

Interactive comment on “Seasonal and intra-diurnal variability of small-scale gravity waves in OH airglow at two Alpine stations” by Patrick Hannawald et al.

Anonymous Referee #2

Received and published: 17 November 2018

General comments:

The current manuscript presents a well written and interesting study on the characterization of gravity wave parameters estimated from ground-based imaging observations of the OH-airglow near the mesopause. The underlying measurements cover a period of about three years and were performed in the central European Alpine region. The data processing and data analysis are described in detail. The results are interesting and to a large extent confirm earlier studies. The obtained results are not spectacularly new, but the manuscript deserves to be published, in my opinion. I only have some minor suggestions.

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Specific comments:

Page 1, line 8: "By combining the information of consecutive images". I suggest adding a comma after this part of the sentence to enhance readability

Page 1, line 22: "Thus, the temporal resolution of the FAIM data is comparatively high" You haven't mentioned yet, what OH bands (i.e. what spectral range) FAIM observes. Perhaps this should be mentioned, otherwise the reader cannot tell, whether the statement makes sense.

Page 2, bottom sentences: you give the "average" spatial resolutions for the measurements at the two different sites. It's perhaps interesting for the reader to see, how the spatial resolution varies across the FOV and how it differs between the two different axes.

Page 4, line 5: "where (a) references to the". Perhaps better "where (a) corresponds to the" ?

Page 7, line 2: "that the distance between two maxima has to be at least three pixels (5x5 kernel for maximum search)".

Can you explain in a bit more details what "5x5 kernel for maximum search" exactly means in this context? This is not entirely clear, at least to me.

Page 12, Figure 7, ordinate labels: "Occurences" -> "Occurrences". Same applies to Figure 6

Page 13, line 6: "the standard error calculated with"

I don't fully understand what this refers to here? The standard error of what quantity? Is the following mathematical expression correct, i.e. $\text{SQRT}(6/N)$?

Page 13, line 12: "which could be related to acoustic gravity waves".

These events could also correspond to Doppler-shifted GWs.

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Page 15, bottom paragraph: it would be good to mention what typical meridional wind speeds in summer and winter are. I imagine that the daily mean meridional wind speed associated with the mesospheric residual circulation is quite small. However, tidal variations may be quite large.

Page 16, line 1: Please briefly discuss the suggestions by Vargas et al. (2015).

Page 16, line 13 to 18: Please mention that latitude of the Tang et al. observations.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-322, 2018.

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