



North Atlantic Oscillation and Precipitation correlation in Europe under climate change

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The North Atlantic Oscillation (NAO) has been known as a climate drive for the Northern Hemisphere and particularly Europe. In this paper the link between the winter NAO and precipitation is studied between 1950-2100, divided into 3 periods. Data derived from seven climate models following the Representative Concentration Pathway RCP8.5, and more specifically sea level pressure and precipitation were used in the process. The results indicate a high correlation between winter NAO and precipitation for all periods, being positive in Northern Europe and negative in Southern Europe. Higher correlations appear in North Europe and the Mediterranean Sea. In the future periods, the years with positive NAO signal will increase along with their average value, resulting in higher precipitation in Northern Europe and lower precipitation in Southern Europe. For the mean NAO time series the number of years with positive NAO value will increase by 14% and 22% for 2001-2050 and 2051-2100 respectively, when is compared with the ones in 1951-2001. The negative NAO values will decrease in the future periods, but especially in the second period (2001-2050) the corresponding signal power is lower, meaning that more extreme events connected with negative NAO will occur. Finally, a Fast Fourier Transformation of the precipitation in 2 locations and the NAO data revealed at various degrees of correlation the best coherence in a dominant cycle of 3-4 years.