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Weather service in the Dronning Maud Land

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For more than a decade meteorologists at the German Antarctic research station Neumayer (70°S, 008°W) offer detailed and individual summer weather forecasts for all activities in the Dronning Maud Land. Especially the intercontinental air link with Cape Town made the establishment of this service mandatory. The work is performed in close cooperation between the Alfred Wegener Institute for Polar and Marine Research (AWI) and the German Weather Service (DWD).
The forecasts base mainly on in situ data including automatic weather stations (AWS), on near real time satellite pictures and on a variety of model products mainly from the Antarctic Mesoscale Prediction System (AMPS) and the European Centre for Medium-Range Weather Forecasts (ECMWF).
To optimize this service the errors of a typical AWS had been quantified by running an unmaintained AWS one year side by side of the maintained instruments from the meteorological observatory from Neumayer. In a second year the same AWS was placed 11 km north of Neumayer to judge the spatial footprint of the observatory data. By comparing model products with the measurements of the observatory systematic errors in the forecast products have been observed. Also the ERA-Interim reanalysis differs significantly from the temperature time series observed at Neumayer despite the fact that the data is fed into the Global Telecommunication System GTS for more than 30 years. From these findings some guidance on optimizing the Antarctic observing and prediction systems could be developed.