



Extrusional Tectonics over Plate Corner: an Example in Northern Taiwan

Chia-Yu Lu (1), Jian-Cheng Lee (2), Zhinuo Li (1), Ching-An Lee (1), and Chia-Hung Yeh (1)

(1) Geosciences, National Taiwan Univ., Taipei, Taiwan (chia@ntu.edu.tw), (2) Institute of Earth Sciences, Academia Sinica, Taiwan

In northern Taiwan, contraction, transcurrent shearing, block rotation and extension are four essential tectonic deformation mechanisms involved in the progressive deformation of this arcuate collision mountain belt. The neo-tectonic evolution of the Taiwan mountain belt is mainly controlled not only by the oblique convergence between the Eurasian plate and the Philippine Sea plate but also the corner shape of the plate boundary. Based on field observations and analyses, and taking geophysical data (mostly GPS) and experimental modelling into account, we interpret the curved belt of northern Taiwan as a result of contractional deformation (with compression, thrust-sheet stacking & folding, back thrust duplex & back folding) that induced vertical extrusion, combined with increasing transcurrent & rotational deformation (with transcurrent faulting, bookshelf-type strike-slip faulting and block rotation) that induced transcurrent/rotational extrusion and extension deformation which in turn induced extensional extrusion. As a consequence, a special type of extrusional folds was formed in association with contractional, transcurrent & rotational and extensional extrusions subsequently. The extrusional tectonics in northern Taiwan reflect a single, albeit complicated, regional pattern of deformation. The crescent-shaped mountain belt of Northeastern Taiwan develops in response to oblique indentation by an asymmetric wedge indenter, retreat of Ryukyu trench and opening of the Okinawa trough.