

Interactive comment on “Using Doppler lidar systems to detect atmospheric turbulence in Iceland” by S. Yang et al.

Anonymous Referee #1

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The paper presents the new lidar measurements of eddy dissipation rate at Reykjavik, Iceland, using commercially available scanning Doppler lidar. This atmospheric dynamic parameter is highly important for both dynamic studies and aviation safety, as the author points out. However, I am concerned about the presented EDR results, since this work lacks the data quality discussion. The two highly important parameters, CRN and CI, are poorly defined, and there is not nearly enough discussion on the measurement uncertainty of the so called structure function D_v . The statistical uncertainty, due to inadequate sampling is also not mentioned at all in the paper. The decision of filtering after or before calculation also seems arbitrary without scientific algorithm to justify. Thus, unless the author can provide new information on these uncertainty issue, these results and conclusions in this paper is unacceptable for the journal publication.

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Technique issues: 1.) The titles for most of the plots seem to be added manually afterwards and become out of place. Most of them blocked the top part of the plots. 2.) Why isn't there tick marks and unit in x-axis of Figure 2? 3.) How do you explain the reversal of power density at high frequency in Figure 3? Is it data quality related or does it indicate some atmospheric dynamic feature? 4.) On page 7, line 13, the author talks about different data quality at low altitude and high altitude. It would be helpful to show some statistics of good data at low altitude (such as at 100 m). 5.) Why does the author show all these high altitude results with low CNR in these contour plots, such as Figure 4 and Figure 6. I would choose a consistent altitude range (1-3000 m, maybe) throughout the paper. 6.) On page 10, line 17-18, "In general...", this sentence does make sense to me. 7.) on page 12, line 8, should be "These results".

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