



# XVII EPGMET

Encontro dos alunos de pós-graduação em meteorologia do CPTEC/INPE



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## USING GPS RADIO OCCULTATION PROFILES TO STUDY GRAVITY WAVES

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### RESUMO

Gravity waves observed in the troposphere play an important role in the transport of energy and momentum between lower and middle atmosphere, changing the thermal structure and general circulation in these regions. However, gravity waves generated by tropical convection are generally not well simulated in global circulation models, remaining as an area of science that deserves research and investment. The use of models capable of explicitly solving moisture transport and heating associated with convective clouds is relatively recent, as well as applications of data assimilation on this scale. On the other hand, only a few observation systems have a high vertical resolution and sample the upper troposphere and lower stratosphere, making difficult to obtain a detailed description of the spectrum of gravity waves generated by deep convection. Observations derived from the radio occultation (RO) of the Global positioning system (GPS) signals are able to assist in this task and have been explored to study atmospheric waves and coupling processes, especially in regions where ground-based temperature profiles are not provided. The high vertical resolution of temperature profiles derived from GPS RO technique and its global coverage, allowed to study the mesoscale temperature fluctuations caused by atmospheric waves in the stratosphere as well as analyze internal parameters of gravity waves. The present study aims to review previous works on the use of GPS RO profiles to explore gravity waves characteristics. Some results of the gravity waves activity in South America will be presented.