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The Dabie Shan – Sulu Connection, China - Cause of strong East-West Topography change as revealed by low temperature thermochronlogical data

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The topography of the Dabie Shan - Sulu ultrahigh pressure (UHP) belt, East-Central China, varies from East to West. Whereas the relief in the Dabie Shan Mountains is characterized by strong variations in elevation and reaches up to 2 km, the Sulu area to the East is flat and near sea level in elevation. Both areas are separated by the N-S trending Tan-Lu continental-scale fault zone. The Qinling-Dabie-Sulu (QDS) orogen has formed as result of the Triassic collision and attempted subduction of the Yangtze continent (South China Block) beneath the Sino-Korean continent (North China Block). Petrologic and structural studies indicate that the Dabie region in the East of the QDS orogen were subducted to $\sim$150 km depth prior to the early Triassic (Ratschbacher et al. 2000). First, exhumation in Triassic time transported subducted UHP rocks from mantle to mid-crustal levels. From Late Jurassic to Early Cretaceous those rocks were exhumed from a depth of 15-30 km to upper crustal levels.

The apatite fission-track age-elevation relationship of 80 to 40 Ma in the Dabie Shan (Reiners et al. 2003) is within errors similar to the age-depth relationship revealed from the CCSD/ICDP-Donghai drill core. Furthermore, the fission track data from the Sulu area indicate that reverse faults moved up the older age-depth gradient of more than 1000 m in Late Cenozoic time ($<$32 Ma). (U-Th)/He data at an elevation of about 340 m are as young as 23 Ma. Considering the stress field described for the Paleogene and Quaternary (Ratschbacher et al. 2000) it is very likely that the UHP rocks of the Dabie Shan were uplifted during the Late Neogene to Quaternary.

References

Ratchbacher L., Hacker B.R., Webb L.E., Mc Williams M.,Ireland T., Dong S., Calvert A.,Chateigner D., Wenk H.R., 2000. Exhumation of the ultra-high pressure crust in eastern China: Cretaceous to Cenozoic unroofing and the Tan-Lu fault. J. Geophy. Res. 105, 13,303 – 13,338.

Reiners P.W., Zhou Z., Ehlers T.A., Xu C., Brandon M.T., Donelick R.A., Nicolescu S., 2003. Post-orogenic evolution of the Dabie Shan, Eastern China, From (U-Th)/He and fission-track thermochronology. Am. J. Sci, 489–518.