



Palaeostress review of the Zagros fold-and-thrust belt and tectonic implications

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The present-day Zagros fold-and-thrust belt of SW-Iran corresponds to the former Arabian passive continental margin of the southern Neo-Tethyan basin since the Permian–Triassic rifting, undergoing later collisional deformation in mid-late Cenozoic times. Here an overview of brittle tectonics and palaeostress reconstructions of the Zagros fold-and-thrust belt is presented, based on direct stress tensor inversion of fault slip data. Results indicate that after the Permian–Triassic rifting and during the Neo-Tethyan oceanic opening, an extensional tectonic regime affected the sedimentary cover in Triassic–Jurassic times with an approximately N–S trend of σ_3 stress axis oblique to the present-day trend of the mountain belt. Some local changes in the stress field indicate a NE–SW trend of the σ_3 axis during Jurassic–Cretaceous times. The stress state then significantly changed to thrust setting, with a NE–SW trend of σ_1 stress axis, and a compressional tectonic regime prevailed during the continental collision and folding of the sedimentary cover in Oligocene–Miocene times. The compression was followed by a strike-slip stress regime with an approximately N–S trend of the σ_1 axis oblique to the mountain belt during inversion of the inherited extensional basement structures in Pliocene–Recent times. The brittle tectonic reconstructions, therefore, highlighted major changes of the stress state in conjunction with transitions between thin- and thick-skinned structures during different extensional and compressional stages of continental deformation within the oblique divergent and convergent settings, respectively.