

## Seismic velocities and reflection sequences of Wisconsinan glaciation in Emerald Basin (Scotian Shelf)

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Emerald Basin is a 2430 km<sup>2</sup> depression located on the central Scotian Shelf approximately 40 km off the coast of Nova Scotia. Emerald Basin contains four geological units including the Scotian Shelf drift, Emerald Silt Facies A and B and the LaHave Clay. The development of the basin and the deposition of its geological components are a direct result of the Wisconsinan glaciation. The Scotian Shelf Drift is a glacial till and was deposited during the Pleistocene beginning around 50,000 years BP. Emerald Silt Facies A was deposited during a similar time period to the till and is subglacial in origin. Emerald Silt Facies B was also deposited during the Pleistocene, between 32,000 to 16,000 years BP. This unit is proglacial but represents a time of ice retreat when areas of the Shelf were exposed to open water conditions. The LaHave Clay is a post-glacial deposit of Holocene age.

The purpose of this project is to map and detail the seismic properties of the units contained within two sites in the northern section of Emerald Basin using OBS (Ocean Bottom

Seismometer) data and air-gun reflection data. Site 1 was recorded by OBS 95-1A and corresponds to an area within the basin. OBS array 95-1A shows velocity values ranging from 1.9 km/s to 2.4 kms<sup>-1</sup> for three distinguishable layers. Site 2 was recorded by OBS 95-2A and corresponds to area on the Sambro Moraine, which is part of the Scotian Shelf end-moraine complex, and marks the northern boundary of Emerald Basin. OBS array 95-2A shows velocities ranging from 1.9 kms<sup>-1</sup> to 6.3 kms<sup>-1</sup>, for four distinguishable layers. A contact between two units in the bedrock, the Cambro-Ordovician metasedimentary rocks of the Meguma Group and the Mesozoic-Cenozoic sediment sequence, runs approximately underneath the moraine complex. The high velocity value of 6.3 kms<sup>-1</sup> recorded from OBS 95-2A on the moraine agrees with this fact. The OBS array data will be combined with the air-gun reflection profiles to create a two-dimensional model of the surveyed area.