High resolution images of bathymetry offshore of Halifax

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A region of the inner Scotian Shelf near Halifax was surveyed in May and June 1992 from the CSS Matthew using the Simrad EM100 multibeam sounder. Over 80 million point measurements of depth were collected during this cruise, comprising 20 Gb of information. The data were corrected for navigation errors, sensor offsets, and tides, projected into a UTM projection, gridded at 10 m horizontal intervals and integrated into a raster–based GIS system. Shaded relief maps of this area show a diverse and varied bathymetry revealing a complex, faulted basement structure and a sedimentary record of glacial retreat. Three-dimensional imaging techniques help highlight aspects of this exceptional data set.

A series of repeated passes over the British Freedom, an oil tanker sunk off Halifax in 1944, permits a finer spatial resolution of bottom features. Three-dimensional shaded relief maps of the ship, at a 2 m grid spacing, resolve the general shape of the vessel and sediment scouring around the hull, but it is unlikely that the ship could be recognized on the basis of bathymetry alone. Coherence is lost when the

bathymetric data are gridded at a finer horizontal resolution.

The bathymetric data are integrated with existing conventional geological maps and magnetic data within the GIS system. The correlation between the data sets aids the identification of offshore geological structure.