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Circulation regimes over western Europe in global simulations from the ENSEMBLES project

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The large scale atmospheric circulation (LSC) can be characterized by a few preferential states called weather regimes. The links between these large scale structures and variables at local scale (surface temperature and precipitation) have been widely studied, showing that weather typing is an efficient approach to establish statistical relationships between LSC and local climate.
In this paper, we analyze the weather regimes of global simulated data from the ENSEMBLES project. These models are validated with regards to the weather regimes representation. The challenge is to verify if the models can reproduce accurately enough the main observed patterns of the spatial leading EOFs in both the 500 hPa Geopotential Height and the Mean Sea-Level Pressure fields over the Atlantic-European domain compared to NCEP reanalysis data.
Once the models are validated, the future evolution of weather regimes using A1B scenarii simulations from the ENSEMBLES simulations is evaluated. The results obtained from these Global Circulation Models are then compared to the weather regimes classification applied to the Regional Circulation Models.