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Interactive comment on "Expansion of oil palm and other cash crops causes an increase of land surface temperature in Indonesia" *by* Clifton R. Sabajo et al.

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We agree that a seasonality analysis might show differences between the wet and dry season. We now made a seasonality analysis. Overall, the relationships in the dry season are stronger than for the wet season as we have much more usable data during the dry season. Only for the 10:30 am data we have significant relationships for both the dry as well as wet season. LST increased 0.08 $\pm$ 0.01 degrees C per year during the dry season, while the increase during the wet season was lower (0.05 $\pm$ 0.01 degrees C per year) (fig. 1). This suggests that the warming is more pronounced during the dry season compared to the wet season, which is reasonable as we have more

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incoming radiation during the dry season. Nevertheless, we prefer to pool the data from the dry and the wet season in order to get more statistically robust relationships.

We added the following sentence to the manuscript (line 755): “We like to point out that our MODIS analysis has a larger proportion of data from the dry season compared from the wet season, as there were more cloud free conditions during the dry season. Thus, our reported warming effect reflects cloud free conditions. During cloudy conditions, particularly in the wet season, the warming effect is expected to be lower.”

In our analysis of the MODIS LST data we have not come across anomalous LST that could be attributed to forest fires. This is caused by the mask we applied in selecting the best quality pixels which mostly also removed pixels covered by smoke. A seasonality analysis is not possible with Landsat data because there is not enough data.

We include a wind rose (Fig. 2) from one of our reference meteorological stations in the area, (see Drescher et al., 2016), for data collected between October 2013 to May 2016. Based on the climate diagram for the region (obtained from data from 1991-2011) we considered as the dry season the months of June-September and the rest was considered as wet season. See the wind roses for the dry (left) and wet (right) seasons below:

During the dry season winds were predominantly from the SE, whereas during the wet season winds where predominantly from the NW. The SE vs. NW shift in wind directions is in line with the regional monsoonal circulation. The landscape in the lowland of Jambi province is, however, very patchy with small-scale mosaics of different land uses. While we cannot fully rule out that advection from upwind land use changes may play a role, but it seems unlikely to have a systematic bias given the typical patchiness of the landscape. Also warm air advection would mean that the “climate change” warming of the forested “control” site is overestimated, thus making the land-use change effect even larger.

We thank the anonymous referee for reviewing the manuscript and for the suggestions

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to improve the manuscript.

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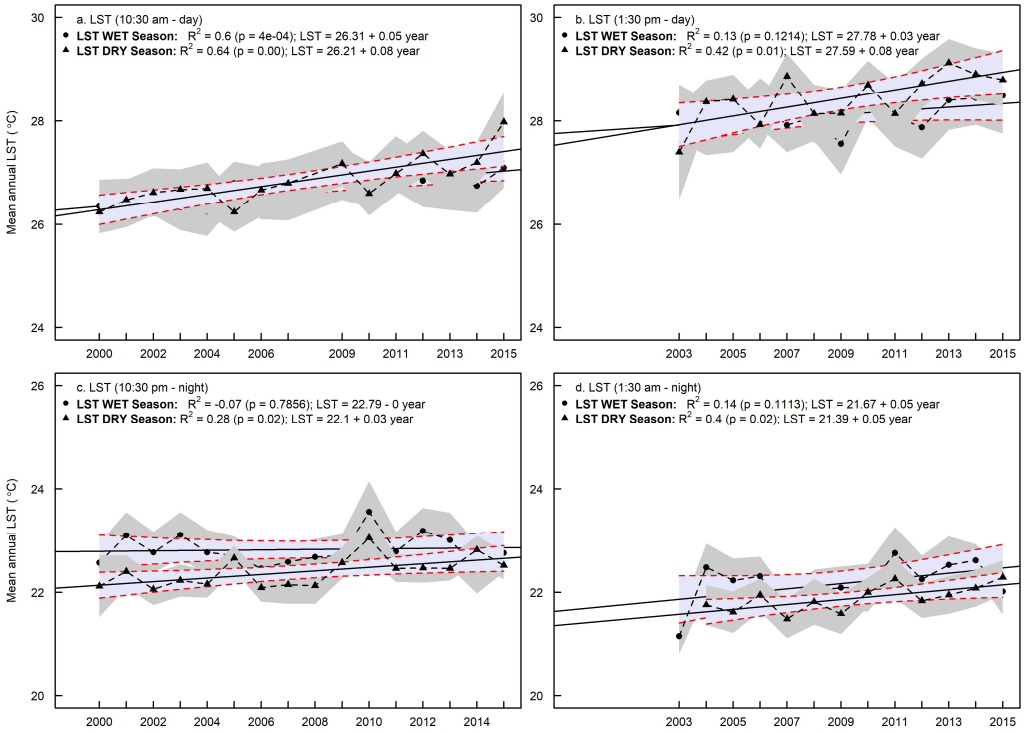

Fig. 1. Mean annual LST (a – d) separated in wet and dry season.

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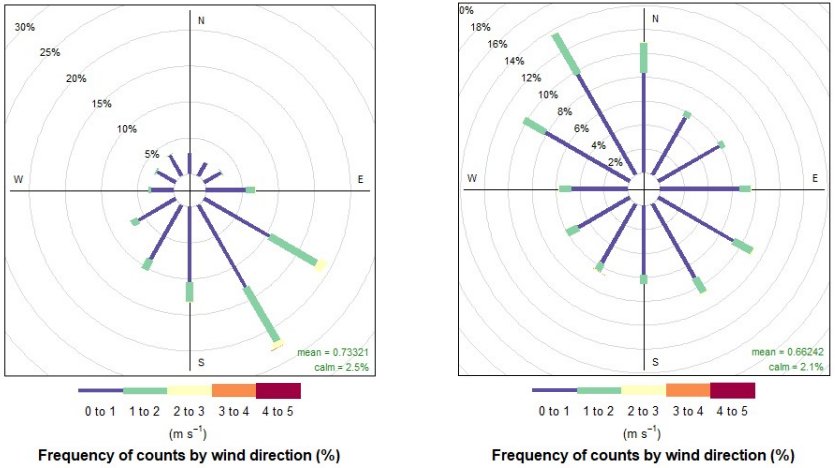

Fig. 2. Wind rose from a reference meteorological stations in the study area (Jambi province).

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