

Glacier monitoring tracks progress in limiting climate change

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Glacier-mass changes are a reliable indicator of climate change. On behalf of the worldwide network of glacier observers, we urge parties to the United Nations Framework Convention on Climate Change to boost international cooperation in monitoring these changes, and to include the results in the Paris agreement's global stocktake.

Since 1960, glaciers have lost more than 9,000 gigatonnes of ice worldwide – the equivalent of a 20-metre-thick layer with the area of Spain. This melting alone – as distinct from that of the Greenland and Antarctic ice sheets – has raised global sea level by almost 3 centimetres, contributing 25–30% of the total rise ([M. Zemp et al. *Nature* 568, 382–386; 2019](#)).

The present rate of melting is unprecedented. Several mountain ranges are likely to lose most of their glaciers this century. And we face the loss of almost all glaciers by 2300 ([B. Marzeion et al. *Cryosph.* 6, 1295–1322; 2012](#)).

Glacier shrinkage will severely affect freshwater availability and increase the risk of local geohazards. Global sea-level rise will result in the displacement of millions of people in coastal regions and in the loss of life, livelihoods and cultural-heritage sites.

The systematic monitoring of glaciers has been internationally coordinated for 125 years. Continuing to do so will document progress in limiting climate change for current and future generations.

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