Geophysical Research Abstracts,
Vol. 11, EGU2009-7755, 2009
EGU General Assembly 2009

Tectonic implications of the magnetic fabric in the Triassic flysch of the Eastern Tethyan Himalaya (SE Tibet)

B Antolín (1), E Appel (1), C Montomoli (2), I Dunkl (3), L Ding (4), R Gloaguen (5), and R El Bay (1)

(1) Institute for Geoscience, University of Tuebingen, Tuebingen, Germany (borja.antolin@uni-tuebingen.de.), (2) University of Pisa, Pisa, Italy, (3) University of Göttingen, Göttingen, Germany, (4) Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China, (5) University of Freiberg, Freiberg, Germany

The Eastern Himalaya-SE Tibetan Plateau area is one of the cornerstones to understand the tectonic evolution that led to the formation of the Himalayan belt and the Tibetan Plateau. The Tethyan Himalaya series preserves a detailed record of processes which occurred since the closure of the Neo-Tethys Ocean until present. The study area ranges between longitudes of E90°and E92°50´ and it is dominated by the Triassic flysch.
Anisotropy of magnetic susceptibility (AMS) measured in 53 sites, structural and thermochronology analysis provides new data to characterize the tectonic evolution of the Tethyan Himalaya Thrust Belt in SE Tibet. Magnetic mineralogy studies show that the geographical distribution of the axes of the ellipsoid of magnetic susceptibility can be interpreted in terms of preferred orientation of the phyllosilicates. The magnetic fabric can be characterized by the magnetic foliation and the magnetic lineation which are concordant with the planar and linear structures of tectonic origin defined by the preferred orientation of the iron-bearing silicates. In SE Tibet AMS is a useful tool because it help us to trace lineations (magnetic lineations) when it is difficult to identify them in the field or in thin sections.

Magnetic foliation strikes WNW-ESE but shows different dips. It has intermediate dips toward the south in the northern part of the studied area and intermediate dips to the north in the southern and central part of the Triassic flysch area. Dips towards the south (parallel to S2) match with the structural position of the rocks in the hanging wall of the Great Counter Thrust. In the other hand, the southern part present magnetic foliation dipping to the north (parallel to S1) and related to continental collision.
The magnetic lineations in SE Tibet can be related to three structural features: the axes of the folds, the intersection of the two main foliations (S1 and S2) and the stretching lineation. If we take into account the directions of the magnetic lineations, they can be divided in 3 groups: (1st group) in the southern part the magnetic lineation trends NW-SE with low-intermediate dip and moving to the north (2nd group) it switches toward E-W with shallow plunges (ca. 10°). Approaching the Great Counter Thrust magnetic lineation (3rd group) trends N-S and is steeply dipping to the south.