

6.16 MONITORING THE ONGOING UPGRADE OF THE SWEDISH WEATHER RADAR NETWORK

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The upgrade of the Swedish weather radar network to dual polarisation began in 2014 and is expected to finish in 2019 with 7 of the 12 radars in the network currently upgraded. The introduction of new components into the network and a constant refinement of the network during the upgrade have increased the need to constantly monitor the stability of the radars in the network. This is compounded by the increased monitoring requirements of dual polarisation radars with the need to maintain consistent calibration of differential reflectivity particularly important. Dual polarisation also provides increased opportunities for monitoring the reflectivity through the application of self-consistent calibration techniques.

To meet these enhanced requirements SMHI has implemented several complementary monitoring techniques, including but not limited to monthly statistical analyses, the Relative Calibration Adjustment (RCA) technique (Silberstein et al, 2008), online solar monitoring techniques (Holleman et al, 2010), the commonly used birdbath calibration technique (Bringi and Chandrasekar, 2001) and self-consistent calibration techniques (Gorgucci et al, 1992).

It has been necessary to adapt these methods to the Swedish network, particularly considering ice phase precipitation is dominant during several months of the year in Sweden and the majority of the Swedish radars are located in rural environments with variable clutter targets. We present our adaptations and results from the monitoring techniques, showing how they complement one another in monitoring the upgraded network. We also present examples of how these techniques have identified radar malfunctions during the upgrade process and how they are now developing into an automated monitoring system that alerts us to any unexpected changes in the network.

References

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