

# TECTONIC LINEAMENTS IN SOUTHERN POLAND<sup>1</sup>

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## ABSTRACT

Photointerpretation and the analysis of topographic contours on maps reduced several times in scale (such as radar imagery, which revealed interconnections between surface morphology and geologic structures), showed the existence of several lineaments in southern Poland. The lineaments are several dozens of kilometers long. They are spaced at about 0.5 km intervals in the crystalline core of the Tatra Mountains (Carpathians) and several are at about 50 degrees, 150 degrees, 180 degrees, and occasionally 100-110 degrees. Three directions coincide with those of major geologic structures in Poland: the NW-SE oriented margin of the East-European Platform, the E-W oriented margin of the Polish Carpathians, and the NE-SW oriented margin of the Fore-Carpathian Deep. The lineaments run along fault and fractures zones within Paleozoic formations in the Holy Cross Mountains and continue as zones of structural weakness (accentuated by erosion) in the Neogene of the southern part of the Holy Cross Mountains and the Quaternary deposits of the Nowy Targ Basin in the Carpathians. Locally they are independent of geological structures.

The good surface expression of the lineaments, even in zones without distinct tectonic discontinuities, and their rectilinear courses, suggest that these features reflect a periodic mobility along fracture zones in the basement. This mobility may result from the action of seismic waves and tidal oscillations of the Earth's crust concentrated in the fracture zones. The addition of even small horizontal stresses may result in the translocation of basement blocks along these zones. Experiments show that even a small percent of the force required to initiate horizontal translocations may result in a creeping of blocks in relation to one another, providing that some vibrations or small oscillatory movements occur along the surfaces separating the blocks. The displacements of basement blocks are reflected at the surface by systems of faults, fault shifts, and overthrusts or folds of a characteristic form.

<sup>1</sup>Verbal Presentation by R. Chojnacki