

## **Structural geology of Main Boundary Thrust, Kalachitta Ranges, Pakistan**

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### **Abstract**

The Kalachitta Range is the eastern extension of the Main Boundary Thrust (MBT) that appears as one of the major thrust systems associated with the Indian-Eurasian tectonics developed in the Northern Pakistan. This range follows an overall east-west trend bordered by the Hissartang Fault and Cherat Fault to its North and Salt Range Thrust (SRT), Surghar Range and Trans Indus Ranges to its South. The east-west trending segment of these Ranges along MBT owe its evolution to frontal ramping from basal decollement thrusting within these Jurassic-Eocene rocks and emerged in the form of a Thrust named here as Peeran Tangai Thrust Fault (PTTF); the major thrust fault which is interpreted to have an active back-thrust associated with it. The hanging wall of the PTTF is moderately to tightly folded, near Khawarra Southern Syncline 1, with an adjacent deformed fault bend fold structure which has been impacted by the underlying blind back-thrust associated with the major PTTF. The PTTS (Peeran Tangai Thrust Southern) which is located at the very south of the study area has also been interpreted via restored section study that it is associated with a back-thrust which terminates within the subsurface shales of Patala Formation and show no surface emergence. Khawarra Thrust Fault (KTF), a fault located in the northern section of the mapped area with a back thrust associated with it, which dies out within the Patala Formation underneath. These back-thrusts follow east-west trend and are non-emergent to a greater extent; although they show some deformational imprints in the surface outcrop. The term active back-thrust is applied because their hanging-wall and foot-wall strata is actively deforming as evident from the Eocene rocks exposed.