

Salt tectonics of the Karoli area, Central Salt Range, Sub-Himalayas, Pakistan

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The paper focuses on of the salt tectonics characterization of the Karoli area, Central Salt Range, Sub-Himalayas, Pakistan. The study area falls in the zone of Himalayan Frontal Thrust. Its architecture was mainly developed in the typical compressional tectonic settings. The study area was lithostructurally mapped at the scale of 1:10,000. The differential erosion at various places in the study area has lead to the loading and unloading of overlying relatively higher density rocks. This resulted in the upward movement of plastic and low density salt of the Salt Range Formation and caused the phenomenon of valley bulging. The interpretation of structural data manifested overprinting of extensional tectonics due to salt diapirism and was displayed by a number of normal faults. Certain well exposed sections showing the outcrops of normal faulted contacts were documented by field photography. A salt diapiric dome was documented as well, not reported by any previous worker. Only one thrust fault was recorded in the mapped area. The presence of normal faults is contrary to the tectonic environment of this area and is the result of structure overprinted by salt diapirism. The subsurface presence of salt marl of the Pre-Cambrian Salt Range Formation is the cause of this structural overprinting. The salt marl moved upward and pierced through the overlying strata. As a result the Salt Range Formation is exposed in the core of dome and at a number of other locations in the investigated area. These investigations led towards the conclusions that the originally developed structure in the compressional tectonic settings was modified by the plastic and diapiric nature of the Pre Cambrian rock salt and features of extensional tectonics have been superimposed on those of compressional tectonics. The presence of newly discovered dome, normal faults and frequent exposures of the Salt Range Formation in the investigated area characterize an environment of salt tectonics.