

Interactive comment on “A robust data cleaning procedure for eddy covariance flux measurements” by Domenico Vitale et al.

Anonymous Referee #2

Received and published: 7 October 2019

General comments This study presents a novel scheme for quality control (QC) of eddy-covariance data, which is a very relevant topic for the readership of this journal. Especially, since more and more data become freely available and are being used in large-scale synthesis studies, a sound and robust data cleaning procedure is needed. This is certainly not the first attempt to provide such a method, and a number of common existing methods are cited, but this new method is somewhat innovative, since it separates the quality tests from data rejection criteria more rigorously than other methods. This allows for more flexibility in the selection of test algorithms, so that future developments can be integrated more easily. While I find the data actual QC algorithm logical and coherent, I find it very bold to assume that a random uncertainty estimate served as the only quality indicator eddy-covariance data, as e.g. stated in the conclu-

C1

sion. More precisely, I have the following two concerns: 1.) I agree, that systematic errors should either be avoided or corrected for. However, the uncertainty of a flux estimate may increase as a result of a flux corrections (because the estimate is partially modelled and not measured, particularly as a result of spectral corrections). How can this be included? 2.) Moreover, the spatial representativeness of a flux estimate, cannot easily be accounted for in a random error estimate. What if there is a mixed land use within the flux footprint? This issue needs to be addressed in some way.

Detailed comments L98: ... because it would be extremely time consuming L122: I disagree that the random uncertainty is sufficient to characterize eddy-covariance data, for the above-mentioned reasons. L140: I disagree with this statement. A bias can at least indirectly be determined using the energy balance closure. L461: This might be a better reference for the Selhausen site: (Schmidt et al., 2012) because it is only one of several sites that are used as an example in Mauder et al. (2013), and the correct Site-ID is DE-RuS

Schmidt, M., Reichenau, T. G., Fiener, P. and Schneider, K.: The carbon budget of a winter wheat field: An eddy covariance analysis of seasonal and inter-annual variability, *Agric. For. Meteorol.*, 165, 114–126

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2019-270, 2019.

C2