Crustal study of Bagh and adjoining areas of Azad Jammu and Kashmir based on gravity data

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The gravity survey has been carried out in the Bagh and adjoining areas of Azad Jammu and Kashmir to delineate the subsurface structural elements and thickness of crust.The geological model computed on the basis of gravity data demarcated the Kashmir Boundary Thrust (KBT) within the Murree Formation of Miocene age that dips at an angle of 65º NE in the sedimentary wedge. This fault shows the reverse behavior in study area and joins the Indus Kohistan Seismic Zone (IKSZ) at a depth of 14 Km. The IKSZdips at an angle of 81º NE in the crystalline basement and penetrates up to the Moho depth. In the northeast of KBT, Main Boundary Thrust (MBT) is demarcated between Murree Formation of Miocene age and carbonate rocks of Cambrian to Eocene age that dips at an angle of 44º NE. In this area carbonate rocks are highly imbricated and thrusted over the Murree Formation. The gravity model also suggests that the total thickness of the crust in Bagh area is 51 Km and in Khurshid Abad the thickness extends up to 53 Km. The thickness of sedimentary wedge in Bagh and Khurshid Abad is 14 Km and 16 Km respectively. The thickness of the crust increases due to the stacking of thrust sheets along KBT and MBT. These faults are developed due to the compressional stresses caused by the collision of Indian and Eurasian plates. Thepresent study indicates that these faults are tectonically active and medium range and long range earthquakes are expected in the study area.