



Late Weichselian glacier dynamics after ice-shelf collapse: analysis of glaciotectonics in lower Borgarfjörður, W-Iceland

Thorbjörg Sigfúsdóttir (1,2), Ívar Örn Benediktsson (1), and Emrys Phillips (2)

(1) Lund University, Sweden (thorbjorg.sigfusdottir@geol.lu.se), (2) Institute of Earth Sciences, University of Iceland (ths45@hi.is), (3) British Geological Survey, UK (erp@bgs.ac.uk)

In the past few decades, glaciotectonic deformation has received much attention in glacial geological research. As the properties of glaciotectonic structures relate to the ice dynamics, studying glaciotectonic deformation can yield important information on former glacial processes and help resolving stratigraphical problems. This project aims to unravel the past glacier dynamics in lower Borgarfjörður, W-Iceland, by focusing on the 6-km long and up to 40 m high Melabakkar-Ásbakkar coastal cliffs, in which deformed sediments of Bølling-Allerød age are exposed. Previous studies suggest that these sediments were deformed when the Borgarfjörður ice stream advanced (surged?) to restabilize after a rapid ice shelf collapse during the early Bølling stage (around 15 ka cal. BP). If true, this would be the only known advance of that age in Iceland. Studies of the cliffs in 2013 and 2014 revealed a series of semi-regularly spaced, highly deformed zones or ridges, located between in-filled basins of undeformed, marine sediments. We hypothesize that the distal-most ridge results from an advance of the Borgarfjörður ice stream to the south whilst the more proximal ridges represent readvances during an overall retreat from the maximum extent.