ICTS Seminar

Title : Gravity waves in a moist atmosphere: a mechanistic picture

Speaker : Joy merwin monteiro, Stockholm University, Sweden

Date : Wednesday, 23 January, 2019

Time : 11:30 AM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : The interaction between one-dimensional gravity and Kelvin waves and moist convection is analysed in a shallow water model with an emphasis on physical interpretation. A Betts-Miller type convective parameterisation is used, and the influence of moisture on wave speed and stability is studied both at the limit of a vanishing convective relaxation timescale (or “strict quasi-equilibrium”) and for finite relaxation timescales.

A physical picture is built for the response of these gravity waves to the gross moist stability and convective relaxation timescale. Furthermore, the gross moist stability "seen" by the wave is seen to be dependent on the details of the convection scheme.

Finally, the statement “Kelvin waves are gravity waves with rotation” is made rigorous by analysing the mathematical structure of the Kelvin wave equations and the relationship of this structure to that of one-dimensional gravity waves.