

# **Observations of F-layer electron density profiles modulated by planetary wave type oscillations in the equatorial and low latitude regions**

Aranha S.L., Fagundes P.R., Pillat V.G., Bolzan M.J.A., Sahai Y., and Becker-Guedes F.

Universidade do Vale do Paraíba (UNIVAP), São José dos Campos, SP, Brazil.  
(fagundes@univap.br)

Digital ionosonde of the type known as the Canadian Advanced Digital Ionosonde (CADI) are operational at São José dos Campos ( $23.2^{\circ}\text{S}$ ,  $45.9^{\circ}\text{W}$ , dip latitude  $17.6^{\circ}\text{S}$ ) and Palmas ( $10.2^{\circ}\text{S}$ ,  $48^{\circ}\text{W}$ , dip latitude  $5.5^{\circ}\text{S}$ ), Brazil. These ionospheric sounding stations are located under the southern crest of the ionospheric equatorial anomaly and equatorial region, respectively. The F-layer electron density profile presents considerable day-to-day variability, even during undisturbed conditions, and this variability is still one of the less understood aspects of the physics of the ionosphere. The propagation of gravity and planetary waves into the ionosphere may play an important role in this day-to-day ionospheric variability. In this paper we used a technique that uses multi-frequency virtual height variations, from ionospheric sounding observations in both stations, to investigate how the F-layer is modulated by planetary wave type oscillations. We have also considered the possible influence of oscillations due to solar origin (solar rotation variation). In the present study, observations during the months of June 2003 to May 2004 have been used. The present study indicates the presence of 2-day (the observed 3-day periods are possibly associated with the quasi 2-day oscillations), 5-day, 10-day and 16-day periods related to planetary wave type oscillations due tropospheric sources during all the day.