



## **The Tropospheric Pathway of the ENSO-North Atlantic Teleconnection**

Bernat Jimenez-Esteve and Daniela I.V. Domeisen

ETH Zurich, Institute for Atmospheric and Climate Sciences, Department of Environmental Systems Science, Zurich, Switzerland (bernat.jimenez@env.ethz.ch)

El Niño Southern Oscillation (ENSO) exerts an influence on the North Atlantic European (NAE) region. However, this teleconnection is non-linear and non-stationary due to the superposition and interaction of a multitude of influences on this region. The stratosphere is one of the major players in terms of the influence of the ENSO signal on this sector. Nevertheless, there are tropospheric dynamical links between the North Pacific and the North Atlantic that are clearly influenced by ENSO. In view of this, the present study revisits the tropospheric pathway of ENSO to the North Atlantic using ECMWF reanalysis and idealized model experiments. Anomalous propagation of transient and quasi-stationary waves across North America is analyzed with respect to their sensitivity to ENSO. Transient (quasi-stationary zonal waves 1-3) wave activity flux (WAF) from the Pacific to the Atlantic increases during El Niño (La Niña) conditions leading to a negative (positive) phase of the North Atlantic Oscillation (NAO). This response is observed from January to March for El Niño and only visible during February for La Niña events. However, the stratosphere strongly modulates this response. For El Niño (La Niña) conditions a weaker (stronger) stratospheric vortex tends to reinforce the negative (positive) NAO with the stratosphere and troposphere working in tandem, contributing to a stronger and more persistent tropospheric circulation response.