# Historical Development of the Proglacial Landforms of Svínafellsjökull and Skaftafellsjökull, Southeast Iceland

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*ABSTRACT*

*This paper examines the origin and development of proglacial landforms associated with the historical recession of two adjacent valley glaciers in southeast Iceland.*

*The two glaciers have displayed contrasting behaviour in response to recent climatic change (1870 to 1984), as a function of differences in source area conditions on the Öræfajökull icecap, and this in turn has been reflected in contrasting styles of glacial and fluvioglacial outwash deposition.*

*The rapid recession of Skaftafellsjökull since 1870 has revealed an extensive area of subglacial ground moraine, moulded by minor oscillations of the retreating ice-front into a series of low concentric ridges. At Svínafellsjökull by contrast, alternate episodes of slow recession and readvance have produced a more complex series of higher push-moraines, composed largely of englacial and supraglacial debris.*

*Outwash deposits at Skaftafellsjökull are generally preserved as discrete units between the arcuate moraines, whilst those at Svínafellsjökull are almost entirely developed outside the moraines, forming dissected outwash fans.*

*Approximate dating of these landforms has been achieved by reconstructing stages in the recession of the two glaciers, from cartographic, photographic and documentary evidence, coupled with field investigation of geomorphic relationships and lichenometry.*

## INTRODUCTION

The historical recession of Svínafellsjökull and Skaftafellsjökull, adjacent outlet glaciers from the Öræfajökull icecap (Fig. 1), has revealed two contrasting landform assemblages in a complex proglacial area. This study employs documentary, cartographic, aerial photographic, lichenometric and morphological field evidence to examine the origin and development of these landforms over the last one hundred and fifteen years.

## EVIDENCE AND CAUSES OF GLACIER FLUCTUATIONS

Prior to 1935, the snouts of the two glaciers were united in front of the mountain Hafrafell, (*Thorarinsson*, 1943, p. 33), forming an extensive piedmont ice lobe which spread out onto the coastal outwash plain (Fig. 2). The maximum extent of this ice-front during Postglacial time is represented by the ancient "Stóralda" moraine in front of Svínafellsjökull. From tephrochronological evidence this moraine is known to predate the 1362 eruption of the Öræfajökull volcano,* and may therefore date

* *Note added in proof.* Recent sampling of tephra layers on various parts of the Stóralda moraine complex has shown that the 1362 Öræfajökull pumice is not found on the main (innermost) ridge, except as a constituent of the underlying till, implying a more recent age for this part of the moraine. Evidence for a pre-1362 ice advance is found only on the subdued outer ridges where the pumice is found *in situ* within the soil.