
Structural geology of the Meguma Supergroup and White Rock Formation contact in the Cape St. Marys area, southwest Nova Scotia

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The contact between the Halifax Group (Meguma Supergroup) and White Rock Formation is strongly deformed, and the exact nature of the contact is disputed. The Halifax Group is slate with lesser amounts of metasandstone, metasilstone, and calcareous rocks; it is underlain by the Goldenville Group composed of metasandstone and slate. The White Rock Formation consists of bimodal tholeiitic-alkalic volcanic and volcanoclastic rocks. The rocks have been metamorphosed to greenschist facies. Cape St. Marys was in a strategic position during the Neocadian orogeny and formed the current synclinal structure with heterogeneous shear as a result of overprinting Alleghanian deformation. The Neocadian orogeny was a result of oblique accretion of the Meguma terrane (Africa) with the Avalonia microcontinent, which generated northeast-trending upright folds. The Alleghanian Orogeny overprinted these F_1 folds, overturning them and forming southwest-plunging reworked folds in a broad zone of transpressive deformation. The Cape St. Marys heterogeneous shear zone extends from Bear Cove to Point David where the Halifax Group is in contact with the underlying Goldenville Group. The centre of the heterogeneous strain zone is an exposed contact between the Halifax Group and White Rock Formation. The contact dips steeply southeast, and kinematic indicators (e.g., curved quartz fibers in pyrite pressure shadows and sigma-tail volcanic clasts) show reverse-sense shearing. The details of the structural conditions, the kinematic evolution, and the origin of the deformed contact need to be better refined.