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The Holocene landscape development of the Gareja region in eastern Georgia – a fluvial approach

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The semi-arid Gareja region in the Iori Highland in the southeastern part of the Republic of Georgia is characterized by an annual precipitation < 500 mm and shows an open steppic landscape today. As is known from historical sources, the landscape showed the same character already during the 6th century AD when the Gareja monastery located in the center of the region was founded by Assyrian monks. However, archaeological research carried out during the Soviet Period showed that there were dozens of settlements of bronze and iron age in this region almost devoid of water resources today, hinting to some sources of fresh water allowing people to live there during those periods. Furthermore, former archaeobotanical studies assume that the region was covered by forests instead of steppes during the past, although there is no final proof yet.

The goal of this study is to shed light on the development of the palaeo-landscape during the prehistoric period and thus to address some of the issues described above. To do so, our work is based on the network of episodic streams that cross the region, running from the Iori mountains towards the Mtkvari (Kura) river as the main gaining stream of the region. Using rain water flow direction modeling in GIS we determined the main fluvial courses according to their. This pattern was compared with that of prehistoric settlements known from archaeologic studies, in order to get information about the possible perennial character of some rivers during the past. Furthermore, we did first investigations of outcrops with fluvial sediments found along some of such fluvial courses: Based on stratigraphic observations, pedologic investigations of potential palaeosols as indicators of landscape stability as well as on first numerical datings, we started to unravel the fluvial pattern of that region.