



Summer NAO flavors and their effects on climate over Europe and North America

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North Atlantic Oscillation (NAO) is one of the most prominent teleconnection patterns affecting weather and climate over the North Atlantic region and its surrounding continents. Although it is more pronounced in winter, the summer NAO (SNAO) is important as well and it exhibits a different spatial structure. In this study, the main SNAO ‘flavors’, defined using Self-Organizing Maps -a topology preserving clustering algorithm- are quantified in reanalysis data. For each of these flavors, the SNAO centers of action, namely the Icelandic Low and the Azores High, occupy different positions compared to a prototype EOF-based pattern. It is argued that not only the phase of the SNAO, but also its distinct spatial structures described by these flavors, play a significant role in shaping weather and climate over Europe and North America. Statistical characteristics, such as frequency, persistence and trends of the SNAO flavors are discussed. The proposed approach tries to tackle the matter of the non-stationarity of the SNAO pattern and the non-linearity of the response of different climate parameters to it.