

# Reconstruction of paleostresses from mesoscale faults in tilted rock masses

# Atsushi Yamaji[1]; Makoto Otsubo[1]

[1] Div. Earth Planet. Sci., Kyoto Univ.

We propose a numerical method to infer paleostresses from mesoscale faults in tilted rock masses. The method is useful to study the temporal variation of stress field in accretionary wedges and fold-and-thrust belts. The relative age of faulting with respect to tilting has been determined at outcrops. However, such a judgment is not always possible, resulting in the difficulty of the inference.

In order to determine the relative timing and the stress that the fault assemblage indicates, we combine the multiple inverse method and paleomagnetists' fold test. Statistically significant stresses determined by the method are indicated by clusters in stress space. We quantify the concentration of a cluster with Orife and Lisle's stress difference. Progressive untilting of fault-slip data causes a variation in the clusters, so that the maximal concentrations indicate possible timing of faulting in the progressive tilting phase. Simple computer simulations showed that our technique was correctly determined the relative timing of faulting and tilting, even for polyphase stress history.