

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2021-124

Anonymous Referee #2

Referee comment on "Atmospheric tomography using the Nordic Meteor Radar Cluster and Chilean Observation Network De Meteor Radars: network details and 3D-Var retrieval" by Gunter Stober et al., Atmos. Meas. Tech. Discuss.,
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The paper introduces a new algorithm to analyze the MLT observations by the radar networks and utilizes two the data from two radar networks to demonstrate the results based on this data retrieval algorithm. The new and improved capability to obtain high quality horizontal mapping of zonal and meridional winds by this technique is quite impressive. The paper has demonstrated that this work is high quality and provide a new tool to study various important dynamic topics in the mesosphere and lower thermosphere in different scales. The figures are clean and clear with proper captions. I understand this is more like a technology journal, but it would be good for illustrate how some of the dynamic parameters was calculated. For example, the body force. The section of discussion reads like a summary of this work.

I only have some minor technical comments. Please see below.

- Line 38. The Na Doppler lidar has been an important ground-based instrument, and has many important contributions to the MLT dynamics, due to its capability of day and night time simultaneous measurements of temperature and horizontal winds [Krueger et al., 2015]. Due to its horizontal wind capability, it can derive the intrinsic properties of GWs. It is unfortunate that the author misses this important instrument.
- Line 44-45. There are actually many of this collaborative investigations between the Na Doppler lidar and airglow instrument. So, I suggest the author replace "only a few" with many. The problem with such Na Doppler lidar – Airglow investigations is that they are mostly focusing on single case studies, such as Yuan et al. 2016, Cai et al., 2014, and, thus, cannot provide statically large numbers of cases to build robust database of these intrinsic properties of GWs.
- Line 2. Replace "can be" with "is"
- Line 60, to investigate
- Line 73, delete "are going to"
- Line 224, demands

- Line 231, delete “thus”
- Line 382, replace “possibilities” with “capabilities”
- Line 384, delete “very”
- Line 401-409, the semidiurnal tidal activity is not quite clear in Fig. 10. I wonder if the author can derive and show the semidiurnal amplitude variations instead of the hourly winds.
- Line 440, I am not quite clear what depend on the choice of... Please specify.
- Line 440 – 443. This is a very long sentence, please consider to revise.
- Line 521, I do not see any “diurnal tidal pattern” is discussed in the paper.