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# YOPP Merged Observatory Data File for Sodankylä

The Merged Observatory Data Files (MODF) are produced for intercomparison between observations from several supersites and weather/climate models. The MODFs apply the same nomenclature and format (netCDF) as the model output files.

The YOPP Model Inter-comparison Project organizes process-based evaluation and verification of numerical weather prediction and climate models with observations from key locations in the Arctic, Antarctic and Third Pole.

Sodankylä supersite is a cluster of stations, as in an area of few squared kilometers there are various measurement towers/sites serving different purposes and projects. Some of the sites are shown in Figure 1 and include the Micrometeorological and ICOS towers, the automatic sounding station, and the Petland site. Data from each station will be included in the Sodankylä MODFs.
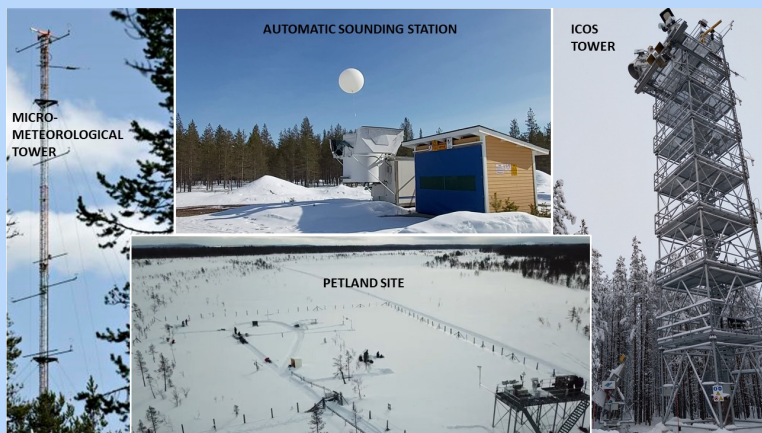


Figure 1. Photos of selected stations in the Sodankylä supersite

FMI provides a separate MODF for each YOPP Special Observing Period (SOP) from 2018 to 2020. Each MODF will have a DOI and be openly accessible through the YOPP data portal (https://yopp.met.no/). The Sodankylä MODFs are initially used by the partners in YOPP and in the H2020 APPLICATE project. In particular, they will be applied to test and develop numerical weather prediction models to improve the forecasts in the Arctic. Also other scientists will use the Sodankylä dataset for model validation and process studies.

Reference:

Arduini, G et al. (2019). Journal of Advances in Modeling Earth Systems, https://doi.org/10.1029/)

| Surface variables | Energy fluxes | Radiosonde measurements |
|---|---|---|
| Surface snow thickness | Upward surface shortwave radiation | Radiosonde latitude |
| Surface snow area fraction | Downward surface shortwave radiation | Radiosonde longitude |
| Snow water equivalent | Upward surface longwave radiation | Radiosonde altitude |
| Snow surface skin temperature | Downward surface longwave radiation | Radiosonde air pressure |
| Snow temperature | Surface turbulent latent heat flux (bulk method) | Radiosonde air temperature |
| Snow density | Surface turbulent latent heat flux (Eddy covariance method) | Radiosonde air humidity |
| Canopy area fraction | Surface turbulent sensible heat flux | Radiosonde wind speed |
| Surface ground skin temperature | Ground heat flux | Radiosonde wind direction |
| Soil temperature | Surface albedo | |

Table 1. Extract from the content of the Sodankylä MODFs