

**Dynamics of climate over the Mesoamerican and Caribbean regions**

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The Caribbean Low Level Jet (CLLJ) is a key element of the Mesoamerica Climate. Its intensification during July produces a westward displacement of the Inter-Tropical Convergence Zone (ITCZ) over the eastern Pacific that results in the Mid-Summer Drought (MSD). This acceleration is not produced by a strengthening of the North Atlantic Subtropical High (NASH). Over the Caribbean Sea the mass field adjusts to the wind field. The CLLJ is accelerated and decelerated through a dynamical interaction with high frequency transients. The meridional convergence of zonal momentum at 700 hPa around 15°N provides the required source of momentum for the zonal wind. The downward flux of zonal momentum to the 925 hPa occurs from May through July, due to subsidence over Caribbean. Such effect disappears from August through October resulting in deceleration of the CLLJ. The ageostrophic component of winds in the western Caribbean leads to enhanced precipitation around the Gulf of Panama. An intense CLLJ tends to reduce Perturbation Kinetic Energy (PKE) over the Caribbean and precipitation over most of the IAS. A moderate to weak CLLJ tends to enhance them. The impact of transient mean flow interactions appears to be crucial for climate over Mesoamerica.