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Coupled modes of large-scale variability patterns and regional wind in the Iberian Peninsula

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The relationship between observational springtime (March-May) wind at the Iberian Peninsula and several North Atlantic teleconnection patterns of low-frequency variability is analyzed for the period 1980-2001. Singular value decomposition (SVD) analysis of the springtime monthly mean fields for the paired 1000 hPa geopotential height/wind combination has shown that their covariability is dominated by two main large-scale atmospheric circulation patterns. The first mode relates winds to the Scandinavian pattern. Below-normal wind anomalies are linked with a blocking pattern affecting Iberia weather. The second covariability mode takes into account the response of the wind speed to the North Atlantic Oscillation (NAO) pattern. An enhanced spring NAO pattern is related to positive (negative) wind correlations over the northern (southern) Iberia. Through these two modes, the North Atlantic large-scale atmospheric dynamics explains about 30% of the total spring wind variability in the Iberian area. A Monte Carlo approach has allowed to set the statistical significance of the obtained modes, assessing the Iberian wind response to the teleconnection patterns.