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Title: Characterization of Mesospheric Gravity Waves observed above King George Island (62°S) during 2010-2011

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abstract: The atmosphere above the Sub-Antarctic Islands and Drake Passage is abundant in gravity waves from the troposphere, passing through the stratosphere, and up to the mesosphere. Satellite data and ground base instruments have demonstrated this high gravity wave activity in these regions. Since 2010 an all sky airglow imager observes gravity waves through the OH NIR airglow emission (~ 87 km height) over Comandante Ferraz Antarctic station (62°S) on King George Island. A new-generation meteor radar was installed on that site in 2010 and has been operated simultaneously with the airglow imager. The data set of images of small-scale gravity waves from 2010 and 2011 was partially characterized. The initial results showed similar characteristics for the waves reported in a campaign carried out in 2007. The hourly mean winds inferred from a co-located meteor radar are used to access the intrinsic gravity wave parameters, and also to characterize the vertical propagation conditions together with satellite temperature profiles. This work will present the full observational results for the gravity waves observed in 2010 and 2011 above King George Island. These results are composed by the observed and intrinsic wave parameters distribution, the preferential propagation directions, and a review on the ray tracing technique, with examples of background atmospheric data, which is applied to the observed gravity waves in order to find out their likely sources in the lower atmosphere.