Response to reviewer's and Editor's comments on the manuscript "A review of turbulence measurements using ground-based wind lidars"

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With regards to the comments of the reviewer number 2, we would first of all like to thank the reviewer for pointing out some inaccuracies in the equations and/or notations. We hope that the two references mentioned by reviewer 2 will be available in English language soon, since we would like to include them in our references. We have read our manuscript very carefully and have made corrections wherever necessary. Following are the specific changes carried out. The line and page numbers correspond to the updated version of the manuscript.

Page 4, Line 14–15 We have now adopted the Pope [2000] notation in denoting the Kolmogorov constants. Thus α_K is removed from the nomenclature and C and C_1 are inserted instead.

Page 4, Line 66 The definition of δ is now changed to denote an angle

Page 7, Line 185 α_K changed to C. It is now called as universal Kolmogorov constant.

Page 8, Line 197 This is called as ..

Page 9, Line 224 Eq. (11) is simply rearranged, but is exactly the same as in the previous version.

Page 9, Line 225 From Eq. (11)...

Page 9, Line 228 We thus have more....

Page 9, Line 247 ...carried out using standard procedures..

Page 9, Line 249 ...points in space, standard techniques...

Page 14, Line 380 α_K changed to C_1 according to the definition in Pope [2000].

Page 14, Line 381 ...wind field component, and $C_1 \approx 0.5$ is the Kolmogorov constant related to $F_{11}(k_1)$.

Page 14, Line 387 θ is changed to θ_T to denote the surface potential temperature.

Page 15, Line 389 ..air density at the surface, θ_T is the surface potential temperature, and $\langle w'\theta'_T \rangle$ is the...

Page 15, 418 Eq. (36) is changed so that it is the same as Eq. (25) in Smalikho [1995].

Page 15, Line 421 ...the probe volume). It should be noted that there is a slight difference in the value of the Kolmogorov constant used in Banakh et al. [1999], although the same Eq. (36) is stated also in Smalikho [1995], i.e. in Eq. (25) of Smalikho [1995] the value of Kolmogorov constant is ≈ 1.83, whereas in Eq. (13) of Banakh et al. [1999], the value of Kolmogorov constant is ≈ 2.

Page 16, Line 435 ..in great detail, where the probe volume weighting function is assumed be Lorentzian. The expression is given as,...

Page 16, Line 437 α_K in Eq. (37) is replaced by C.

Page 16, Line 439 ..separation distance along the x_1 axis,....

Page 16, Line 441 In Eq. (38) there was a typo with regards to the term r_1/l inside $\tan^{-1}$ term.

Page 16, Line 444 α_K replaced by C.

Page 16, Line 446 ...derived by Kristensen et al. [2011], Smalikho [1995]....

Page 16, Line 453 ...$d_f\delta$ on the base of the scanning cone, where $\delta = 2\sin^{-1}(\sin\phi\sin\theta)$ is the angle subtended by the two lidar beams in a VAD scanning...

Page 17, Line 456 ...using this approach but neglected the contribution due to random instrumental noise that was considered in Banakh et al. [1996]. For modern lidar systems the instrumental noise can be neglected [Mann et al., 2009], but for older systems was found significant [Drobinski et al., 2000, Frehlich et al., 1998], and hence, one must be careful before neglecting it.

Page 17, Line 465 In Eq. (39), α_K is replaced by C and s_1 and s_2 are replaced by dimensionless variables s_1' and s_2' respectively.

Page 17, Line 467 ...isotropic turbulence, and $s_1' = s_1/d_f$, $s_2' = s_2/d_f$ are non-dimensional variables.

Page 17, Line 469 In Eq. (40), α_K is replaced with C and there was a typo in the fifth line of the equation, where $8(d_f/l)^2$ is replaced by $16(d_f/l)^2$.

Page 17, Line 473 ..$R(0)$ term in their equation, perhaps because at $\delta \ll \pi/2$, and $d_f \gg \mathcal{L}$, this term is negligible....

Page 18, Line 478 ..estimated $R(0) = 1.74\,\varepsilon^{2/3}(d_f\cos\phi)^{2/3}$. Alternatively one may use the von Kármán [1948] energy spectrum and derive expressions for $R(0)$....

Page 18, Line 496 The typos have been corrected. The squaring of the exponential term in the first line is removed and $x/2$ is added in the second line.

Page 18, Line 500 ...$2/\sqrt{\pi}\int_0^x \exp(-t^2)\,dt$ is the error function. In order...

Page 20, Line 562 ...not been carried out. By fitting Eq. (46) to measurements of $\langle S(v_r)\rangle$, $\langle {v_r'}^2\rangle$ can be estimated...

Page 22, Line 617 ...Very few studies have exploited the Doppler spectral width to estimate ε, where the reasons could be that for a c-w lidar its applicability is limited to $l \ll \mathcal{L}$, and for a pulsed lidar it is quite complicated to process the data [Smalikho et al., 2005]....

Page 23, Line 682 ...This method also requires that the horizontal homogeneity assumption is valid over a larger area, particularly if we are interested to measure turbulence statistics at greater heights and/or several heights....

Page 24, Line 697 ...measurements to obtain R_{ij} is then essential in order...

Page 28, Line 831 ...atmosphere sporadically [Dors et al., 2011, Xia et al., 2007]. The simple...

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