Innovative Severe Weather Sensing Technology Using Multi-Phased Array Weather Radars

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Phased array weather radar (PAWR, hereafter) is a state-of-the-art remote sensing technology that performs high-speed volumetric scan of convective cloud systems located within 60-80 km in range at an update rate of 10-30 seconds. Since 2015, Meteorological Research Institute and Japan Radio Co., Ltd. are operating X-band PAWR in Tsukuba and Chiba, respectively. In this study, we analyze several severe weather events including localized heavy rain, typhoon, and damaging wind cases using coincident dual PAWR observation data. In addition to clarifying the three-dimensional space-time structures of reflectivity and wind field in these events, we extend our discussion to how multi-PAWR observation network improves future monitoring and short-term prediction of severe weather systems.
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Keywords: phased array weather radar, convective system

