EGU25-9608, updated on 12 Apr 2026
https://doi.org/10.5194/egusphere-egu25-9608
EGU General Assembly 2025
© Author(s) 2026. This work is distributed under
the Creative Commons Attribution 4.0 License.

On the links between large-scale atmospheric circulation and extreme precipitation in the middle and lower Danube basin

Ileana Mares, Venera Dobrica, **Constantin Mares**, and Crisan Demetrescu
Institute of Geodynamics, Romanian Academy, Bucharest, Romania (ileana_mares@geodin.ro)

The aim of this study was to find the connection between the large-scale atmospheric circulation in the winter season and the occurrence of extreme precipitation in the spring months at the regional scale. For the large-scale circulation, climate indices (GBOI and NAOI) associated with the Greenland-Balkan Oscillation and the well-known North Atlantic Oscillation were considered, and for the regional scale, certain representative stations for the middle and lower Danube basins were considered. The tests were carried out for a 120-year interval (1901-2020), by applying the extreme value theory (EVT). The modelling of maximum precipitation was carried out through the generalized extreme value (GEV) distribution. In order to see the impact of the large-scale circulation, the results obtained by incorporating NAOI as covariate into the location parameter of GEV distribution, were compared with the results obtained considering GBOI as covariate. For extreme precipitation in the lower basin area, the influence of GBOI is much more significant than that of NAOI, while for the middle basin area, the differences between the two indices are not so significant.