

Beyond weather data ...key figures for radar monitoring and calibrations!

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During the last 2 decades, weather radar data become one of the main element for weather monitoring and quantitative measurement. The continuous demand for more accurate, stable and well-calibrated radar data increase especially for severe weather monitoring, rainfall estimation, and others. Many methods and software (even specific workshops) have been dedicated for this topic.

Modern technologies provide a lot of potentials to derive performance and quality measures without interfering the radar operation, flexible for different weather radar system hardware and independently of the radar manufacturer. Moreover, inherently given since it is based on the atmospheric measurements.

In this paper, we describe a few methodologies to derive and monitor key figures, i.e. detecting some specific behavior or variation of parameters in certain conditions to monitor the quality of data from the data itself. The general approach is idea is to define representative (very few) values (resp. key figures) and study their variation in function of the time. For example, the average value of the Differential Reflectivity (ZDR) in light rain is a key figure, the average value of ZDR at 90° (the birdbath calibration) is another one. Louf et al. 2019 showed that monitoring the 95 percentile of the reflectivity of the near ground clutter (Relative Clutter Adjustment (RCA)) would monitor the stability of the absolute calibration of the entire system. RCA is also considered as a key figure. Other key figures can be simply created and configured by the user.

The goal is to use the weather radar data beyond its “classical” purpose and to define a set of key figures to monitor the radar data, or the hardware sub-systems in order to define e.g. measures for predictive maintenance activities.

The results of the key figures are stored in a database. A specific web-based graphical user interface is dedicated for the real-time visualization, archiving and restoring or extracting data for long-term period assessments.

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