

## Fission track and U-Pb zircon ages of psammitic rocks from the Harushinai unit of the Kamuikotan belt, Hokkaido

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In order to discuss exhumation processes and mechanisms for high-*P/T* type metamorphic rocks, it is necessary to obtain correct informations on pressure-temperature-time paths of these rocks from sedimentation to exhumation through maximum burial. We conducted coupled fission-track (FT) and U-Pb dating on detrital zircon grains in two psammitic rock samples collected from the Harushinai unit of the Kamuikotan metamorphic rocks using a Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS). The results indicate that the concordant zircon U-Pb ages greatly vary between 1980-90 Ma. Among them, the youngest U-Pb age cluster (*c.* 110-90 Ma) is dominant, yielding the weighted mean ages of Albian ( $100.8 \pm 1.1$  and  $99.3 \pm 1.0$  Ma with  $2\sigma$  errors) for both samples. According to an oscillatory zoning of igneous origin without any overgrown rims in the analyzed zircon, the zircon U-Pb ages were not reset by the high-*P/T* type metamorphism, and hence the youngest U-Pb ages indicate the upper bound of sedimentary ages. On the other hand, the zircon FT data show the spectra with a single peak age at 100-90 Ma, which are comparable with the youngest U-Pb age cluster. The fact indicates that these zircon FT ages were once reset at *c.* 100 Ma due to an intense igneous activity at the provenance, but have not been essentially reset since the sedimentation. The scenario is supported by the temperature conditions slightly less than those of brittle-ductile transition of quartz (*c.* 300 °C, also closure temperature of zircon FT) estimated from the microstructures in deformed quartz detrital grains constituting the psammitic rocks. Combining these results with the previously reported K-Ar ages of white mica, it is inferred that Harushinai unit was deposited after *c.* 100 Ma, dragged down to the maximum depth, and further affected by a localized thermal overprint during exhumation (*c.* 58 Ma).

Keywords: Kamuikotan metamorphic rocks, zircon, U-Pb ages, Fission track ages, deformation microstructure