Interactive comment on "**Basic and extensible post-processing of eddy covariance flux data with REddyProc**" *by* **Thomas Wutzler et al.**

Anonymous Referee #2

Received and published: 11 March 2018

1   General comments

The paper describes the R package REddyProc containing tools for post-processing of eddy covariance data with a focus on CO_2. The REddyProc package contains tools for reading halfhourly data from different formats, estimating u_* thresholds, gapfilling, flux-partitioning, data visualisation, and estimation of uncertainties.

The results obtained with the routines of the package are compared with other state-of-the art tools. This resulted in no significant differences in the results from the different tools on a montly or annual scale. The REddyProc package contain a more sophisticated way of the treatment of seasons and the possiblity to run and take advantage of multi-year data sets.

The paper provides a good description of the rationale of the package and the diffence in calculation method between this package and earlier available tools. The paper also includes an appendix with example of how to run the routines on a full annual dataset.

In general, I find that the paper is well written and documented, and that it can provide a very useful reference for scientist using the package. I have some suggestions for improvements in the specific comment below. Providing this package is very good for the flux reasearch community and by using standardized methods the results from different research groups become much more comparable.

2   Specific comments

Table 1. I find it a bit lazy to write "uStar" in stead of the correct symbol "u_*".

Figure 2. Caption: I suppose it should be "night-time NEE". The "season–temperature subset" is only understandable after careful reading of the main text.

p.6, l.12-13: It is not completely clear from the text which time-frame is used for the flagging. What is the chosen aggregation period for a "robust u_* estimate" (l. 10).

p.7, l.8.: Probably this is the first time in the paper the "BGC online tool" is mentioned, and should thus be explained and referenced here.

p.9, l.22: The abbreviation "LRC" should be explained.

p.12, l.13: The choice of the software used for comparison (here called "benchmarking") should be explained better. The u_* filtering is compared to Papale et al. (2006) and the gap-filling and flux partitioning to the BGC online tool. Do these represent (previous) state-of-the-art or have exactly those routines been used for calculating the FLUXNET data-sets?

p.14, l.6: Should read "To explore these consequences ..."

Fig.4+5: I find it quite interesting that there seems to be a fairly large scatter in the estimated u_* thresholds, but this does not seem to translate into a similar scatter in the annual NEE estimates. It would be valuable to have a further discussion on this. Does it e.g. mean that the value of the u_* threshold is not very important? A lower u_* threshold means that more data are kept which could potentially lower the uncertainty on the annual estimate.

Fig. 6: The symbols of the quality flags are very difficult to read and distinguish. The legend refers to the sub-figures as "top" and "bottom". Here it should be "left" and "right".

Appendix B: I tried out the REddyProc package on my MacBook, First I tried to update all packages and after a little tweaking I managed to load REddyProc. Following the example went very smooth until running the function sEstUstarThresholdDistribution() where I got the message "Error: could not find function "sEstUstarThresholdDistribution". This is probably a minor trivial issue in my implementation that can be solved.

C3