



Nonlinear estimation of the ENSO signal in the North Atlantic

I. Pérez González (1), M.J. Ortiz Beviá (1), F. J. Álvarez García (1)

Departamento de Física, Facultad de Ciencias, Universidad de Alcalá, Alcalá de Henares.
Madrid, Spain [morrupg@yahoo.es]

The nonlinear nature of the atmospheric response to the ENSO signal seems to require of nonlinear procedures (either dynamical or statistical to assess ENSO impact. In the present study, the robust nonlinear canonical correlation analysis of Canon and Tsieh (2007) is set to estimate ENSO impact in the values of some atmospheric variables (i. e. Sea Level Pressure anomalies) in the North Atlantic sector(90 E-40 W, 20 N-80 N) .The ENSO signal is obtained from the Sea Surface Temperature anomalies in the tropical Pacific (20 N, 20 S) and captured in the first pair of modes, while the second pair relates a NAO-like pattern in the North Atlantic with a trend in the west Pacific. The results of the nonlinear analysis compare favorably with those obtained with standard canonical correlation analysis. The correlation of the first pair with the Niño3.4 Index is higher than the one obtained in the linear estimation. Moreover, this mode explain a greater amount of the observed SLP anomalous variability in the North Atlantic sector than the one obtained from linear analysis.