

Abstract for COCONet session

Title: Variability and remote influences of Intra-Americas moisture fluxes and impacts on precipitation

Presenter: Ernesto Muñoz

We discuss and analyze the variability of the IAS low-level jet (IA-LLJ) and its role in the moisture transport over the Caribbean and Gulf of Mexico regions. For the COCONet workshop, this presentation has two parts, both of which are relevant for discussions of new and existing pan-Caribbean observational networks. In the first part we provide an overview of the inter-annual climate dynamics in the Caribbean region that are relevant to moisture and precipitable water observations. In the second part of the presentation we provide an example of a recent study of the IA-LLJ inter-annual variability in the spring season. The data used for both parts is mainly from atmospheric reanalyses and land observations.

The main mode of variability of the spring IA-LLJ is obtained from a combined principal component analysis of zonal and meridional winds at 925-hPa. For the spring season (March-May), the first empirical orthogonal function of the IA-LLJ is a strengthening of the climatological flow with stronger easterlies in the Caribbean and stronger southeasterlies in the Gulf of Mexico. This mode not only has interannual variability but also shows a decadal shift with weaker IAS moisture fluxes into the USA after the late 1970's. Correspondingly, there is also a decadal shift in precipitation and tornado count over the region of the Mississippi and Ohio Rivers with weaker precipitation and a decrease in significant tornadoes after the late 1970's. The decadal shift in the strength of the springtime IAS moisture fluxes is mainly related to Pacific decadal variability.