

# Resurvey of the Margins of Gljúfurárjökull and the Chronology of recent Deglaciation

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## INTRODUCTION

Two of the principal aims of the 1981 Joint Universities (Exeter and St. Andrews) North Iceland Expedition were to resurvey the margins of Gljúfurárjökull and to test the chronology proposed for the recent deglaciation of Gljúfurárdalur by Caseldine and Cullingford (1981), on the basis of work undertaken on the Exeter University North Iceland Expedition of 1979. This paper describes the results of the 1981 survey work and outlines a history of recent deglaciation based on a lichenometric survey of the sequence of morainic ridges mapped and described in 1979.

## GLACIER SURVEY

The methods used in the survey of the snout area of Gljúfurárjökull followed those previously described (Caseldine 1981, Caseldine and Cullingford 1982), and the mapping was greatly facilitated by the abundance of well-marked stations from previous studies. The persistence of snowbeds around the glacier margin delayed the survey as many stations were not visible but the presence of a thick

snowbed covering the steep frontal slope of the glacier allowed direct survey of part of the glacier not adequately surveyed in 1979, allowing the contouring of the ice in 1981 to be based on a better spread of survey points. Any difference in the trends of the ice contours may, at least partially, be due to this better cover.

Overall Gljúfurárjökull has shown a continued advance since 1979 with the maximum downvalley extent increasing by 30 m over the two years (Fig. 1). It is difficult to estimate correctly the degree of change of the eastern and western margins of the glacier due to the continued presence of thick snowbeds masking the true edge of the ice and this accounts for any apparent inconsistency in the behaviour of these margins since 1977. The dead ice features noted in 1979 immediately in front of Gljúfurárjökull were not apparent in 1981 and there was very little evidence of dead ice and debris concentrations in this area as a whole. There seems to have been little alteration in the slope of the snout and the large dip in the surface of the centre of the ice above the snout was still clearly pronounced,

TABLE 1. Net movement of the glacier surface, July 1979 – July 1981.

TAFLA 1. Heildarhreyfing á yfirborði jökuls frá júlí 1979 til júlí 1981.

Marker	Direction of movement <i>Stefna hreyfingar</i>	Distance moved <i>Tilfærsla stiku</i> (m)	1979 altitude <i>hæð</i> (m)	1981 altitude <i>hæð</i> (m)	Altitude change <i>hæðarbreyting</i> (m)
I	N 9° E	35	688.8	681.6	-7.2
IV	N 22° E	50	757.5	748.4	-9.1
VII	N 27° E	42.5	780.7	769.5	-11.2
VIII	N 20° E	42.5	772.1	759.8	-12.3

Note – Station II was located but not surveyed in 1979.

– The altitude of Station IV has been omitted in error from Fig. 1.