

## Researchers show that predicting European summer droughts months in advance is feasible

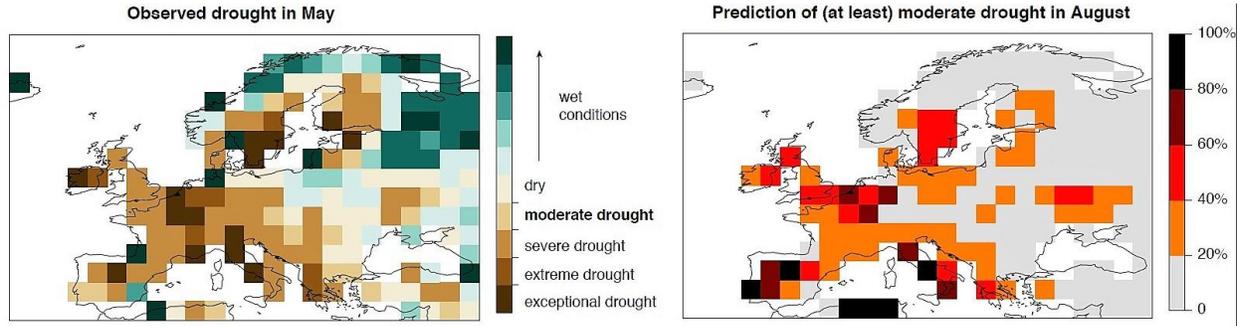
- The progress is possible merging observations with forecasts, according to a study published in *Environmental Research Letters*

(Barcelona, 6<sup>th</sup> of July 2017). - Researchers have shown that predicting droughts months in advance is feasible. A recent study published in [Environmental Research Letters](#), led by researchers of the [University of Barcelona](#), the [Barcelona Supercomputing Center](#) and the [Joint Research Centre of the European Commission](#), analysed how to improve the early prediction of droughts in Europe. Researchers see a window of opportunity for the development of an operational early-warning system capable of anticipating summer droughts in Europe and stress this can benefit various economic sectors, such as agriculture and water management, by helping them to be better prepared in the face of extreme events.

The study shows the viability of developing an operational early-warning system capable of anticipating droughts in areas where prediction still represents a challenge. In general, predictions tend to be more reliable over the tropics and their reliability is more limited in other areas such as Europe. According to the researchers, the improvement of current predictions is possible merging observations with forecasts.

To bring novel information on the prediction of summer droughts over Europe, the study compares observed climate conditions with probabilistic predictions of the current summer precipitation and temperature and defines droughts using the Standardized Precipitation Evapotranspiration Index (SPEI). Unlike the traditional approach, SPEI includes the effects of temperature on drought assessment. This is highly relevant in the case of European summers, characterized by higher evapotranspiration potentials associated to higher temperatures, which are generally not considered in traditional approaches but are responsible of water deficits contributing to shape stronger drought impacts.

Starting from the observed drought conditions in May, when some regions in Spain, Italy and Portugal have already suffered from important droughts, a prediction of moderate to exceptional drought risk conditions is provided for this month of August 2017 (see Figure), identifying high probability of moderate risk of drought in some south-European areas. This information constitutes an important planning tool for farmers, water companies, governments and even insurance companies.



**Figure:** Category of drought observed in May 2017 in Europe (left) and prediction of the probability of moderate to exceptional drought in August 2017 (right).

### About Barcelona Supercomputing Center

Barcelona Supercomputing Center (BSC) is the national supercomputing center in Spain. BSC specializes in High Performance Computing (HPC) and its mission is two-fold: to provide infrastructure and supercomputing services to European scientists, and to generate knowledge and technology to transfer to business and society.

BSC is a Severo Ochoa Center of Excellence and a first level hosting member of the European research infrastructure PRACE (Partnership for Advanced Computing in Europe). BSC also manages the Spanish Supercomputing Network (RES).

BSC is a consortium formed by the Ministry of Economy, Industry and Competitiveness of the Spanish Government, the Business and Knowledge Department of the Catalan Government and the Universitat Politècnica de Catalunya (UPC).

### Reference of the study:

Turco, M., Ceglar, A., Prodhomme, C., Soret, A., Toreti, A., & Doblas-Reyes, F. (2017).

[Summer drought predictability over Europe: empirical versus dynamical forecasts.](#) *Environmental Research Letters*. DOI: <https://doi.org/10.1088/1748-9326/aa7859>