

Towards an European continental-scale network of ground-based microwave radiometers

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Nowadays, ground-based microwave radiometers (MWR) are robust instruments providing continuous unattended operations and real time atmospheric observations under nearly all-weather conditions.

In the framework of the EU COST Action TOPROF (Towards operational ground based profiling with ceilometers, doppler lidars and microwave radiometers for improving weather forecasts), a working group dedicated to MWR was established (WG3).

WG3 aims at developing the tools and data cycle for experimenting the exploitation of an European continental scale network of ground-based MWR into Numerical Weather Prediction (NWP) models.

In this presentation we will:

1) present the WG3 activities on MWR instrument calibration and uncertainty characterisation;

2) introduce the development of a ground-based version (RTTOV-gb) of the fast radiative transfer RTTOV, commonly used to assimilate satellite radiometric observations into NWP;

3) present results from a prototype network of six MWR in Europe such as (i) a 1-year Observations-Background (O-B) analysis and (ii) a one-dimensional variational scheme (1DVAR) to retrieve harmonised temperature and humidity profiles

4) summarise the data assimilation (DA) trials exploiting MWR observations;

5) present current plans for implementing an operational DA framework exploiting observations from an European continental-scale MWR network.