

Stratigraphic and Structural Framework of Himalayan Foothills (Northern Pakistan)

POSTER

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The integration of new paleontological, stratigraphic, and structural data permit analysis of the pre-Himalayan configuration of the Indian plate passive margin in northern Pakistan. Thick sections of Paleozoic metasediments exposed in the Peshawar basin were preserved in half grabens created during Late Paleozoic rifting. Rift highlands were largely stripped of Paleozoic cover in Swat where Permian metabasalts overlie the Proterozoic Manglaur Formation and in the Attock-Cherat Range where Jurassic and Cretaceous rocks overlie the Proterozoic(?) Dakhner Formation. In the absence of a fossiliferous Paleozoic section, lithologic correlation of Proterozoic units is crucial to retrodeformation and estimates of Himalayan shortening. The Proterozoic Salt Range Formation, Hazara (Dakhner) Formation, Manki Formation, Gandaf (Salkhala) Formation, and Karora Group are interpreted as a formerly continuous northward-deepening sequence.

The Khairabad and Nathia Gali - Hissartang faults divide the foothills region into three stratigraphically distinct structural blocks. The northern block consists of the Proterozoic Gandaf and Manki Formations overlain by younger Proterozoic(?) formations and fossiliferous Paleozoic and Mesozoic strata. The metamorphic grade in the northern block gradually increases northward from lower greenschist facies near the Khairabad fault to upper amphibolite facies in central Swat. The central block consists of weakly metamorphosed Proterozoic Hazara (Dakhner) Formation and locally Cambrian and younger Paleozoic(?) strata overlain by Cretaceous and Paleogene marine strata. The southern block consists of unmetamorphosed fossiliferous strata of Triassic to Eocene age. Proterozoic rocks in the subsurface of the southern block are probably transitional between the evaporite dominated Salt Range Formation and the shallow marine clastics of the Hazara (Dakhner) Formation.

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