

Contribution of Meteor Flux in the Occurrence of Sporadic-E (Es) Layer over Arabian Peninsula

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There are few papers dealing with the relationship between meteor events and Es occurrence and the region studied in the proposed manuscript is scarcely investigated. Thus the work can provide a valuable scientific contribution. Nevertheless, I find the scientific discussion too vague and I recommend to revise significantly the paper that cannot be accepted for publication in its present form.

My major concern is about the discussion that needs to be extended, integrated and tailored to the region under investigation.

I read the paper by Chandra et al. (2001) mentioned in the manuscript: the authors of that paper made an in-depth dissertation of the Es layer formation and evolution interpreting the shape of the traces in the ionograms and they provided a detailed description of the meteor event. I understand the authors consider several meteor events, nevertheless I invite them to extend their discussions. In particular, the discussion needs to be extended when the authors claim (lines 142-143) "The abnormalities are caused by plasma instabilities due to the various electrodynamic processes in the ionosphere." What are these various processes? Are these processes locally generated or are they linked to plasma transport? What do the authors mean with "unfavorable conditions" in the sentence (lines 143-145) "Meteoric activity may provide metallic ions to the ionosphere, but they may not be displayed in ionograms if the conditions are unfavorable."? Also the sentence (lines 153-155) "Es layer may be affected by differences in climatology and wind dynamics" should be extended and discussed in the context of the regional analysis presented in the manuscript.

Minor comments

Caption Figure 3: Simultaneous monitoring of meteors and Es layer over Arabian Peninsula from May 2019 – April 2020. (a) Es occurrence frequency as function of local time, (b) **Hourly average of foEs recorded using ionosonde**, (b) Hourly meteor count.

Figure3b Y-axis label: **foEs average (MHz)**

Line 116: **Fig 4 is a comparison between the daily and monthly meteor counts with daily and monthly averages of foEs layer occurrences.**

Caption Figure 4: Daily and monthly averages of **foEs** and meteor count over Sharjah. (a) Including all observations (24 hours), (b) Nighttime observations only

Figure 4 Y-axis label: **foEs average (MHz)**

Caption Figure 5: Relationship between **foEs layer** monthly averages and monthly meteor count observed at Sharjah.

Figure 5 X-axis label: **foEs monthly average (MHz)**