

Review of manuscript amt-2022-254, entitled

Multistatic meteor radar observations of two-dimensional horizontal MLT wind

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This manuscript presents some preliminary results on mesosphere and lower thermosphere (MLT) winds and wind gradients based on measurements obtained from a bi-static meteor radar located in Central China. Overall, the paper is well written and understandable. However, and as I stated in the rapid access review stage, the authors have chosen the wrong journal to submit it.

The manuscript does not contribute with any new information/results on measurement techniques of the atmosphere. Multi-static meteor radars have already been well described in many previous studies (Stober & Chau 2015; Chau et al., 2017; Stober et al., 2018; Vierinen et al., 2019; Spargo et al., 2019; Chau et al., 2021; Poblet et al., 2022; to name only a few). Furthermore, many of these previous studies presented new results on the physics of the MLT, which could be done with the system presented in the manuscript here reviewed, but sadly, it is not done. Only a few days of wind data are presented and briefly discussed. Given that the MLT over Central China has not been studied using multi-static meteor radars, the authors have a unique opportunity to present new and exciting results on MLT dynamics over this part of the world. I encourage them to do so, and resubmit their manuscript to the adequate journal (e.g., *Annales Geophysicae* or *ACP*).

- Stober, G., and J. L. Chau (2015), A multistatic and multifrequency novel approach for specular meteor radars to improve wind measurements in the MLT region, *Radio Sci.*, 50, 431–442, doi:10.1002/2014RS005591.
- Chau, J. L., G. Stober, C. M. Hall, M. Tsutsumi, F. I. Laskar, and P. Hoffmann (2017), Polar mesospheric horizontal divergence and relative vorticity measurements using multiple specular meteor radars, *Radio Sci.*, 52, 811–828, doi:10.1002/2016RS006225.
- Stober, G., Chau, J. L., Vierinen, J., Jacobi, C., and Wilhelm, S.: Retrieving horizontally resolved wind fields using multi-static meteor radar observations, *Atmos. Meas. Tech.*, 11, 4891–4907, <https://doi.org/10.5194/amt-11-4891-2018>, 2018.
- Vierinen, J., Chau, J. L., Charuvil, H., Urco, J. M., Clahsen, M., Avsarkisov, V., et al. (2019). Observing mesospheric turbulence with specular meteor radars: A novel

method for estimating second-order statistics of wind velocity. *Earth and Space Science*, 6. <https://doi.org/10.1029/2019EA000570>.

- Spargo, A. J., Reid, I. M., and MacKinnon, A. D.: Multistatic meteor radar observations of gravity-wave–tidal interaction over southern Australia, *Atmos. Meas. Tech.*, 12, 4791–4812, <https://doi.org/10.5194/amt-12-4791-2019>, 2019.
- Chau, J. L., Urco, J. M., Vierinen, J., Harding, B. J., Clahsen, M., Pfeffer, N., et al. (2021). Multistatic specular meteor radar network in Peru: System description and initial results. *Earth and Space Science*, 8, e2020EA001293. <https://doi.org/10.1029/2020EA001293>.
- Poblet, F. L., Chau, J. L., Conte, J. F., Avsarkisov, V., Vierinen, J., & Charuvil Asokan, H. (2022). Horizontal wavenumber spectra of vertical vorticity and horizontal divergence of mesoscale dynamics in the mesosphere and lower thermosphere using multistatic specular meteor radar observations. *Earth and Space Science*, 9, e2021EA002201. <https://doi.org/10.1029/2021EA002201>.