



Hydroclimatic signal and LBK cultural activity in the Upper and Lower Rhine, inferred from abandoned channel fill deposits

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The Linear Band Ceramic (LBK) culture represents a major event in the spread of agriculture in Europe. Occupation particularly occurred in river valleys, with largest densities found along the rivers Danube, Elbe and Rhine. The interaction between the emergence of this culture and the dominant climatic and hydrological conditions is not yet fully established. As part of the ANR OBRESOC project, in which LBK activity is investigated in a transect from France (Marne river) to the catchment of the Danube river (Tisza), we studied palaeo-environmental changes in the Rhine valley between 7600-6600 cal. yrs. BP. Focus is on the Upper Rhine Graben and the Lower Rhine valley near the Rhine Delta apex, which is thought to be a peripheral region of LBK-activity. In these regions, a total of five cores from abandoned channels were analysed to reconstruct palaeo-environmental dynamics in vegetation and fluvial activity during the period of LBK development. Abandoned channel fills are excellent sites to perform detailed studies of palaeo-environmental dynamics, as they (i) form proximal locations to occupation sites of the LBK culture, (ii) act as efficient traps of sediments in which different environmental proxies are well preserved, (iii) contain well-datable material for the construction of detailed age-depth models, and (iv) provide a long proxy record, potentially over more than a millennium at a single site. On all cores, high resolution analysis of channel fill deposits (grain size and geophysical properties) and biotic proxies (micro-charcoal fluxes and pollen assemblages) were performed to reconstruct palaeo-environmental signals, such as changes in fluvial activity, forest fires, and vegetation evolution, which may be related to agricultural activity, and climatic and hydrogeomorphic changes in the region. In this contribution we compare the results of the high-resolution core analyses (1,5 to 5m sequences for the studied timeframe) derived from the more densely populated Upper Rhine Graben with those from the more peripheral Lower Rhine valley to decipher anthropogenic impacts from natural environmental circumstances. Moreover, we try to discriminate the local to the regional signals recorded in the fluvial archives, by comparing the proxy data with the pedo-sedimentary context. The ultimate goal is to model socio-environmental interactions during the LBK culture progression to Western Europe with MMA.