
Geometry and Chronology Of Basement Faulting In The Fars Arc : A View From Structural And Morphological Analysis

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In the Zagros Fold Thrust Belt (ZFTB) of Iran it is firmly established that the basement is involved in the deformation. The strongest line of evidence for this assertion comes from the relatively intense mid-crustal seismic activity. Molinaro et al. (2005) shown that in the Eastern Zagros Mountains basement control on surface structures only occurred at a late stage of the tectonic evolution. In other words, the current thick-skinned style of Zagros deformation succeeded a more general thin-skinned phase of orogeny. This chronology is particularly well illustrated by spectacular interference patterns, in which early detachment folds are cut by late oblique basement faults. This leads up to form sigmoid structures on surface. Systematic morphological analysis (large scale topography and river network) combined with structural analysis allow to construct a general map of basement faulting in the Fars arc. The basement trends identified in this study show similarities with the ones drawn by Berberian (1995), however, more faults are depicted. These are shown to be mainly reverse faults and not, as had been previously suggested, strike-slip trends. The faults show an increase in segmentation in the eastern limb of the Fars Arc. This change in geometry may be related to the influence of inherited transverse structures within the Arabian basement, related to the Oman Line transform fault system which developed during Permo-Triassic Neotethys rifting.
