Multivariate analysis of the South American rainy season onset

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By mean of the application of a multivariate empirical orthogonal function (EOF) analysis of the South American gridded precipitation and the different components of Lorenz cycle derived from the NCEP reanalysis. The South American rainy season onset is studied. The first combined EOF represent the North-West South-East migration of the precipitation between South and Central America. The second combined EOF represents a situation in where the SACZ is defined and according to the Lorenz cycle both processes, the baroclinic instability and the generation term (diabatic heating) contributes to this configuration, with predominance of the latter. The time dependence of the second EOF has outstanding spectral peaks at the intraseasonal time scales. The predominance of the generation term in the Lorenz cycle could be used as an index to define when the onset rainy season occurs in terms of physical processes, while the existence of outstanding peaks at intraseasonal time scales could be used for monitoring purposes.