Merguerian, Charles, 1996b, Evidence for post-glacial surface faulting in New York City.

The dynamic relationship between earthquakes and movement on reactivated faults mandates assessment of the potential seismic risk for populated urban areas underlain by deeply eroded crystalline rocks. In NYC, isoclinally folded Taconian amphibolite-facies tectonites are cut by two sets of brittle faults trending: 1) ~N30°E [paralleling the long axis of Manhattan] and 2) ranging from N20°W to N50°W. The NE-trending faults, which locally reactivate annealed ductile fault zones (Cameron's Line and the St. Nicholas thrust), are steep- to vertical and show dominantly dip-slip motion and minor offsets. The NW-trending faults dip steeply to moderately and show complex movement dominated by strike-slip offsets followed by dip-slip or oblique-slip reactivations. The NW-trending faults have produced map-scale offset and geomorphic evidence implying ground rupture.

Unequivocal post-glacial ground rupture is difficult to demonstrate in NYC where most bedrock faults are deemed to have formed at depth and then later elevated to the surface. Yet, the Bronx River, which formerly flowed SSW in an open valley underlain by the Inwood Marble, shows diversion away from its "pirated" marble valley along the NW-trending right-lateral Mosholu fault, suggesting relative displacement. South of the fault, the river now flows in a non-glaciated south-trending V-shaped gorge within more-competent gneiss and schist of the Hartland Formation. More recently, the August 1884 magnitude ~5.0 NYC earthquake produced 4 m long by 3 m deep soil openings, cracked buildings and chimneys in Brooklyn.

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