Representing moist thermodynamic processes in COSMIC radio occultation refractivity profiles within precipitating and non precipitating clouds.

Manuel de la Torre Juárez¹, F Joseph Turk, Ramon Padullés², Heiðar Þór Þrastarson¹, C.O Ao¹, Terry Kubar³, E Cardellach².

¹Jet Propulsion Laboratory/California Institute of Technology
²Instituto Catalán de Estudios Espaciales/CSIC
³UCLA-JIFRESSE

Abstract: Refractivity profiles from COSMIC radio occultation (RO) are compared to those expected for different atmospheric moist thermodynamic processes such as saturated atmosphere, a constant mixing ratio atmosphere, or the refractivity that would correspond to a moist adiabat. Comparing the observations to the different profiles of potential refractivity helps identify the moist thermodynamics most akin to the observed RO profiles. The limitations of these analyses are also discussed. The analysis is particularly relevant to clarifying the thermodynamics inside clouds. RO profiles coincident with TRMM soundings are used to search for thermodynamic signatures of precipitating versus non-precipitating clouds.