Geophysical Research Abstracts
Vol. 15, EGU2013-2418-10, 2013
EGU General Assembly 2013

Anatomy of folds in the damage zone of the Chimei Fault, eastern Taiwan

Szu-Ting Kuo
National Taiwan University, Geosciences, Taiwan (r01224201@ntu.edu.tw)

To understand the deformation characteristics of fault zone, paleostress inversion of slickensides is widely used. However, anatomy of folds is rarely applied on fault zone. In this study, the Chimei Fault in eastern Taiwan, where folds are well developed in the damage zone, is selected to be the study area, and then field-base measurement of the outcrop-scaled folds will be carried out.
The Chimei Fault, considered to be a reverse fault with N-S compression, is believed to produce total offset up to several kilometers due to reverse drag from the andesitic hanging wall. Previous studies have identified the damage zone, where folds are widespread, of the turbidity footwall based on fracture density. Asymmetric Z-folds are dominant structures in the damage zone. As fault rocks being closer to the fault plane, Z-folds become isoclinal, showing fault rocks are deformed by layer parallel shortening. In order to evaluate the shear sense, asymmetric fold limbs and their enveloping surfaces are used as a kinematic indicator. It is prevalent that both long limbs and enveloping surfaces dip to the south, indicating that footwall was dragged northward. In addition, fold axial planes are approximately strike 090 and dip 80S which further suggest that N-S compression, identical to the direction of fold drag, predominates in the damage zone.
It could thus be concluded that N-S compression in damage zone has contributed to northward reverse drag. Furthermore, this movement could be correlated to the result of stress inversion reported from previous studies. It is thus proposed that fault-related folds in damage zone, as illustrated herein, could be used a kinematic indicator of fault activity.