Links between NAO fluctuations and interannual variability of precipitation in the Seine River watershed

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Abstract The variability of precipitation on the Seine River watershed (France) was studied during winter for 1951–2004. This study aims at characterizing the interannual variability of precipitation in the Seine watershed in relation to that of the North Atlantic Oscillation (NAO). The precipitation in the Seine watershed is characterized by a long-term trend, indicating the existence of disruption around 1970–1980 and 1990. These disruptions are also found in NAO. A wavelet coherence analysis between precipitation and NAO showed the existence of three distinct periods: before 1970, between 1970 and 1990, and after 1990. The results highlight the relationship between NAO and precipitation in the Seine watershed, which appears to affect some specific interannual time scales more specifically, namely the 5–9 year and the 16–20 year modes, during certain time periods.

Keywords NAO/precipitation relationship; interannual variability; wavelet coherence analysis; LOESS; Seine River watershed