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Comment on angeo-2021-65

Anonymous Referee #1

Referee comment on "Propagating characteristics of mesospheric gravity waves observed by an OI 557.7 nm airglow all-sky camera at Mt. Bohyun (36.2°N, 128.9°E)" by Jun-Young Hwang et al., Ann. Geophys. Discuss.,
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Dear Editor,

The paper by Hwang et al. titled "Propagating characteristics of mesospheric gravity waves observed by an OI 557.7 nm airglow all sky camera at Mt. Bohyun (36.2N, 128.9E)" provides a comprehensive summary of the 557.7 nm greenline all sky camera observation of gravity waves. The authors found that majority of the gravity waves are vertically free propagating waves. The horizontal propagating directions are consistent with seasonal variations of the neutral winds from the reanalysis data base and locally installed meteor radar observation. It is nice to have combined wind and all sky image observations, which allows the derive of the intrinsic frequency of the gravity wave. The paper is well written and should be considered for publication. I have some minor comments about the paper.

- The authors used "observed wave parameters " referring to the neutral wind Doppler shifted values. I think it is better to refer them as "apparent".
- L182 "... Korean peninsula can propagate any directions ...'. Change to '... in any directions ...'
- L252 "The small percentage of evanescent waves may imply that the majority of the observed waves is not locally originated from, at least the altitude range of 90 – 100 km." Probably should just say that majority of the waves is free propagating wave.
- L286 "The evanescent waves may be generated in situ at the airglow layer, probably as secondary waves, not propagated from the lower atmosphere. The evanescent waves were very rare (less than 2%) in our analysis of the BHO images. " It will be good to show some examples of all sky images of the evanescent waves. As to the sources of the wave, do you have any references? Do you see any sign of the instability in the mesospheric region?

- Did you do any binning of the CCD images?