Fault Zone Rocks and Processes at Fort Foster Park, Kittery and Two Lights State Park, Cape Elizabeth, Maine with New Drone-based Detailed Mapping

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SG&T Forum Field Trip. Tuesday June 21, 2022

Starting Time - 9:00AM

Starting Location - Fort Foster Park, Pocahantas Rd, Kittery, Maine

We will park on the roadside just outside the Gatehouse (Park doesn't open until 10AM) and walk into the Park to the first exposures.

New quadcopter drone-based, ultra high-resolution orthomosaic imagery for two key locations on the Maine coast, enables unprecedented detailed mapping of the often subtle and intricate complexities of shear-related deformation. Locations include the deeper mylonitic rocks of the Fort Foster Park, Kittery and the shallower, lower-grade, fluid dominated rocks of the Two Lights State Park. Cape Elizabeth.

This trip starts with a morning tour through Fort Foster Park, Kittery to see the high grade, variably-mylonitized Rye Formation granites, gneisses, schists, amphibolites and marbles focusing on kinematic indicators for ductile shear, shear zone processes, younger brittle pseudotachylyte-generating fault geometries and a new shear zone structure for the Rye Formation rocks across Fort Foster and the rest of Gerrish Island.

An afternoon visit to Two Lights State Park, Cape Elizabeth will follow to see the brittle strike slip fault zones and related deformation features of the Cape Elizabeth Fault and Vein System. These exposures feature meter-displacement dextral strike slip faults, shear band fabrics, and high-angle antithetic kink bands that support dextral shear. Dextral shear has been accompanied by cycles of quartz vein emplacement perpendicular to the overall shear which are in turn subjected to clockwise rotation, antithetic bookshelf slip and boudinage during continued overall dextral shear as a form of episodic strain partitioning.