



## **Relationships between surface solar radiation and wheat yield in Spain**

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Here we examine the role of solar radiation to describe wheat-yield variability in Spain. We used Partial Least Square regression to capture the modes of surface solar radiation that drive wheat-yield variability. We will show that surface solar radiation introduces the effects of teleconnection patterns on wheat yield and also it is associated with drought and diurnal temperature range. We highlight the importance of surface solar radiation to obtain models for wheat-yield projections because it could reduce uncertainty with respect to the projections based on temperatures and precipitation variables. In addition, the significance of the model based on surface solar radiation is greater than the previous one based on drought and diurnal temperature range (Hernandez-Barrera et al., 2016). According to our results, the increase of solar radiation over Spain for 21st century could force a wheat-yield decrease (Hernandez-Barrera et al., 2017).

Hernandez-Barrera S., Rodríguez-Puebla C. and Challinor A.J. 2016 Effects of diurnal temperature range and drought on wheat yield in Spain. *Theoretical and Applied Climatology*. DOI: 10.1007/s00704-016-1779-9

Hernandez-Barrera S., Rodríguez-Puebla C. 2017 Wheat yield in Spain and associated solar radiation patterns. *International Journal of Climatology*. DOI: 10.1002/joc.4975