

## ***Interactive comment on “Stratospheric observations of noctilucent clouds: a new approach in studying large-scale mesospheric dynamics” by Peter Dalin et al.***

### **Anonymous Referee #1**

Received and published: 15 September 2019

This paper reports the stratospheric observations of noctilucent clouds from a balloon on 5-6 July 2018 near Moscow. Several hundreds of NLC images were taken for over one hour. Various NLC morphology and associated gravity waves are discussed in the paper, including ice voids, a medium scale GW.

Overall, the paper is clearly written and the results are interesting. On the other hand, the English language needs to be tightened up. Please see the minor comments. Most importantly, the paper "oversells" itself. The significance is exaggerated. Except the factor of weather and doubled field of view, the balloon photographing of NLCs does not demonstrate a substantial difference from the ground photography. The PMC-Turbo ex-

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periment targets high resolution, unlike this experiment. Also unlike the authors claim, the spatial coverage of this experiment is not comparable to satellite observations. Please correct these statements.

Detailed comments:

1. title: "large-scale mesospheric dynamics". Not really, the images shown cannot be used to study large scale waves, such as tides or planetary waves.
2. line 19: "100-1450 km"?
3. line 24: "unique", well, as shown in the next sentence, the field of view of a balloon borne camera is only twice of a ground observation (1450\*750 km vs. 800\*550 km).
4. line 28: "is confirmed" → "was confirmed"
5. line 30: "vertical amplitude". This is an inaccurate expression. Please change.
6. line 33: "various distances"→ "various scales"
7. line 42: "30-100 nm"
8. line 47: "NLC" → "NLCs", and throughout the paper
9. line 50: "10000 km". This is not accurate. At high latitudes, the scale of tides and PWs are much shorter than 10000 km.
10. line 57: spell out these acronyms (AIM, SBUV)
11. line 69-71: the meaning is not clear. Please elaborate.
12. line 84: "large scale dynamics", we usually call large scale dynamics for much larger scales than 100 km. "opens new horizons", it is an improvement compared to ground observations. But this statement oversells.
13. line 103 "build" → "built"
14. line 122: "preliminary" → "preliminarily"

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15. line 131: how about local time?

16. line 166: is comparable to PMC observations"...This is a wrong statement. The space observation is much wider than the balloon one. Figure 3 clearly shows this.

17. line 238: please define vertical amplitude. "vertical displacement"?

18. line 245-250: How's the amplitude of vertical displacement leading to more knowledge of kinetic wave energy? I also found this part exaggerated.

19. Conclusions. This is a good experiment. But none of the conclusions a-g clearly demonstrate its advantage to ground and space observations.

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Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-114>, 2019.

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