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Late-Holocene human impact on fluvial systems in a Mediterranean mountain ecosystem

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Within the territory of Sagalassos, a classical city in the Western Taurus Mountains (SW Turkey), detailed sedimentological and palynological analyses in small catchments have revealed a strong local impact of human-induced land use changes on the physical environment during the so-called Beyşehir Occupation (BO) Phase. In order to test whether larger geomorphic systems respond similarly to human impacts in this mountain environment, we aim to reconstruct the late-Holocene floodplain sediment dynamics of the Büğdüz River catchment (264 km^2).

In total, 32 percussion drill corings, sampled every 10 cm, were made so far in the floodplain of the Büğdüz River and a first approximation of sediment texture was made. From seven sub-samples, sufficient amounts of organic matter could be retrieved to be radiocarbon dated by AMS. First results revealed two distinct sediment deposition phases: first, up to 5m of mainly coarse sediments alternating with thin silty layers were deposited. This phase was still active around Cal. 890-780 BC. Next, up to 2.5 m of mostly silty sediment was deposited, the majority after Cal. AD $\sim$900-1000. No exact data on the transition from the first to the second phase are available, however. The average floodplain sedimentation rates, 1.59 ± 0.13 mm a^{-1} for the first and 1.46 ± 0.13 mm a^{-1} for the second phase, do not differ much. Towards the periphery of the floodplain, alluvial and colluvial deposits most likely interfinger, resulting in a considerably higher sedimentation rate since Cal. 780-410 BC (i.e. 2.20 mm a^{-1}).

Compared to smaller catchments, where the higher sedimentation rates during the BO Phase decline sharply afterwards, the sedimentation rates in the Büğdüz River system remain rather stable, illustrating the greater buffering capacity of larger fluvial systems in response to important human-induced land use changes since classical times. Nevertheless, these land-use changes have brought about changes in main sediment texture deposited (i.e. transition from gravels to silt) and river morphology (transition from a braided to a single-thread channel).