Quantitative mapping in the Parry Sound domain for structural analysis

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The Parry Sound domain (PSD), a granulite nappe in the Central Gneiss Belt of the ca 1.1 Ga Grenville Province gives insight into structural processes in mid-crust of a doubly-thickened orogen. The Twelve Mile Bay Shear Zone forms a boundary of the PSD along which interior granulite facies PSD structures are transposed at amphibolite facies metamorphism. The focus of the study is to create a quantitative map so that measurements can be obtained for further structural analysis, to better understand how the lower crust deforms. In the summer of 2011 a Dalhousie team set about creating this unique map by using a camera on a pole to shoot very low aerial photos of a few islands. The islands were selected because they were transitional from foliated granulite facies rocks to transposed sheared amphibolite facies rocks of the same composition, with the intention of understanding how these shear zones form and propagate. The Leica DGPS system was used to set up a grid of points in combination with the pole-camera to shoot the grid systematically. Photos are now in the process of being merged together to create the map through experimenting with several different photo software suites. Once the map is complete, data such as change in thickness of a layer as it enters a shear zone and layer displacement across a shear zone can be collected. This data can be used to quantify the shear strain show how the islands have changed in shape over time.

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