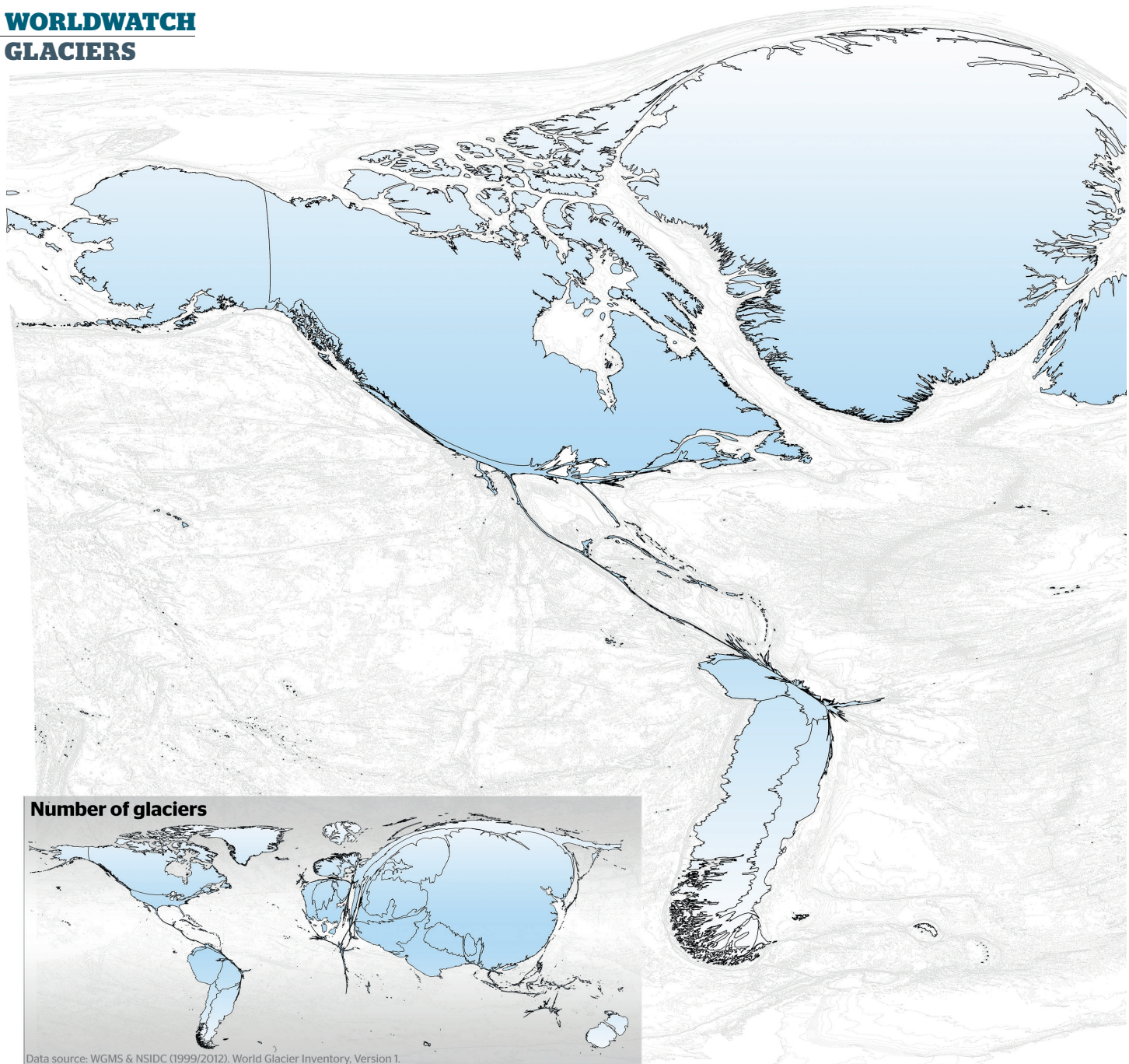


WORLDWATCH GLACIERS



Ice plays a central role in the global warming debate. According to the US National Snow & Ice Data Center (NSIDC), taken together, glaciers, ice caps and the ice sheets of Greenland and Antarctica amount to approximately 10 per cent of global land area, compared to 32 per cent during the last ice age. The quantity of freshwater stored within them amounts to 69 per cent of the world's freshwater resources. When it comes to glaciers, an area of 726,000 square kilometres is covered by the world's estimated 198,000 glaciers.

Glaciers are important both in the way they react to climate change and in

their contribution to sea level rise, even if the major ice sheets contain much more ice. A melting of all glaciers would 'only' lead to sea level rise of 405mm, but it would also impact ongoing changes in the cryosphere (the frozen parts of Earth). The significance of glaciers in the dynamics of climate change is not to be underestimated.

Gaining an understanding of where exactly glaciers are, quantifying them and also monitoring their dimensions and dynamics is therefore an important part of climate change research. In recent years, methods have improved considerably through the combined use of remote sensing techniques, field measurements and numerical modelling, providing an ever more detailed picture of the world's frozen areas and the ways

in which they are changing.

This cartogram uses data from the NSIDC's World Glacier Inventory which contains detailed information about the location, the size and a range of additional geographic indicators for more than 130,000 glaciers around the world. The database provides a general snapshot of glacier distribution in the second half of the 20th century. As the only uninhabited continent in the world, and taking up a significant share of cryosphere, data for Antarctica has been excluded from the maps to allow the geographic variation in the remaining parts of the world to be more visible.

The main cartogram shows each country proportional to the estimated total area covered by glaciers, while the small inset map is a visualisation of the



Frozen planet

By Benjamin Hennig

total number of glaciers counted in each. The latter does, in some cases, differ from the overall glaciated area. One example is New Zealand, where many individual glaciers are counted which overall cover a relatively small area. For the United States and Norway, the country areas were split in order to allow for the distinct geographical distribution of glaciers in the two countries to become more visible. Alaska is shown separate from the rest of the US, while Svalbard and Jan Mayen are shown separate from the rest of Norway.

In Iceland, glaciers not only form part of the nation's identity, but through tourism have become an important element of its economy. The country's glaciers also feed its hydropower plants which contribute significantly

to Iceland's renewable energy output. The country is predicted to lose all of its glaciers within the next 200 years due to climate change and the environmental and social impacts of this are already becoming apparent. As one of the major natural attractions of the country, the tourism industry is keen to maintain access to retreating glaciers for as long as possible. Reflecting the importance of these structures, Iceland held a public funeral for the nation's first deceased major glacier – nicknamed Ok – in 2019.

The rapidly changing nature of glaciers also has many dimensions that go beyond the environmental side of global warming. Iceland's symbolic gesture demonstrates the societal impact of these changes.

Glaciers are one small piece of the complex jigsaw that constitutes climate change and we have only just begun to understand them. The plaque that was mounted on Ok's summit reminds us of one generation's responsibility for these processes. Written by the Icelandic author Andri Snær Magnason, it reads: 'A letter to the future: [...] This monument is to acknowledge that we know what is happening and what needs to be done. Only you know if we did it' ●

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