

GSA 2014

19-22 October | Vancouver, BC, Canada

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2014 GSA Annual Meeting in Vancouver, British Columbia (19–22 October 2014)

Paper No. 208-45

Authors will be present from: 9:00 to 11:00 AM, and 5:00 to 6:30 PM

EVIDENCE FROM JOINT SETS AND SHEAR ZONES IN EASTERN NEW YORK FOR TWO OROGENIC EVENTS AND THE WESTWARD DISPLACEMENT OF THE CATSKILL MOUNTAINS ALONG A DECOLLEMENT

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A longstanding problem in the Hudson Valley fold thrust belt (HVFTB) is determining the relative effects of the Acadian and Alleghanian orogenies. The 010-trending HVFTB is considered Acadian, but transitions into the 030-trending Alleghanian central Appalachian Valley and Ridge. This suggests that overprinting structures should exist, but they have not been confirmed. In the Catskill Mountains, west of the HVFTB, we believe structures in the relatively flat-lying strata contain evidence for stress trajectories related to both events. In the North-South Lake area, along the eastern edge of the Catskill Mountains, are two joint sets at 098-83 (J1) and 015-83 (J2). Truncation geometries show J1 is older than J2. Although mutually cross-cutting relationships occur, we believe these are due to joint reactivation, as suggested for western New York. Data collected along the Route 28 corridor also show two major joint sets, 292-82 (J1) and 205-89 (J2). This agrees with previous studies in the Phoenicia and Panther Mountain areas. Joint surface features, such as plumose structures, and the absence of slickensides, indicate the joints are extensional. We also examined exposures of what we consider a major regional detachment in the Devonian Stony Hollow Mbr, Union Springs Fm, Marcellus subgroup, Hamilton Gp. An exposure near the Route 28 / 209 intersection contains meter scale cleavage duplexes. The cleavage orientation is 019-61, giving a displacement direction of 289. An exposure 0.7 km NW, has well developed spaced cleavage refracted from sandy to shaley layers, indicating increasing shear strain. The cleavage is 032-80, giving a 302 displacement. A similar shear zone in this unit has been reported 110 km NW at Cherry Valley, NY, suggesting a regional detachment. Our working hypothesis is that the 280 joints represent Acadian stress trajectories, and are related to the west-directed displacement of the Catskills, and the 020 joints are related to Alleghanian stresses.

Session No. 208--Booth# 89

T125. Sigma Gamma Epsilon Undergraduate Research (Posters)

Tuesday, 21 October 2014: 9:00 AM-6:30 PM

Vancouver Convention Centre-West Exhibition Hall C

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