

Interactive comment on “Investigation of scale interaction between rainfall and ecosystem carbon exchange of Western Himalayan Pine dominated vegetation” by Sandipan Mukherjee et al.

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Received and published: 29 October 2018

Reply to the comments of Short Comment - 1: Pramit Deb Burman, IITM, India

With respect to comments on the ‘3-hourly CASA-GFED3 model product’ this is to emphasize that the 3 hourly data was converted to daily average values, afterwards, wavelet analysis was carried out. As indicated above, the CASA-GFED3 data we had at our disposal and not many ecosystem model results are available at sub-daily time resolution.

The scale difference in Figs – 4, 6 and 7 are due to inclusion of all statistically significant

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signatures of different parameters. Hence, a forced equaling scaling during production of images would either include statistically insignificant information (i.e. inclusion of 1/64 in case of 1/32) or removal of significant information (i.e. restriction of scale up to 1/32 where valid signatures are present in 1/64).

The color scale of Fig-5 can be explained in a revised draft. For the detail LAI information Singh et al (2014a) is referred. The comment on relationships between NEE-VPD and NEE-air temp. seems not correct as no direct wavelet based relationships between these parameters were derived, rather VPD-rain and air temp.-rain relationships were highlighted to physically correlate meteorological parameters during different seasons and scales. Similarly, as indicated in the draft, power spectra of NEE were evenly distributed for all the three monsoon periods. Since, carbon budget estimation was not the objective of the study, no detail uncertainty and error estimation was carried out.

The generic understanding of continental scale temperature gradient and subsequent monsoon rainfall is a regional scale phenomenon within the central and peninsular India. The same monsoonal trough does not propagate much beyond the foothills of Himalaya. Therefore localized convection and moist adiabatic lifting of air parcel plays a significant role for precipitation within Himalaya even during monsoon. The temperature enhancement following rainfall, particularly during premonsoon periods, can be corroborated to sufficient latent heat release after rainfall events. The phase-lock conditions in cross wavelet analysis represent those periods when two events are having similar oscillation. The details mathematical explanations of wavelet methods are not provided in the draft to avoid repetitions. Similarly, comments related to ‘Figure captions’, ‘Change in figure spacing’, ‘Occasional typos’ and ‘More detailed discussion of results’ could be incorporated in a revised draft.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-299>, 2018.

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