



## Structure, morphology and seismicity of the frontal part of a propagating fold-and thrust belt: The Holocene 123-km-long Kur Fault, Greater Caucasus, Azerbaijan

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We present the main features of the frontal structure, known as Kur Fault, of the Plio-Quaternary Kura fold-and-thrust belt in the Greater Caucasus (Azerbaijan). The Kur Fault has been analysed thanks to geological-structural and geomorphological surveys of its whole length, integrated by a relocation of instrumental seismicity, data on historical seismicity, new focal mechanism solutions, and ambient vibration measurements across the fault trace. The in-depth study of the frontal structure can: i) provide insights into the shallow propagation of a regional reverse fault, ii) contribute to a better understanding of the earlier stage of development of a young continent-continent collision, and iii) have implications for seismic hazard assessment because the area is seismically active and hosts the most important infrastructure for energy production in the country. The results show that the fault deforms the surface for a total length of 123 km. The shallow expression is given by four main scarp segments, with a right-stepping arrangement, which have different structural significance; they are represented by an alternation of fault-propagation folds, folds with offset frontal limbs, and shallow faulting. Analyses of the age of deformed deposits and landforms suggest activity from Mid-Late Miocene times to the Holocene. The fault attitude and its reverse kinematics are coherent with the Holocene and present-day state of stress, characterised by a N-S to NNE-SSW horizontal  $s_1$ , suggesting the capability for seismic reactivation. Earthquake focal mechanism solutions indicate from pure reverse motions to transpressional kinematics in the area. Calculation of potential  $M_w$  indicates values in the range 7.5-7.9 if we consider its entire fault length, 6.1-7.2 if we consider the single segments.