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Orographic Flows across the Antarctic Peninsula: a comparison of AWS data and regional atmospheric model simulations.

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Over the past 50 years the Antarctic Peninsula (AP) has been one of the most rapidly warming regions on the planet, with the strongest warming rate occurring in winter along the west coast of the Peninsula. In summer, the largest temperature increase is observed over the northern part of the east coast. During summer the temperature on both sides of the Peninsula is correlated with the circumpolar westerlies, expressed in the Southern Annular Mode (SAM). The suggestion is that the stronger westerlies interact with the orographic barrier formed by the Peninsula, resulting in Föhn events on the lee side in the area of the Larsen Ice Shelf.
In this study we use standard meteorological parameters as measured by Automatic Weather Stations (AWS) on either side of the Antarctic Peninsula to derive an indicator for Föhn events. This indicator is then used to analyse simulations by two high-resolution regional atmospheric models – the WRF model, run at 5 km resolution as part of the Antarctic Mesoscale Prediction System (AMPS) and the UK Met Office Unified Model (UM) run at 4 km resolution as part of an experimental real-time forecast system for the Antarctic Peninsula region with regard to their representation of such events.
In a further step we will look into which impact the models' performance with regard to Föhn events may have on simulated components of the surface energy balance and thus potential melt.