

The amount of snowfall in coastal West Antarctica increased during the 20th century

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The Amundsen Sea sector of the West Antarctic Ice Sheet has been losing mass in recent decades. However, long records of snow accumulation are needed to place the recent changes in context. In this paper we present 300-year records of snow accumulation from two ice cores drilled in Ellsworth Land, West Antarctica. The records show a dramatic increase in snow accumulation during the twentieth century, which has been linked to a deepening of surface pressure in the Amundsen Sea, a feature known as the Amundsen Sea Low. The persistent climatological low pressure system, indicating increased storm activity, draws warm, maritime air from the mid-latitudes to the Amundsen Sea coast. The increased snowfall is also linked to tropical

sea-surface temperatures and a reduction in sea ice in the Bellingshausen Sea, resulting in greater moisture availability.

The observed increase in [snow accumulation](#), and the increased interannual variability, during the late twentieth century, is unprecedented in the context of the past 300 years. The same processes that are driving increased snowfall inland are also bringing warmer ocean currents into contact with West Antarctic's ice shelves, resulting in rapid thinning. Thus the increased snowfall we report here has not led to a thickening of the ice sheet, but is in fact another symptom of the changes that are driving contemporary ice-sheet loss.

More information: E. R. Thomas et al. Twentieth century increase in snowfall in coastal West Antarctica, *Geophysical Research Letters* (2015). [DOI: 10.1002/2015GL065750](https://doi.org/10.1002/2015GL065750)

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