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This map was produced by Natural Resources Canada in cooperation with Fisheries and Oceans Canada

Multibeam backscatter data collected by Canadian Hydrographic Service, 1993, 2006-2009; Geological Survey of Canada, 1999-2003, 2009-2009; and University of New Brunswick, 1993, 1994, 2002-2003

Multibeam backscatter data compiled by Canadian Hydrographic Service, Geological Survey of Canada, and University of New Brunswick, 1993-2010

Digital cartography by P.A. Malbouin and P. O'Brien, Data Dissemination Division (DDO); and G. Grant, S.E. Hayward and E. Platon, GSC (Atlantic)

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

Universal Transverse Mercator Projection  
North American Datum 1983  
© Her Majesty the Queen in Right of Canada 2011  
This map is not to be used for navigational purposes

Digital bathymetric contours in metres supplied by Canadian Hydrographic Service and GSC (Atlantic)

Magnetic declination 2011, 17°47'W, decreasing 7.2" annually

Elevations in metres above mean sea level

Depth in metres below mean sea level

Any revisions or additional geographic information known to the user would be welcomed by the Geological Survey of Canada

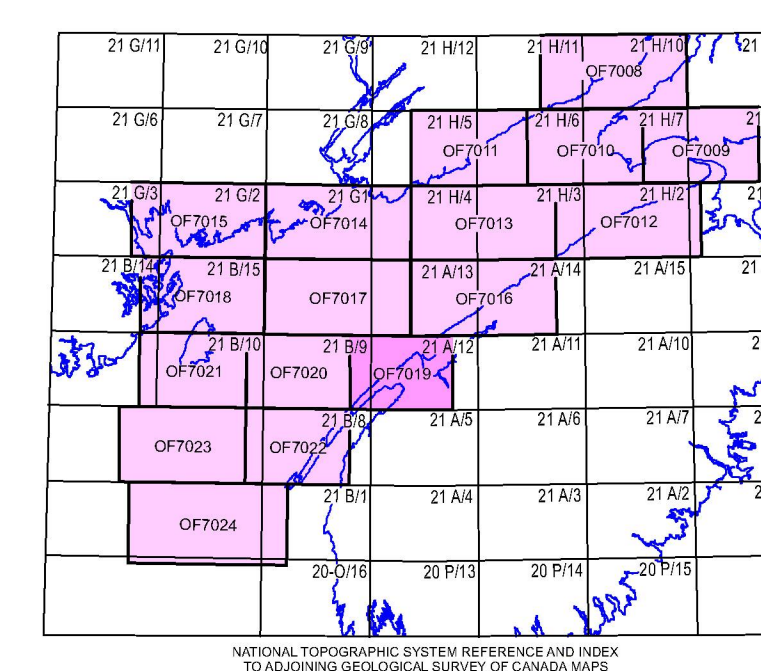
Digital base map (land area) from data compiled by Geomatics Canada, received by GSC (Atlantic)

Digital bathymetric contours in metres supplied by Canadian Hydrographic Service and GSC (Atlantic)

Magnetic declination 2011, 17°47'W, decreasing 7.2" annually

Elevations in metres above mean sea level

Depth in metres below mean sea level



DESCRIPTIVE NOTES

**INTRODUCTION**  
The Bay of Fundy, located on the east coast of Canada between the provinces of Nova Scotia and New Brunswick, is a world-famous tidal embayment (Arnold et al., 1992) with the highest tides in the world. The Bay of Fundy is a unique natural laboratory for the study of geological and geophysical processes. The Bay of Fundy is a unique natural laboratory for the study of geological and geophysical processes. The Bay of Fundy is a unique natural laboratory for the study of geological and geophysical processes.

**MULTIBEAM-SONAR SURVEYS**  
The University of New Brunswick, the Canadian Hydrographic Service and the Geological Survey of Canada conducted Bay of Fundy multibeam-sonar surveys from 1993 to 2009. During these surveys, multibeam sonar systems were used to map the seafloor. The data were used to create a digital bathymetric model (DBM) of the Bay of Fundy. The DBM was used to create a shaded relief map of the Bay of Fundy. The shaded relief map was used to create a backscatter strength map of the Bay of Fundy.

**BACKSCATTER DEFINITION**  
The backscatter coefficient of a given sediment type (mud, sand, or gravel as defined by Wentworth (1922) and modified by Folk (1994)) at a given frequency is an inherent property of that geological material and varies with angle of incidence of the sonar beam to the seabed (the grazing angle). The backscatter coefficient is a function of the sediment grain size, grain shape, grain orientation, and grain composition. The backscatter coefficient is a function of the sediment grain size, grain shape, grain orientation, and grain composition.

**DATA PROCESSING**  
Backscatter data processing is treated thoroughly by Hughes Clarke et al. (2008) and is summarized here. The backscatter data were processed using the software package EM1000. The backscatter data were processed using the software package EM1000. The backscatter data were processed using the software package EM1000.

**ACKNOWLEDGMENTS**  
B. MacGowan, M. Lamplugh and J. Griffin of the Canadian Hydrographic Service (CHS) organized the multibeam-sonar survey of the Bay of Fundy and processed the data. The Canadian Hydrographic Service provided the data to the Geological Survey of Canada (GSC) for further processing and interpretation. The GSC provided the data to the Geological Survey of Canada (GSC) for further processing and interpretation.

**REFERENCES**  
Amos, C.L., Buckley, D.E., Dalton, G.R., Dalrymple, R.W., McCann, S.B., and Rea, M.L., 1990. Geosynthetic and sedimentology of the Bay of Fundy, Geological Association of Canada, Field Trip 16: 102-112.  
Bishop, R., 2008. Tides and the earth-moon system, in: Observer's handbook 2009, Royal Astronomical Society of Canada, p. 163-167.

**BACKSCATTER DISTRIBUTION**  
The backscatter strength data shown on this map, and on other maps of the Bay of Fundy map series (Fig. 1), have been processed using the software package EM1000. The backscatter strength data were processed using the software package EM1000. The backscatter strength data were processed using the software package EM1000.

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Year	Vessel	Multibeam sonar	Frequency (kHz)
1992			
1993			
1994			
1996			
1999			
2002	CGS Frederic G. Creed	EM1000	95
2006	CSL Haven	EM3000	300
2006	CGS Frederic G. Creed	EM1002	93/98
2006	CGS Frederic G. Creed	EM1002	93/98
2007	CGS Matthew	EM710	71-97
2007	CSL Plover	EM3002	300
2007	CGS Frederic G. Creed	EM1002	93/98
2008	CGS Haven	EM710	71-97
2008	CSL Plover	EM3002	300
2009	CGS Matthew	EM710	71-97
2009	CSL Plover	EM3002	300

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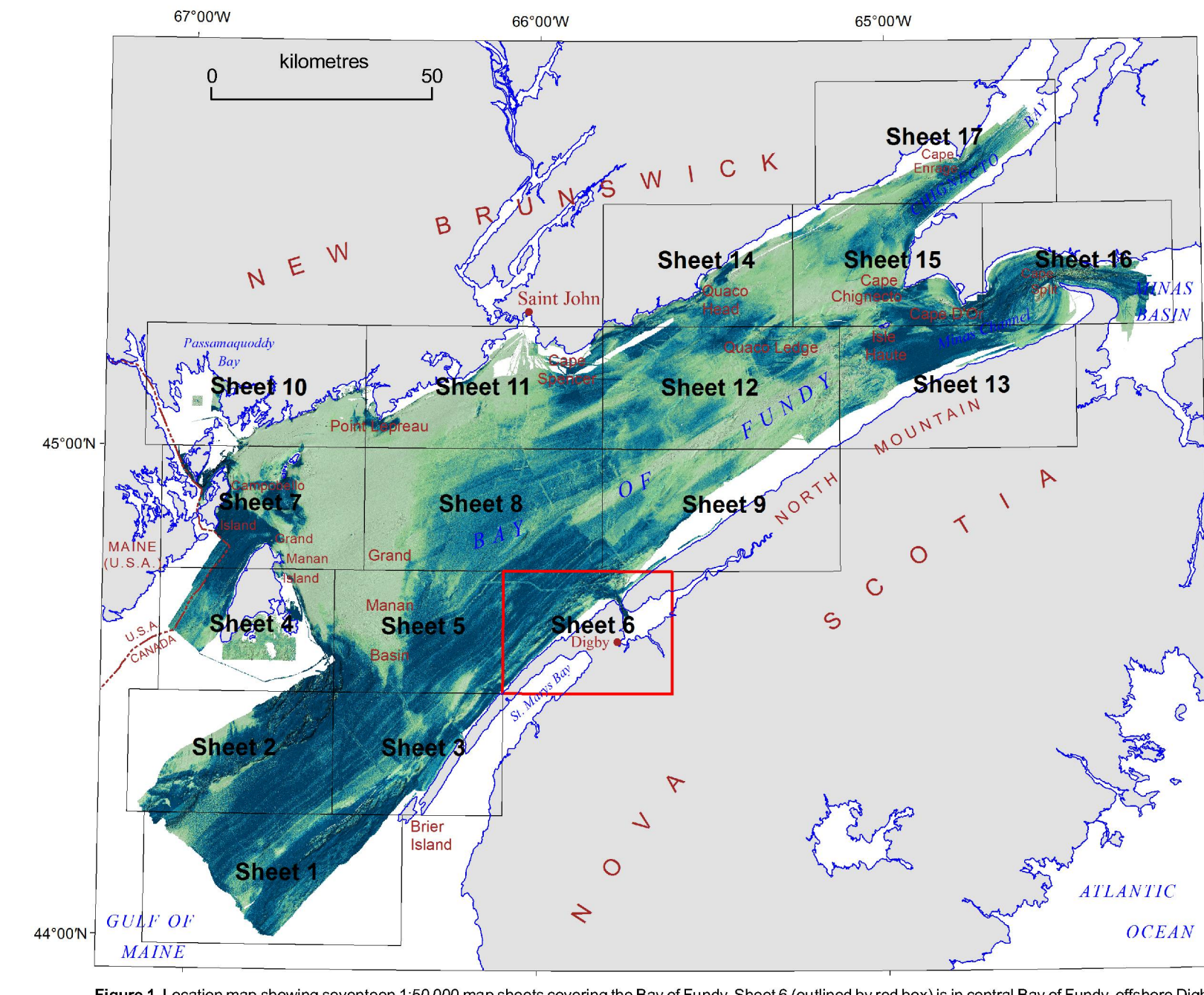


Figure 1. Location map showing seventeen 1:50 000 map sheets covering the Bay of Fundy. Sheet 6 (outlined by red box) is in central Bay of Fundy, offshore Digby, Nova Scotia.

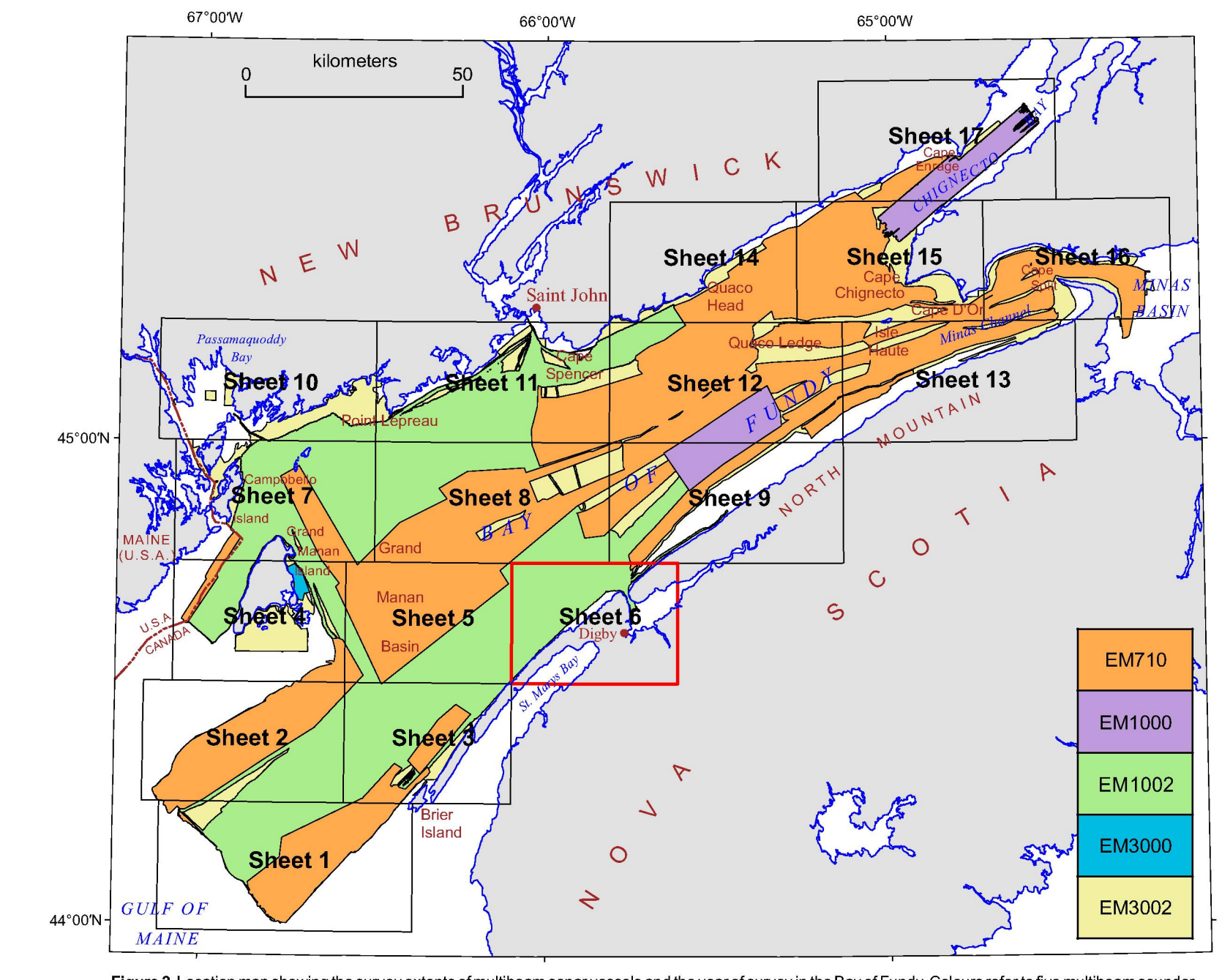


Figure 2. Location map showing the survey extents of multibeam sonar vessels in the Bay of Fundy. Colours refer to five multibeam sonar types (and frequencies) listed in Table 1.

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2011