



## **An Analysis of Gravity Wave Activity near to the Andes Mountains, from GPS Radio Occultation Long Term Data.**

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A significant wave activity in the upper troposphere and lower stratosphere was detected at midlatitudes (30-40S) above the Andes Mountains, from a global analysis of GPS radio occultation temperature data (CHAMP and SAC-C Low Earth Orbit - LEO- satellites). These profiles were obtained between May 2001 and November 2005 (257,160 events). The possible main gravity wave sources in the region considered are expected to be: i) orographic forcing, ii) geostrophic adjustment and iii) deep convection. From the capability and available resolution of GPS soundings, the observed wave activity local enhancements might be attributed to the generation of inertio gravity waves (IGWs), with longer horizontal and perhaps shorter vertical wavelengths than those typically observed in mountain waves (MWs). IGWs could be generated, after a geostrophic adjustment process near to a permanent zonal jet situated above the Andes Mountains, starts. The wave activity intensity exhibits an association with the zonal wind velocity strength at jet altitudes. In fact, IGWs are expected to be more easily detected from GPS profiles than MWs. Nevertheless, given the predominant GPS-LEO lines of sight in the region considered as well as its orographic morphology, it should not be disclosed that the GPS RO profiles could be suitable to detect MWs too.