



## Consistency of compression in Fault and Joint Patterns across a Mountain Belt in Taiwan

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The main purpose of this study is to apply fracture analysis based on field measurements of faults, joints and related fractures. The principal stress axes  $\sigma_1$ ,  $\sigma_2$ ,  $\sigma_3$ , were calculated from the measured fault populations at each site. The ratio that defines the shape of stress ellipsoid is small, indicating that the value of the main stress axes is large relative to  $\sigma_2$  and  $\sigma_3$ , which are approximately equal. The computed  $\sigma_2$  and  $\sigma_3$  axes plunge close to the vertical or subvertical indicating that the thrust or strike slip tectonic regimes tend to dominate. This relationship is illustrated by the fact that the maximum compressive stress axis always lies more or less horizontal. Furthermore, slight plunging of the stress axis  $\sigma_1$  also implies that subsequent deformations such as folding and tilting were not significant. The spreading of the compressive stress axis is probably due to compressive events in different directions. The first compressive event was orientated N150°E and the last N120°E. These directions match the movements of the Philippine Sea plate by former studies. The indicator for the compressive direction of the joint system is the acute bisector between conjugate joints. The coincidence of the acute bisector of the conjugate joints with the maximum compressive stress axis at several sites strongly suggests the existence of a common compressive regime between the joints and faults.