



## **Spatio-temporal atmospheric circulation variability around the Antarctic Peninsula based on hemispheric circulation modes and weather types**

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Large parts of the Polar Regions are affected by a warming trend associated with substantial changes in the cryosphere. In Antarctica this positive trend pattern is most dominant in the western part of the continent and on the Antarctic Peninsula (AP). An important driving mechanism of temperature variability and trends in this region is the atmospheric circulation. Changes in atmospheric circulation modes and frequencies of circulation types have major impacts on temperature characteristics at a certain station or region.

We present results of a statistical downscaling study focused on AP temperature variability showing both results of large-scale atmospheric circulation modes and regional weather type classifications derived from monthly and daily gridded reanalysis data sets. In order to investigate spatial trends and variabilities of the Southern Annular Mode (SAM), we analyze spatio-temporally resolved SAM-pattern maps from 1979 to 2015. First results show dominant multi-annual to decadal pattern variabilities which can be directly linked to temperature variabilities at the Antarctic Peninsula.

A sub-continental to regional view on the influence of atmospheric circulation on AP temperature variability is given by the analysis of weather type classifications (WTC). With this analysis we identify significant changes in the frequency of occurrence of highly temperature-relevant circulation patterns. The investigated characteristics of weather type frequencies can also be related to the identified changes of the SAM.