**台灣脊樑山脈剝蝕機制之研究**

**Study of Exhumation Processes of the BackBone Range, Taiwan**

**Supervisor:**

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**Project description:**

Recently, age dating results and petrographic P-T path of the Yuli belt displayed that the protolith of the Yuli belt was deposited during Miocene and metamorphosed/exhumed from 40-50km depth back to the surface recently. Compared with Taroko belt and eastern slate belt in Taiwan, the rock in the Yuli belt was experienced relatively high pressure and rapid exhumation lately. If the hypothesis is true, some differences of structure aspects among the Taroko belt, Yuli belt and eastern slate belt should be observed. To test this hypothesis, this project will focus on estimating the vertical strain and evaluating the difference of vertical strain in rocks among three different domains. For assessing the vertical strain, student will measure the attitude of crenulation cleavage of last ductile deformation event, photograph the orthogonal profile of recumbent folds associated with the crenulation cleavage development of the axial plane and collect the oriented samples in the field for each domain. In the lab, student will digitize the fold geometry and restore it back to length before folding and estimate the vertical strain based on current length and original length with reference frame of crenulation cleavage. Furthermore, XRF chemical analysis and microstructure observation on cleavage and microlithon domains of oriented samples will be conducted to account for the strain amount of pressure solution. With those vertical strain estimations of rocks across three domains, comparison of vertical strains can be investigated and the hypothesis can be validated.

This study is planned to training student familiar with field work and lab experiment for estimating the vertical strain among the Taroko belt, Yuli belt and eastern slate belt, investigating the difference of exhumation processes among three domains, and testifying the hypothesis that Yuli belt uplifted rapidly recently. The Results of this work will shed lights on deciphering the exhumation processes of Taiwan orogen and evaluating the tectonic evolution of Taiwan mountain belt.

**Project Schedule:**

**1 week: paper study; 1 week: field work; 1 week: digitations analysis s; 1 week: chemical analysis; 1-2 weeks: thin section analysis; 1-2 weeks: synthetic interpretation; 1 week: complete the presentation / report.**

**Preferred background:**

Knowledge of Excel, Matlab and stereonet plotting is required.

Skill of field mapping is required.