

## ***Interactive comment on “Vertical profiles of the 3D wind velocity retrieved from multiple wind LiDARs performing triple range-height-indicator scans” by M. Debnath et al.***

### **Anonymous Referee #1**

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This paper concern the use of lidars as "virtual tower" for measuring wind. The amount of data used is very low and there are problems with the way the experiment has been planned. It is hard to point out what new knowledge is generated by the paper.

The experiment is not planned very logically. All scanners use elevation angles from 0-45 degrees while have very different distances to the virtual towers ranging from 98 to 955 m. This means that a lot of measurements are waisted, i.e. that the overlap in measurements is quite poor. Furthermore, the scanners are not synchronized which means that they interrogate the same intersecting volume at the virtual mast at different times. The implication of both these issues is that the calculation of the wind vector becomes more uncertain than it needed to be. Also the azimuth angles are not ideal.

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They should have been closer to 120 degrees apart to reduce uncertainties on the horizontal wind, or, if reduced uncertainty in the vertical component is wanted, have one close to the foot of the virtual tower and the two others at roughly 90 degrees apart. For the virtual mast 2 one instrument is in fact close to the base of the virtual mast (8 in fig 1) but the two other lidars are at 180 degrees to each other, virtually the worst configuration one could choose.

The comparisons in figure 6 are unimpressive which is probably due to the bad setup of the experiment as mentioned above. Slopes between the sonic are up to 15% off for the horizontal components and much more for the vertical.

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[Interactive comment on Atmos. Meas. Tech. Discuss.](#), doi:10.5194/amt-2016-164, 2016.

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