



The exhumation mechanism of the Yuli belt in Chinshuichi area, eastern Center Range, Taiwan

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The continental margin of Eurasia plate subducted into Philippine Sea plate that results in developing the high P low T Yuli belt in eastern Center Range, Taiwan. Previous petrology studies show the Yuli belt has been subducted to ca. 50-55km in depth. In this study we combine with structural analysis, potassic mica K-Ar dating and zircon fission track ages to reveal the exhumation process of the Yuli belt in Chinshuichi area.

In the Yuli belt it develops E-W trending low angle extensional ductile shear zone and the F2 recumbent folds. Both ductile shear zone and F2 recumbent fold infer extensional structures in deeper.

In the eastern side of the Yuli belt the youngest detrital zircon in meta-sandstone is ca.10Ma that indicates the metamorphism and deformation should be younger than 10Ma. The potassic mica K-Ar ages show 10-26Ma which is older than strata age indicating partial reset ages and the oldest reset ages could be 5-8Ma. By contrast the zircon fission track ages show quite young age 0.4-1Ma in Chinshuichi area. This indicates the cooling rate is rather low between 8-1Ma and start to rapid cooling (260-650°C/km) since the 1Ma. Considering the reset temperature of zircon fission track (ca. 260°C) is similar with the deformation temperature of S2 (dominantly in pressure solution crenulation cleavage) that suggests that the S2 developed since ca. 1Ma. Considering the extensional structures are associated with rapid cooling we suggest that the E-W trending extension is the important mechanism for exhumation the high pressure Yuli belt.