



Origin and pre-Cenozoic evolution of the Qiangtang terrane basement, central Tibet

Zhongbao Zhao (1), Paul D. Bons (1), and Genhou Wang (2)

(1) Department of Geosciences, Eberhard Karls University Tuebingen, Germany (zhongbao.zhao@ifg.uni-tuebingen.de), (2) School of Science and Resources, China University of Geosciences, Beijing, China

Central Tibet, with its high-pressure rocks, is a key area to unravel the evolution of the Proto-, Paleo- and Meso-Tethys. However, due to its remoteness and difficult field conditions, relative little is known of the area. Here we present new evidence on the Paleozoic and Mesozoic evolution of the Qiangtang Terrane, located between the Jinsha suture zone in the north and Banggong-Nujiang suture zone in the south. A >500-km-long east-west trending high-pressure metamorphic belt divides the Qiangtang Terrane into the North Qiangtang Terrane and the South Qiangtang terrane. Different hypotheses have been proposed for the origin and pre-Cenozoic evolution of the Qiangtang Terrane.

In the Central Qiangtang Terrane, an unconformity with basal conglomerate separates the basement from overlying middle Ordovician strata. Based on structural analysis of basement and cover units, detailed geochronology (including detrital and magmatic zircons) and comparison with surrounding micro-plates (such as Lhasa Terrane, Himalaya Terrane and Southern China Terrane) we conclude that the basement of the Qiangtang Terrane was connected with Gondwana as a passive margin of the Proto-Tethys during the Early Paleozoic.

The occurrence of Late Triassic eclogite and glaucophane-bearing schists in the Central Qiangtang Terrane indicates the existence of a suture zone between the North and South Qiangtang Terrane before the Late Triassic (Liu et al., 2011). This suture zone resulted from closure of the Palaeo-Tethys between the two terranes and obduction of the melange onto the basement of South Qiangtang before 210 Ma. ~275 Ma E-W oriented dyke swarms in the north of the South Qiangtang Terrane indicate opening of the Palaeo-Tethys in a back-arc setting between the North and South Qiangtang Terrane, during roll-back retreat of the Proto-Tethys further north. Late Permian to Early Triassic subduction related volcanism and the 236-219 Ma adakitic volcanic series are related to southward subduction of the Proto- -Tethys. Late Triassic syn-collisional granites and rapidly exhumed high-pressure rocks indicate the closure of these oceans and final amalgamation of the re-united Qiangtang Terranes with Eurasia.

Liu, Y., Santosh, M., Zhao, Z.B., Niu, W.C., Wang, G.H. 2011. Evidence for palaeo-Tethyan-oceanic subduction within central Qiangtang, northern Tibet, *Lithos* 127, 39-53