

Nowcasting of an X-band Dual-Polarization Radar during Southern China Monsoon Rainfall Field Campaign

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Abstract-- The Southern China Monsoon Rainfall Field Campaign aims to obtain high spatial-temporal resolution observations of the fine-scale structures of the convective systems and improve the performance of the quantitative precipitation estimation/forecast (QPE/QPF) in the region of southern China during the early summer rainy season. The field campaign was launched in Guangdong province from mid-April to mid-June of 2016.

The X-band dual-polarimetric weather radar (XPOL) was part of the composite observing network to monitor local small-scale convective storm within 80 km range. XPOL has high spatial resolution of 75m better than the spatial resolution of current operational S-band China New Generation Doppler Radar (CINRAD) which is mainly used for moderate-large scale precipitation. XPOL plays the gap-filling role for nearby S-band CINRADs. The additional characteristic of smaller footprint, lower cost, and easy sustainability furthermore enhance the remarkable performance of XPOL.

The DARTS-based (Dynamic Adaptive Radar Tracking of Storm) Nowcasting algorithm is implemented for XPOL, in order to forecast the precipitation pattern motion and intensity variation of fine-scale storm. Fifteen rainfall events data were captured during field campaign and used to validate the performance of DARTS-based algorithm.