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Impact of climate change on dryness over Europe using climate models and observations

Concepcion Rodriguez-Puebla (1) and Sara Hernandez-Barrera (2)

(1) University of Salamanca, Fundamental Physics, Salamanca, Spain (concha@usal.es), (2) University of Salamanca, Fundamental Physics, Salamanca, Spain (sarahb@usal.es)

This study provides projections about the risk of dryness over Europe troughout the 21st century. Dryness index is computed as potential evaporation minus precipitation, normalized based on probability relative to normal conditions. The Penman-Monteith formulations and the Gaussen index are used to determine the evaporative demand of the atmosphere. To address the changes in dryness an evaluation of dryness indices using historical Coupled Model Intercomparison Project Phase 5 (CMIP5) models in comparison to CRU TS3.10 data is performed for the period 1901 to 2012. The contribution of warming conditions to dryness is determined using models of RCP8.5 experiment. The methods used for the comparison are Empirical Orthogonal Function (EOF) to extract modes of dryness variability over Europe, Partial Least Square (PLS) to obtain the dryness simulation and Empirical mode decomposition to provide the different scales of dryness variability.