



The geomorphic evolution of Someș Mic River (Romania) over the past two millenia

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In this paper we present the dynamics of Someș Mic River (NW Romania) in relation with the climatic changes over the past 2000 years. The results and discussions are based on 1) documentary evidences of important floods in the area (starting with 1200 AD), 2) the spatial position of old bridges, roads, human settlements related to river position (from the Roman Epoch through the Medieval Period), 3) historical planform river dynamic, based on successive cartographic maps (past 250 years) and 4) OSL and ¹⁴C absolute dating of channel fills exposed in the river's bank. The climate in the area was reconstructed using stable isotopes of oxygen and hydrogen in ice cores retrieved from Scarisoara Ice Cave, which display two colder (and possibly more humid) periods between 400 – 900 AD (dark Ages Cold Period – DACP) and 1300-1850 AD (Little Ice Age – LIA), and two warmer (and possibly drier) periods, between 0-400AD (Roman Warm Period - RWP) and 900-1300 AD (Medieval Warm Period - MWP)

Our results shows that during periods with high incidence of important floods (LIA), the river readjusts its planform morphology through meander cut-offs or avulsions on a larger scale, while during periods of reduced incidence of important floods (RWP and MWP), lateral migration became the main river planform process. This behaviour is complicated by geology, reflected in specific local adjustments (e.g. high planform stability, preferential channel migration, avulsion).