



## Variability of the Caribbean low-level jet during boreal winter and summer

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The Caribbean low-level jet (CLLJ) is a strong wind current over the Caribbean Sea. Annually it has two peak periods, where February and July being the winter and summer components, respectively. The CLLJ is an important element for the climate and weather of the region, due, in part, to its interaction with the convective activity over the Caribbean, mainly during the second half of the year. Nevertheless, there still is little knowledge about its variability and the relationship with fluctuations of the large-scale fields such as the sea surface temperatures (SST) and the sea level pressure (SLP). Therefore, this study seeks to establish a statistical relationship between the changes in the intensity of the jet with the anomalies of SST and SLP. Furthermore, the relationship with large-scale variability modes such as El Niño, the North Atlantic Oscillation (NAO) among others, during the jet maxima, is analyzed. Wind products of the NCEP/NCAR reanalysis, and SSTs from NOAA are used for the base period 1950-2010. A CLLJ index describing the variability of the wind at 925 hPa is defined for the region bounded by  $12.5^{\circ} - 17.5^{\circ}$  N and  $80^{\circ} - 70^{\circ}$  W. Preliminary results show that the correlation patterns of the wind index with the SST anomalies remain similar in both seasons over the Atlantic and the Caribbean Sea, while a more complex distribution is observed over the Pacific in each season. The latter evidences different feedback mechanisms during each month in the Pacific. In February warm (cold) waters in the eastern tropical Pacific would decrease (increase) the easterlies intensity during winter. The opposite is observed during July. Moreover, the correlation of the wind index with the anomalies of SLP exhibits different behavior during both month as well. During the winter peak the jet reacts to the location and intensity of the subtropical highs in the North Pacific and Atlantic. It also shows a negative association with the SLP anomalies over Iceland that might connect the fluctuations of the CLLJ with the NAO. Whereas in July, the response in the intensity of the jet is associated to the location, extension and intensity of the North Atlantic subtropical high (NASH) and to the gradients of SLP between the Atlantic and the Pacific Ocean. Following these results, the correlation of the wind index with variability modulators is explored. El Niño 3.4 seems to have the most important influence in the fluctuations of the easterlies at 925 hPa during both wind maxima. Nevertheless, the Pacific Decadal Oscillation (PDO) and the Pacific North American (PNA) teleconnection show relevant association with the jet during winter. The summer peak is not influenced by the PNA. No significant correlation of the CLLJ index with the NAO, or the Atlantic Multidecadal Oscillation (AMO) was found.