

## Nappe tectonics in the Kathmandu area, central Nepal: single nappe? or double nappes?

# Kazunori Arita[1], Akira Takasu[2]

[1] Earth and Planetary Sci., Hokkaido Univ., [2] Dept. Geoscience, Shimane Univ.

The Himalaya is a fold-and-thrust belt in the northern margin of the Indian continent showing a piggyback thrust sequence. In central Nepal the Higher Himalayan crystallines in the north is thrust over the Lesser Himalayan meta-sediments in the south along the Main Central Thrust zone which is clearly separated from the rock units above and below the zone by the difference in lithostratigraphy, deformational features and metamorphic characters. In the Kathmandu area double thrust-sheets idea has been proposed for the Kathmandu Nappe. Our field survey around the nappe and laboratory works have revealed that the Kathmandu Nappe consists of a single thrust-sheet accompanying the underlying the Main Central Thrust zone.

The Himalaya, a fold-and-thrust belt in the northern margin of the Indian continent, is characterized by a series of foreland-propagating thrust system, i.e. from south to north the Himalayan Frontal Fault, Main Boundary Thrust and Main Central Thrust (Schelling and Arita, 1991). In central Nepal the Higher Himalayan crystallines in the north is thrust over the Lesser Himalayan meta-sediments in the south along the Main Central Thrust zone which is clearly separated from the rock units above and below the zone by the difference in lithostratigraphy, deformational features and metamorphic characters. The thrust zone is characterized by characteristic Ulleri-type mylonitic augen gneiss associated with quartzite and mica-chlorite phyllitic schist with snow-ball spessartine garnet showing prograde chemical zonation, and is strongly sheared to show intense S-C fabric and various kinds of asymmetric deformational textures representing top-to-the-south sense of shearing. But location and nature of the Main Central Thrust zone are still controversial.

In the Kathmandu area the Higher Himalayan crystallines cover the underlying Lesser Himalayan meta-sediments to extend southwards upto the Main Boundary Thrust, and forms the Kathmandu Nappe (Stoecklin, 1980). Recently Rai et al. (1998) proposed double thrust-sheets idea for the Kathmandu Nappe, that is, the Gosainkund nappe and the underlying Kathmandu nappe. Upreti and Le Fort (1999) and Upreti (1999) applied the idea to the whole Nepal Himalaya.

Our field survey in the Kathmandu area and laboratory works have revealed that the Kathmandu Nappe consists of a single thrust-sheet accompanying the underlying the Main Central Thrust zone. The thrust zone skirts the nappe, although its thickness is variable in places. The Mahabharat Thrust (Stoecklin, 1990) on the southern margin of the Kathmandu Nappe also is associated with the Ulleri-type mylonitic augen gneiss and mica-chlorite phyllitic schist with snow-ball garnet, and is regarded as a southern continuation of the Main Central Thrust zone in the root zone of the Higher Himalayan crystallines in the north. The Kathmandu Nappe is cut by an out-of-sequence fault to the north of Kathmandu (Arita et al., 1997), and in general the crystalline rocks to the north of the fault is higher in metamorphic grade than those to the south. This is considered to be due to a difference in lithostratigraphic horizon of the upper Main Central Thrust that cuts the Higher Himalayan crystallines.

### References

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