

Future Atmospheric Rivers in Antarctica: intensity and impacts

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Through their strong impact on both components of the Surface Mass Balance (SMB) of the Antarctic ice sheet, atmospheric rivers (ARs) are key events to better understand the future of the Antarctic. Indeed, ARs create extreme atmospheric conditions that have a strong influence on snowfall, but also surface melt and ice shelf stability.

We study these events in the CMIP6 IPSL coupled model, using a detection algorithm tuned for Antarctica, for ensembles of both present-day and mid-century simulations. While the number or duration of ARs does not change much - once taking into account the global increase of atmospheric water vapor - their intensity increases, also leading to more likely extreme events. We also quantify the increases in AR impacts on snowfall and surface melt.