

Interactive comment on “A long-term time series of global and diffuse photosynthetically active radiation in the Mediterranean: interannual variability and cloud effects” by Pamela Trisolino et al.

Anonymous Referee #1

Received and published: 27 December 2017

This is a very interesting study on PAR measurements.

There are not too many studies on PAR long term measurements and this study is presenting a lot of new and interesting aspects of global and diffuse par

I would suggest the publication of the manuscript after some minor revisions.

The abstract is overloaded with quantified results and is difficult to follow in the current form. Please shorten it and provide only the main quantified findings in fewer paragraphs.

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Page 2, line 53 needs a reference.

Page 3, line 83 add months to the covered dataset period (e.g. Jan 2002 - Dec 2016).

Page 4, line 07 and page 6 lines 68-69 are there any additional uncertainty information (e.g. for hourly MFRSR data) about the angular response in order to exclude data for $\text{SZA} > 80$ degrees?

Page 4, lines 20 and 28 provide a sentence explaining to the basics the Langley plot method with a relevant reference and mention the additional AOD uncertainty.

Maybe Sections 3 and 4 can be under the same Section with potential title "Global and diffuse PAR irradiances". Then, the current section 3 would be 3.1 under the title "All sky conditions" and the current section 4 would be 3.2 under the title "Cloud-free conditions", while the sub-sections will be renamed accordingly (3.1.1, 3.2.1 and 3.2.2 respectively).

Section 5 is recommended to be renamed as "Sensitivity analysis"

Add grid lines in Fig. 1.

link of the long term series with a discussion and details of the calibration series results and uncertainty

Since Lampedusa is severely affected by dust intrusions it would be important to discuss also aerosol attenuation in addition to Cloud attenuation. If the paper is focusing only on cloud effects this have to be mentioned clearly in the discussion or/and in the title. If there will be another manuscript describing the aerosol effects then this has to be mentioned too. Otherwise you can dedicate at least a paragraph on the issue including results of a number of publications on aerosol/dust effects on solar radiation at the site, that authors of this manuscript have investigated in depth in the past.

I would point out more in the conclusions the significance of this study (and PAR and diffuse PAR series, seasonal analysis e.t.c.) for agricultural related applications.

happy holidays and wishes for a happy new year, to all authors and the editor.

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