

A study of ionopause perturbation and associated boundary wave formation at Venus.

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In contrast to Earth, Venus does not possess an intrinsic magnetic field. Hence the interaction between solar wind and Venus is significantly different when compared to Earth, even though these two planets were once considered similar. Within the induced magnetosphere and ionosphere of Venus, previous studies have shown the existence of large scale vortex like structures. These structures may play an important role in the atmospheric evolution of Venus. By using Venus Express data, we analyse perturbations of the ionopause in the polar region to further investigate these structures. The orbit of Venus Express is well aligned for such a study as it regularly traverses the terminator region at an altitude close to that of the nominal ionopause. A minimum variance analysis of both the 1Hz and 32Hz magnetic field data is conducted. Wave like structures are identified and the statistical dynamics of the Venusian ionosphere is studied. Their evolution into the potential nonlinear regime is discussed.

Keywords: Venus , Ionosphere, Magnetosphere, Kelvin-Helmholtz instability