

## **DWDs new radar network and postprocessing algorithm chain**

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The Deutscher Wetterdienst (DWD) is currently replacing its operational Doppler radar network with new polarimetric C-Band Doppler radar systems. Along with the replacement the network structure was optimized by the relocation of 4 sites (Frankfurt, Hamburg, Berlin, Munich). At the end of the exchange in 2015 there will be 17 operational systems and one research system. Overall a preservation and improvement of data quality and quantity within the weather radar network is expected.

Beside the radar system exchange a 5-min volume scan strategy was successfully introduced in 2012. The enhanced system capabilities of the polarimetric radar systems in combination with the new volume scan strategy allow an improvement of the existing algorithms and the development of new algorithms.

Therefore along to the radar replacement a new postprocessing algorithm chain using a uniform software framework called POLARA (polarimetric radar algorithms) is developed. The advantage of POLARA is that all algorithms benefit from the framework functionality and that each algorithm may use the output of its predecessors.

The postprocessing algorithm chain starts with a radar system monitoring at each radar site followed by a central quality control using the radar system monitoring output. The results of this quality control stage are quality index fields for each radar sweep, where detected errors for every single range gate are binary coded. The quality index fields may now be applied to the radar measurements providing the basis for further post-processing algorithms like hydrometeor classification, quantitative precipitation estimation, the generation of quality controlled composites and the detection of severe convective events (cell and mesocyclone detection).

The new and improved algorithms deliver a direct profit to the nowcasting of precipitation and estimation of precipitation phase as well as the whole warn management of DWD.