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Annales Geophysicae Discussions

# *Interactive comment on* "An investigation of the ionospheric F-region near the EIA crest in India using OI 777.4 and 630.0 nm nightglow observations" *by* Navin Parihar et al.

**Anonymous Referee #1**

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The analysis of ionospheric variability is always welcome, and more now that space weather is a topical issue. However, I think that the method used to obtain Nm and hmF2 to analyze variations, is not appropriate to analyze variability over a single location. In my opinion, the method detailed by Makela et al. (2001) using nightglow emissions is useful for analyzing data over a region or area. If I am wrong, I would like the authors to convince me of this. Also, to analyze variations, you could analyze directly the airglow data. I am not convinced by your analysis of the absolute data you obtain for Nm and hmF2. However, the method is really interesting and may be useful for regions where F2 region ionospheric parameters cannot be obtained in another way.



Main comments:

1) I would like the authors to explain the usefulness of estimating Nm and hmF2 for a single station with the method they propose, despite of the disadvantage of having to estimate a calibrating factor for example.

2) I would expect a more robust statistical analysis adding more cases maybe, or some tests, before deciding the calibrating factor.

3) Are there any recent papers using this method to assess Nm and hmF2 parameters for just one location?

Other comments:

1) Page 4, lines 23-24: I do not understand what do you mean by " ... however, is limited to report by Sahai et al. (1981) and Makela et al. (2001)."

2) Page 8, line 22: I guess that "Hm" should be "hmF2"

3) Page 10, in the section of "Comparison with earlier reports", this comparison should be made under the same conditions specifying time, solar activity level, geomagnetic activity level, etc. If this is not the case, anyway you should mention these conditions.

4) Page 14, in "Signatures of gravity waves in Nm and hmF2 variations". How do you estimate the periods?

5) Figures 8 and 9: Which Nm and hmF2 is shown? That obtained with the airglow emissions?

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