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Trend analysis of extreme precipitation probability since 1950 by means of point process methodology: application in North-East Spain

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Important changes have been observed in the magnitude and frequency of extreme precipitation events in several regions. Different climate change models predict a noticeable increase of the extreme precipitation events throughout the twenty-first century. This makes necessary to develop robust methods to detect changes in the frequency of extreme events. In this study, we analyse the temporal trends in the probability of occurrence of intense precipitation events by means of a novel technique (point process analysis) based on calculation of mobile return periods for a given precipitation intensity. For this purpose the Generalised Pareto distribution was used and the time variation of the parameters of the distribution were obtained by means of the L-moment method. This methodology has been applied in the North-East Spain from 1950 by means of a dense database of daily precipitation records which covers a climatically diverse region from Atlantic to Mediterranean conditions.