

Regional climate model simulations for the Antarctic Peninsula: Comparing and contrasting with observed climate variability

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This ongoing study aims to evaluate hindcast simulations performed with Polar-WRF (v.3.9.1) driven by reanalysis data (ERA-Interim) over the Antarctic Peninsula for the period 1990-2015. A nested domain configuration at 45 km and 15 km spatial resolutions is used for the simulations. In addition, hindcast simulations of KNMI-RACMO21P model within the CORDEX-Antarctica framework are also included to analysis. We first present observed temperature, precipitation and sea-ice variability of the Antarctic Peninsula using meteorological stations, reanalysis and satellite products at seasonal and annual time scales. We also compare ERA-Interim fields with the latest reanalysis product of ERA5 within the context of observed climate variability over the Antarctic Peninsula. Given that the peninsula has a relatively mild and humid marine climate on the west coast and a cooler continental climate on the east coast, the analysis is basically performed for two distinct regions of the peninsula: windward and leeward. As the observed climate variability of windward and leeward sides shows non-homogeneous trends, one of the main motivations of this study to investigate whether the dynamical downscaling products are able to capture the contrasts in the observed trends in temperature, precipitation and sea-ice. Furthermore, we also aim to discuss the variability of large-scale fields obtained from ERA5 (e.g., sea-level pressure and zonal winds) in order to interpret the contrasts in the observed trends.