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Regional variability of extreme rainfall events in Romania

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Extreme rainfall events triggering flash floods occur quite often over the territory of Romania, leaving behind significant damages and casualties. This research is a contribution to the FP6 Project HYDRATE (Hydrometeorological data resources and technologies for effective flash flood forecasting). It aims at investigating the spatial patterns of the extreme rainfall events in Romania, based on the characteristics of their intensity-duration-frequency (IDF).
The study uses the peak-over-threshold concept, which basically consists of analyzing all precipitation amounts above certain thresholds selected for different durations. The data come from 60 weather stations. They cover the warm interval (generally, April-October, but less extended for mountain stations), and at least 30 years-datasets have been used. The regional differences were retrieved from the IDF curves and they were also approached by GIS-based mapping the intensities corresponding to sub-daily durations (5 – 180 min.) and to different return periods (10,50, 100 years).
The results highlight significant regional variations, that improve the understanding of the impact of the extreme rainfall events and the consequent flash floods on the natural and social environment. At the same time, overlapping the extreme rainfall data and land cover information, we have empahsized the hazard potential of the precipitation events.