



## **Vertical characteristics of midlatitude E and F region ionospheric drifts during disturbed conditions..**

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Modern HF digisonde DPS-4 D (Digisonde Portable Sounder), which is in operation at the Pruhonice observatory of the Institute of Atmospheric Physics, Prague (IAP) from 2004, enables us to carry out standard ionospheric sounding and ionospheric drifts measurements. Using standard mode of automatic drift (autodrift mode) measurements the velocity of the F region drifts is usually determined in the vicinity of the peak of the electron density profile ( $N(h)$  profile). Since 2005 we are also measuring ionospheric drifts at the heights of the ionospheric E region. This new experimental arrangement makes possible to study vertical changes and profiles of the ionospheric drift velocity in two different ionospheric regions. From E region within the altitudinal interval of 90-150 km to F region in altitudes from 150 km up to height of the maximum electron density profile  $N(h)$ . This paper presents the results of the analysis of the plasma drifts velocity in two different ionospheric regions observed under quiet geomagnetic and ionospheric conditions and especially during ionospheric spread F conditions. These spread F conditions are often observed in the ionosphere as effect of travelling ionospheric disturbances TIDs. The presence of this TIDS can be detected from the F layer isoelectrondensity contours. The spread F conditions are often present also under moderate-to-intense ionospheric and geomagnetic storm conditions.

Our results show, that behavior of Es layer drifts can be different than drifts in E-layer. During winter geomagnetic storm -more dramatic increasing of all drift velocities components was observed (50 – 100 m/s vertical drift component).

Different behaviour ionospheric drifts at the heights intervals 90 – 110 km and 110 – 130 km was observed during winter storm. Significant height changes of the drift velocity height profile in the interval of heights 90 – 130 km during winter event was observed. Our results show that behavior of Es layer drifts can be different than drifts in E-layer.

All components of the ionospheric F region drift velocity, measured during medium and strong geomagnetic events are strongly disturbed by storm conditions. Observed drift velocity components reached during strong storm values ~100- 150 m/s during summer and ~500 m/s during winter storms.