



Assessing the impact of resolution and forcings on bottom potential temperature and sea ice in the Southern Ocean using ESMValTool

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We present an analysis of ocean and sea ice properties in Antarctica and the Southern Ocean, tracking the progress and changes of the newest model generation used in CMIP6 as compared to CMIP5. Furthermore, the influence of changes in model resolution on these crucial parts of the earth system is explored using high resolution studies from the PRIMAVERA project, thus improving the understanding of the role they play in climate models.

We employ ESMValTool which has been established as a useful standard tool for model evaluation. Here, we use the new version 2 of ESMValTool, in particular our extension of its capabilities with regriding for irregular grids as commonly used in ocean models in the preprocessor stage of the tool.

Thanks to the flexible architecture of ESMValTool together with its extensive support for observational datasets and the easy integration of model data that complies with the CF conventions, this analysis can readily be streamlined and applied to new observational datasets as they become available, and be performed across other model datasets or extended to other variables, e.g. from the wide gamut of CMIP6 experiments.

In this way, we gain insight into the model response to different forcings, here by comparing the pre-industrial control simulations with the historical runs from CMIP6. By integration of recent observational datasets, this work will contribute to a better understanding of the ocean-sea-ice relation in the Southern Ocean.