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Title: *Retrieval of the meteorological data from Global Data Assimilation System model on the sub-grid scale for the region of Polish Polar Station at Hornsund*

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Global Data Assimilation System (GDAS) model is one of a meteorological data computer reanalysis performed in National Centers for Environmental Prediction (NCEP)USA. The model contains many surface parameters and indexes as well as vertical profiles of e.g. temperature, humidity on 23 pressure levels with spatial resolution of 1x1 degree in latitude and longitude. Reanalysis is performed eight times a day with 3 hours interval. Model's data are one of the best due to spatial and temporal resolution. The data are freely available.

Polish Polar Station at Hornsund (77°00'N 15°33'E, 10 m above sea level) provides meteorological measurements and observations within WMO network. Station's WMO number is 01003. There are only ground level measurements performed.

Since 2009 Station's lidar laboratory has started systematical observation of troposphere and low stratosphere. Profile of atmosphere temperature is additional parameter for the calculation of Rayleigh scattering used in lidar technique. In case of lack of meteorological vertical profiles, procedure of use a data from the International Standard Atmosphere model is applied with respect to available surface data.

The lack of vertical profiles of meteorological parameters for Hornsund Station was the motivation to retrieve the parameters from a global model of the atmosphere. Such approach seems to be better, because the model basis on meteorological measurements: from surface, atmospheric radiosounding and satellites observations. Next the data from measurements are assimilated to the model and basis on physics laws the reanalysis is performed. Since the Station is located between model's grid points, procedures of interpolation were applied to retrieve the meteorological data for exact position of Hornsund Station.