



Extreme precipitation in the Mediterranean area and large scale atmospheric patterns

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Extreme precipitation events have a strong impact on economies and population. The understanding of their behavior is a crucial task to be dealt with. Besides index approaches, Extreme Value Theory can provide useful tools for that aim. A new procedure based on Generalized Pareto distribution has been developed and applied to a set of 20 daily winter precipitation series, recorded at coastal stations in the Mediterranean. Extremes are characterized in terms of intensity and occurrence (e.g. return levels). Moreover, their relationship with large-scale atmospheric circulation patterns is investigated through daily reanalysis of Z500, Sea Level Pressure and wind at 250 hPa. Anomalies during (i) extreme precipitation events, (ii) non extreme wet days, (iii) dry days are calculated. The members of the three classes undergo a new two-step classification algorithm developed for that issue. Three significant main patterns are identified both for the eastern and western part of the Basin. A dipole structure characterizes two patterns out of three both for the eastern and western Mediterranean.