

## The NE-directed Shikar Beh nappe in the Himalayan orogenic prism of Lahul and Ladakh

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Two belts of SW-verging folds and thrusts dominate the structure of the Himalaya. The North Himalayan nappes are composed of the north Indian Tethys shelf sediments and their Paleozoic and Precambrian base. They are situated between the Indus-Tsangpo suture to the north and the Zaskar shear zone to the south. The High Himalayan nappe with its frontal Main Central and Main Boundary thrusts occupies the southern part of the orogenic prism. These, SW-directed nappes have been formed by underthrusting of the Indian margin below Asia since 55 Ma. Structural and metamorphic investigations in the Chenab, Miyar, Kullu and the Spiti valley regions of the Higher Himalaya show the existence of older NE-verging folds and thrusts, associated with an older up to amphibolite facies metamorphism. This is the Shikar Beh nappe that extends from the Suru valley to the NW to the Spiti valley to the SE over a distance of 400 and a width of 60 km. The overprint of the Shikar Beh nappe structures by the North Himalayan frontal thrusts is observed in the Chandra valley at Batal and in the Spiti valley to the East of Kiato. SW-verging folds of the High Himalayan nappe deform the NE-verging Tandi syncline composed of Permian to Triassic limestones. Similar fold interference structures are responsible for the fan-shape folds in the upper Chenab and lower Miyar valley. Radiometric dating indicate an age of 53 Ma for the Tso Moriri ultra-high pressure metamorphism, 48-30 Ma for the North Himalayan nappes and >22 – 18 Ma for the Zaskar Shear Zone and the High Himalayan nappe extrusion. Younger cooling ages indicate continuous movements on the Main Central and Main Boundary Thrusts up to the present. Radiometric ages of the polymetamorphic Higher Himalaya give >42 – 30 Ma for the Shikar Beh nappe Barrovian metamorphism. New Th-Pb monazite ages of  $42 \pm 2$  and  $38 \pm 0.7$  Ma were obtained for the Miyar thrust zone associated to the same event. The formation of the intra-continental NE-directed Shikar Beh nappe testifies of compressional forces acting on the Indian crust during its underthrusting. This fact suggests that slab-pull was probably not the exclusive force acting on the Indian crust during its underthrusting below Asia.

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