



## ***Interactive comment on “Influence of the calibration on experimental UV index at a midlatitude site, Granada (Spain)” by M. Antón et al.***

### **Anonymous Referee #2**

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This is an interesting study on the influence of different calibration procedures on UV index calculations from broadband meters. The study is based in well defined measurements, application of existing calibration techniques and use of a radiative transfer code. Most of the issues described here, could be in a form of a technical report. What will make it a scientific publication (even in a measurements and techniques related journal) is the justification of the differences or non-differences found and some kind of recommendations that can be drawn from the conclusions. In terms of the text, I find it very well written and clear. So I would recommend the publication of the manuscript after discussing the below mentioned issues.

The main issues pointed out in this work are: a. There is a considerable error when using just the manufacturers' calibration on the UVI calculation b. One step and two step methods have small differences. These two issues are illustrated well in the manuscript but there are some points that need clarification in order to find the reasons for the differences (or the non differences) and to provide direct or indirect recommendation to YES UVB-1 users.

## Comments

Concerning the manufacturer calibration.

It has to be mentioned when this has been measured and if the company has provided any recommendation on instrument re-calibration of any of the calibration components (angular, spectral absolute response) in a period of time from the first calibration.

It is of importance to provide the reasons of the deviations using the manufacturer calibration. Would that be the spectral response ? Is it just the absolute response ? Previous measurements have revealed such issues (<ftp://ftp.wmo.int/Documents/PublicWeb/arep/gaw/gaw141.pdf>) . The authors could probably compare their results to this WMO report.

I do not think that all YES UVB-1's have the same calibration function provided by the company as it is mentioned in the text.

The main differences that can be seen in figure 5 point out the inconsistency of the YES calibration has to deal with high voltages, thus low solar zenith angle measurements. If the problem comes from the provided CF then it is related with the curvature at low angles shown in figure 1 and not any cosine response problems. Could you comment on that?

## One step and two step Methods

It is a very interesting result, the agreement of the two methods on a dataset such as this shown in figure 6. I would expect that the ozone variability over the long term period

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period, would affect the RMSE of the one step method. Why this is not the case?

Also, it has to be reported that the one step method is using the results of the 2007 campaign over the whole period so it seems that the instrument is quite stable over this period concerning the overall calibration.

The authors have to clarify the methodology of comparing a 3 (to 7 depending on the instrument) minutes spectroradiometer scan with a 1 minute resolution UVB-1 measurement. Especially the effect on high solar zenith angles.

The spectroradiometer absolute calibration is based on lamp measurements. This calibration is transferred indirectly to the UVB-1 using the above mentioned methods. Results on the performance of various spectroradiometers and comments about the absolute response and uncertainty levels are reported at (<http://iopscience.iop.org/0026-1394/43/2/S14/>). Maybe a comment concerning this fact would be valuable for the paper.

Model calculations.

It would be useful to provide surface albedo and aerosol profiles used as inputs. Also the Single scattering albedo constant input would have an effect on the RMS of both one step and two step methods.

Interestingly single scattering albedo of 0.9 still leads to a higher measured UVI values (1-step, 2-step) than the ones simulated by the model (on cloudless days and for a given AOD and Angstrom Exponent). This means that it would take even higher SSA values to compensate the difference, but that is unrealistic. Could you comment on that?

Figure 6 includes daily UVI's, so days with clouds also. Since there is no investigation on such cases please mention this while describing the figure.

I apologize to the authors and the editor for my late response.

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Interactive comment on Atmos. Meas. Tech. Discuss., 3, 5645, 2010.

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