

West African Monsoon influence on the summer Euro-Atlantic circulation

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The West African Monsoon (WAM) influence on the interannual variability of the summer atmospheric circulation over North Atlantic and Europe is investigated over the period 1971-2000. This point is carried out analyzing a set of sensitivity experiments performed through the Arpege-Climat atmospheric general circulation model, using the so-called "grid-point nudging" technique, where the simulated atmospheric fields inside the WAM region are relaxed towards the ERA40 reanalysis.

Reanalysis confirm that a sizable part of the interannual variability of the Euro-Atlantic circulation is related to the WAM in boreal summer, with positive convection anomalies in the Sudan-Sahel region associated to positive North Atlantic Oscillation (NAO) phases and subsidence over eastern Mediterranean. The role of the WAM in driving the mid-latitudes circulation is highlighted in the numerical experiments, with an improvement in the description of the mid-latitudes interannual variability in the nudged simulations. A strong effect is observed in the subtropical North Atlantic, with a strong monsoon related to high-pressure anomalies over the Azores and positive NAO phases. The atmospheric nudging is also effective in replacing the NAO centers of action in more realistic locations.