



Geomorphology of arcuate iceberg scours on the Hudson Bay seafloor produced during the final drainage of Lake Agassiz-Ojibway

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Recent multibeam sonar and subbottom profiler surveys undertaken in Hudson Bay reveal iceberg scours showing a distinctive arcuate pattern. These arcuate scours are observed in western and northern Hudson Bay between -80 and -205 m. They are <1 km long and generally incised <3 m deep. The absence of icebergs today in the region indicates that the scours were produced during deglaciation in a former calving bay, considering their presence within a restricted sector of Hudson Bay. These scours are unique because they occur in high concentrations, show preferential directions and have a similar geometry. Previous studies suggested that they were either produced by: a) tidal resonance in a former calving bay that entrained icebergs into a circular motion to form swirling circular scours, or b) remobilization of icebergs during the Lake Agassiz-Ojibway final outburst flood ca. 7700 yr BP. The multibeam data reveal that they: i) mostly form parabolas rather than circles or half-circles, ii) are generally convex to the ENE with other convexities to the WSW, NNW and NW, and iii) occasionally cross-cut each other, although the limited number of cross-cutting indicates that they were formed by a short-lived event. This new data implies that they were not produced by tidal currents because tides would have generated round or oval scours without preferential directions. Taken together, these new observations support the formation of the arcuate scours by the Lake Agassiz-Ojibway final outburst flood.