

Atmos. Meas. Tech. Discuss., community comment CC1
<https://doi.org/10.5194/amt-2022-193-CC1>, 2022
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Bias in Doppler Velocity due to Insect Migration

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Community comment on "Complementarity of wind measurements from co-located X-band weather radar and Doppler lidar" by Jenna Ritvanen et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-193-CC1>, 2022

Dear authors,

Throughout your contribution you treat insects as proper and unproblematic targets for Doppler weather radar wind velocity measurements. There is neither a discussion of the potential bias in velocity due to migratory behaviour of insects, nor a verification that this is not the case in your data set. It is known in the literature that special heed needs to be paid, if insects are acceptable as a target or not for the application at hand. In the latter case, insects need to be filtered out (see [1] and [2], for example). For example, the German Weather Service operates X-Band Doppler weather radar/Doppler Lidar combinations at Frankfurt and Munich airport. Their observations reveal that differences between Doppler velocities from radar and lidar are unacceptable, if insects are not filtered out, since this leads, inter alia, to false wind shear alerts. [3]

[1] Rennie, S.J.: "Doppler weather radar in Australia.", CAWCR Technical Report No. 055, 2012

[2] Hannesen, R., S. Kauczok, and A. Weipert: "Quality of clear-air radar radial velocity data: Do insects matter?" 8th European Conference on Radar in Meteorology and Hydrology, Garmisch-Partenkirchen, Germany. 2014

[3] B. Stiller, German Weather Service, personal communication, 2013