Geophysical Research Abstracts
Vol. 18, EGU2016-14827, 2016
EGU General Assembly 2016

Forecasting European cold waves based on subsampling strategies of CMIP5 and Euro-CORDEX ensembles

Laura Cordero-Llana, Pascale Braconnot, Robert Vautard, Mathieu Vrac, and Aglae Jezequel

Laboratoire des Sciences du Climat et de l'Environnement, LSCE/IPSL, CEA-CNRS-UVSQ, Université Paris-Saclay, F-91191 Gif-sur-Yvette, France (laura.cordero-llana@lsce.ipsl.fr)

Forecasting future extreme events under the present changing climate represents a difficult task. Currently there are a large number of ensembles of simulations for climate projections that take in account different models and scenarios. However, there is a need for reducing the size of the ensemble to make the interpretation of these simulations more manageable for impact studies or climate risk assessment. This can be achieved by developing subsampling strategies to identify a limited number of simulations that best represent the ensemble. In this study, cold waves are chosen to test different approaches for subsampling available simulations. The definition of cold waves depends on the criteria used, but they are generally defined using a minimum temperature threshold, the duration of the cold spell as well as their geographical extend. These climate indicators are not universal, highlighting the difficulty of directly comparing different studies. As part of the of the CLIPC European project, we use daily surface temperature data obtained from CMIP5 outputs as well as Euro-CORDEX simulations to predict future cold waves events in Europe. From these simulations a clustering method is applied to minimise the number of ensembles required. Furthermore, we analyse the different uncertainties that arise from the different model characteristics and definitions of climate indicators. Finally, we will test if the same subsampling strategy can be used for different climate indicators. This will facilitate the use of the subsampling results for a wide number of impact assessment studies.