



UPPSALA
UNIVERSITET

**Project in
Computational
Science
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Evaluating Locally Measured Weather and Weather Services



Project Aim

This study was done within the scope of the Gigacow project at the Swedish University of Agricultural Sciences (SLU). The aim of the study was to investigate the feasibility to approximate observations of local weather conditions with interpolated weather data.

MESAN (AROME) Dataset

- Gridded interpolated weather data.
- Provided by the Swedish Meteorological and Hydrological Institute (SMHI).

LantMet Dataset

- Observed weather data from local weather stations.
- Provided by SLU LantMet.

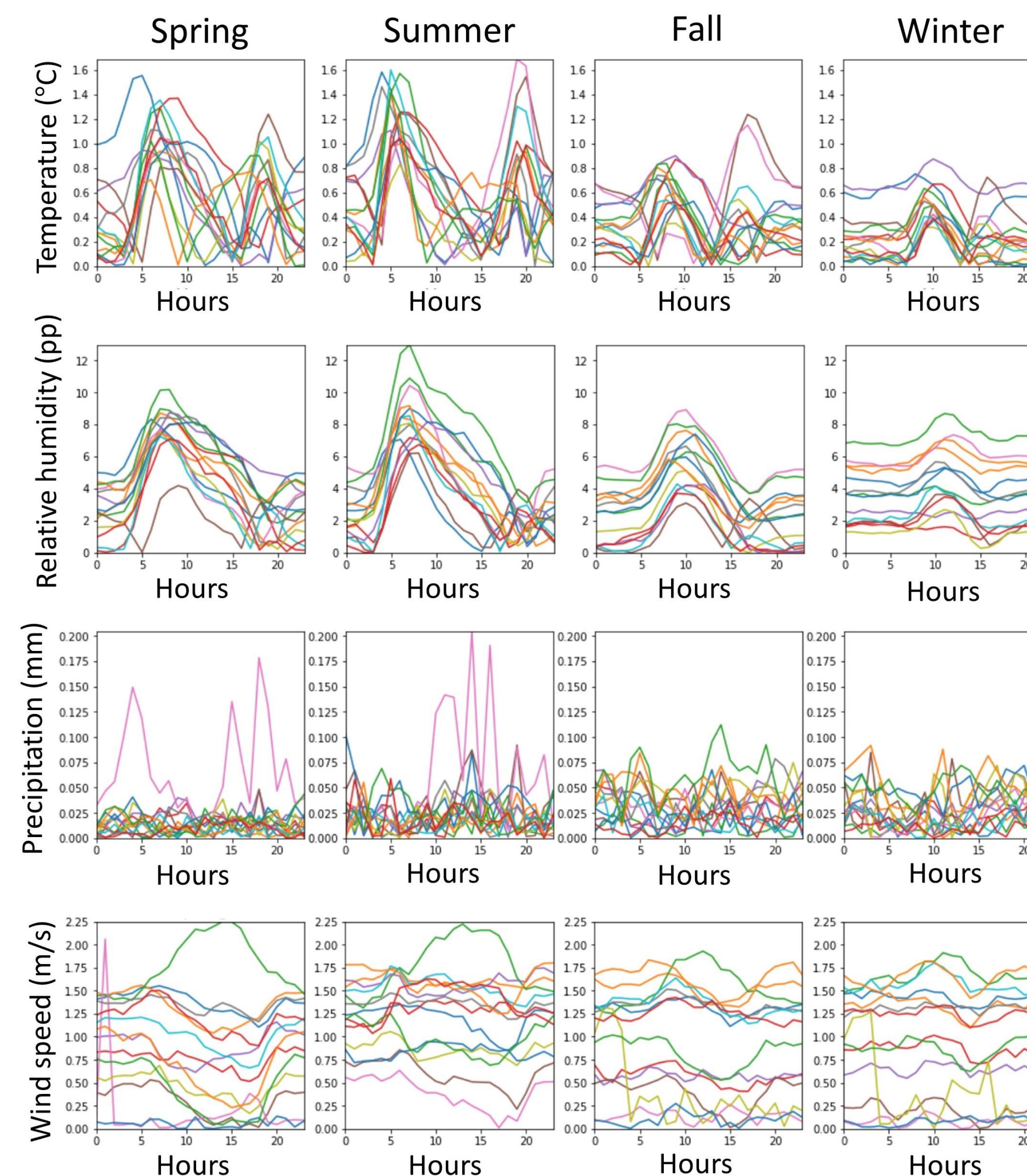
Method

The investigated parameters were temperature, relative humidity, precipitation and wind speed.

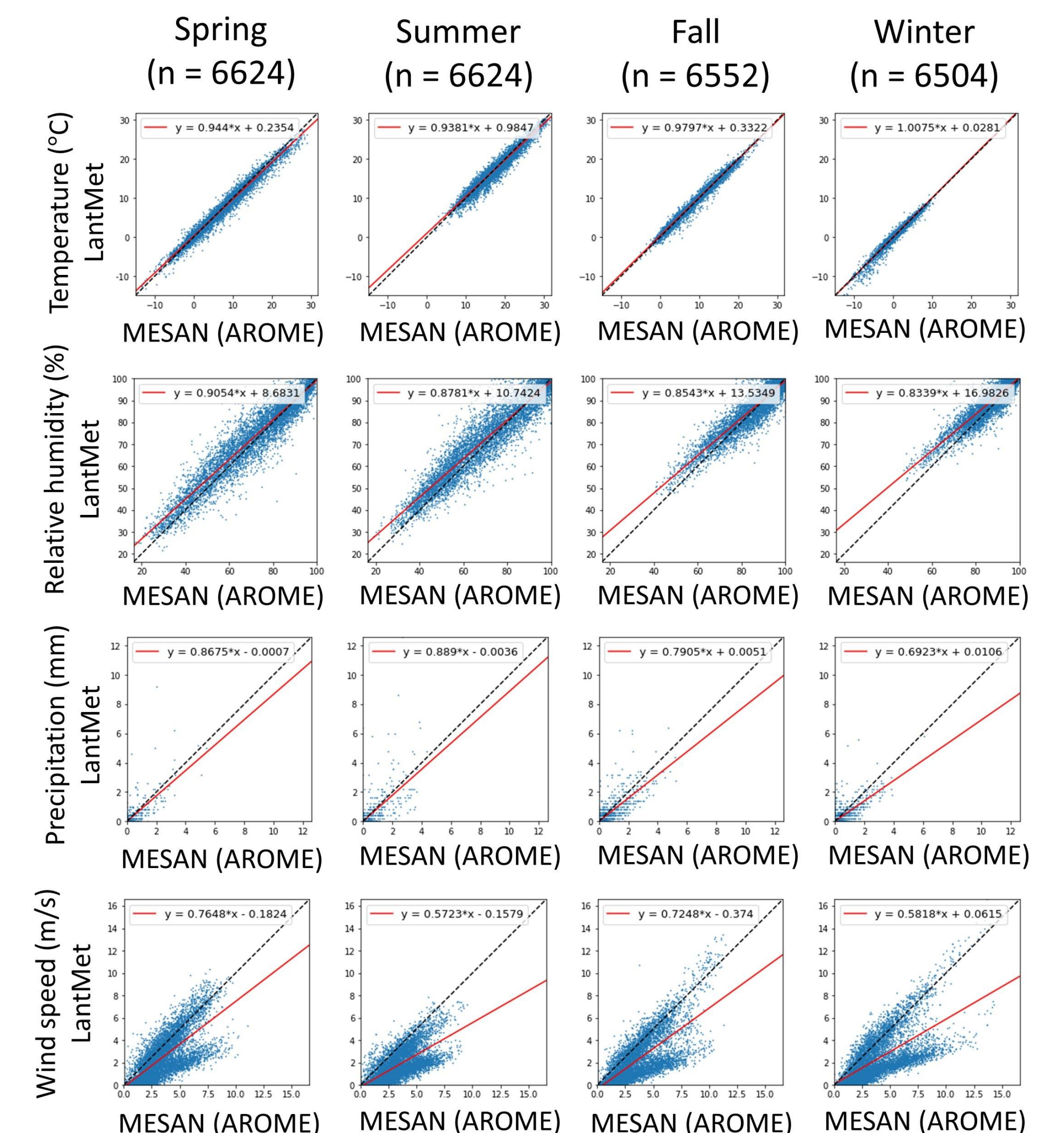
We compared observed and interpolated data from the locations of 18 local weather stations. The data stretched from the first of March 2017 to the last of February 2020.

Results

Diurnal plots of the average hourly absolute error between interpolated and observed data for all parameters, seasons and stations.



Scatter plots of interpolated MESAN (AROME) data and observed LantMet data for one weather station for all parameters and seasons with corresponding linear regression models.



Conclusions

- The absolute errors of temperature and relative humidity were smaller during fall and winter, probably due to stable weather.
- The temperature, relative humidity and wind speed had a diurnal variation of the absolute errors that were suspected to depend on the sun.
- Temperature and relative humidity were the parameters best approximated by interpolated data.