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Title: *Application of Dynamic Harmonic Regression for meteorological data set from Hornsund*

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The aim of the study is the statistical analysis of meteorological data collected at the Polish Polar Station Hornsund (WMO 01003) in south-western Spitsbergen. Most of the meteorological parameters have been continuously measured for the last 34 years (since 1978). We focus on recognition of seasonal/cyclic and long-term tendencies in time series from Hornsund. Dynamic Harmonic Regression ([/www.lancs.ac.uk/captain](http://www.lancs.ac.uk/captain)) is applied. The proposed method is based on the unobserved component approach, and combines the data analysis in frequency domain with the time domain. The method allows the estimation of low frequency variation (trend) and other seasonal/cyclic frequency components. Together with the estimates of components, the uncertainty of the estimates is also calculated. The results of the DHR analysis are compared with the calculated linear trends and basic statistical analysis of different parameters, such as: daily mean, minimum and maximum air temperature, air pressure, daily sum of precipitation, snow depth, snow water equivalent, wind speed, relative humidity, total sunshine, cloud cover as well as foginess.