



Stochastic generation of spatio-temporal compound events for flood risk assessment.

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Recently there has been a shift in policy from threshold based ‘Design Events’ to ‘Flood Risk Assessment’ (FRA). In order to perform a FRA, synthetic boundary conditions are required. We propose a new approach to generate synthetic compound events from observed compound data (CFSR) on the continental scale. We define spatio-temporal clusters of extreme precipitation, wind speeds and low pressure (here defined as compound events), extract hydrological descriptors for each event, generate synthetic descriptor sets with a multivariate extremal dependence model [Heffernan and Tawn, 2004] and finally, create synthetic compound events from the generated synthetic descriptors.

We compare the result of the spatio-temporal compound generator with local analysis and will demonstrate that the generator produces more robust and realistic return level estimations that are less sensitive to the sparsity of observation data.