

OPEN FILE 7019
BACKSCATTER STRENGTH AND SHADED SEAFLOOR RELIEF
BAY OF FUNDY, SHEET 6
OFFSHORE NOVA SCOTIA-NEW BRUNSWICK
Scale 1:50 000/Echelle 1:50 000
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The University of New Brunswick, the Canadian Hydrographic Service and the Geological Survey of Canada conducted Bay of Fundy multibeam sonar surveys from 1992 to 2009. During these operations, nineteen surveys were undertaken using five different vessels equipped with five different multibeam sonar systems operating across a range of frequencies (see Table 1).

DESCRIPTIVE NOTES

INTRODUCTION
The Bay of Fundy, located on the east coast of Canada between the provinces of Nova Scotia and New Brunswick (Fig. 1), is an anastomosing estuarine embayment (Amos et al., 1980) with the highest tides in the world (Toft et al., 2011). The Bay of Fundy is a unique natural laboratory for the study of tidal processes and sediment transport. Backscatter strength is used to identify and describe the geological nature of the substrate (Mitchell and Hughes Clarke, 1994). The backscatter strength is a measure of the intensity of the backscattered signal from the seafloor. Backscatter strength is a function of the seafloor composition, grain size, and the angle of incidence of the sonar beam.

MULTIBEAM SONAR SURVEYS
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ACKNOWLEDGMENTS
B. McCowan, M. Lamplugh and J. Griffin of the Canadian Hydrographic Service (CHS) organized the multibeam sonar surveys of the Bay of Fundy and oversaw data processing. The Canadian Hydrographic Service provided the data to the Geological Survey of Canada (GSC) for further processing and interpretation. J.E. Hughes Clarke of the Ocean Mapping Group (OMG), Department of Geodesy and Geomatics Engineering, University of New Brunswick (UNB), supervised the earliest collection of multibeam sonar data in the 1990s, followed by systematic mapping of the coastal areas of the Bay of Fundy.

REFERENCES
Amos, C.L., Buckley, D.E., Dalson, G.R., Dabrynski, R.W., McCann, B.B., and Ral, M.A., 1980. Geomorphology and sedimentology of the Bay of Fundy. Geological Association of Canada, Field Trip Guidebook Trip 23, 82 p.

DATA PROCESSING
Backscatter data processing is treated thoroughly by Hughes Clarke et al. (2008) and is summarized here. Backscatter strength is defined as the ratio of power backscattered from the seafloor to the incident power. Backscatter strength is a function of the seafloor composition, grain size, and the angle of incidence of the sonar beam.

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INTRODUCTION
The backscatter strength data collected on this project cover the entire region covered by multi-source, acoustic backscatter data collected in the Bay of Fundy from 1992 to 2009. The backscatter strength data are presented as a shaded relief map of the Bay of Fundy. The backscatter strength is a function of the seafloor composition, grain size, and the angle of incidence of the sonar beam.

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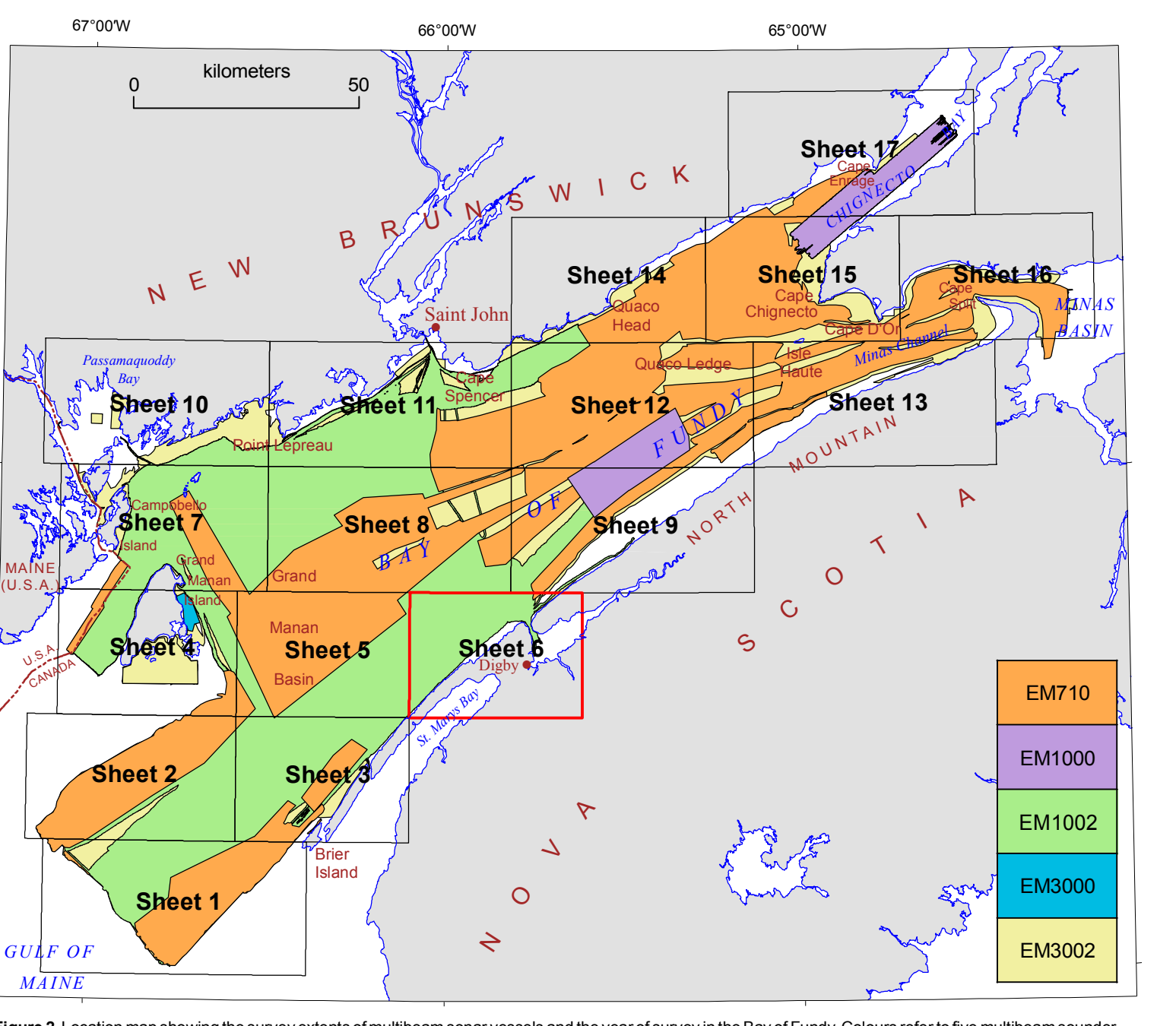
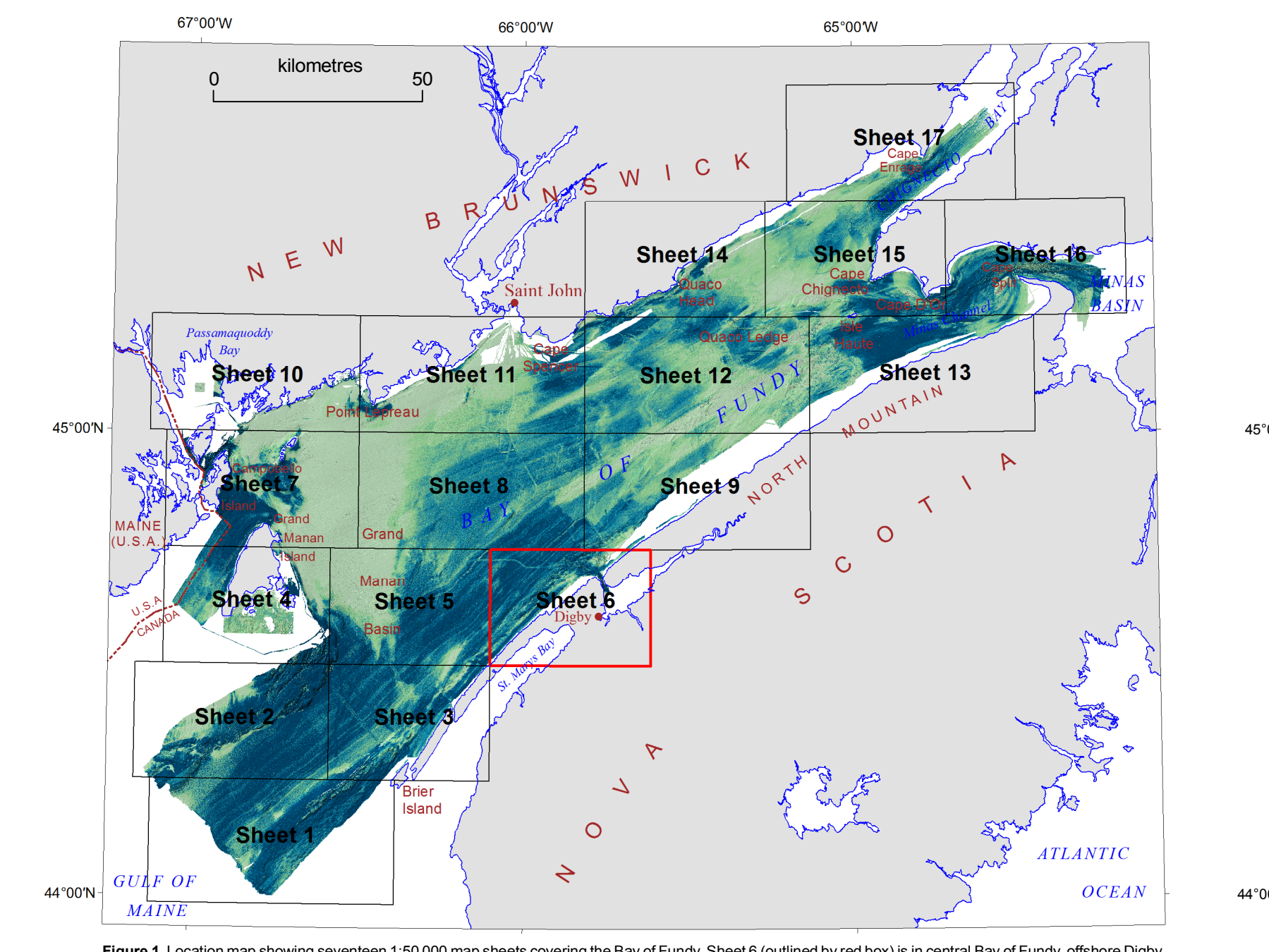


Figure 1. Location map showing seventeen 1:50 000 map sheets covering the Bay of Fundy. Sheet 6 (outlined by red box) is central Bay of Fundy, offshore Digby, Nova Scotia.

Figure 2. Location map showing the survey extent of multibeam sonar vessels and the year of the survey in the Bay of Fundy. Colours refer to five multibeam sonar types and frequencies listed in Table 1.