Referee #1 Evaluations:

Reviewer #1 (Formal Review for Author)

This paper provides statistics on quasi-monochromatic gravity wave events from 2017 to 2022, based on the observation of all-sky airglow imager. The propagation parameters of the waves were extracted using 2D Fourier transform, and the positions of wave sources were inferred with the ray tracing model. In three case studies, the wave sources were related to jet streams, instead of deep convection. This paper is based on abundant observation data and logically-organized, so I think this should be acceptable. However, I have two small questions as below:

Appreciations: The authors would like to thank the reference for taking time off to review this manuscript and for the comments, suggestions, and corrections. We have given the response accordingly.

- In the abstract (**line** 1) and conclusion (**line 463**), the authors said there were 209 events found during the five years. But in **line 114-115**, the number of gravity wave cases changed to 64. Why are there two different numbers?

  Response: Here, we intend to say that 64 nights out of the 1512 clear sky nights were the nights from which the 209 individual Quasi-Monochromatic Gravity Waves events were obtained. However, as you have pointed it out, we have rewritten this part as:

  A total of 1512 nights of clear sky images were analysed. From 64 nights, 209 QMGWs events were obtained [Line 156 - 157].

- How did the authors find out the total 209 (or 64) gravity wave events from the airglow images captured in the five years? Have any methods been taken to avoid omissions and misjudgments?

  Response:

  Before selecting the QMGWs, the waves must first and foremost be visible in the OH image for not less than two(2) hours. Next, the wave parameters were determined every ten (10) minutes. This is done to track the variations in the wave parameters (specifically the horizontal wavelength) to make sure that it is the same wave. GWs that satisfied this criteria are chosen to go through the next stage of criteria. The above described point are included in the main text as:

  The five years of observed OH airglow images were subjected to spectral analysis to estimate the QMGW characteristics. Specific criteria were imposed to select the QMGW events used in this work. After the spectral analysis, the confidence level (CL) of the estimated wave spectrum is estimated. The spectrum having peak power spectral density with CL $\geq$ 95% is accepted (Hu et al., 2002). Before selecting the QMGWs, the waves must first and foremost be visible in the OH image for not less than two (2) hours. Next, the wave parameters were determined every ten (10) minutes. This is done to track the variations in the wave parameters (specifically the

horizontal wavelength) to make sure that it is the same wave. If the conditions; CL $\geq$ 95%, visibility of wave and the determined wave being similar are satisfied, the wave is then subjected to the following conditions: [Line 166 - 170]

i. the λ_H must be greater than or equal to 10 km ($\lambda_H \geq 10$ km);

ii. the variation of ϕ within an hour must be less than 25° ($\Delta\phi \leq \pm 25°$);

iii. the GW propagation period must be between 5 and 80 min (5 min $\geq \tau_H \leq$ 80 min), and

iv. finally, the GW phase speed must be less than or equal to 150 m/s ($c_H \leq$150 m/s).

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5**Response:** Based on your comment, the entire section of the all-sky imager and the observation mode has been written all over in the main text as shown in the red highlighted text below: