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A numerical approach applied to the study of the 2003 Bingol earthquake

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In 2003 an event M=6.5 occurred in the structurally complex Bingol region, Eastern Turkey, with a right-lateral strike-slip mechanism. This earthquake is not compatible with Coulomb stress changes due to the preceding large events and regional stress loading computed with deep-slip or virtual slip approaches over the 2003 rupture area since 1784. Applying a 2D finite element numerical model we assess the role of the complex regional fault network in the overall detected deformation of the area. We investigate the sensitivity of our model to the rotation of regional stress principal axis and to the rheological heterogeneities of the area as well as to the stress complexities induced on the stress loading by the mapped fault trace network.