

Review of Manuscript

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Evaluation of OAFlux datasets based on in situ air-sea flux tower observations over the
Yongxing Islands in 2016

By

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General

The main aim of this study is to assess the comparisons of latent (LHF) and sensible (SHF) heat fluxes from the high quality Yongxing air-sea flux tower (YXASFT) and OAFlux data. YXASFT LHF and SHF are calculated from bulk variables derived from instrument measurements, while OAFlux fluxes are available as global daily re-analyses with a spatial resolution of 1° in longitude and latitude. The authors handled interesting and needed work aiming at the estimation of heat fluxes. However, the paper requires scientific improvements. I would suggest to further clarify the study objective and the main new findings. The main results, shown in this paper, deal with straightforward comparisons of YXASFT and OAFlux daily flux estimates, with few insights in the physics and the spatial and temporal scale impacts on the comparison results. The paper does not investigate the quality of YXASFT heat fluxes. The results showing the comparison between YXASFT and ECF fluxes are not convincing. The comparisons between the two sources are quite poor. OAFlux flux estimates have been investigated in several papers, including in papers published by the authors. For instance, the bias characterizing mean difference between moorings and OAFlux LHF are quite small. In this study, the LHF biases exhibit “outstanding” values. It would of great interest for scientific community to understand the source of differences between the previous published results and those shown in this manuscript. I am feeling very sorry. I cannot recommend the publication of this paper. However, I strongly encourage the authors to consider the comments aforementioned and listed hereafter for a new enhanced version.

Specific comments:

1. Page 3, Line 23 : The correction procedure used for the estimation of Tau, SHF, and LHF should be explained.
2. Page 4: Are bulk variables measured at 20m, 12m, or 10m? The manuscript shows all these values, but does not mention any height correction.
3. Page 3, Line 13: OAFlux are not measurements. They are estimates.
4. Page 5, Lines 18 – 25: It is not clear. Are these calculates handled by the authors or by dedicated online software. The authors mention above the use of Easy-flux software.
5. Page 6, Lines 19 – 24: Do the authors assume that ECF LHF observations are overestimated for rain events?. Does it result from instrumental and/or measurement issues?
6. Page 7, Lines 25 – 28: Convincing scientific and/or technical reasons should be provided for explaining the difference between observed and estimated SHF.
7. Page 7, Lines 11-13: How the YXASFT and OAFlux consistency has been determined?.
8. Page 8, Lines 1-2: The OAFlux U biases are quite high compared to those obtained from moored buoys and OAFlux U10 comparisons. Does this result relies on YXASFT location and/or on OAFlux spatial and temporal resolutions?.
9. Page 8, Lines 22-24: The cloud impact on OAFlux Ts (from NOAA OI SST) should be found everywhere, and especially along tropical are. The previous published studies aiming at the assessment of OAFlux daily data , did not provide Ts results shown in this study.
10. Page 10: The section on top only confirms the results published in several papers. It does provide any new findings dealing with the assessment of LHF and SHF quality or accuracy. Figure 9 and 10 show some interesting results. For instance, the relationship between ΔLHF and ΔTa for winter, would be investigated. Furthermore, the figures show significant scatter. The latter would be investigated as study cases.