Statistical Downscaling Based on Conditional Weather Generation for Storm Hyetograph

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General circulation models (GCMs) provide the well information about future climate change. However, GCMs only simulate reliably on a large scale, but fail on a regional scale because of their low spatial resolution. In addition, their temporal resolution is also too low to represent the variation of single storm event. The conventional studies use statistical downscaling scheme to overcome the spatial resolution insufficiency but still not resolve the temporal resolution insufficiency. Hence this study proposes a novel statistical downscaling approach for storm hyetograph in Shihmen watershed. The study use a conditional weather generation downscaling model (CWGDM) to synthesize daily rainfall and then finding out the annual maximum precipitation strength of 24 hours from these synthesize data. The study then estimates the precipitation strength of different return period based on their statistical distribution and calculates the storm hyetograph of different return period through precipitation strength of different return period and design hyetograph. Those hyetograph of different return period are relevant for hydraulic facility design.