2007 GSA Denver Annual Meeting (28–31 October 2007)

Paper No. 83-45

Presentation Time: 8:00 AM-12:00 PM

ALONG-STRIKE PROPAGATION OF SLAB BREAKOFF AT THE END OF THE TACONIC OROGENY: A MODEL OF SHORTENING-EXTENSION TRANSITION ACCOMPANYING STRIKE-SLIP FAULTING

LIM, Chul and KIDD, William S.F., Dept of Earth and Atmospheric Sciences, University at Albany, 1400 Washington Ave, Albany, NY 12222-0100, cl0250@csc.albany.edu

Orogen-parallel normal faults and veins recently recognized within the Taconic frontal zone in eastern New York followed thrust convergence during the last part of the Ordovician Taconic orogeny. Mapping in the Bald Mountain region of the frontal zone identifies major normal faults truncating shortening structures and continuing to the north and south. Correlation with normal faults showing the same cross-cutting relationships such as the Mettawee Fault to the north in western Vermont and the high-angle normal faults in the areas near Troy and Hudson to the south in eastern New York suggests that the present western boundary of the Taconic Allochthon is marked by an approximately 200 km long, east-side-down normal fault system. The extension, following cessation of the Taconic shortening, was induced by a northward-propagating breakoff of the old, eastward-subducted slab, which established a regional-scale, tensional stress field behind the tip of the breakoff. During the northward propagation of slab breakoff, separation of the slab was preceded by a marginal pull, with both processes migrating northward as the tear point moved. The last phase of thrusting with accompanying fluid migration, shown by the strike-parallel reverse-motion veins, is also proposed to have been provoked by the brief and rapid shortening driven by the localized marginal pull. The strike-slip cross faults/veins occurring commonly over the Taconic orogen and foreland in New York and Vermont resulted from segmented propagation of slab-pull separation accompanying marginal pull. We suggest that the right-lateral cross faults/veins formed because of differential motion caused by a brief and rapid shortening driven by the increased stress from the dangling part of the slab (marginal pull). The left-lateral cross faults/veins formed because of differential motion induced by the removal of slab pull with passage of the tear point.

2007 GSA Denver Annual Meeting (28–31 October 2007)
General Information for this Meeting

Session No. 83--Booth# 85
Structural Geology and Tectonics (Posters)
Colorado Convention Center: Exhibit Hall E/F
8:00 AM-12:00 PM, Monday, 29 October 2007

Geological Society of America *Abstracts with Programs*, Vol. 39, No. 6, p. 230