Late Wisconsinan glacial history of Placentia Bay, Newfoundland, as interpreted from seabed geomorphology and stratigraphy

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This presentation describes the glacial history of Placentia Bay, Newfoundland as interpreted from both seabed and terrestrial glacial records. Multibeam sonar data, augmented by seismic and coring data revealed a range of flow-parallel and flow-transverse glacial landforms on the Placentia Bay seafloor. Flow-parallel landforms identified include drumlins, flutes, megaflutes and crag-and-tails. These landforms show a general trend of convergent flow, interpreted to represent fast-flowing ice which was converging into an ice stream down the axis of Placentia Bay. Flow-parallel landforms and striations from the surrounding land areas demonstrate that the convergent flow can be traced up-ice to regional ice dispersal centres. Flow-transverse landforms include De Geer moraines and grounding-line moraines. De Geer moraines occur in several fields throughout the bay marking the intermittent retreat of grounded ice up the bay. Radiocarbon dates from glaciomarine silt suggest that ice became ungrounded and glaciomarine sedimentation started by at least 16,080 yrs BP.

Ice-flow mapping in Placentia Bay also demonstrated that the largely depositional record preserved on the seabed is incomplete, with the apparent absence of a strong westward flow onto the Burin Peninsula. The mostly erosional ice-flow record on land also appears incomplete because there is no evidence to date, for a northeast-southwest ice-flow that is recorded by a fluted field in southwestern Placentia Bay. Given the incomplete records on both the seabed and on land, the integration of seabed data with onshore glacial records provides a better understanding of the glacial history. This integrated approach also represents an important development in mapping palaeo-ice flows and the understanding of ice sheet behaviour during the transition from largely marine-based to land-based glacial conditions which may reflect the deglacial scenarios in other bays in Newfoundland and elsewhere.

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