



## **Preliminary data analysis for a multisite rainfall stochastic model implementation**

V. Montesarchio (1), F. Napolitano (1), and D. Koutsoyiannis (2)

(1) Sapienza, DITS, Hydraulics, Highways and Roads, Rome, Italy (valeria.montesarchio@uniroma1.it), (2) National Technical University of Athens, Faculty of Civil Engineering, Department of Water Resources and Environmental Engineering, Greece

In many hydrological applications and in developing flood risk management strategies, stochastic rainfall simulation is the most convenient and reliable method. Generally, it is required that the stochastic model preserves important properties of the rainfall process such as intermittency, seasonality and scaling behavior in space and time, so that there will be no substantial differences between historical rainfall data and synthetic records. This paper summarizes an investigation of rainfall properties in the North Lazio Region, Italy. The spatial variability of rainfall is examined for the years 1993-2008, at time scales from 30 min to 1 year using a raingauge network (at least 17 instruments on 4000 square kilometers). Examined properties are basic statistics of rainfall process (maximum, minimum and mean value, variance, skewness, kurtosis), probability and length of dry intervals, and dependence structure of rainfall (time and space correlation between time series for different time scales, hourly, daily, monthly, yearly). The study concludes with a discussion of results, and the specifications of an appropriate stochastic model for multisite rainfall simulation, in order to be used in a flood risk evaluation methodology.