

# **PALEOMAGNETIC VIEW ON LITHOSPHERE KINEMATICS: THE EXAMPLE OF SOUTHERN TIBET AND THE HIGHER HIMALAYAN CRYSTALLINE**

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Paleomagnetic study in southern Tibet and the Higher Himalayan Crystalline (HHC) was twofold: (1) the recognition of vertical and horizontal block rotations and (2) the examination of the high grade metamorphic rocks (gneisses) from the HHC for their suitability for paleomagnetic investigations.

Toward the separation of local and regional tectonic effects, the results from southern Tibet reflect a regional trend in agreement with oroclinal bending and rotational under-thrusting. On the other hand, measured “anomalous inclinations” are interpreted as a consequence of extensional tectonic, and the circular distribution of magnetic remanences is attributed to long wavelength folding within the study area as well as doming in the crust.

The examination of the high grade metamorphic rocks was successful: The high quota of isolated stable and well grouping secondary magnetic remanences, demonstrate their suitability for paleomagnetic investigations. A high potential source is therefore established which enable considerable contributions within the thermo-tectonic evolution of an orogen. Data suggest no significant vertical rotation on a regional scale versus India. A regional trend comparable to that obtained for south Tibet, and expressed as a dispersion of remanence vector directions on a small circle is observed.

The new findings are in disagreement with the hypothesis of a uniform clockwise rotation increasing to the east of the Himalayan arc. A major effect, inferred from paleomagnetic data, attributed to long wavelength folding, doming and associated low/high normal faults/thrust system became more evident.

In summary, paleomagnetism is a potential applied method in deciphering deformation processes on local-, meso- and regional scale.

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