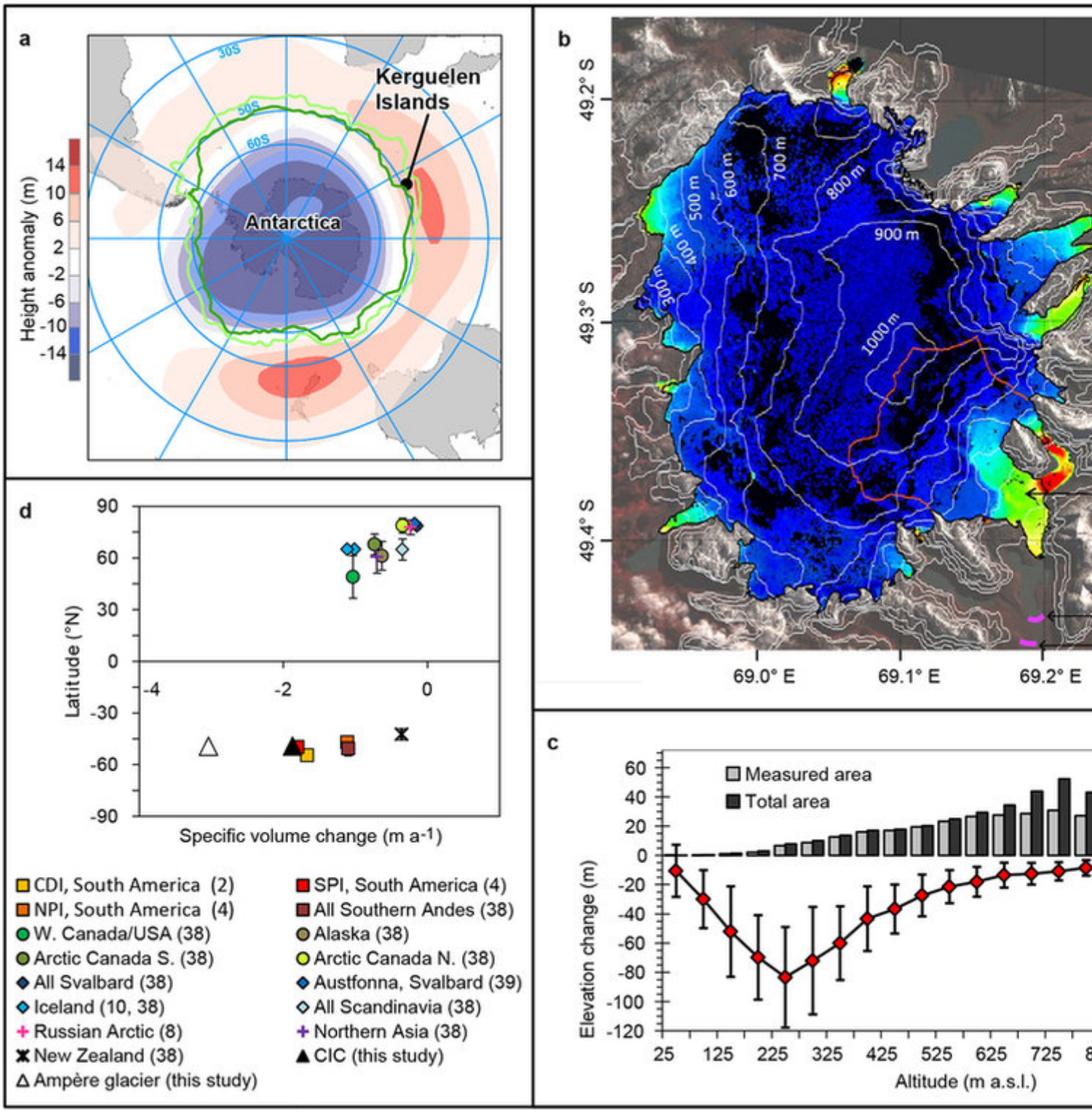
Atmospheric drying main driver of dramatic glacier retreat in the southern Indian Ocean



The well-known scientific journal Nature has recently published the paper titled Atmospheric drying as the main driver of dramatic glacier wastage in the southern Indian Ocean.

This paper, whose co-author is the BSC researcher Martin Ménégoz, focuses on the retreat of the glaciers in the Kerguelen archipelago (Southern Indian Ocean), which reached values close to the maximum never observed at the surface of the Earth. This study showed that this impressive glacier wastage starting in the 1960's has been largely driven by the precipitation decrease induced by both the ozone hole and the greenhouse gases emissions.

Abstract: The ongoing retreat of glaciers at southern sub-polar latitudes is particularly rapid and widespread. Akin to northern sub-polar latitudes, this retreat is generally assumed to be linked to warming. However, no long-term and well-constrained glacier modeling has ever been performed to confirm this hypothesis. Here, we model the Cook Ice Cap mass balance on the Kerguelen Islands (Southern Indian Ocean, 49°S) since the 1850s. We show that glacier wastage during the 2000s in the Kerguelen was among the most dramatic on Earth. We attribute 77% of the increasingly negative mass balance since the 1960s to atmospheric drying associated with a poleward shift of the mid-latitude storm track. Because precipitation modeling is very challenging for the current generation of climate models over the study area, models incorrectly simulate the climate drivers behind the recent glacier wastage in the Kerguelen. This suggests that future glacier wastage projections should be considered cautiously where changes in atmospheric circulation are expected.

Citation: V. Favier, D. Verfaillie, E. Berthier, M. Menegoz, V. Jomelli, J. E. Kay, L. Ducret, Y. Malbéteau, D. Brunstein, H. Gallée, Y.-H. Park & V. Rinterknecht

Scientific Reports **6**, Article number: 32396 (2016)- doi:10.1038/srep32396

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