Geophysical Research Abstracts
Vol. 18, EGU2016-17800, 2016
EGU General Assembly 2016

The impact of sea surface temperature on winter wheat in Iberian Peninsula

Mirian Capa-Morocho (1), Belen Rodríguez- Fonseca (2,3), and Margarita Ruiz-Ramos (1)

(1) CEIGRAM-AgSystems–ProducciónAgraria, ETSI Agrónomos, Technical University of Madrid, Madrid 28040 Spain., (2) Universidad Complutense de Madrid, Facultad de Físicas, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (3) Instituto de Geociencias (CSIC-UCM), Plaza de Ciencias1, Madrid, Spain28040.

Climate variability is the main driver of changes in crops yield, especially for rainfed production systems. This is also the case of Iberian Peninsula (IP) (Capa-Morocho et al., 2014), where wheat yields are strongly dependent on seasonal rainfall amount and temporal distribution of rainfall during the growing season. Previous works have shown that large-scale oceanic patterns have a significant impact on precipitation over IP (Rodriguez-Fonseca and de Castro, 2002; Rodríguez-Fonseca et al., 2006). The existence of some predictability of precipitation has encouraged us to analyze the possible predictability of the wheat yield in the IP using sea surface temperature (SST) anomalies as predictor.

For this purpose, a crop model site specific calibrated for the Northeast of IP and several reanalysis climate datasets have been used to obtain long time series of attainable wheat yield and relate their variability with SST anomalies. The results show that wheat yield anomalies are associated with changes in the Tropical Pacific (El Niño) and Atlantic (TNA) SST. For these events, the regional associated atmospheric pattern resembles the NAO, which also influences directly on the maximum temperatures and precipitation experienced by the crop during flowering and grain filling.

Results from this study could have important implications for predictability issues in agricultural planning and management, such as insurance coverage, changes in sowing dates and choice of species and varieties.