



HISTORICAL BACKGROUND OF ALL-SKY AIRGLOW OBSERVATIONS AT COMANDANTE FERRAZ ANTARCTIC STATION AND SMALL-SCALE GRAVITY WAVES CLIMATOLOGY

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ABSTRACT

Atmospheric gravity waves are known to play an important role in the atmospheric dynamics and thermal structure. Systematic observations of gravity waves all around the world have been carried out by different research groups. In Antarctica, the gravity waves have been deeply investigated by distinct techniques and modeling in the last years. Since the scientific community knows very little on atmospheric gravity waves over the Antarctic continent as compared to other places in the world. Gravity wave observations at the Comandante Ferraz Antarctic Station - CF (62.1°S, 58.4°W) began in 2007 through a short (6 months) campaign by using a low-cost airglow imager. Later on, in 2010 the same imager system was reinstalled at CF and operated until the beginning of 2012. In 2014, a new airglow experiment returned to operated, but only for a couple of months. The new system installed in 2014 is a more modern airglow imaging system, which contains a filter wheel, with three airglow filters (OH-NIR, OI 557.7nm, and OI 630.0nm). For now, we have been analyzing continually the image data acquired with the OH filter since the gravity waves are commonly seen with a better quality in this emission and also because the previous observations (2007; 2010-2011) were made only in the OH-NIR. In this work, a brief history of the airglow observations at CF and a climatology of all the small-scale gravity waves observed at five distinct years, that is, 2007; 2010-2011; 2014/2015-216, will be presented. We will focus in the presentation of the different types of gravity waves (morphology as seen in the airglow images), their observed parameters and propagation directions, and some examples of case studies on mesospheric fronts.