



Historical climatic record from flood sediments deposited in the interior of Spiralka Cave, Czech Republic

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Magnetic susceptibility (χ) was measured on more than four hundred samples collected from a 5 m high section of fine grained sediments deposited during flood events in the interior of Spiralka Cave, Czech Republic. In the upper 1.5 m of this profile, mineral magnetic (χ_{fe} , ARM/SIRM, S-ratio, $\chi(T)$) and other non-magnetic measurements (heavy mineral concentration, loss on ignition and particle grain size) indicate that χ variations are controlled by the concentration of magnetite and by magnetic grain size. A positive correlation of Ti and Zr concentrations in this part of the profile with our magnetic susceptibility record suggests a detrital signal responding to changing environmental conditions in the catchment area. Furthermore, a comparison of the χ record with the winter temperature anomalies constructed from both instrumental and historical records collected at the Klementinum Observatory in Prague shows a remarkable correlation. We suggest that during years with warmer winters and less snow cover the floods were less intensive but probably had access to larger tracts of cultivated land as agriculture tended to expand during these warmer periods. Cultivation of the land provided flood waters with greater access to coarser grained magnetite-like materials exposed by tilling of soils. Lower in the profile, interpreting the environmental significance of magnetic susceptibility variations is more complex as remobilization of iron has occurred. Nevertheless the magnetic susceptibility record, when coupled with non-magnetic measurements, correlates to known environ-

mental conditions present in Central Europe during the deposition of the lower portion of the profile.