Comparison between X-band and C-band co-located rainfall estimations in urban environment in Torino, Italy

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Urban hydrological applications require high spatial resolution estimations of the rainfall field. These observations can be achieved by weather radar. However several sources of uncertainties like ground clutter, partial beam blocking and signal attenuation affect these observations. The metropolitan area of Turin, Italy, is monitored by an operational C-Band weather radar, 6-km far from downtown and by a research weather X-band radar, located within the city. Moreover several tipping-bucket raingauges continuously monitor rainfalls in the urban area. This study compares X-band and C-band weather radar rainfall estimations and raingauges network observations. Detailed analysis of sources of uncertainties in the observations is realized using Open Source Geographic Information System (GIS) tools providing physical interpretation of the results.