

# Changes in the glaciers of Argentière, Saint-Sorlin and the Mer de Glace: indicators of an inexorable trend

These glaciers have been studied since the late nineteenth century. Annual mass balances have been measured for the Argentière Glacier since 1976 and for the Mer de Glace Glacier since 1979. Since 2004, they have been integrated in the GLACIOCLIM national observation service.

Analysis of the map of the Mont Blanc massif drawn by Joseph Vallot in 1905, as well as of old aerial photographs and recent satellite information, combined with annual measurements in the field, have indicated the loss of the equivalent of a 47-metre strip of ice shaved off on average along the entire surface of the Argentière Glacier, and 58 metres of ice for the Mer de Glace Glacier, between 1905 and 2024 (of course, lower parts of the glacier lose more thickness than upper parts. This is an average figure across the whole surface).

According to digital simulations of the glacier of Saint-Sorlin performed by researchers from the Institute of Environmental Geosciences at Université Grenoble Alpes, the glacier is expected to vanish by 2050, regardless of the climate scenario considered.

More broadly speaking, observations show that the mass balances of Alpine glaciers are increasingly in decline, with a loss of mass over the past two decades that is 30 to 45% greater than the average since the mid-1980s. Glaciers located at an altitude of above 4200 m are less concerned by this phenomenon but are suffering from significant warming at depth.

The photographs presented here show changes in the glacier of Saint-Sorlin in the Grandes Rousses massif from 2010 to 2023.



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