



## **Influence of pre-existing basement faults on the structural evolution of the Zagros Simply Folded belt: 3D numerical modelling**

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The Simply Folded Belt of the Zagros orogen is characterized by elongated fold trains symptomatically defining the geomorphology along this mountain range. The Zagros orogen results from the collision of the Arabian and the Eurasian plates. The Simply Folded Belt is located southwest of the Zagros suture zone. An up to 2 km thick salt horizon below the sedimentary sequence enables mechanical and structural detachment from the underlying Arabian basement. Nevertheless, deformation within the basement influences the structural evolution of the Simply Folded Belt. It has been shown that thrusts in form of reactivated normal faults can trigger out-of-sequence deformation within the sedimentary stratigraphy. Furthermore, deeply rooted strike-slip faults, such as the Kazerun faults between the Fars zone in the southeast and the Dezful embayment and the Izeh zone, are largely dispersing into the overlying stratigraphy, strongly influencing the tectonic evolution and mechanical behaviour.

The aim of this study is to reveal the influence of basement thrusts and strike-slip faults on the structural evolution of the Simply Folded Belt depending on the occurrence of intercrustal weak horizons (Hormuz salt) and the rheology and thermal structure of the basement. Therefore, we present high-resolution 3D thermo-mechanical models with pre-existing, inversively reactivated normal faults or strike-slip faults within the basement. Numerical models are based on finite difference, marker-in-cell technique with (power-law) visco-plastic rheology accounting for brittle deformation.

Preliminary results show that deep tectonic structures present in the basement may have crucial effects on the morphology and evolution of a fold-and-thrust belt above a major detachment horizon.