



## **The Significance of basement faulting on fold style of cover sequence with median detachment in Zagros foreland fold-thrust belt: Analogue modeling and natural examples.**

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Fold style in cover sequence of fold-thrust belts with median detachments varies above and below detachment layers. Therefore surface fold style does not necessarily reflect subsurface structures. However, median detachments on cover sequence above reactivated basement faults does not effect on fold styles. Detail structural mapping of Kangan, Pars and Karanj anticlines, located in southern part of Fars oil field, integrated with Seismic Profiles resulted in construction of a regional structural cross-section across the folds. The section showed that fold style of Kangan anticline which is located on hangingwall of the Zagros Frontal Fault (ZFF), does not vary from surface to depth. In Pars and Karanj anticlines, however, the fold style changes to depth. This demonstrated the effect of basement fault on fold style of cover sequence. To evaluate this significance two series of analogue modeling was set. In each modeling two layers of Silicon Putty, with their thickness equal to 15% of cover stratigraphic thickness, were put one at the base and the other one in the middle of sedimentary cover. Dry loose sands were used in the modeling to simulate the properties of the rest of cover sequence stratigraphy. In first modeling cover sequence were detached above a rigid wooden basement while in the second modeling the basement were involved in deformation by a reverse slip along a 60° dipping fault. The result of first modeling showed that thick middle detachment layer isolates structural style at surface from

depth by development of open folds with long wavelength above it and a duplex thrust system below it. In second modeling, however, the thick median detachment does not effect on the fold style and an uplifted forced fold formed by reverse slip of the basement fault above it and kept its style up to the surface. The median detachment causes only development of a small fold above it and on the fold back limb, as a rabbit-ear structure.