Modelling of extreme rainfall in Singapore using 100m uSINGV

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Singapore, as a highly urbanized coastal city situated near the equator, has a typical tropical climate with abundant rainfall throughout the year. With the global warming, Singapore is prone to more frequent extreme rainfall events and at an increased risk for urban flooding. A fundamental problem with the conventional km-scale models to predict such high-impact weather is that small-scale convective processes are under-resolved. In comparison, a high-resolution sub-km model with urban modelling capability is promising as it can resolve smaller scales and also take into account the urban effects. In this study, we employ the latest urban modelling system developed at CCRS, the 100m uSINGV, for a number of selected extreme rainfall events to evaluate the performance of this hectometric model and to better understand urban-scale high-impact weather in the region. In this talk, I will present the progress of this research project and share what we have learnt so far.