



Synchronous debris-rich glacier advances in northeast Iceland triggered by an Early Holocene climate fluctuation.

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Evidence is presented for Icelandic geomorphic response to an early Holocene climatic cooling which instigated a return to extreme periglacial conditions following deglaciation from the last glacial maximum. The Icelandic environment is transitional between glacial and periglacial domains, and its geomorphic history provides a unique record of the sensitivity of these systems to climatic variations.

A series of landform suites representing synchronous early Holocene debris-rich glacial advances and associated periglacial activity are identified in the Borgarfjorður region of northeast Iceland. These depositional features, indicative of synchronous and widespread debris transportation by ice, display unique morphological characteristics and lie within comparable altitudinal ranges. It is suggested that these debris/ice flow events were triggered by the initiation of a cooler climate and associated enhanced glacial and periglacial activity, which exploited inherent slope instabilities. Tephrostratigraphic dating indicates these features are of early Holocene age, and therefore are possibly connected with the globally significant “8.2ka cooling event” detected in Greenland ice core records. The study has implications for the use of landforms as climatic indicators, and for the understanding of interactions between periglacial processes and climate.