



Effects of Climate Change on the Estimation of Intensity-Duration-Frequency (IDF) curves for Thessaloniki, Greece

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ABSTRACT

In this study predictions from the regional climate model (RCM) KNMI are used to assess how extreme rainfall events will be modified in the future for the region of Thessaloniki (Greece). A statistical downscaling method, which is based on the scaling of the Generalized Extreme Value (GEV) distribution, is presented and implemented in order to describe the relationships between daily and sub-daily extreme precipitations for the derivation of IDF curves for current and future climate. To assess the suitability of the temporal downscaling procedure for the construction of IDF curves, sub-daily extreme rainfall estimates, provided by applying the downscaling procedure to given daily rainfall records, and those obtained directly from historical data are compared. Comparing the IDF curves based on RCM simulations for current climate (1950-2000) with those for future climate (2001-2100), a clear increasing trend in future rainfall intensities and depths is indicated.

KEYWORDS

Climate change, temporal downscaling, extreme rainfall, IDF curves, urban drainage