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Influence of the North Atlantic sea surface temperature on the winter rainfall and river flow regimes in NW of Iberian Peninsula

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The precipitation and river flow regimes are characterized by large values of inter-annual variability, with large disparities between wet and dry years. This situation is a major problem for water resources management in general, and for the production of hydroelectricity in particular.

Several studies have also established links between the NAO and precipitation in Western Europe and the Mediterranean basin. This control exerted by the NAO on the precipitation field is related to corresponding changes in the associated activity of North Atlantic storm tracks (Trigo et al., 2002). On the other hand, the role played by North Atlantic sea-surface temperature (SST) anomalies in establishing a NAO pattern has also been demonstrated through the use of an ensemble of runs with an uncoupled GCM (Rodwell et al., 1999).

In a recent work (DeCastro et al., 2006) the influence of the most representative winter teleconnection patterns of atmospheric variation in the Northern Hemisphere on precipitation variability and on river flow regimes was evaluated for the Miño River basin (NW Iberian Peninsula).

Having these ideas into account, we explore the relationship between monthly North Atlantic SSTAs and Galician (NW Spain) winter rainfall. The main results show an important correlation of winter rainfall with the SSTA of the summer months in the middle of North Atlantic and also with the SSTA of January in front of Sahara desert.

The role played by North Atlantic sea-surface temperature (SST) anomalies in establishing the phase of the different winter patterns in the Northern Hemisphere has also been observed.The results obtained should be more deeply developed with the purpose of providing a seasonal forecasting tool.

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