CAMERON'S LINE and the ST. NICHOLAS THRUST in NEW YORK CITY (NYC)

MERGUERIAN, Charles, Duke Geological Laboratory, Stone Ridge, NY 12484

Cameron's Line [CL] is a Taconian cryptic suture in the northern Appalachians that stretches from MA-VT as the Whitcomb Summit thrust and extends southward as CL through western CT to New York City [NYC]. Along the CT-NY domain CL imbricates lithotopes of a collapsed Laurentian margin, adjacent oceanic strata and farther east, a sutured arc complex. Rocks found east of CL provide an exhumed view of a former accretionary wedge formed by oceanward subduction of the Laurentian margin and fringing oceanic strata beneath the Ammonusuc-Bronson Hill volcanic arc. Both CL and adjacent rocks exhibit shear folds, down-dip lineations, imbrication, mylonite, crystal-size reduction, migmatite and serpentinite. In CT, CL is intruded by mafic-ultramafic 446 to 452 Ma (Late Ordovician) intrusives, fixing a pre-Silurian age for the boundary (Ratcliffe et al 2012). Although absolute age control provided by cross-cutting intrusives is lacking in amphibolite facies tectonites in NYC, the lithostratigraphic relationships are identical to those in CT except for the St. Nicholas thrust [SNT], a shear zone found west of and structurally beneath CL.

In NYC, the SNT separates metamorphosed former shelf strata (Inwood Marble + interstratified Walloomsac Schist) from slope/rise strata (Manhattan Schist). To the east, Manhattan Schist is in contact with metamorphosed oceanic strata of the Hartland formation along CL. Associated with abundant serpentinite bodies, the SNT and CL form a duplex of stacked shear zones with identical structural sequence and F_3 fold patterns as found in western CT. Mapping of these disparate formations in Manhattan and the Bronx shows identical, albeit highly attenuated lithostratigraphic relationships which can be traced northeastward on the ground to non-metamorphosed pre-Silurian correlatives in the Hudson Valley. Mapping throughout Manhattan and the NY Botanical Garden, Bronx Zoo, Boro Hall and Crotona parks in the Bronx NY also shows annealed mylonite, migmatite and serpentinite associated with both CL and the SNT.

The structural complexity detected in 5 km deep DSDP borings through the Shikoku subduction zone near the Japan trench leads one to the concept that deeper medium- to high-grade sheared accretionary orogens may be best understood by abandoning simple layer-cake stratigraphic models and entertaining the idea that shearing and imbrication may be more pervasive than outcrop mapping may indicate. It begs the question - Are there shear zones surrounding many exposures!

To cite this abstract:
Merguerian, Charles, 2026a, Cameron's Line and the St. Nicholas Thrust in NYC (NYC) (abs.): Geological Society of America Northeastern Section, 61st Annual Meeting, 21-24 March 2026, Hartford, CT, Abstract No. 12564.