U-Pb zircon geochronological, geochemical and Sr-Nd-Hf isotopic studies of granitoids in Muzhaerte River, Southwest Tianshan UHP belt (NW China), and their tectonic implications

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Two granitic intrusions, Changawuzi and Alasan plutons, in Muzhaerte River of Southwest Tianshan UHP belt (NW China) were studied, with the purposes of determining their ages, petrogenesis and implications for the evolution of South Tianshan orogenic belt. A SHRIMP zircon ²⁰⁶Pb/²³⁸U age of 333±3 Ma was obtained for the Changawuzi pluton and LA-ICP-MS zircon U-Pb dating gave three 206Pb/238U ages of 296±4 Ma, 292±2 Ma and 287±8 Ma for the Alasan pluton respectively. The Changawuzi pluton is formed in a continental marginal setting by fractional crystallization from the partial melting of juvenile mafic continental marginal arc rocks, which later assimilated ancient continental crustal material to the extent of 10-15% during emplacement as suggested by the Sr-Nd isotope mixing modelling. The elemental and Sr-Nd-Hf isotopic geochemical studies indicate that the Alasan pluton was the products of fractional crystallization of magma, which were generated by partial melting of mixture of crustal juvenile medium-to-high K intermediate-to-basaltic rocks and 10-30% ancient continental crustal material. As the closure of paleo-South Tianshan ocean (319 Ma), the lithospheric tearing with localized upwelling of asthenosphere occurred at the beginning of slab breakoff because of the localized deformation. This induced the syncollision magmatisms (317-301 Ma) in the Middle Tianshan terrane. Afterwards, the extensive upwelling of hot asthenosphere induced the partial melting of the crust and formation of voluminous granitic rocks in the early Permian (300-270 Ma) in the South Tianshan orogenic belt. These results imply successive stages of late subduction and closure of paleo-South Tianshan ocean, as well as the collision and post-collision between Tarim plate and Yili-Central Tianshan block happened in Late Paleozoic period.

Geochemical composition of recent sediments and subrecent variability of the last 500 years for the SW Adriatic Sea and the Gulf of Taranto (Southern Italy)

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Previous studies from the Gallipoli shelf, Gulf of Taranto, S. Italy, indicate that continuous sedimentation at high accumulation rates and low bioturbation [1] permit highresolution paleoclimate studies. Measurements of carbonate contents, thermolumuniscens, oxygen and carbon isotopes, [2,3] and reconstructed sea surface temperatures [4] display cyclic frequencies similar to those known for solar cycles. Origin and processes related to these patterns, however, remain unclear. To study these cycles in more detail, a multiproxy approach is needed to reconstruct e.g. changes in runoff, and productivity in the past. The Gulf of Taranto however is located in a coastal area, influenced by rivers, ocean currents, and eolian dust sources, affecting the geochemical composition of the in situ sediments [5-8]. Assessing input and geochemical fingerprints of all different sources to the Gulf of Taranto in the present system, will permit changes in these sources to be reconstructed. Here, we present details and interpretation for a compositional study of core top samples from the S. Adriatic and the Gulf of Taranto and terrestrial samples from the Italian Adriatic coastal area. Results are then used to reconstruct e.g. run off in the Gulf of Taranto for the last 500 years.

[1] Cini Castagnoli *et al.*, (2002) [2,3] Cini Castagnoli *et al.*, (1996), and (2002). [4] Versteeg, (2007). [5] Frigani *et al.*, (2005). [6] Tankere, (2000); [7] Tesi *et al.*, (2007) [8] Rossini, (1996).

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