NEW CONSTRAINTS ON THE TIMING OF THE MAE-PING CORE-COMPLEX (NW-THAILAND)

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The Mae Ping fault zone (MPFZ) is considered to be one of the major strike-slip shear zones contributing to the lateral extrusion of SE-Asia. Within this fault zone a Core-Complex of ductile deformed amphibolite-facies rocks, the so called Lan Sang Gneisses, occurs. Despite several former investigations some aspects concerning the time, regime and cause of exhumation remain unclear. New detailed structural, petrographical and geochronological investigations of the Lan Sang Gneisses were undertaken to develop for the first time different PTt paths for different rock types (an augen-gneiss, a biotit-gneiss and a subvolcanic dyke).
Concerning the timing of the MPFZ, an undeformed discordant subvolcanic dyke has been found within the highly deformed Lan Sang Gneisses which is clearly of intrusive nature. LA-ICP-MS U-Th-Pb dating of prismatic and soccerball shaped zircons from this dyke yields an age of 42 ± 2 Ma and suggests a deformation of the MPFZ prior to this time.
However, the zircon age of the subvolcanic dyke clearly conflicts with Ar-Ar dating on biotites by LACASSIN et al. (1997) who suggest the timing of the fault zone to be around 30 Ma. Furthermore these results question the MPFZ to be one of the shear zones contributing to the lateral extrusion of SE-Asia during the Himalayan orogenesis. Therefore the deformation could be of Indosinian (Triassic) origin as a result of the collision between Sibumasu and Indochina.

LACASSIN, R., MALUSKI, H., LELOUP, P H., TAPPONIER, P., HINTHONG, C., SIRIBHAKDI, K., CHUAVIROJ, S., CHAROENRAVAT, A. (1997): Journal of Geophysical Research, Vol. 102, 10,013-10,037.