

Contact metamorphism in the High Himalayan Crystalline of Zaskar (India)

Contact persons

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Context

The Zaskar Shear Zone is a major Himalayan tectonic structure that marks the transition between the high-grade metamorphic rocks of the High Himalayan Crystalline (HHC) and the low-grade sedimentary series of the Tethyan Himalaya in the Zaskar region (NW India). According to the classical kinematic model for the HHC, the metamorphism in this unit results from the NE underthrusting of the HHC high grade rocks below the Tethyan Himalaya. Following this crustal thickening event, rapid extension along the ZSZ induced a nearly isothermal decompression, resulting in a high-temperature/low-pressure metamorphic overprint. However, recent field observations have revealed the presence of an Ordovician orthogneiss at the base of the ZSZ. An increasing number of arguments suggests that the growth of some of the observed metamorphic minerals (e.g. garnet) in the ZSZ results from contact metamorphism prior to Barrovian Eocene metamorphism. The presence of an older contact metamorphism would have important implications regarding the interpretation of the overall tectono-metamorphic history in this part of the Himalayan range.

Aims and Methods

The aim of this work is to test and document the hypothesis of a contact metamorphism in the footwall of the ZSZ. This research requires detailed petrographic analysis in thin sections of the metasediments collected at the edges of the orthogneiss intrusion. Whole rocks chemistry, microprobe analyses and stable isotope chemistry will be then used on selected samples to characterize and quantify the thermal history of the metasediments at the base of the ZSZ. These data will be integrated in the tectonic model of this region.

References

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Website

Prerequisite