

## ***Interactive comment on “Performance of the meteorological radiation model during the solar eclipse of 29 March 2006” by B. E. Psiloglou and H. D. Kambezidis***

### **Anonymous Referee #2**

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The authors proposed the MRM model in the last 80's and the paper presents the latest version 5; The final objective of the paper is to demonstrate the flexibility of the model and to test it under solar eclipse conditions, 29 March 2006 , over Athens.

In solar radiation area, the evaluation and modelling diffuse solar irradiance is difficult and this paper include a new algorithm for calculating the solar radiation on horizontal surfaces, on cloudy days.

The paper is well written and provides a useful overview of the state of research on the

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subject. Because of this I believe that it is appropriate for publication in Atmospheric Chemistry and Physics

The scientific method to develop the MRM model has been efficient. The model has been improved in the transmittances of atmospheric components and in solar geometry evaluations. The authors show clearly their own new and original contribution and the presentation is clear and well designed and the language is fluent.

In my opinion perhaps the title is a bit long, but it reflects the contents of the paper. The abstract would provide some details about the numerical results of the comparisons between measured and simulated data. The paper does not explain the methodology used to correct the measured diffuse data on page 12821, line 18.

For validation results, and in this point, I would recommend some modifications, the authors evaluate the rmse and mbe values in (%), perhaps it will be necessary to evaluate rmse and mbe in  $Wm^{-2}$  also and to show another statistical estimators as, histograms, frequency distributions of both data series, measured and simulated, and etc.

About the results, in Figure 4 we can see that simulated values of total solar irradiation are higher than measured ones, in the early morning; in central hours of the day simulated values are lower than measured ones and in the afternoon simulated values can be higher than measured ones. In the afternoon diffuse increases and the differences between simulated and measured values increases. For clear hours diffuse values are very similar, except in central hours of the day. When clouds appear the sunshine sensor would record them at the same moment that they appear. In this point I would recommend some comments about the results shown in Figure 4.

Similar details could be observed in Figure 5 but it was a cloudy day in the morning and in the afternoon. Also in this point I would recommend to comment with more details the results, if it is possible.

Figure 6 shows the agreement between simulated and measured values. In my opinion these results would be given with the line equation, the determination coefficient value, the number of studied data and in order to explain completely the results, some comments would be necessary.

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