



## **Relationship between earthquake b-values and crustal stresses in a young orogenic belt**

Yih-Min Wu

National Taiwan University, Geosciences, Taipei, Taiwan (drymwu@ntu.edu.tw)

It has been reported that earthquake b-values decrease linearly with the differential stresses in the continental crust and subduction zones. Here, we report a regression-derived relation between earthquake b-values and crustal stresses using the Anderson fault parameter in a young orogenic belt of Taiwan. This regression relation is well established by using a large and complete earthquake catalog for Taiwan. The dataset consists of b-values and Anderson fault parameters derived from relocated earthquakes and focal mechanisms, respectively. Our results show that b-values decrease linearly with the Anderson fault parameter at crustal depths with a high correlation coefficient of 0.9. Thus, b-values could be used as stress indicators for orogenic belts. However, the state of stress is relatively well correlated with the surface geological setting with respect to earthquake b-values in Taiwan. Temporal variations in the b-value could constitute one of the main reasons for the spatial heterogeneity of b-values. We therefore suggest that b-values could be highly sensitive to temporal stress variations.