

Interactive comment on “The von Kármán constant retrieved from CASE-97 dataset using a variational method” by Y. Zhang et al.

Anonymous Referee #2

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The paper provides confirmation on the value of von Karman constant utilizing an extensive field data set. The study is a good contribution on the topic and can be published in ACP after the following items have been considered.

- could it be possible that after all k is in fact constant, and the variation stems from the measurement inaccuracies or the incomplete theory/model, where the variation of some other variables or some “unknown”, generally minor phenomena, are not taken into account?; I am not sceptical that k would be a changing variable but I would like to see the authors’ more strong statement on this; the possible invalidity of M-O theory under highly stable and unstable conditions is discussed but could it be possible that there is still even something else or if we had a corrected M-O theory the k would be constant? - I. 159: LE was computed from the energy

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budget method; how accurate is this concerning that there exists generally the known mismatch between net radiation and turbulent fluxes in a way that often the sum of fluxes are only 80% - 90% of the net radiation, over long averaging periods when storages should be negligible; may this affect somehow on the analysis in the paper? - How sensitive are the results for the mathematical form of Eqs. 5a & 6b; these forms are quite standard ones but sometimes a bit different formulas are also used - I would omit Table 1 and give the information only in the main text: different min and max limits of used weights of constraints and report the variation/max-min limits of the resulting k values - I would omit Fig. 3

Minor/Technical

- I. 152: I think 2.95 m is too accurate, it should be 3.0 m; also 1 and 2 m should 1.0 and 2.0 m
- I. 158: 1-D sonic anemometer?; I guess it should be 3-D
- I. 347: how were sensible heat fluxes computed?
- Table 1 and Fig. 1: why Fig. 1a gives 0.42 for k while Table 1 gives 0.41?
- Fig. 4: what is the fundamental reason that two quarters (upper right and lower left) are empty?; can it be seen easily for example from theory?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 13667, 2008.

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