



Past, present and future glacier variations of southeast Vatnajökull, Iceland

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Icelandic glaciers are sensitive to climate change and provide important climatic information through variations in mass balance and extent. The small non-surging outlet glaciers in East-Skaftafelssýsla are located in the warmest and wettest area of Iceland. The documentary record of glacier variations and detailed information about glacier geometry is unique for studying the response of glaciers to climate change. Data on the extent, bedrock and surface topography of outlet glaciers of southeast Vatnajökull, along with meteorological data, will be used to study the connection of glacier variations and climate change and tune models. The response of the glaciers to prescribed climate scenarios will be modeled. Runoff changes of glacial rivers will be evaluated in relation to past, current and future changes in glacier geometry. The project is part of a research program at the Earth Science Institute which aims at modeling the response of glaciers in Iceland to climate change.

The project involved mapping well-preserved glacial deposits from the Little Ice Age (LIA) maximum, including end and lateral moraines, trimlines and shorelines. It is evident that these glaciers have thinned 100-200 m since the LIA maximum. Historical accounts and personal communication indicate that the outlet glaciers were most extensive in the middle of the 18th century and in the period 1870-1890. Comparison of maps from the 20th century has revealed changes in volume and surface extent of the outlet glaciers.