2023

Jöklar Íslands

Lifandi kennslustofa í loftslagsbreytingum

Icelandic glaciers

A natural laboratory to study climate change

Hörfandi jöklar
Melting glaciers

Yfirlit um íslenska jökla 2023

Jöklar á Íslandi halda áfram að hörfa og rýrna. Hér er gerð grein fyrir breytingum á jöklunum og lýst niðurstöðum mælinga á afkomu og flatarmáli, jafnframt stöðu jökulsporða sem sjálfboðaliðar Jöklarannsóknafélag Íslands sinna á haustin.

Overview of Icelandic glaciers 2023

Glaciers in Iceland continue to retreat and lose mass. In this newsletter, glacier changes are described, including the results of mass balance measurements and changes in area, along with results of monitoring of glacier termini carried out by volunteers of the Iceland Glaciological Society every autumn.

Miðjökull í norðurhlíðum Hrútfells (1400 m y.s.) hefur hörfað um 700 m frá því eldri myndin var tekin. Ljósmyndir eftir Jón Eyþórsson (um 1930) og Hrafnhildur Hannesdóttir (11. júlí 2023). Valdar sögulegar jöklaljósmyndir eru birtar á Flickr myndasíðu Jöklarannsóknafélags Íslands (https://flic.kr/ps/3ZVjMZ).

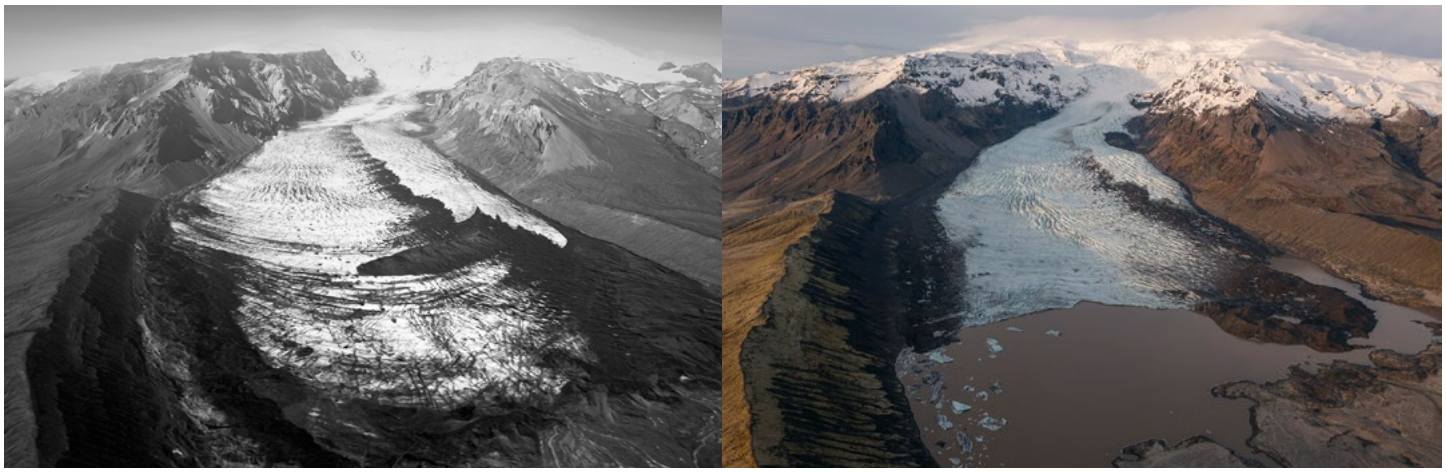
Miðjökull in northern Hrútfell (1400 m elevation) has retreated about 700 m since the older photo was taken. Photographs by Jón Eyþórsson (1930s) and Hrafnhildur Hannesdóttir (11th of July 2023). A collection of historical glacier photographs is available on the Flickr page of the Iceland Glaciological Society (https://flic.kr/ps/3ZVjMZ).

Útlínur jökla og flatarmálsbreytingar

Samanlagt flatarmál jökla á Íslandi árið 2023 var 10.220 km² og minnkaði um 90 km² frá árinu 2021. Munar mestu um hörfun stærri skriðjöklanna sem margir hörfuðu um nokkur hundruð metrum á síðastliðnum árum. Frá árinu 2000 hafa um 70 litlir jöklar horfið, en flatarmál þeirra flestra var á bilinu 0,1–3 km² í upphafi þessarar aldar.

Glacier outlines and area changes

The total area of glaciers in Iceland in 2023 was 10,220 km², and decreased by 90 km² since 2021. The greatest retreat is in the larger outlets, which amounts to several hundred metres in recent years. Since the year 2000 about 70 small glaciers (0.1–3 km²) have disappeared.



Flugsýn af tungu Kviárjökuls 1989 og 2023. Myndin frá 1989 byggir á loftmyndum Landmælinga Íslands og landlíkani sem reiknað er á grundvelli myndanna. Samanburður við ljósmynd úr flygildi frá 2023 sýnir vel hörfun jökuljaðarsins og lækkun yfirborðs jökulsins á rúmlega 34 ára tímabili. Myndvinnsla: Kieran Baxter.

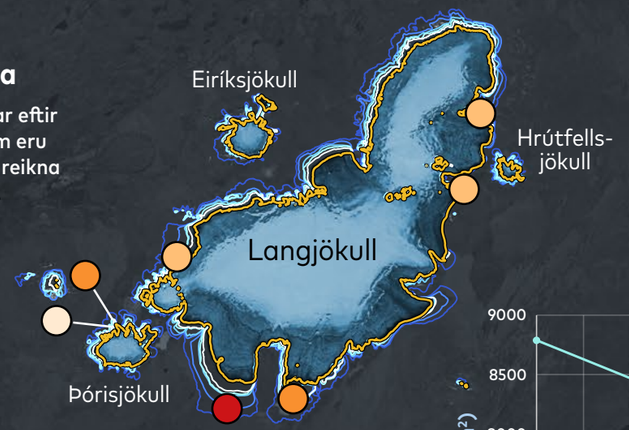
Bird's-eye views of the tongue of Kviárjökull in 1989 and 2023. The 1989 view is a three-dimensional composite produced from aerial photographs from the National Land Survey of Iceland. When compared with a drone photograph from 2023 the images clearly show the retreat of the terminus and the lowering of the glacier surface over the 34-year period. Images produced by Kieran Baxter.

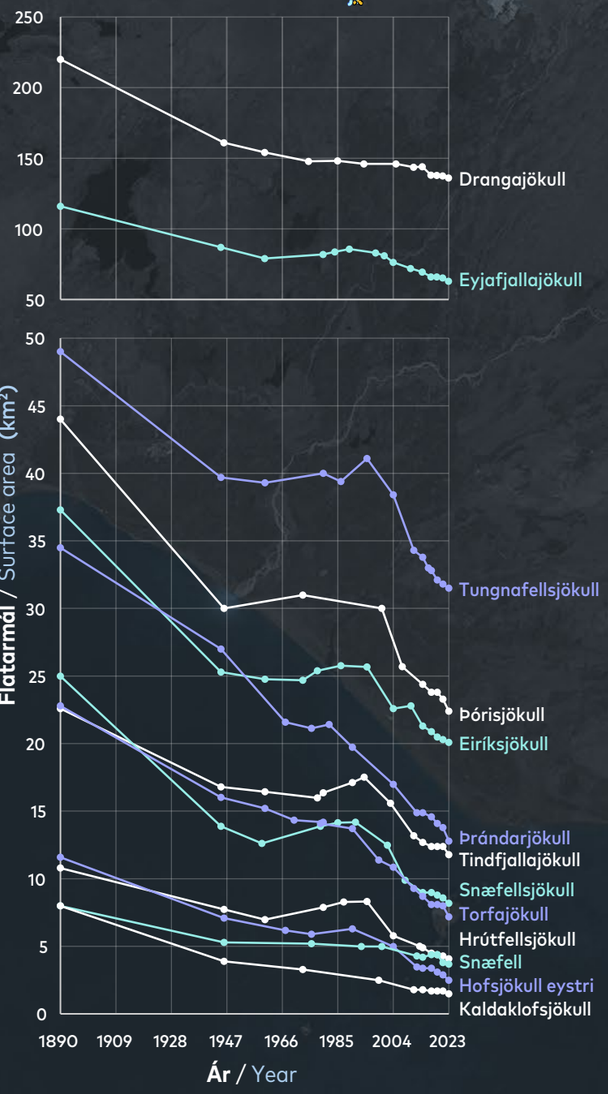
2023 Jöklabreytingar
Glacier changes

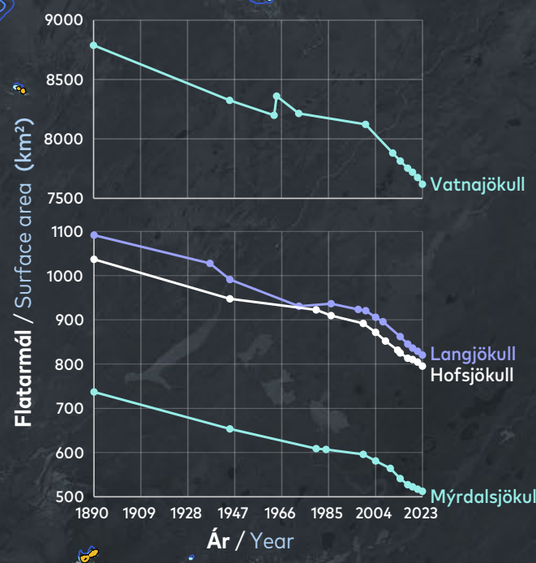
Flatarmál jökla

Jöklaútlínur dregnar eftir gervitunglamyndum eru notaðar til þess að reikna flatarmál jöklanna.

2023
~2010
2000
1970s
1945
~1890







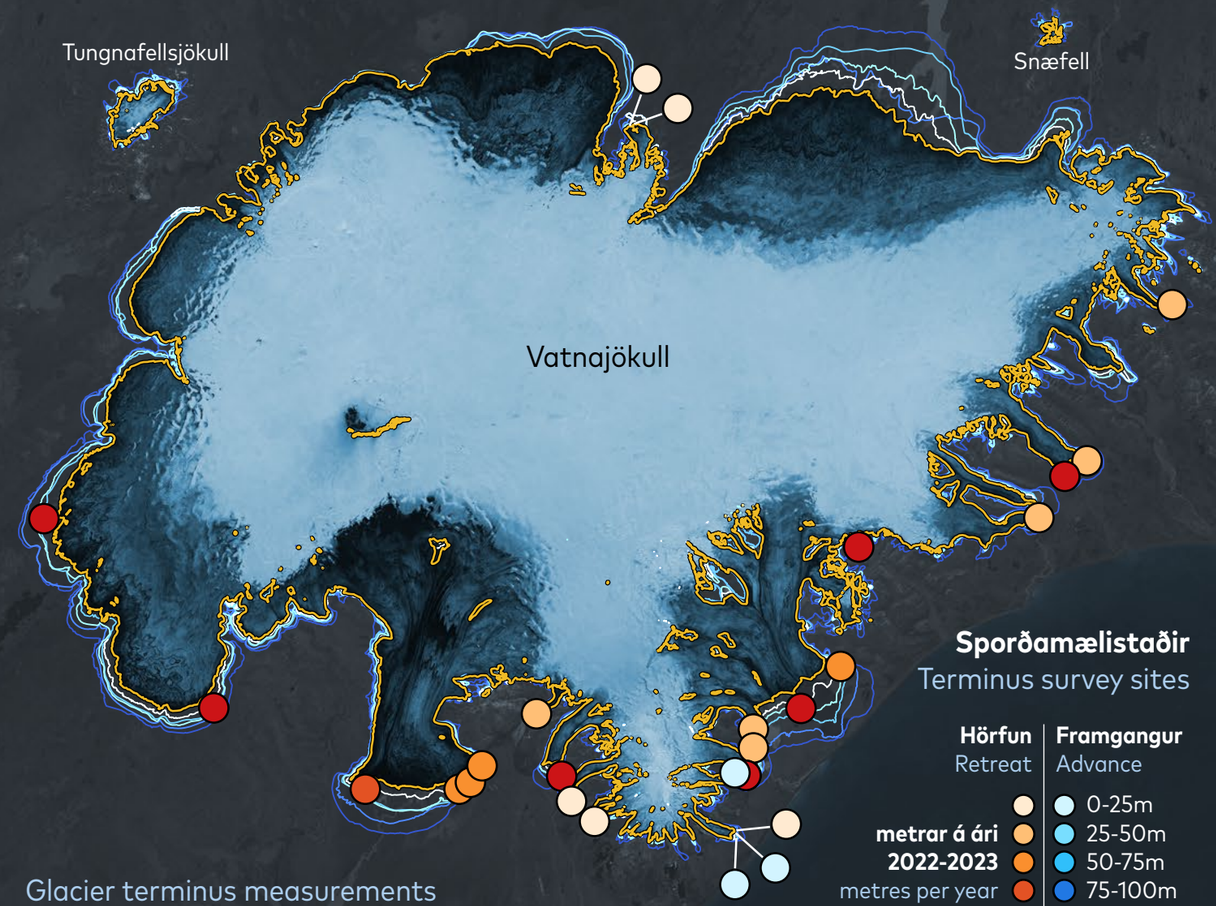
Glacier area

Glacier outlines traced from satelite imagery are used to calculate surface area.

Kort byggt á Copernicus Sentinel gögnum (2023).
Map contains modified Copernicus Sentinel data (2023).

Jökulsporðamælingar

Langflestir jökulsporðar hörfa og er breytingin einna mest á stærri skriðjöklum Vatnajökuls, Langjökuls og Mýrdalsjökuls, allt að 100–200 m. Sums staðar hafa hlutar af lífvana sporðum losnað frá meginjöklinum, svo sem á Jökulhálsi á Snæfellsjökli og Brókarjökli í sunnanverðum Vatnajökli. Örlítill framgangur mældist í nokkrum skriðjöklum Öræfajökuls og norðanverðs Eyjafjallajökuls. Lesa má nánar um sporðamælingar í grein í tímaritinu Jökli og niðurstöður mælinganna eru birtar á jöklavefsjánni (islenskirjoklar.is).



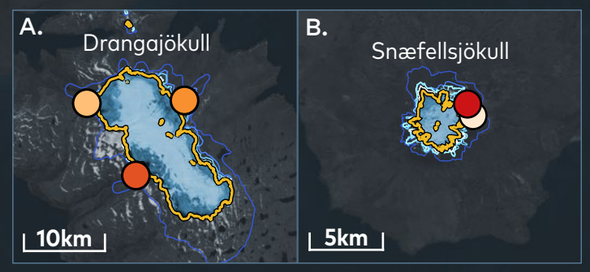
Sporðamælistaðir
Terminus survey sites

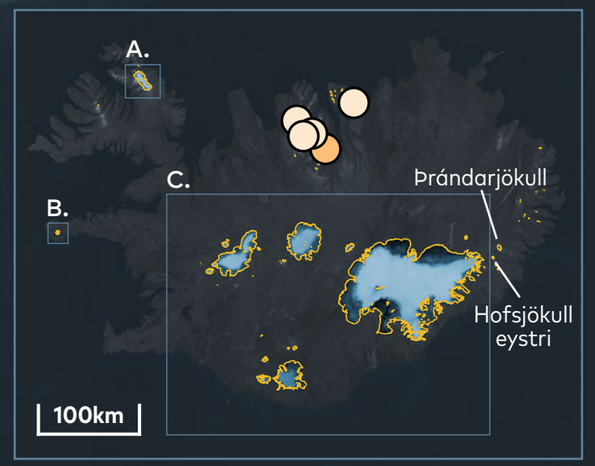
Hörfun Retreat	Framgangur Advance
metrar á ári 2022-2023 metres per year 2022-2023	0-25m
	25-50m
	50-75m
	75-100m
	>100m

Glacier terminus measurements

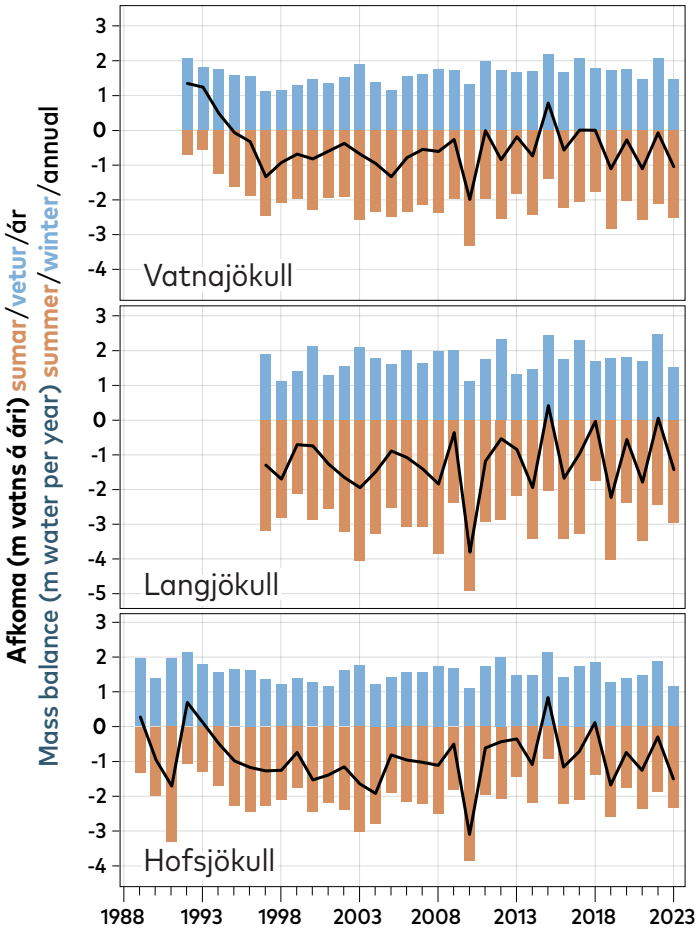
Glacier retreat was observed at most of the survey sites. The highest figures were measured at the larger outlet glaciers of Vatnajökull, Langjökull and Mýrdalsjökull, where the retreat is up to 100–200 m. At a few locations, such as the terminus of Brókarjökull and Jökulháls on Snæfellsjökull, large blocks of the terminus have become separated from the main glacier.

Slight advances were recorded for the outlet glaciers of Öræfajökull and northern Eyjafjallajökull. Further information can be found in the annual report in the journal Jökull and the measurements are available on the glacier web portal (icelandicglaciers.is).





Jöklar á Íslandi og sporðamælistaðir á Norðurlandi.
Glaciers in Iceland and terminus measurement sites in North Iceland.



Samantekin gögn um yfirborðsafkomu þriggja stærstu jöklanna frá upphafi mælinga. Bláar súlur sýna vetrarafkomu, rauðar súlur tákna sumarafkomu og græn lína táknar ársafkomu.

Specific surface mass-balance observations for the three largest ice caps in Iceland. Blue bars show the winter balance, red shows the summer balance and green lines the annual balance.

Gögnin ásamt útskýringum eru aðgengileg á islenskirjoklar.is og í skýrslu í Jökli um afkomu jökla 2022–2023. Nánar má fræðast um samband jökla og loftslags á fræðsluvef Vatnajökulsþjóðgarðs um jökla- og loftslagsbreytingar Hörfandi jöklar: www.vatnajokulsthjodgardur.is/fraedsla/horfandi-joklar/um-horfandi-jokla

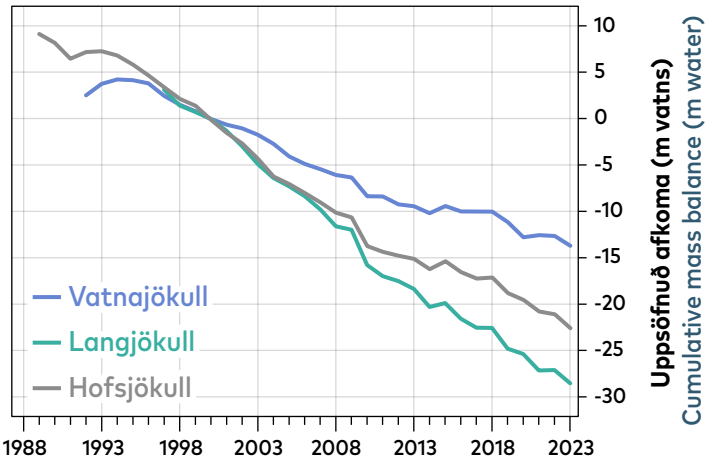
Data, supporting literature and reports are accessible at icelandicglaciers.is and in the mass balance report of the glaciological year 2022–2023 in the journal Jökull. Further information about glaciers and climate may be found on the educational website of the Vatnajökull National Park 'Melting glaciers': www.vatnajokulsthjodgardur.is/en/melting-glaciers/um-horfandi-jokla

Afkoma jöklanna

Afkoma var mæld á um 120 stöðum á stærri jöklum landsins (Vatnajökli, Langjökli og Hofsjökli). Vetrarafkoma 2022–23 var undir meðallagi vegna minni úrkomu en að jafnaði. Sumarið var ennfremur frekar hlýtt, skýjahula með minna móti og sumarleysing því mikil. Ársafkoma jöklanna var verulega neikvæð, til dæmis mældist tvöfalt meira massatap á Vatnajökli en í meðalári. Afkoma stærstu íslensku jöklanna hefur verið neikvæð eða nærri núlli síðan 1995 að frátöldu árinu 2015.

Glacier mass balance

For the glaciological year 2022–23, mass balance was measured at ~120 locations on the larger ice caps in Iceland (Vatnajökull, Langjökull og Hofsjökull). The winter mass balance was below average, due to less than average winter snowfall. Relatively warm and cloud-free conditions prevailed during the summer months, leading to high levels of summer ablation. The mass balance of all the 3 ice caps was significantly negative, for example the mass loss of Vatnajökull was double the long-term average. The mass balance of these ice caps has been negative or close to zero since 1995, except for 2015.



Uppsöfnuð afkoma Vatnajökuls, Langjökuls og Hofsjökuls frá upphafi mælinga. Þessir jöklar geyma >95% af rúmmáli íss í jöklum landsins.

Accumulated mass balance of Vatnajökull, Langjökull and Hofsjökull. These three ice caps contain >95% of the volume of all of the glaciers in Iceland.

Jökulhlaup

Jökulhlaup hófst í Skaftá 28. ágúst og stóð yfir í um viku en það átti upptök sín í Eystri-Skaftárkatli. Við Sveinstind mældist hámarksrennsli um 750 m³/s. Nokkur lítil jökulhlaup komu frá Mýrdalsjökli, en þeirra varð vart í Fremri-Emstruá, Múlakvísl og Jökulsá á Sólheimasandi.

Jökulhlaups (Glacier outburst floods)

A jökulhlaup (glacier outburst flood) in Skaftá began on August 28th and lasted for a week. It originated from the Eastern Skaftá cauldron by Sveinstindur, the peak discharge was 750 m³/s. A few small jökulhlaups were released from Mýrdalsjökull in the rivers Fremri-Emstruá, Múlakvísl and Jökulsá on Sólheimasandur.

Miklar sprungur myndast kringum Skaftárkatla er lónin undir þeim tæmast og jökulyfirborðið sígur. Hlaupvatn kemur undan aurugum Skaftárjökli. Kerlingar í baksýn.

Circular crevasses form when the lakes at the glacier bed are emptied and the glacier surface subsides. Flood water emerging from the Skaftárjökull outlet glacier. The mountain Kerlingar is in the background.

Ljósmyndir/Photographs: **Þorsteinn Þorsteinsson.**

Upplýsingarnar sem hér birtast eru byggðar á mælingum jöklahóps Jarðvísindastofnunar Háskólans, Veðurstofu Íslands, Landsvirkjunar, Náttúrustofu Suðvesturlands og Jöklarannsóknafélags Íslands.

The results presented here are based on the measurements of the glacier group of the Institute of Earth Sciences, University of Iceland, the Icelandic Meteorological Office, Landsvirkjun – the National Power Company of Iceland, the South East Iceland Nature Research Center and the Iceland Glaciological Society.

Hönnun/Design: **Kieran Baxter**

Veðurstofa Íslands · Háskóli Íslands · Náttúrustofa Suðausturlands · Vatnajökulsþjóðgarður National Park