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Using LAPS/STMAS as a real time surface analysis tool

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A data assimilation system based on the LAPS/STMAS software is tested for a full year (2012) to provide hourly surface analyses at high resolution (3 km) in a complex terrain area centered over Catalonia. In particular, surface observations of more than 150 automatic weather stations (AWS) of the Meteorological Service of Catalonia (SMC) are combined with the operational outputs of WRF-ARW model at 3 km available at SMC.

The hourly analyses obtained are verified against independent observations in order to evaluate the system as a real time tool in a small meteorological office. Additionally, an special study is carried out focusing on temperature at 2 m by means of introducing some code modifications in the LAPS/STMAS software. These tests are compared together with a simple multiregression technique exclusively based on observational data (AWS).

The comparison shows that the best results are obtained for STMAS when introducing an error weight that depends on the station topography representativeness, instead of just considering a common instrumental error for all the stations. Nevertheless, the multiregression technique still provides more accurate results on temperature and reveals that additional work has to be done in order to improve the system.