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Neotectonic and modern stresses of Steppe Crimea

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Abstract. This article presents data on the neotectonics and seismicity of the Crimean Peninsula. Using two versions of the structural-geomorphological method – a manual version and a version with the SimSGM software – the neotectonic stress state of Steppe Crimea and adjacent territories was characterized in relation to the peninsula's current seismicity. Areas of fracture concentration of the tension and shear types were identified. The results show that the stress field is characterized by a strike-slip pattern, with a predominantly northeast-oriented compression axis and the least pronounced northwest-trending compression. The relief and its main features are expressed as heterogeneities with an orthogonal strike for Steppe Crimea and a diagonal strike for Mountainous Crimea. The obtained data on the distribution of shear and tension megafractures and seismicity are essential for understanding the formation of hazardous geological processes and are also useful in the design of civil structures and the exploration of ore and oil deposits, as blocks with tension fractures are more fluid-permeable and subject to more intense failure. The low seismic activity is likely due to, firstly, the small number of seismic stations and, secondly, the release of accumulated crustal stresses in the Black Sea basin.

Keywords:
Steppe Crimea, Crimean Peninsula, neotectonic and modern stresses, fault tectonics, structural-geomorphological method, SimSGM program

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