

Characteristics and process controls of statistical flood moments in Europe - a data based analysis

*Original*

Characteristics and process controls of statistical flood moments in Europe - a data based analysis / Lun, David; Viglione, Alberto; Komma, Jörgen; Bertola, Miriam; Parajka, Juraj; Blöschl, Günter. - In: HYDROLOGY AND EARTH SYSTEM SCIENCES. - ISSN 1027-5606. - 25:(2021), pp. 5535-5560. [10.5194/hess-25-5535-2021]

*Availability:*

This version is available at: 11583/2863072 since: 2021-01-19T10:39:50Z

*Publisher:*

Copernicus

*Published*

DOI:10.5194/hess-25-5535-2021

*Terms of use:*

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

*Publisher copyright*

(Article begins on next page)

EGU2020-16969

<https://doi.org/10.5194/egusphere-egu2020-16969>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## Characteristics and process controls of statistical flood moments in Europe - a data based analysis

**David Lun**<sup>1</sup>, Alberto Viglione<sup>2</sup>, Jürgen Komma<sup>1</sup>, Miriam Bertola<sup>1</sup>, Juraj Parajka<sup>1</sup>, and Günter Blöschl<sup>1</sup>

<sup>1</sup>TU Wien, Institute of Hydraulic Engineering and Water Resources Management, Vienna, Austria (lun@hydro.tuwien.ac.at)

<sup>2</sup>Politecnico di Torino, Department of Environment, Land and Infrastructure Engineering, Turin, Italy

Characteristics and process controls of statistical moments of annual maximum peak discharges, including the mean annual flood (MAF), the coefficient of variation (CV) and the coefficient of skewness (CS), are analyzed for flood series in Europe. The data set consists of observations from 2370 catchments with an average record length of 48 years. The controls are identified by investigating dependencies between the flood moments and catchment area, flood seasonality, climate and catchment characteristics in five regions. The covariates providing the most explanatory power for within-region variability are identified in a regression framework. Preliminary results indicate: MAF and CV are strongly correlated with hydroclimatic catchments characteristics, and to a lesser degree with topography and land use. In the Atlantic region, precipitation is the most important control on the spatial patterns of MAF and CV; in the Mediterranean it is precipitation and aridity; and in Northeastern Europe it is air temperature.