Reviewed research article

Late Holocene and modern glacier changes in the marginal zone of Sólheimajökull, South Iceland

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Abstract – *The forefield of the Sólheimajökull outlet glacier, South Iceland, has a variety of glacial landforms and sediments that are products of late Holocene and modern glacier oscillations. Several sets of moraine ridges reflect past ice front positions and river-cut sedimentary sections provide information about past environments. Here, we describe sediments and landforms deposited during the late Holocene. Chronology is obtained by ^{14}C dating and cosmogenic exposure dating. The age determinations suggest that Sólheimajökull had major advances in the late Holocene prior to the Little Ice Age, and more restricted advances during the Little Ice Age, after AD 1539. Oscillations of the Sólheimajökull ice margin between 1938 and 2010 are documented by aerial photographs. Digital elevation models were produced from selected years in order to quantify ice thickness changes at the glacier margin over the last 50 years. The glacier margin thickened 70–100 m from 1960 to 1996 and then thinned 120–150 m between 1996 and 2010. In 2010, the glacier snout was 20–40 m thinner than in 1960. Additionally, the DEM time-series detect areas of erosion and deposition in the forefield.*