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Drought impact links to meteorological drought indicators and predictability in Spain

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S1. Calculation of performance metrics in the cross-validation analysis

All performance metrics (for both the regression and classification models) were computed following a repeated 10-fold cross-validation analysis. This analysis used all of the available data and was repeated five times. This means that the data was split into 10 folds. The models were then trained and tested on all the data, using each fold as the test set and the remaining part of the time series as the validation set. A new model was trained and validated for each of the 10 folds; a different fold was held back for testing each time. The performance metrics were then averaged for the 10 iterations. To improve the estimate of the model performance, this procedure was then repeated five times. For each repetition the split of the data set into folds was different. The final performance metric was an average of the five repetitions.

When training a model, one can choose which performance metric to tune the model with. We tuned the models by selecting the *mtry* parameter that yielded the best model in terms of the performance metric being assessed. For instance, to compute the precision (or another metric) of the models, we tuned them to yield predictions with highest precision (or another metric). Therefore, the predictions of impact occurrences for each of the models varied slightly.

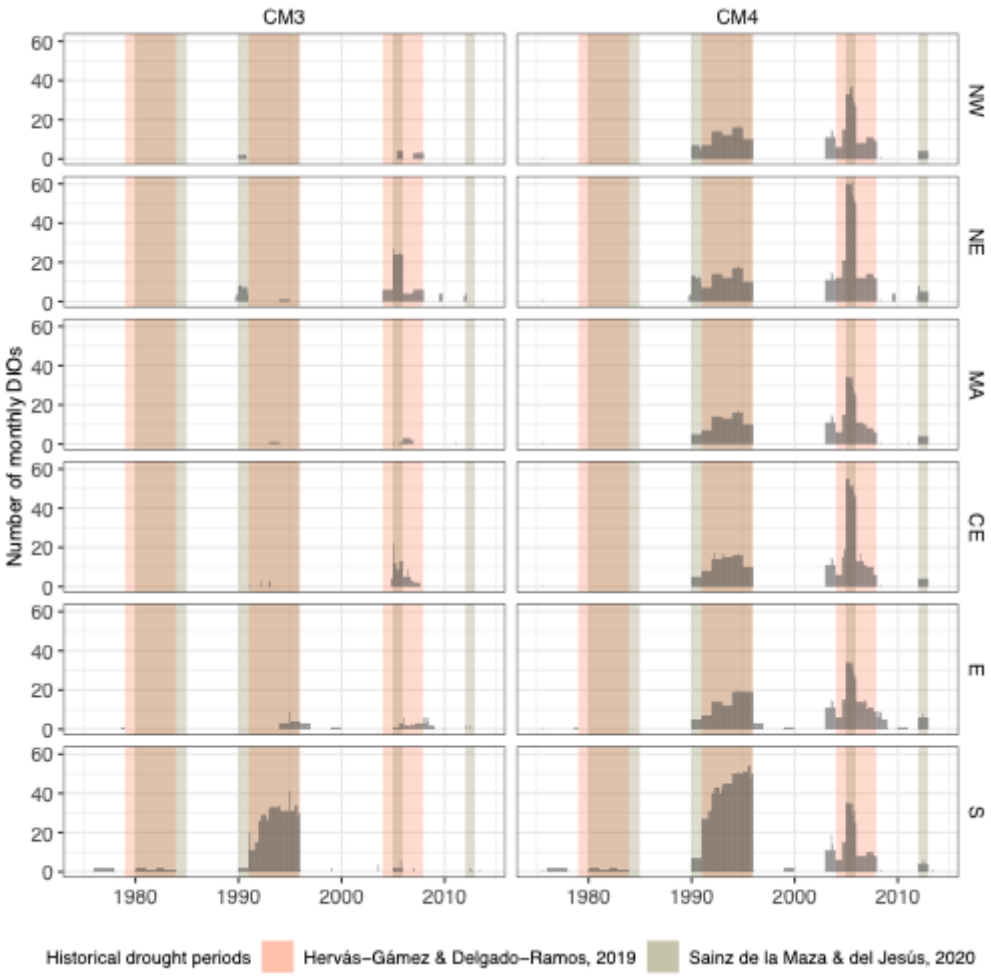

Figure S1. Monthly DIOs (bars) in each sub-region from 1975 to 2013 using the least censoring counting methods (CM3 and CM4). Important historical drought periods identified in other studies are highlighted.

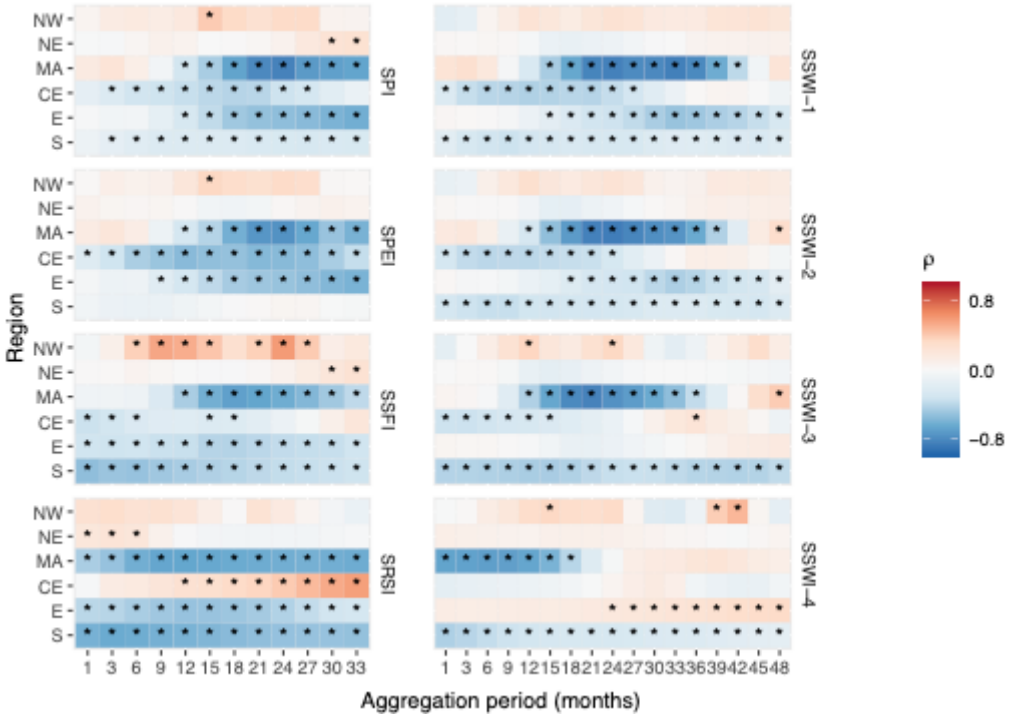

Figure S2. Correlation coefficients (ρ), between time series of drought indicators and impact occurrences for each sub-region using a more censoring counting method (CM3). Stars indicate significance ($p < 0.05$).