Considerations on the use of third party data for the spatial quality control of near-surface observations of temperature ~~and precipitation~~

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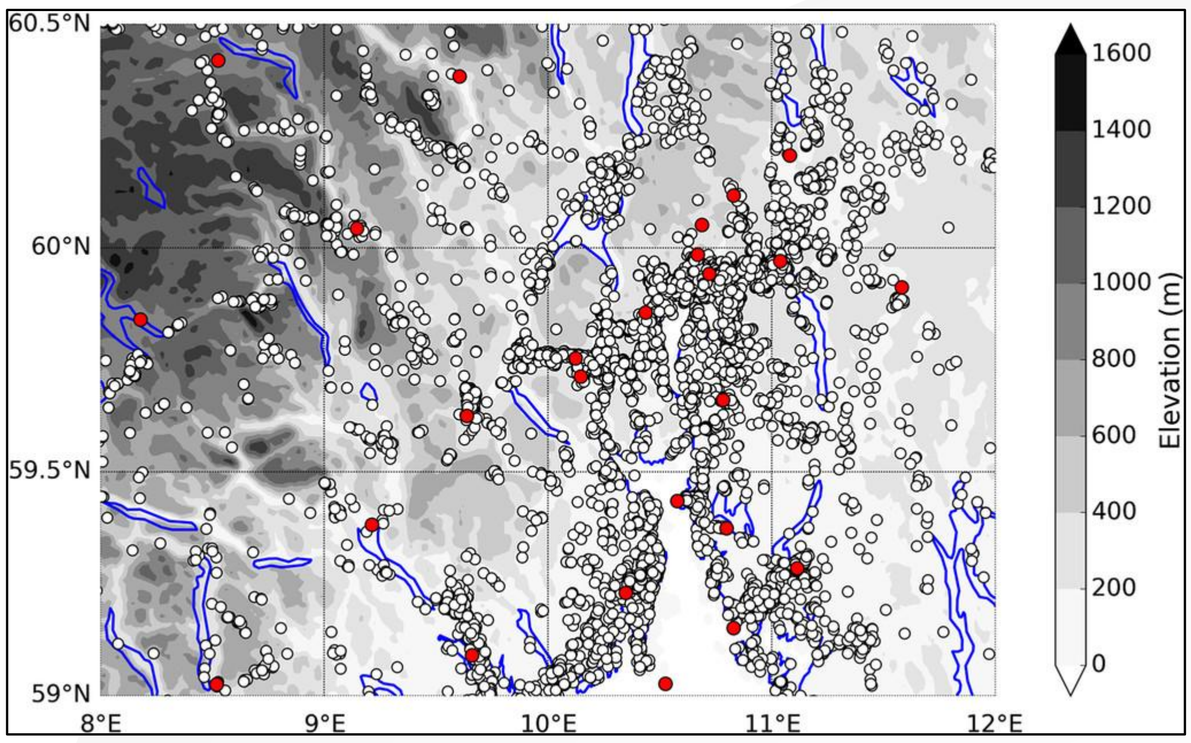
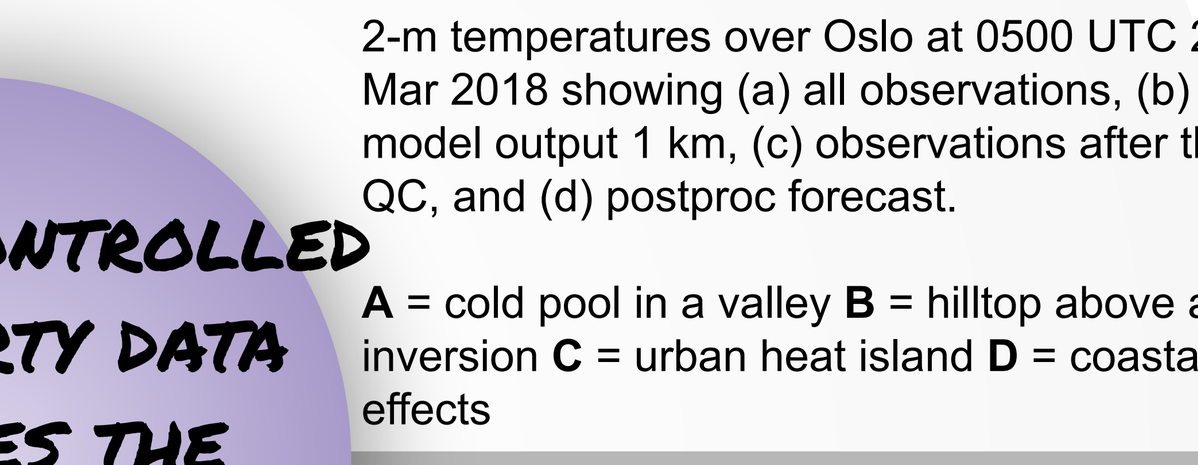
DATA SOURCES



Comparison of MET Norway's network of WMO-compliant stations (red circles) and Netatmo's network of citizen weather stations (white circles) in southeastern Norway.

CITIZEN NETWORKS CAPTURE HIGH-RES WEATHER PHENOMENA

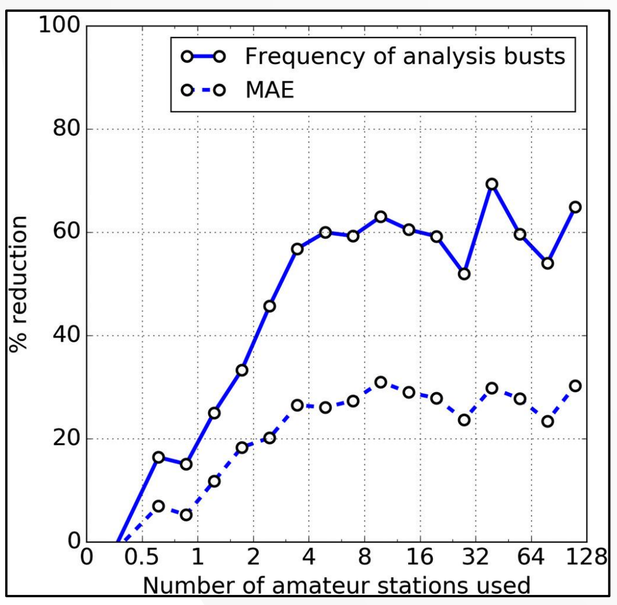


2-m temperatures over Oslo at 0500 UTC 28 Mar 2018 showing (a) all observations, (b) model output 1 km, (c) observations after the QC, and (d) postproc forecast.

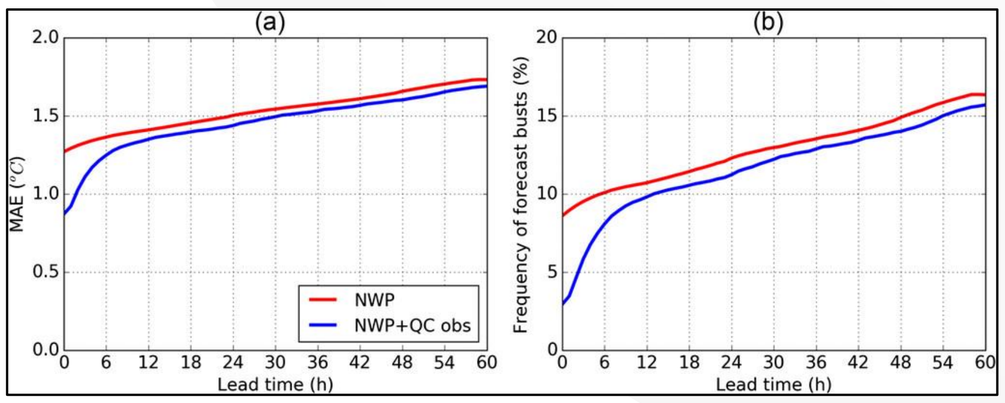
A = cold pool in a valley **B** = hilltop above an inversion **C** = urban heat island **D** = coastal effects

QUALITY-CONTROLLED THIRD PARTY DATA IMPROVES THE REPRESENTATION OF TEMPERATURE

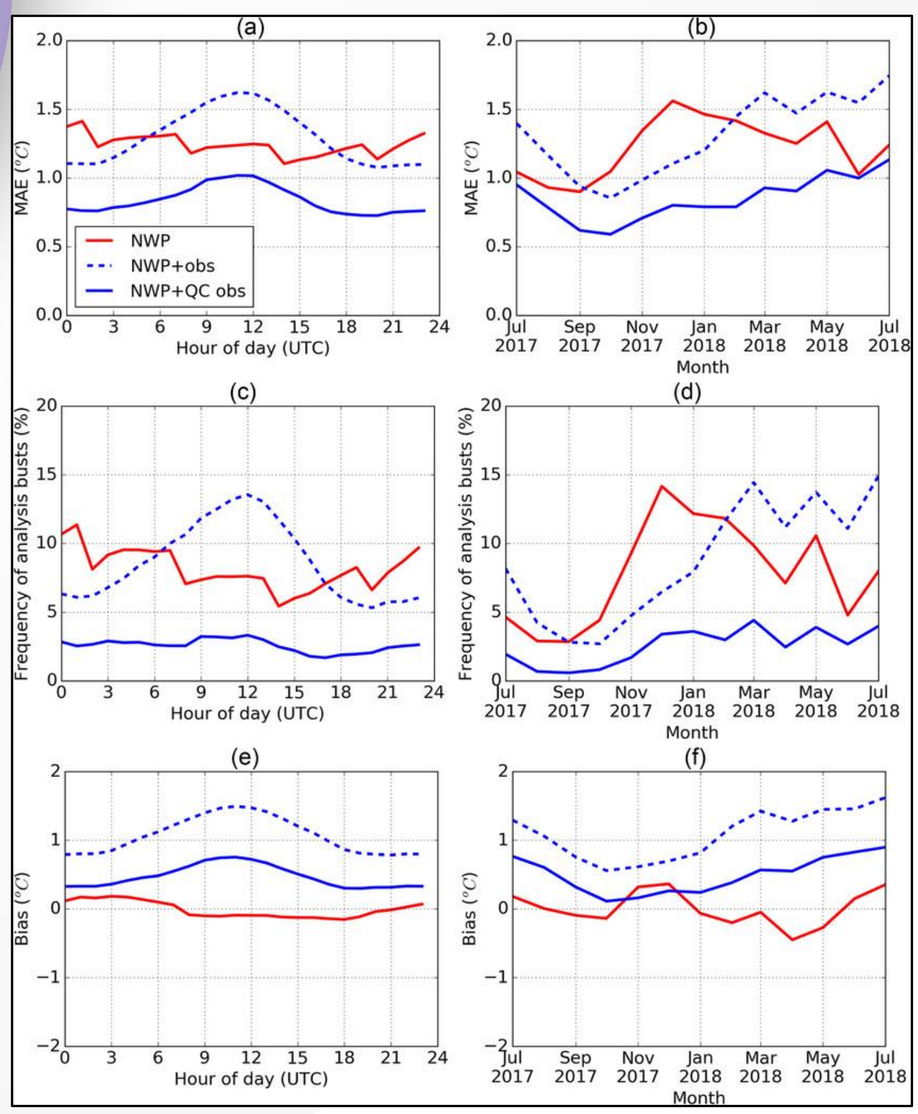
RESULTS



How does the improvement diminish with decreasing station density?
Figure: Analysis improvement as a function of station density



The improvements to the gridded truth carry over to the forecasts Figure: Verification for the forecasts as a function of forecast lead time.



Verification scores for the 2m temperature analysis verified against independent observations from 93 WMO-compliant stations in Norway for which the Netatmo network is sufficiently dense.

Nipen, T. N., Seierstad, I. A., Lussana, C., Kristiansen, J., & Hov, Ø. (2020). **Adopting Citizen Observations in Operational Weather Prediction**, Bulletin of the American Meteorological Society, 101(1), E43-E57

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To learn more about quality-control methods used at MET Norway see also the github repository *https://github.com/metno/titanlib*