



Characterization of the vertical structure of tropospheric water vapor over the Island of Tahiti

Jonathan SERAFINI

Gepasud Laboratory, University of French Polynesia, Faaa, French Polynesia (jonathan.serafini@upf.pf)

We study the vertical variability of tropospheric water vapor over the island of Tahiti from radiosondes made every 12 hours from 2003 to 2011. In particular, we present the characteristic profiles associated with the trade winds and those associated with the presence of deep convection. The vertical profiles associated with trade winds are usually strongly influenced by a temperature inversion layer about 400 meters thick. It is typically located 3 km altitude. This inversion area generally bounds the lower troposphere wetted by the ocean and the free troposphere dried by subsidence. The vertical structure of the water vapor is marked by a sudden decrease in the inversion layer. Conversely, when the convection is deep enough, it enhances mixing between the different layers of the troposphere and the profiles are more continuous. To characterize the vertical structure of the water vapor, we define a model whose objective is to identify the presence of this inversion layer (obstruction of deep convection), its altitude and its thickness. These two parameters, coupled with other weather index are used to characterize tropical rainfall.