

Chronology and palaeoenvironmental implications of the ice-wedge pseudomorphs and composite-wedge casts on the Magdalen Islands (eastern Canada) - DTU Orbit (08/11/2017)

Chronology and palaeoenvironmental implications of the ice-wedge pseudomorphs and composite-wedge casts on the Magdalen Islands (eastern Canada)

The Magdalen Islands are a valuable terrestrial record, evidencing the complex glacial and periglacial history of the Gulf of St. Lawrence. Thirteen structures interpreted as ice-wedge pseudomorphs or composite-wedge casts were observed at four sites on the southern Magdalen Islands and testify to the former presence of permafrost under periglacial conditions. These features truncate Carboniferous sandstone or Last Glacial Maximum (LGM) glacial and glaciomarine diamicts, both overlain by subtidal or coastal units. Six optically stimulated luminescence (OSL) and four radiocarbon ages were obtained from both host and infilled sedimentary units. These ages provide the first absolute chronological data on these structures, shedding new light on the relationships between glacial and periglacial phases. Our chronostratigraphic data suggest that, after the deglaciation and the emersion of the archipelago, thermal contraction cracks grew during the cold period of the Younger Dryas (11–10 ka; 12.9– 11.5 cal. ka BP). The Younger Dryas, which is well documented in the Maritime Provinces of Canada, occurred after a pedogenesis phase associated with the Allerød warm period evidenced by the well-developed palaeopodzol ubiquitous on the Magdalen Islands.

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Authors: Remillard, A. (Ekstern), Hetu, B. (Ekstern), Bernatchez, P. (Ekstern), Buylaert, J. (Intern), Murray, A. (Ekstern), St-Onge, G. (Ekstern), Geach, M. (Ekstern)

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