T.E.V.E.RE: a Transient Extreme Values Estimation within a user-friendly softwaRE

Davide Luciano De Luca[1], Benedetta Moccia[2], Luca Buonora[2], Elena Ridolfi[2], Fabio Russo[2] and Francesco Napolitano[2]

(1) Department of Informatics, Modelling, Electronics and System Engineering, University of Calabria, Rende (CS), Italy
(2) Department of Civil, Constructional and Environmental Engineering-DICEA, Sapienza University of Rome, Italy

Effects of Climate Changes (CC) on hydrological scales constitute an important topic for scientific community. Besides the open debate about the use of terms "stationary/non-stationary" and "change" (Koutsoyiannis and Montanari, 2014), the adoption of the outputs (usually considered as reference) from Regional Climate Models (RCMs) can clearly induce a significant uncertainty, mainly due to the differences between RCM and hydrological scales (spatial and temporal).

In this context, authors propose a probabilistic approach for modelling possible trends induced by CC, focusing on Annual Maxima (AM) of sub-daily rainfall heights, and in particular on evaluation of transient Amount-Duration-Frequency (ADF) curves.

In detail, starting from the use of TCEV (Two-Component Extreme Values, Rossi et al. 1984) distribution for AM time series, the coefficients characterizing possible parametric trends are assumed as further random variables following assigned distributions (uniform, triangular, and so on), and the whole analysis is implemented inside the software T.E.V.E.RE. (Transient Extreme Values Estimation within a user-friendly softwaRE), which will be soon available as a freeware at https://sites.google.com/unical.it/tevere/home-page.

The proposed methodology was tested for some rain gauge series of Lazio and Calabria regions, located in central and southern Italy, respectively.

References

Koutsoyiannis D. and A. Montanari (2014). Negligent killing of scientific concepts: The stationarity case, *Hydrological Science Journal*, **60**, 1174–1183

Rossi F., M. Fiorentino and P. Versace (1984). Two-component extreme value distribution for flood frequency analysis, *Water Resources Research*, **20**, 847-856