

Folding style within thrust sheet above Decollement: An example from Central Trans-Indus Salt Ranges, Pakistan

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Abstract

Folds are categorized in a single thrust sheet with respect to the Plate Tectonic Transport Direction (PTTD) and three different classes of such folds generated in a single thrust sheet have been observed in the Marwat-Khisor fold-thrust belt constituting the central part of the Trans-Indus Salt ranges. Folds generated towards the hinterland or dorsal side of the (PTTD) is called the trailing edge folds and these folds develop over the footwall ramps and represent the initiation of the tectonic wedge. The Marwat Anticline represents the trailing edge fold towards the dorsal side of the frontal thrust. Folds which occupy the central/middle topography of the thrust sheet are called the intraplate folds and responsible for the major crustal shortening within the thrust sheet. The middle folds zone in the thrust sheet has been observed in central part of the Khisor Range that is responsible for maximum shortening in the cover sequence. The third category of folding is the leading edge folds and the same folds style has been observed in the frontal foothill of the Khisor Range. The frontal fold zone has been eroded and smashed due to propagation of the Khisor frontal thrust wedge. However, remnant parts of the leading edge folds and their unfaulted equivalents can be traced at the lateral termination of the thrust sheet. Majority of folds in various classes possess kink-band geometry. The folds hinges are sharp and their limbs are planar and longer above the basal decollement and make a staircase trajectory with the combination of ramp-flat system instead of concentric or cylindrical folding. The Marwat-Khisor fold-thrust belt provides excellent examples of various classes and styles of folds above the basement rocks/basal detachment horizon in the cover sequence of the Trans-Indus Salt ranges of Pakistan.