13.47 EFFECT OF URBAN ENVIRONMENT ON SUMMER PRECIPITATION IN STUTTGART

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Analogous to the orographic effect, urban environment is perceived to engender a complicated influence on the precipitation occurring within or surrounding the city. The issue regarding how the urban environment modifies the precipitation is still in debate, and thus our study is intended to fathom the foregoing questions in regards to the impact of urban environment on the precipitation, for instance, to investigate the mechanism that the existence of urban environment would inhibit or encourage the initiation and development of precipitation systems.

Accordingly, high-resolution X-band measurements were performed from May-October 2017 in Stuttgart, the sixth largest city in Germany, with 10-minute interval repetitions of three 75-meter resolution low-elevation scans and one 250-meter resolution volume scan. Interlacing of two types of scan can provide both very high resolution and comprehensive inspection of the precipitation. The acknowledged and unique topographic features of Stuttgart render our study more challenging, but it might also bring about chances to investigate the interaction of urban effect and topographic effect.

Besides the highly resolved X-band radar measurements, additional instruments including automatic rain gauges "Pluvius" and a Micro-Rain Radar (MRR) can provide supplementary information of precipitation measurements at the ground (from "Pluvius") and the vertical profile (from MRR). One-site comparison from MRR and Pluvius with X-band radar measurement can improve our effective use of X-band radar measurement, further contributing to the better characterization of precipitation in the urban environment.