

# Surge fingerprinting of cirque glaciers at the Tröllaskagi peninsula, North Iceland

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**Abstract** – *The geomorphology and sedimentology of the Teigarjökull and Búrfellsjökull, two small surge-type cirque glaciers at the Tröllaskagi peninsula, northern Iceland was explored for improved understanding of their surge imprints. Geomorphological, geological and remote sensing data on sediments and landforms were used for developing a geomorphological model for surge-type cirque glaciers in Iceland. Most surge moraines identified are in the form of uneven small ridges or debris sheets that constitute a boulder-rich hummocky terrain. The size and structures of two moraines in front of Teigarjökull are interpreted as suggesting that the glacier has in the past switched between surge and non-surge behavior. Hummocky surfaces, small medial moraines and crevasse-fill ridges are common, as are landforms suggesting dead-ice melting, such as backslumping, extension cracks and sinkholes. The surface sediments are rich in subangular and angular pebbles, cobbles, and boulders. This distinct geomorphology of the glacier forefields results from ample supply of coarse and angular sediments originating from the steep mountain slopes bordering the glaciers and subsequently carried to the marginal zone via englacial and supraglacial transport.*

**Key words:** Surge-type glaciers, glacial geomorphology, Búrfellsjökull, Teigarjökull