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Geoscientific Model Development Discussions

Interactive comment on "FluxnetLSM R package (v1.0): A community tool for processing FLUXNET data for use in land surface modelling" *by* Anna M. Ukkola et al.

Anonymous Referee #2

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Ukkola et al. document an R package to convert FLUXNET data into forcing data for land surface models. This tool might be useful for all land surface models and may lead to more frequent use of FLUXNET data for model evaluation. As the general steps described here are necessary for using FLUXNET data for any land surface model, this can develop into a frequently cited reference.

Reading data files, converting the units and writing them into netcdf is however not a big issue for most scientists. I therefore have some suggestions that could generalize the package more and hopefully lead to a more frequent use of the package.

1) the authors convert the driving data with respect to the units. it might also be useful to provide aggregation to different time steps, not all land surface models use the same

time step in their forcing.

2) The authors only mention that they include the IGBP vegetation classification. Many models however use plant functional types. For the package to be applicable in this respect for most land surface models a conversion to plant functional types would be necessary.

3) It would be interesting to check whether the unit conversion that is applied here is the one required for other models. The authors could gather a list with units for the most widely used land surface models and check whether additional unit conversions are necessary, and if so extend the package accordingly.

Specific comments:

p.2, l. 16-26: I think it would be good to distinguish between the forcing data and the flux measurements used to evaluate the model. The flux measurements do not necessarily need to be gapfilled if the model is compared with these data in high temporal resolution. Then you can simply only use the datapoints that were measured. Of course if you want to evaluate the annual sum the fluxes also need gapfilling.

p.2 l. 35: what are Tier 1 sites?

p.3 l.21: is there any reference for this R package?

p.3 l. 22: "encourages screening of flux tower sites for model applications", what do you mean ? can you be more specific what this screening does?

p.3 l. 26-30: please be more precise: "encourages better documentation", basically this paper is the documentation of the methods, right?

p.7, l. 30: please include all variables that are not gap filled.

p.10, l. 30: did you verify that the format is really directly usable by (many) LSMs? Formats might differ considerably between different models.

p.11, l.1: what are these specific applications?

Reference:

Poulter, B., Ciais, P., Hodson, E., Lischke, H., Maignan, F., Plummer, S., and Zimmermann, N. E.: Plant functional type mapping for earth system models, Geosci. Model Dev., 4, 993-1010, doi:10.5194/gmd-4-993-2011, 2011.

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