

Ice-thickness measurements on Sólheimajökull, southern Iceland and their relevance to its recent behaviour

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Abstract — *We present a radio-echo sounding and ice elevation survey along a central flowline of Sólheimajökull, a 15 km long outlet glacier of the Mýrdalsjökull ice cap. The glacier reaches a maximum thickness of 433 m and occupies an overdeepened parabolic trough. The trough form contrasts with nearby canyons incised by jökulhlaups, indicating that it has formed predominantly as a result of glacial erosion. The ice surface shows few large undulations and has a consistent decline in altitude, indicating regular ice flow conditions. The parabolic profile, a gentle, consistently declining bed and ice surface slope, wide accumulation area and long narrow snout are characteristics of a glacier that is sensitive to climatic change. The recent glacier advance (1970-1995) is likely to have resulted from a dynamic response to changing mass balance conditions over the last few decades, in line with other maritime glaciers in the North Atlantic.*