

Program Development on the Nonparametric Weather Generator with Climate Condition supported by a Database System

Jonghyun Lee and Taesam Lee¹

Department of Civil and Environmental Engineering, Colorado State University

Abstract. Weather generators have been used in basic input data of water distribution system, erosion control, etc. Traditional generators, based on parametric time series approaches, currently lead for usage (Wilks and Wilby, 1999). However those parametric weather generators coincide with the significant shortcomings such as simulating physically implausible values (e.g. negative values on precipitation data), biases on the marginal distribution of the weather variables, and cumbersome interconnection between the intermittent variable (precipitation) and other non-intermittent variables (e.g. maximum temperature, minimum temperature).

In literature, nonparametric weather generators (NPWG) have been proposed to surmount those drawbacks. Those NPWG, however, require tremendous data ordering and comparison in the generation process. Recent developments on handling enormous data using databases can be useful techniques for those heavy data handling.

Therefore, the objective of this work is to program those cutting-edge nonparametric weather generator techniques supported by a database system and open for public use. Primarily, the Microsoft Access Database is employed in this study. The further extension, however, is to include other types of database systems such as MS SQL, Oracle, and MySQL etc.

¹ Corresponding Author : Engr. Bldg B10, Hydrology Lab
Department of Civil Engr., Colorado State University
Tel:970.491.4302, Email : tae3lee@engr.colostate.edu