



Fault slip analysis and paleostress reconstruction in the Aghdarband, Kopet Dagh, northeastern Iran

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The Kopet Dagh sedimentary basin has formed after Middle Triassic orogeny in the northeastern Iran and started to sink along the major roughly NW–SE trending faults. Aghdarband klippe in the eastern Kopet Dagh is the unique area where the Triassic Kopet Dagh basement is outcropped. This research considers the brittle structures developed during different orogeny processes to understand the history of polyphase deformations and compressional tectonic regimes of Kopet Dagh from the beginning of its formation. We have therefore applied the inversion tectonic techniques to determine and separate the different brittle tectonic regimes in terms of stress tensors.

Our field measurements reveal an ancient E-W extensional regime before Jurassic and during Triassic which is likely related to Early Kimmerian orogeny phase. After Triassic, Aghdarband area has been dominated by a NW-SE extensional stress that created Kopet Dagh sedimentary basin which its depression probably started as the consequence of mentioned tectonic regime. The evidence confirm presence of compression with the same direction during the Late Kimmerian orogeny phase and simultaneous with Jurassic-Cretaceous. During Paleogene, the Cretaceous layers have been folded by a NE-SW compressional stress. According to our observations, a N-S compressional regime which generated strike-slip fault systems in Paleogene and Quaternary rock units of central Kopet Dagh is the youngest stress regime during the tectonic evolution of studied area.