



## **The importance of the NAO and different weather types for morrocan precipitation variability**

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**ABSTRACT:** Precipitation data from the GHCN (Global Historical Climatology Network) for 42 stations in Morocco, Western Algeria and Northern Mauritania (0 to 13°W, 25°N to 36°N) from the 19th and 20th century is investigated on a monthly mean basis with respect to North Atlantic Oscillation (NAO) variations and different weather types. During winter a clear NAO influence is found for whole Morocco, whereas for autumn and spring a significant relationship is restricted to the north-western parts of the country; no relationship at all is found for the summer months. There is a general decrease in NAO precipitation correlation from the north-western to the south eastern parts of the considered region with a distinct drop south of the Atlas mountains and towards North-western Algeria. The use of different southern poles of the NAO leads to considerable differences in the strength of the relation. While a NAO calculated from the pressure difference between Gibraltar and Iceland explains up to 60% of the rainfall variance in some month at some stations, a NAO based on the pressure in Ponta Delgada (Azores) reaches only a maximum of 36% with markedly weaker values especially in autumn and spring. The pressure variations in Gibraltar alone explain even up to 67% of the variance. A correlation between monthly precipitation at each station and SLP over the Atlantic and the Mediterranean reveals that the 'optimal NAO poles' are located off the west coast of the Iberian Peninsula and in a broad band around 60°N between the southern tip of Greenland and Scandinavia. Since the NAO indices used represent basically the average large-scale circulation over the North Atlantic, more detailed insight into the actual weather situations favourable for Moroccan precipitation is given by looking at the Jones (1993) circulation weather types on a daily time-scale.