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Meteor induced layers in 2013 observed by ionosonde with high cadence

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Abstract

© 2014 IEEE. It is considered that the main theory explaining appearance of sporadic E is the theory of wind shear, which means (includes) the presence and movement of nodes converging tidal wind through the height region of the most frequent occurrence Es (120-140km) [Mathew et. all, 1998]. However, the appearance of intense layers, following its name, are sporadic, and such variability cannot to explain by the influence of tidal waves only. Another indication inconsistency theory of wind shear is the appearance of so-called transient Es layers [Maruiama, 2003]. The distinctive feature of this trace is the high critical frequency (> 5 MHz), a constant height, weak amplitude, all trace semitransparent and short lifetime [Maruiama et. all, 2003 and 2008 and references there], see for example Fig. 1. Because of duration, such layer is opposite to the traditional persistent Es layer, which we do not consider in this paper. Various researchers have used different terms for such spontaneous Es, it is meteor echo, meteor induced Es, spontaneously formed sporadic Es patches resulting of the Fresnel scattering from a region of enhanced plasma density along the meteor trail, transitory Es and transient Es. Since the term transient Es is unstable, to avoid confusion, we will stick to this term. Since meteor echo is not fully satisfy this term by some parameter, we will describe the properties of transient Es based on the ionogram properties and not from physics of its origin.

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