

# St. John's 2012

## Technical Program

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### **SY1: Collision tectonics and terranes: The Appalachian-Caledonian symposium is a celebration of the career of Hank Williams**

**Sponsored by / Parrainé par:** Department of Natural Resources, Newfoundland and Labrador

**Organizers / Organisateurs:** Cees van Staal, Stephen Johnston, Dennis Brown, and John Waldron

**Room / Salle:** Salon A

**Date:** 5/27/2012

**Time:** 4:00 PM

**Presenter:** Thomas M. Skulski

### **Western Baie Verte Peninsula revisited: From ophiolite obduction onto Laurentia, the Notre Dame continental arc, to post-arc continental volcanism and the Salinic Orogeny**

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The Laurentian continental margin, including the 557 Ma Birchy Complex along the Baie Verte Line (BVL), underlies the western part of Baie Verte Peninsula where it represents an east-facing prism beneath obducted ophiolite. The overlying Advocate Complex contains dismembered ophiolite including mantle, boninitic cumulates, gabbro and sheeted dykes. Its volcanic section was faulted or eroded and is preserved as tectonic slivers of island arc tholeiitic (IAT) basalt in the BVL. Basinward, the Point Rousse Complex (PRC) contains thrust slices of boninitic cumulates, 488 Ma gabbro, sheeted dykes and IAT basalts, whereas the ophiolite section in the Pacquet Complex only exposes boninite and 487 Ma VMS-bearing rhyolite. All three complexes contain vestiges of syn-obduction, submarine cover (Snooks Arm Group). Proximal to the BVL, the basal cover contains megabreccia with ophiolitic blocks overlain by conglomerate and iron formation; basinward, the disconformity is marked by iron formation. Conglomerates contain ophiolitic- and platformal-derived detritus including 2550-550 Ma zircons and 479 Ma granitoid clasts providing a maximum age on obduction. Overlying 476 Ma felsic volcanic rocks and age data from the east constrain the cover sequence to 476-467 Ma. Emergence of the margin followed deposition of 457 Ma tuffs, quartzite and pillow basalt. Notre Dame Arc magmatism was associated with a number of unconformity-bound, volcano-plutonic sequences. The earliest phase of the Burlington Plutonic Complex (BPC; 445 Ma) is unconformably overlain by lower Micmac Lake Group conglomerate and 441 Ma subaerial ignimbrite coeval with 442 Ma BPC granodiorite. The upper Micmac Lake Group contains post-arc, comenditic- and 430 Ma mafic tuffs and high Ti basalts separated by an angular unconformity from lower Micmac Lake Group and a 432 Ma late BPC granite.

Western Baie Verte Peninsula has been affected by four phases of deformation. Preserved D<sub>1</sub> tectonometamorphism (468-459 Ma) in the Birchy Complex is related to Taconic ophiolite obduction. D<sub>2</sub> is the main tectonometamorphic event in the western map area, where the SSW-trending S<sub>2</sub> fabric (427-417 Ma) is associated with ESE-directed shear zones. To the east, the D<sub>2</sub> structural grain is rotated into E-W orientation and associated with L-tectonites and S-directed shear zones (ca. 430-420 Ma; Scrape fault). D<sub>3</sub> SW-NE-plunging sinistral folds and SE-directed shear zones are believed penecontemporaneous with D<sub>2</sub> and resulting from Salinic transpression. Major SSW-trending D<sub>4</sub> fault zones and extensional reactivation of D<sub>2</sub> faults in the PRC reflect Devonian-Carboniferous dextral transtension between the Baie Verte Road and Green Bay faults.