

Number of days of rain in Iberian Peninsula has increased since 1903

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In spring, the number of rainy have decreased slightly since 1954. Credit: SINC

A research team, led by the University of Extremadura, has for the first time analysed the frequency of rainfall over the whole of the Iberian Peninsula from 1903 to 2003. The results show that the number of rainy days increased over the 20th Century, except in the area of the Gulf of Cádiz and in western Portugal. However, rainfall has become less and less intense, except in these two regions.

The study, which used daily precipitation data from 27 stations in Spain and Portugal, provides the first long-term evaluation of changes to [rainfall](#) over the Iberian Peninsula. The period covered by the study (from 1903 to 2003) is the longest ever to date.

"The number of days of total rainfall (in excess of 0.2 mm/day) and light

rainfall (between 0.2 and 2.5 mm/day) increased at most observatories across the Peninsula, except in the west of Portugal and the Gulf of Cádiz, where it is decreasing", María Cruz Gallego, lead author and a researcher at the Physics Department of the University of Extremadura, tells SINC.

The researcher says that "at most of the observatories in the Peninsula, rainfall is becoming increasingly less intense, except in western Portugal and the Gulf of Cádiz, where it seems to be intensifying", adding that the proportion of light rainfall has increased across the whole area, but has diminished in these two regions, where an increase in heavy rainfall has been seen.

The study, which has been published in the *Journal of Geophysical Research*, used standardised precipitation series for the 20th Century over the whole of the [Iberian Peninsula](#). The research team studied the trends in the number of days of seasonal rain, the seasonal maximum and minimum durations of dry periods, and the seasonal proportion of each kind of rain (total, light, moderate, heavy and very heavy).

"The maximum duration of the dry periods declined at most of the observatories on the Peninsula over the course of the year, with the same exceptions in the west of Portugal and the Gulf of Cádiz, where they are increasing", Gallego stresses. As a result, "rainfall events are becoming less and less spaced out in the Peninsula".

A century of rain

The scientists divided the data into two sub-periods: from 1903 to 1953, and from 1954 to 2003, in order to analyse how these trends evolved in greater detail. In the first sub-period, the researchers observed an "almost generalised" decline in the number of rainy days in autumn for all the categories of rainfall, the expert explains.

In the second sub-period (1954-2003), they discovered the "opposite" pattern, with an increase in the number of rainy days in autumn for all the rainfall categories, above all for total and light rain.

In spring, the number of rainy days increased above all in the categories of total rainfall, moderate rainfall (between 2.5 and 7.5 mm/day) and heavy rainfall (in excess of 7.5 mm/day) for the first sub-period. "This decreases slightly in the second sub-period". This decline is "clearer" in winter.

The researchers say that analysing a long period makes it easier to see how rainfall behaves over a century. "But if you analyse smaller sub-periods within the total period, you can find behaviour that is contrary to the overall pattern", the scientist concludes.

More information: Gallego, M.C.; Trigo, R.M.; Vaquero, J.M.; Brunet, M.; García, J.A.; Sigro, J.; Valente, M.A. "Trends in frequency indices of daily precipitation over the Iberian Peninsula during the last century" *Journal of Geophysical Research-Atmospheres* 116: D02109, January 2011. [doi:10.1029/2010JD014255](https://doi.org/10.1029/2010JD014255)

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