

# 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:** Sébastien Castonguay

**Eastern Baie Verte Peninsula revisited: From early Paleozoic suprasubduction zone ophiolite, through syn-orogenic continental volcanism, to later Paleozoic extensional collapse**

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Baie Verte Peninsula in the Newfoundland Appalachians records a complex Paleozoic history of plate interaction between Laurentia and outboard terranes. A geological map of the eastern half of the peninsula combines published government, academic and industry data with new bedrock mapping, geophysics, lithogeochemistry and geochronology. In this area, a tectonic window exposes late Precambrian to early Paleozoic continental margin rocks of the Ming's Bight Group. The eastern half of Baie Verte Peninsula is more notable for its well-preserved supracrustal and plutonic rocks of the tectonic upper plate and younger continental cover. During the Taconic Orogeny, the Laurentian margin was overthrust by a 489 Ma suprasubduction ophiolite and 487 Ma juvenile island arc that host VMS copper and late gold mineralization in the Betts Cove and Pacquet complexes. A syn- to post obduction, >470-467 Ma submarine ophiolite cover sequence is represented by the Snooks Arm Group in the Betts Cove and Pacquet complexes. In eastern Baie Verte, this basal facies, volcano-sedimentary cover disconformably overlies the ophiolite and island arc sequence, and is separated by the Nugget Pond iron formation and host to younger gold mineralization. Emergence of this marine succession in eastern Baie Verte is linked to voluminous, episodic arc- and later granite magmatism represented by 457 Ma felsic dykes and the voluminous 445-433 Ma Burlington Plutonic Complex. Bimodal, post-arc magmatism in the Cape St. John Group (428-426 Ma) and synvolcanic plutons including the 429 Ma Cape Brule porphyry and 427 Ma Dunamagon granite are the vestiges of a large, continental caldera complex and its satellite plutons that are broadly contemporaneous with the Salinic Orogeny. Rocks of the eastern Baie Verte Peninsula have been affected by at least four phases of deformation. An early, NW-directed fault in the Betts Cove ophiolite, is the sole evidence of early D<sub>1</sub> deformation related to Taconic obduction of the Baie Verte oceanic tract. Penetrative D<sub>2</sub> deformation involved S-SE overturned folds, and later, SSE-directed ductile to brittle-ductile shear zones that affect both Ordovician and Silurian units. Open, upright F<sub>3</sub> cross folds are interpreted as penecontemporaneous with D<sub>2</sub> and resulting from an overall Salinic transpressional regime. In the northern part of the map area, recumbent F<sub>4</sub> folds are cogenetic with southeast-dipping, ductile-brittle extensional shear zones. These structures are responsible for local unroofing of continental margin units causing a metamorphic overprint (405-370 Ma) and reflect transtensional deformation between the NE-striking, dextral Baie Verte Road and Green Bay faults.

