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Deciphering the Late Quaternary fluvial dynamics at the foothill of an active orogen – the example of the Transcaucasian depression in eastern Georgia

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Generally, the dynamics of fluvial systems can be triggered by climate, tectonics, anthropogenic activity or internal mechanisms. The lowland of the Transcaucasian depression is located between the Greater Caucasus in the north and the Lesser Caucasus in the south. Both mountainous massifs form a part of the Alpidic orogenic belt and are thus characterized by a high tectonic activity. During the Weichselian glaciation, due to their altitude >3000 m the massifs were strongly glaciated.

During the last years, we investigated fluvial sediment sequences of several rivers that originate from the mountain belts and cross the eastern semi-arid part of the Transcauscasian depression towards the Caspian Sea (e.g. Algeti, Khrami, Kura, Alazani), in order to decipher changes of their fluvial dynamics during the past. The investigated sediments of Late Pleistocene and Holocene age show thicknesses up to 50 m and are mostly well outcropped. Our morphologic, sedimentologic and chronostratigraphic investigations of different sediment sequences demonstrate distinctive changes of the fluvial dynamics between the Late Pleistocene and the Holocene, and show that high-frequent Holocene changes of the fluvial pattern of the rivers are probably linked to climatic and/or anthropogenic triggers. Additionally, on a longer time scale the fluvial dynamics of the rivers is obviously controlled by ongoing tectonic processes.