



Behaviour of the F2 peak ionosphere over Nicosia during quiet and disturb conditions from new DPS-4D ionosonde data

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Ionospheric specification data from digisonde ionograms are expected to become the important contributing technique for not only real-time propagation predictions but space weather applications as well. The new ionosonde has been making routine ionospheric measurements over Nicosia station (35 N, 33 E) since September 2008. These observations have been used to study the behaviour of the F2 peak for the duration of some specified quiet and disturb periods in equinox and winter ionosphere at very low solar activity. In particular, enhanced electron densities that appear to be associated with the 11 October 2008 event, when the arrival of a fast solar wind stream from a coronal hole produced a geomagnetic storm (K_p reached 7), suggesting that the electron density increases are connected with the F2 peak rising. As well as being an interesting phenomenon in its own right, this behaviour may shed new light on the formation of the ionospheric evening anomaly. No unambiguous explanation for this behaviour can be determined from the data presently available, but an examination of some possibilities suggests that an evening downward flux of plasma from the plasmasphere may be at least partly responsible for the phenomenon. While the main purpose of this paper is to inform the users of digisondes and of digisonde data about the new ionospheric station operating at Nicosia, some of the ideas here presented may be of use to other algorithm developers for single station physics-based modelling.