

## ***Interactive comment on “Estimating downwelling solar irradiance at the surface of the tropical Atlantic Ocean: A comparison of PIRATA measurements against several re-analyses and satellite-derived data sets” by Mélodie Trolliet et al.***

### **Anonymous Referee #2**

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Review of "Estimating downwelling solar irradiance at the surface of the tropical Atlantic Ocean: A comparison of PIRATA measurements against several re-analyses and satellite-derived data sets" by Trolliet et al.

This manuscript compares estimates of downward surface solar irradiance (DSIS) from two reanalyses datasets and three satellite-based products to measurements from PIRATA moored buoys at five locations in the tropical Atlantic and shows that the satellite

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data outperforms the reanalysis datasets. The results are very useful and should be published. However, I think the paper needs improvement before being fit for publication. As a reader, it's quite difficult to read it as it is currently laid out as you have many repetitive sections on the various datasets. Going back and forth between the various plots is also a bit cumbersome. I suggest restructuring the paper to make it easier to read. Key results are also hidden in the middle of the paragraphs of repetitive text. I would also suggest that the main results and what makes this study different to the ones you have referenced widely are made clear for the reader.

Some comments (see attachment for some language suggestions also):

- Perhaps give the buoys names other than their lat/lon coordinates?
- State why you used TOA on page 5 line 4.
- I'd suggest a table for the datasets described in sections 1.2 -1.7 The text in these sections is repetitive and could be tightened.
- You've looked at cloud cover – could you consider using integrated cloud condensate instead as it provides more information?
- Tables 2-4 – fix caption. Some plots of these values would be more useful and may highlight the trends better.
- Results section should indicate what you've plotted before being discussed in the next section.
- Ensure all figures included are discussed – if not, remove unmentioned ones.
- Discussion section needs restructuring to eliminate the repetition.
- Also ensure key results are clear.
- A lot of your results are consistent with other studies – please highlight the novel aspects of your study.
- Can you do further analysis to investigate exactly why the reanalysis products are worse.
- Make it clear why you include hourly and daily results.
- Figure 3 – a different scale would mean less white space. Also looks too digitised.
- Figure 4 – refine the scale used.
- Figure 5 – contour bar too long relative to the plots

Please also note the supplement to this comment:

<https://www.ocean-sci-discuss.net/os-2017-95/os-2017-95-RC2-supplement.zip>

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