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Mesozoic evolution of the Northern Tien Shan batholith (Kyrgyzstan): a reconnaissance apatite fission-track study of the Moldo Range and the Suusamyr valley

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The Tien Shan form one of the most active intracontinental mountain belts on earth. It is part of the Central Asian Orogenic System (CAOS) that stretches from the Tibetan Plateau to the Baikal rift zone in Siberia. This vast intracontinental area is currently reactivated as a distant tectonic response to ongoing convergence between the Eurasian continent and India. The Tien Shan are situated in the southern part of CAOS, north of the stable Tarim Basin. While the eastern Tien Shan fall within the borders of China, the western Tien Shan are located for the larger part in the republic of Kyrgyzstan, where the landscape is dominated by east-west trending mountain ranges, often separated by large intramontane depressions.

The northern part of the Kyrgyz Tien Shan is basement cored, in particular by an Ordovician granitoid batholith. This batholith is related to the closure history of the Paleozoic Turkestan Ocean and the formation of the Tien Shan region basement within the framework of the growth of the Eurasian continent. In Central Kyrgyzstan, the southern edges of this batholith have been sampled for apatite fission-track (AFT) analysis. Specifically, granite and granodiorite samples were collected in the Moldo and Djumgöl ranges, south of the Suusamyr valley. Samples were taken at elevations between 1700 and 2500 m along a $\sim$50 km north-south transect, perpendicular to the main east-west trend of the mountain ranges. Apatite was separated from the granitoid rock samples, mounted in epoxy, ground and polished and a muscovite external detector was attached using conventional techniques. Irradiation was carried out at

the Thetis research reactor at the Ghent University where absolute thermal neutron (ϕ) calibration was performed by γ-spectrometry of co-irradiated Au-Al and Co-Al monitor foils. Along with the Tien Shan samples, co-irradiated and other apatite age standards (Durango and Fish Canyon Tuff) with IRMM-540 glass dosimeters were analysed. Using absolute calibration and age standard (zeta; ζ) calibration, both absolute (ϕ) and zeta (ζ) AFT ages were calculated. Both age data sets agree well within analytical uncertainties and yield tight clusters of Late Cretaceous apparent AFT ages ($\sim$85-75 Ma). These apparent ages are younger than those obtained from the northern part of the batholith (Issyk-Kul region, Kungey range), but nevertheless are suggestive of a Late Mesozoic denudational event.

At the time of writing more samples are under investigation and in addition AFT lengths are being measured in order to perform thermal history modelling of the AFT data. These thermal history models of the Kyrgyz Tien Shan batholith will be presented at the time of the conference and will shed new light on its Mesozoic evolution and that of the Kyrgyz Tien Shan on a broader scale.