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# Extreme precipitation risk in North-Spain as a function of the phase of different atmospheric circulation patterns

**S.M. Vicente-Serrano** (1), S. Beguería (2), J.C. González-Hidalgo (3) and J.I. López-Moreno (1)

(1) Instituto Pirenaico de Ecología, Spain, (2) Estación Experimental de Aula Dei, Spain. (3) Departamento de Geografía, Universidad de Zaragoza, Spain (svicen@ipe.csic.es/Phone:+34976716141)

Atmospheric circulation patterns control the climate in large regions of the World. In the Mediterranean area some patterns affect the amount and the frequency of precipitation. The majority of studies have been focussed on the impact of circulation patterns on precipitation amount. Although some studies have dealt the differences in the frequency distributions of daily precipitation related to the different phases of atmospheric circulation patterns, no studies have been done about changes in the risk of occurrence of the most extreme events as a function of these phases. In this study we analyse the role of positive and negative phases of the most important atmospheric circulation patterns that control the climate over the North-East of the Iberian Peninsula (The North Atlantic Oscillation, the Western Mediterranean Oscillation, the Southern Oscillation index, etc.) on the probability of occurrence and the return period of intense precipitation events. The analysis shows the spatial changes on risk related to the different phases changes, and noticeable seasonal differences found in the area. This study shows that the proposed method is very useful to improve the prediction and the management of the intense precipitation events in the study area, being also applicable for other regions.