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Trends in precipitation: towards increased variability in Portugal?

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The study of precipitation variability is very relevant, mainly because of its impact on society (e.g. urban drainage), economic activities (e.g. agriculture), land use, water resources and ecosystems. Increased precipitation variability in recent years has already been reported by different studies, in particular on the basis on annual and monthly point data, and for different geographical locations. However, for some engineering applications, the behaviour of precipitation at different scales is of the utmost importance. Many hydrological and hydraulic design approaches rely on the characterization of precipitation at specific temporal and spatial scales: daily or even higher resolution data and spatial patterns have to be investigated.

In this work recent trends in the structure of precipitation are investigated using high resolution point data from Portugal. The analysis uses several daily precipitation indices and other parameters. Results show that the spatial variability of relevant factors affecting precipitation can lead to contrasting statistics which should be carefully taken in to account in design procedures and decision making processes. The analyses lead to a characterization of changes in the distribution of precipitation within the year and over the territory, which further strengthens the well-known strong seasonal and regional character of precipitation in Portugal. The role played by intense events in this behaviour is discussed.

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