Geophysical Research Abstracts
Vol. 12, EGU2010-3164, 2010
EGU General Assembly 2010

Spatial interpolation of daily rainfall in Ourthe and Ambleve Basins, Belgium

Sarann Ly (1), Catherine Sohier (1), Catherine Charles (2), and Aurore Degré (1)

(1) University of Liege, Gembloux Agro-Bio Tech, Hydrology & hydraulic Eng., Gembloux, Belgium (sarann.ly@student.ulg.ac.be), (2) University of Liege, Gembloux Agro-Bio Tech, Applied Statistic, informatics and mathematic, Gembloux, Belgium

Spatial interpolation of precipitation data is of great importance for hydrological modelling. The methods of geostatistics (krigings) become more popular to make spatial interpolation from point measurement to distributed hydrological models. However, most of existing geostatistic algorithms are available only for single-moment data. The first step of Kriging computation is the semi-variogramme modelling which usually uses only one variogramme model for all-day data. The objective of this paper is to review the implementation of an algorithm of spatial interpolation methods for daily rainfall and to compare the results of geostatistic and deterministic approaches. In this study, we will use daily rainfall data from 70 rain gauges in the hilly landscape of Ourthe and Ambleve Basins in Belgium (2751 km^2). This area lies between 35 and 690 m in elevation and consists of river networks which are the tributaries of the Meuse River. The proposed algorithm will use the method of Cressie's Approximate Weighted Least Squares to fit among sevens semi-variogramme models (logarithmic, power, exponential, Gaussian, rational quadratic, spherical and penta-spherical) to daily sample semi-variogrammes. These seven models are computed on a daily basis. Firstly, one model is chosen by considering the minimum of least squares coefficient. Secondly, if the chosen model gives negative interpolated values, other models will be chosen again until the result become positive. Cross validation will be used to compare the interpolation performance of geostatistic to deterministic methods usually known as Thiessen polygon and Inverse Distance Weighting (IDW).

KEYWORDS: spatial interpolation, geostatistic, Kriging, semi-variogramme IDW, Thiessen, daily rainfall, Ourthe, Ambleve