

Responses to the comments of the Anonymous Referee #2

[RC2.1] The manuscript investigates the potential errors in the estimation of the local turbulent kinetic energy dissipation rate. The original aspect is the use of fully resolved DNS of statistically stationary, homogeneous, isotropic turbulence to estimate the energy dissipation rate by applying to simulation data the different methodologies commonly used by experimental scientists from time-dependent single point one-dimensional velocity measurements sampled in the atmospheric boundary layer.

The DNS data are used as ‘ground-truth reference’ for comparing the various estimation techniques used for extracting the time-dependent energy dissipation rate from non-ideal turbulent flows and for assessing the influence of different potential causes of errors, such as (among the most relevant) the size of averaging window, the turbulence intensity, the large-scale random flow velocities, or the anemometer misalignment. The topic is extremely interesting because the turbulent kinetic energy dissipation rate is one of the most fundamental quantities in turbulence and it is crucial to accurately derive the errors associated to the different methodologies commonly used to derive it.

I read the review of the Referee #1 and globally I agree with his comments. Surely the manuscript is well written and organized and the obtained results interesting and original. Probably is ‘too much’ and should be simplified by cutting some details or some theoretical part, as already highlighted by the Referee #1. However, the paper is of excellent quality and I recommend to accept the paper.

[AC2.1] Many thanks for the positive review. We agree with you and Referee #1 that the amount of detail is overwhelming and may compromise the usefulness of the paper. We have streamlined the manuscript and added a new section that is essentially a non-technical summary for those who want to grasp the key and practical points of the paper quickly without diving into the details. We also corrected minor issues here and there and polished some parts of the manuscript without changing the basic scientific content to improve the readability of the paper.