

Assimilation of Radar Data in a Convection Permitting Operational NWP System Using the Field Alignment Method

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Position error correction methods in data assimilation for weather forecasts have received in the recent past increased attention. DA algorithms usually employed in Limited Area NWP operational systems (e.g. 3DVar) cannot handle properly this kind of errors. Hence the importance of bringing in these environments efficient techniques that can improve on the current situation. In this work, the implementation of the Field Alignment method [1] in a state-of-the-art of one of such systems is presented. HARMONIE is the result of the collaboration in the NWP field of several European NMHS and is already being used in some of them to provide operational forecasting centers with short range weather predictions at a spatial resolution of the order of 2 Km. The tests on the method carried out so far have included radial Doppler wind and reflectivity data from six C-band operational weather radars of the Spanish network. These tests are giving encouraging results. Verification with the own radar data indicates a positive impact for all ranges and that it can last for longer than three hours in some cases. These verifications do not show severe spin-up noise. Among the problems found in the course of this development, the difficulty of having to adjust to the constraints imposed by the system's design is certainly one to mention. Several variants of the use of the Field Alignment method and more tests with radar data are underway in order to gain a more complete evaluation of the possibilities of the technique in an operational framework.

References

[1] Ravela S, Emmanul K, McLaughlin D, 2007: "Data Assimilation by Field Alignment" *Physica D*, **230**, 127-145