?Development of a user-friendly web application for providing stochastically simulated rainfall time series

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(a) Purpose of study or research hypothesis

Rainfall data is important to develop hydrological model for risk assessment as well as plans for water resources. However, this rainfall data oftentimes is unavailable. Stochastic rainfall models that simulate synthetic rainfall can be the one of solutions to this issue. Because of model's complicated procedure to simulate synthetic rainfall, user of the model is limited to related field specialist at present. This research aims to develop a web application which enables the use of synthetic rainfall time series simulated by stochastic rainfall models without difficulty.

(b) Key issue(s) or problem(s) addressed

Observed rainfall data is unavailable or not long enough oftentimes because of shortage of gauge stations and some errors in rainfall data. Another problem in the stochastic rainfall simulation model as the suggested alternative is that the model structure is so complicated that general user can't use the model easily.

(c) Methodology or approach used

A web application named Let-It-Rain is developed. It can simulate hourly synthetic rainfall scenario based on Modified Bartlett-Lewis Rectangular Pulse model which is the one of the Poisson cluster rainfall model. A structure of this application consists of ArcGIS Server for providing model parameter and JavaScript for user to execute the Modified Bartlett-Lewis Rectangular Pulse model.

(d) Results or conclusions derived from the project

Characteristics of observed rainfall such as mean, variance, autocovariance, and proportion of dry period at one hour to one day of aggregation interval were reproduced satisfactorily. In application of runoff and flood modeling, depth and peak flow were also reproduced reasonably well.

(e) Implications of the project relevant to congress themes

We expect that this application will be approach to share the rainfall information to world wide users.

Keywords : Poisson cluster rainfall simulation, Web application