van Geel, Mark Gessner

#### Session abstract

This session aims to address research at the interface of instrumental and proxy time series and should stimulate discussions among researchers from different disciplines trying to elaborate a process understanding of regional climate and landscape dynamics across observational and proxy timescales. Driving mechanisms of climate dynamics and landscape evolution operate on a variety of time scales from season to millennia. Instrumental measurements are only available for a limited time period and thus do not capture the full range of variability. On longer time scales, proxy data from geological and biological archives have proven rapid and high-amplitude climate changes and their terrestrial environmental impacts. This approach, however, has its limitation in the uncertainty of climate representations in those proxy data. It is a challenge for the scientific community to reduce the limitations inherent in both approaches by firmly merging proxy time series and instrumental measurements into a consistent record of climate dynamics and landscape evolution. This approach leads to an advanced assessment of ongoing climate change and environmental impacts based on a perspective beyond observational scales.