Further geochemical studies of the Staten Island, NY Serpentinite

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The Staten Island serpentinite is a lens shaped NE-SW trending body, having a long dimension of 12 km and a width of 4.7 km. The ridge of serpentinite, makes up the bedrock in the Northeastern section of Staten Island, New York and reaches an elevation of approximately 135 meters above sea level. The serpentinite body is part of a string of similar ultramafic bodies, extending throughout the Appalachians, from to Newfoundland to Alabama. Eleven specimens of serpentinite from Staten Island, NY were analyzed for major, minor and trace elements including REE's. Averages of major oxides (wt. %) are SiO_2, 36.03; TiO_2, 0.003; Al_2O_3, O.32; FeO, 6.35; MnO, 0.091; MgO, 39.56; CaO, 0.060; NiO, 0.287; Cr_2O_3, 0.343; and LOI, 16.15. The average MgO/SiO_2 ratio is 1.098. This would indicate a serpentinized harzburgite [1]. The Al_2O_3/SiO_2 ratio is 0.009. The variable ratios LREE/HREE ($0.8 < La/Yb < 5.0$) may be related to primary orthopyroxene[1]. Mantle normalized spider diagrams [2] show an enrichment in Pb. Chondrite normalized spider diagrams reveal a positive Eu anomaly. Most of the specimens of this study plot (La/Yb vs. Yb; U vs. Yb) in the abyssal serpentinite field [1].

[1] Deschamps, Godard, Guillot, & Hattori (2013) *Lithos* **178**, 96-127 [2] Sun, & McDonough (1989) *Geological Society, London, Special Publications* **42**, 313-345