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# Micromorphological analysis of sediments retrieved from Lake CF8, Baffin Island

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Sediment cores retrieved from Lake CF8, located on the Clyde foreland, northeast Baffin Island, Canada span at least 3 interglacial periods and thus constitute the longest lake sediment record recovered from within the limits of continental glaciation in North America. Complex, multistadial lacustrine deposits such as the sequence preserved at Lake CF8 are diagnostic of minimal erosion beneath overriding cold-based ice. Cosmogenic exposure dating on the Clyde Foreland supports the lake having been overridden by ice multiple times in the late Quaternary. This study presents micromorphological analyses on multiple sections of the retrieved CF8 sediments in an attempt to determine the impact of these overriding events on the preserved lake sediments.

Analysis was performed on thin sections made from sediments from the Holocene, last interglacial, and penultimate interglacial (MIS 7). Evidence of porewater transport within the sediments is noted throughout the core but occurs more frequently with depth. Water escape structures found in sediments deposited during and immediately before the penultimate glaciation clearly show disruption of laminae and contact zones thereby implying pressurized porewater movement. Observations in sediments deposited during the Holocene confirm diffuse porewater movement. Microlineations, indicative of short distance shearing, are commonly found throughout the sections and do not change in number or geometry with respect to depth. The evidence provided by the array of microstructures within the Lake CF8 sections indicate a series of 'stress' events impacting upon the underlying lake sediments. Lake CF8 sediments provide a fascinating case where the number of overriding events is known for a given stratigraphic section and thus provides a test site for establishing compression signatures using micromorphology.