



IONOSPHERIC INVESTIGATIONS AT COMANDANTE FERRAZ BRAZILIAN ANTARCTIC STATION

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ABSTRACT

The long term study of the ionospheric behavior obtained from measurements using radio techniques has been used to characterize the impact of space weather in the atmosphere at Comandante Ferraz Brazilian Antarctic Station (EACF). At EACF, the ionospheric conditions started to be investigated on 1984 using very low radio frequency (VLF) signals, afterwards was improved with the installation of a dual frequency GPS receiver on 2003 and an ionosonde and riometers on 2009. The multi-instrument observations permit characterize the ionospheric electrodynamics from 60 to ~400 km. The long term VLF and GPS data measurements have shown how the ionosphere is driven by the 11-year solar radiation variation and its seasonal variation. Special attention has been given to VLF studies, which have shown that the bottom of ionosphere is strongly affected by atmospheric waves of tropospheric and stratospheric origin, particularly by the planetary waves during the winter. The effect of gravity waves just started to be investigated using the amplitude of VLF signals propagating in two different paths crossing the Drake Passage in the Antarctica Peninsula, which preliminary results are showing a close association with the airglow observations done at EACF. The recent main results of the ionospheric investigation done at EACF will be presented.