

# ***Interactive comment on “Mesospheric gravity wave activity estimated via airglow imagery, multistatic meteor radar, and SABER data taken during the SIMONE–2018 campaign” by Fabio Vargas et al.***

**Fabio Vargas**

[fvargas@illinois.edu](mailto:fvargas@illinois.edu)

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We would like to thank the reviewer for taking the time to review our work. Your help is deeply appreciated.

A short reply to major issues is given here and is to be elaborate timely. -> as pointed out, we did not detect waves with periods <20 min, although they would be present certainly. Due to the filter wheel cycle time, a given airglow emission is sampled every 10 min, which allows only the detection of waves having periods >20.

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-> compare the results with Li et al., 2011. we did the comparison because the paper utilizes the same autodetection technique. we focus on the results of Li et al which are comparable to the wave scales we have detected. We will check this to provide a stronger correspondence btw the results.

-> lines 284-285. the meaning is relative to the MF mean and standard deviation of the sample, not the error in the MF determination.

- line 286: I agree the total MF value means nothing.

-> momentum flux of waves in different layers can be given. we have estimated it separately, but because the detections in an individual layer were not too many, we showed the results together.

-> estimating the momentum flux divergence between two layers is possible and we have done that in the past (Vargas et al, 2015, <http://dx.doi.org/10.1016/j.asr.2015.07.040>). The simultaneous identification of a wave in two layers is more demanding, and we do that for specific, individual cases. Instead of that, we have estimated the flux divergence from our model (Vargas et al, 2007, JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 112, D14102, doi:10.1029/2006JD007642, 2007) based on the distribution of periods and wavelengths of the observed waves. In this paper, we have done that as if the wave amplitude was measured in the OH and O(1S) layers simultaneously, with no change in amplitude detected (saturated waves).

-> we did not address the sources of the waves in this paper but will do it in a following publication exploring the sources of primary and secondary waves based on secondary wave generation in the range of 30-40 km as seen in lidar temperature data.

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