5.7 RADAR DATA ASSIMILATION AT GERMAN METEOROLOGICAL SERVICE OPERATIONAL APPLICATIONS AND PRE-OPERATIONAL RESEACH

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Radar data contains very valuable information on the current structure of the atmosphere. The very high resolution in space and time provided by radar measurements is expected to narrow the large gap NWP is facing when trying to initialize the high dimensional numerical weather prediction models. Especially the improvement of the very short range NWP with respect to high impact weather is a main goal. Application of radar observation in the process of data assimilation is a very challenging task and has to consider a lot of issues, concerning observation, model and assimilation techniques.

At DWD radar observation is assimilated operationally since 2006 by applying a very simple technique, called latent heat nudging (LHN). This more indirect method of assimilation, using a 2d composite of derived precipitation rates, has proven to be beneficial not only on precipitation forecasting but also shows positive impact on surface parameters. However, as 3d volume data at a European scale become available more easily, the hope is to get even more benefits on the three dimensional structure of the model atmosphere by assimilating this amazing data source applying the operational LETKF scheme. The presentation will give an overview of the state of the current radar data assimilation done at DWD. The focus will be more on the research part, and may address important issues of treating such data within a LETKF frame (localization, influence on spread, representation of observation errors, possibilities to make model background and observations more comparable). At the time of the conference it is expected, that 3d radial wind observations are assimilated operationally, at least for measurements of German radar sites. Be curious!