

Use of Radiances in the CNMCA (Italian National Meteorological Center) Operational Ensemble Data Assimilation System

Lucio Torrisi^a and Francesca Marcucci^b

^a *CNMCA-Italian National Meteorological Center, Italy, torrisi@meteoam.it*, ^b *CNMCA-Italian National Meteorological Center, Italy*

Localization is essential in an ensemble-based Kalman filter data assimilation scheme, due to the practical necessity of using a limited number of ensemble members.

The vertical localization of satellite radiances is less straightforward to implement than for other observation types in a local algorithm such as LETKF [1] because these data are an integrated measure sampling different layers of the atmosphere.

The use of radiances from AMSU-A and MHS sensors has been investigated in the CNMCA operational data assimilation system based on the LETKF algorithm [2,3]. The assimilation of these satellite radiances has been tested applying different localization strategies. Other aspects of data assimilation (e.g. quality control, radiance bias correction, etc.) has been handled in order to obtain positive impact in the operational NWP system.

References

- [1] Hunt, B. R., E. Kostelich, I. Szunyogh. " Efficient data assimilation for spatiotemporal chaos: a local ensemble transform Kalman filter," *Physica D*, 230, 112-126, 2007.
- [2] Bonavita M, Torrisi L, Marcucci F. "The ensemble Kalman filter in an operational regional NWP system: Preliminary results with real observations", *Q. J. R. Meteorol. Soc.*, 134, 1733-1744, 2008.
- [3] Bonavita M, Torrisi L, Marcucci F. "Ensemble data assimilation with the CNMCA regional forecasting system", *Q. J. R. Meteorol. Soc.*, 136, 132-145, 2010