

south of the EMA and CMA plutons appear to be different, mainly on the basis of density characteristics. The northern basement has characteristics consistent with those determined in southern New Brunswick for Ganderia, whereas the southern basement is a better match for the Brookville-Bras d'Or terrane than for the Avalon terrane. The four EPMA source bodies may be "stitching plutons" emplaced along the Canso Fault in the mid- to Late Devonian.

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**Evaluating the source of the East Point Magnetic Anomaly, southern Gulf of St. Lawrence, based on magnetic, gravity, and seismic data**

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The East Point magnetic anomaly (EPMA), located in the southern Gulf of St. Lawrence between western Cape Breton Island and eastern Prince Edward Island, is approximately 50 km wide and 150 km long, trends east-west, and has an amplitude of about 500 nT. The presence of the EPMA makes it difficult to correlate terranes between Cape Breton Island and mainland Nova Scotia and New Brunswick using their geophysical signatures. In this study, the source of the EPMA has been evaluated by forward-modeling of magnetic and gravity data, with additional constraints from seismic and petrophysical data and on-land geology. The second vertical derivative magnetic anomaly map resolves the EPMA into four separate approximately circular anomalies termed the Mabou Highlands (MHMA), east (EMA), central (CMA), and west (WMA) magnetic anomalies. These anomalies are attributed to plutons. The source of the easternmost anomaly (MHMA) is the ca. 375 Ma Port Ban Diorite, part of the Mabou Highlands of western Cape Breton Island. The diorite extends offshore for 12 km beneath the Carboniferous and younger sedimentary cover, and appears to have a steep intrusive contact at a depth of about 4 km with the EMA pluton to the west. The EMA, CMA, and WMA plutons have densities and magnetic susceptibilities consistent with granitic bodies which are progressively deeper, denser, and more magnetic toward the west. The unusually high magnetic susceptibility suggests correlation with the highly magnetic ca. 390 Ma Gaytons Quartz Monzonite in the Brookville terrane of southern New Brunswick. Basements at depths of ca. 3–7 km on the north and ca. 5–6 km on the