

Interactive comment on “Multiple quality tests for analysing CO₂ fluxes in a beech temperate forest” by B. Longdoz et al.

Anonymous Referee #1

Received and published: 30 November 2007

Review of 'Multiple quality tests for analysing CO₂ fluxes in a beech temperate forest' by B. LONGDOZ, P. GROSS, and A. GRANIER

The paper presents interesting features which are necessary (and urgent) to apply on eddy covariance data to make them more comparable across sites. Even though such tests are known for quite a long time already they are rarely used by the eddy covariance community. There is a clear need for such a paper. Anyhow the quality of the paper suffers from clarity caused by frequent usage of acronyms and weak English language (I recommend a native speaker to read through), statistics should be described more clearly.

specific comments:

P4198, I2: 'the selection of...' what choice do you have? This is maybe not the correct word used

P4198, I9: which 'filtering' do you mean, this is not clear here.

P4198, I12: which 'improvement', not clear here

P4198, I16-17: 'The application on large datasets such as CarboEurope and FLUXNET is necessary.'

P4199, I2: temperature is measured as well!

P4198, I22: the Falge et al paper deals only with gaps produced by power failures, malfunctioning, ustar filtering, not by additional data filtering, the word 'selection' is maybe not correct here

P4200, I15: how was the roughness length determined, this value seems relatively low

P4201, I16: u and v are not needed to calculate FC

P4202, I9: what is 'a tolerable range'?

P4207, I12-18: it is difficult to decide whether the scientific message is valid because of unclear sentences and abbreviations

P4213, I6: what do you mean with 'more important photosynthesis exchanges'?

P4213, I11-13: The systematic application of quality tests is not only a question that is legitimate. The statement at the end should be made more clear!

Figs 1-2 should rather show CO₂ concentrations instead of voltage

1) Does the paper address relevant scientific questions within the scope of BG? Yes
2) Does the paper present novel concepts, ideas, tools, or data? yes
3) Are substantial conclusions reached? To be made more clear
4) Are the scientific methods and assumptions valid and clearly outlined? no
5) Are the results sufficient to support the interpretations and conclusions? Should be enhanced
6) Is the description of exper-

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iments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? 7) Do the authors give proper credit to related work and clearly indicate their own new/original contribution? yes 8) Does the title clearly reflect the contents of the paper? yes 9) Does the abstract provide a concise and complete summary? Should be improved 10) Is the overall presentation well structured and clear? 11) Is the language fluent and precise? NO 12) Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? 13) Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? Several text parts have to be clarified 14) Are the number and quality of references appropriate? yes 15) Is the amount and quality of supplementary material appropriate?

Technical corrections:

P4198, I1: Eddy covariance measurements...(skip the article)

P4198, I2: carbon sequestered... P4198, I11: 'The spatial heterogeneity of soil respiration' instead of 'The soil respiration spatial heterogeneity' P4198, I24: '...to have a direct measure of these...'

P4198, I11: '...problems met with EC measurements...' P4200, I1: 'Flux measurements' instead of 'Fluxes measurements'

P4201, I20: 'obtained by the summation of FC and change in CO₂ storage in...'

P4201, I23: twofold usage of 'estimate', estimate is too weak anyhow: 'This amount of CO₂ is determined from a profile of concentration measured at 6 different heights (22m, 10.4m, 5.2m, 2m, 0.7m, 0.2m).'

P4202, I1: 'check' instead of 'control'

P4202, I6: 'The tests check the high frequency...'

P4202, I21: '...have not found any half-hour...'

P4203, I5: '...between w and C measurements.'

P4203, I8: 'Additional quality assessment...'

P4203, I8: sentence has to be rewritten

P4203, I24-25: rewrite sentence: 'In the first dataset, the gaps in the NEE time series correspond only...'

P4204, I2: '...day is based on global radiation..' (remove 'the')

P4204, I9: 'repartitioning' is not English

P4204, I19: '...by a two step procedure.'

P4204, I21-22: '...without water stress, the dependence of Reco on temperature is fitted (...) by a Q10 relationship (...)'

P4205, I4: 'Among the latter classes, the...'

P4205, I6: '...relationship fit depends on the...'

P4205, I20: 'The averages are...'

P4206, I3: '...only 2.1% correspond to...'

P4206, I12: '...can be divided into five...'

P4206, I15: '...restrictive' is probably not the correct word in the context

P4206, I16: 'The percentage of stationarity flags is close to...'

P4206, I17: 'To go one step further...'

P4206, I20: 'selective' is not the correct word in the context

P4206, I21-22: 'This predominance of the flags by the kurtosis test on the other ones has also been observed...' P4207, I1-2: rewrite sentence, this is very unclear! P4207, I8: '...presented in Table 3.'

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P4207, I12-18: difficult to follow because of unclear sentences and abbreviations

P4207, I22: '...is applied for both, night- and daytime...'

P4207, I23: '...increases significantly the presence of gaps in ...'

P4208, title: Temporal variability of ecosystem respiration

P4208, I7: '...without any soil water stress...'

P4208, I18: '...causes of the temporal variability of Reco.'

P4208, I19: '..., available soil carbon content...'

P4208, I20: sentence very difficult to understand

P4209, I19: '...with the results of the geographical sector analysis.'

P4209, I26: '...found for soil respiration, ...'

P4210, I6: '...filtering does not lead...'

P4210, I15: '...NEE measurement to achieve GPP.'

P4210, I21: 'of the' to much, regression instead of regressions

P4211, I1: rewrite sentence for clarity

P4211, I12: what does this mean: 'goes from 7.1% to 20.6% for...?'

P4211, I17: '...filled with the respective parameterisations...'

P4211, I24: '...of the quality test procedure. The test application leads to an...'

P4211, I28: 'For NEE, the quality...'

P4212, I1-4: difficult to understand, is this really surprising?

P4212, I18: '...to year even though the forest...'

P4212, I21-22: 'This was not achieved because of the large spatial heterogeneity of

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Reco.'

P4212, I27: 'On the one hand,...'

Interactive comment on Biogeosciences Discuss., 4, 4197, 2007.

BGD

4, S2051–S2056, 2007

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