



Assimilation of humidity and temperature observations retrieved from ground-based microwave radiometers into a convective-scale NWP model

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Temperature and humidity retrievals from an international network of ground-based microwave radiometers (MWR) have been collected to assess the potential of their assimilation into a convective-scale Numerical Weather Prediction (NWP) system. Thirteen stations over a domain encompassing the western Mediterranean basin were considered for a time period of forty-one days in autumn, when heavy-precipitation events most often plague this area.

Prior to their assimilation, MWR data were compared to very-short-term forecasts. Observation-minus-background statistics revealed some biases, but standard deviations were comparable to that obtained with radiosondes. The MWR data were then assimilated in a three-dimensional variational (3DVar) data assimilation system through the use of a rapid update cycle. A set of sensitivity experiments allowed assessing extensively the impact of the assimilation of temperature and humidity profiles, both separately and jointly. The respective benefit of MWR data and radiosonde data on analyses and forecasts was also investigated.