

Timing and development of Late Quaternary fluvial terraces of the lower course of Kızılırmak River (Northern Turkey)

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The Kızılırmak River (1355 km) is the longest river of Anatolia. It traverses the Central Pontides and forms deep bedrock gorges, fluvial and deltaic terraces along its lower stream and a large delta into the Black Sea. The Central Pontides is an actively deforming and uplifting mountain range located at the northern margin of the Central Anatolian Plateau (CAP). The presence of strath terraces and uplifted paleo-delta levels along the lower course of the river indicates a response of Kızılırmak to active uplift of the Central Pontides and sea-level fluctuations of the Black Sea.

To understand the Quaternary tectonic, climatic and sea level impacts on the lower stream and delta of the Kızılırmak River, we carried out geologic and geomorphic mapping of several fluvial and deltaic terraces in order to date 5 levels by optically stimulated luminescence dating (OSL) method.

Our results indicate accelerated regional uplift since Middle Pleistocene in the eastern part of the Central Pontides with uplift rates varying between about 0.07 and 0.3 m/ka. The delta terraces at 103 and 123 m above mean river level on the western side of Kızılırmak River uplifted presumably faster than the terraces at 58 and 87 m above mean river level on the eastern side by 0.2-0.3 m/ka. Since MIS 9 the western and eastern delta platforms uplift coherently with 0.2 m/ka or less. The southern part of the delta is delimited by Alaçam Segment of the Erikli Fault. The area south of the Alaçam segment of the Erikli Fault is uplifting faster than the region to the north of it (0.07 m/ka) since Middle Pleistocene. This indicates a tectonic interaction between the positive flower structure of the North Anatolian Fault Zone and an active rifting of the Sinop Graben over the Erikli Fault system.