

### **3.7 PROSPECT OF IMPLEMENTING THE ADVANCED RADAR REFRACTIVITY TECHNIQUE ON OPERATIONAL RADARS**

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Radar refractivity is a proxy for two-dimensional near-surface moisture fields. This technique is based on the temporal phase variation from ground targets as an indication of the refractivity change along the radar beam path. High temporal and spatial resolution refractivity maps have been used to study the spatial variation of near-surface moisture associated with convection evolution and boundary layer processes, as well as for assimilation in numerical weather prediction models to improve quantitative precipitation forecasting skills.

In this study, we introduce the recent progress in the radar refractivity retrieval technique and how these improvements benefit the future implement on operational radars. With the improved algorithm, the three-dimensional refractivity information is provided, consisting of a horizontal map at a given height above the terrain and the averaged refractivity profile over the data coverage. Newly obtained knowledge on the ground targets also improve the ground target section at the calibration stage and the quantification of observation errors. The related preparation, such as scanning strategy, will be suggested. In the second part, new prospects on how to use the refractivity fields will be introduced with examples, e.g. heat island effect.

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