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**New insights into the Gander margin system in northern  
New Brunswick**

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New field and analytical data have shed further light on the evolution of Ganderian elements in northern New Brunswick, including the Middle Ordovician Popelogan arc-forearc system and subsequent Salinic forearc deposits associated with subduction of the Tetagouche–Exploits backarc basin (TEB). Geochronological and lithogeochemical data from a small inlier near Oxford Brook, and from the Elmtree Inlier near Bathurst, highlight close parallels with Ordovician volcanism in northern Maine, and provide evidence for late Darriwilian volcanic arc activity in the TEB. At Oxford Brook, felsic volcanic rocks yielded a U–Pb zircon age of  $467.7 \pm 0.4$  Ma, identical to ages obtained from Ordovician inliers in northern Maine. Furthermore, SHRIMP isotopic analysis demonstrates a zircon inheritance profile very close to that of the Maine rocks, and confirms that the Popelogan arc was constructed on Ganderian basement. In the Elmtree Inlier, felsic tuff beds in the Pointe Verte Formation display volcanic arc signatures, and one such bed has been dated at  $463.2 \pm 2.6$  Ma. The arc-related Pointe Verte Formation is slightly younger than the structurally overlying, ophiolitic crustal rocks of the Devereaux Formation and is structurally underlain by mélangé with large slivers of serpentinized mantle, implying that the former was deposited on oceanic crust and probably records migration of the magmatic axis away from the trench because of shallowing of the subduction zone.

In a separate study, recent mapping in the Bathurst Mining Camp has extended the distribution of the Tomogonops Formation, which overlies Sandbian–Katian black shale and chert at the top of the Bathurst Supergroup. On the eastern limb of the Nine Mile Synform, two belts of sandstone, slate, wacke, and calcilutite that were formerly assigned to the Boucher Brook Formation are reassigned to the Tomogonops Formation. Detrital zircon analysis has shown that the youngest zircons in the Tomogonops Formation are late Katian, implying that the Tomogonops is coeval with lithologically similar, Late Ordovician–Early Silurian rocks deposited in the Matapédia forearc basin farther to the west, during west-directed subduction of the TEB. The implication of this “spillover” of forearc rocks onto the accretionary wedge is that the forearc progressively

expanded towards the southeast between 445 and 435 Ma; this is interpreted to result from accretion of successive TEB terranes and concomitant stepping back of the subduction zone.