ASSOCIATION BETWEEN IONOSPHERIC PLASMA BUBBLES AND SPREAD-F

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Abstract

statistical study of association between ionospheric bubbles and the range spread-F, both denominated large-scale ionospheric irregularities is presented here. This study was based on radio frequency observations (digisonde) and optical observations of the airglow OI630nm (imager systems) acquired at the low-latitude region - Cachoeira Paulista (22.5oS, 45oW) - and at the equatorial region - São João do Cariri (7.4oS; 36.5oW). In the total, 158 nights of simultaneous data during maximum solar cycle were analyzed being 63 nights at Cachoeira Paulista and 95 nights at São João do Cariri. The occurrence frequency of ionospheric bubbles (OFB) at Cachoeira Paulista was compared with the occurrence frequency of the range spread-F (OFS) over the same region and, at São João do Cariri, the OFB was compared with the OFS over São Luis (2oS; 44oW) and Fortaleza (3.5oS; 38.2oW) because unfortunately there is no a digisonde operating at São João do Cariri. This statistical study with the local time showed that the ionospheric irregularities occur with high frequency between October and March. Also, it was observed that the OFB is closely related to the OFS. The data observed showed that the OFB in Cachoeira Paulista is greater than the FOS. Apparently, this fact occurs because of the discrepancies between the areas of covering of each instrument utilized.