

# ***Interactive comment on “European UV DataBase (EUVDB) as a repository and quality analyzer for solar spectral UV irradiance monitored in Sodankylä” by A. Heikkilä et al.***

## **Anonymous Referee #2**

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Heikkilä et al., "European UV Database as a repository and quality analyzer for solar spectral UV irradiance monitored in Sodankylä"

The authors describe the quality assurance (QA) methodology that is currently used with the solar spectral irradiance measurements. Their approach comprises several metrics that provide important supplemental information about the actual spectral data. This metadata, or, in the authors' terminology, "flags", allows the end-users to assess the reliability of the data. For those actually carrying out the measurements using a spectroradiometer, the QA is an invaluable tool for instrument maintenance and calibration, which is crucial for research based on data covering several decades.

In my opinion, the manuscript is of relevance for the science community and suitable

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for publication in Geoscientific Instrumentation, Methods and Data Systems. I do, however, have a few comments and recommend a minor revision before publication.

1. The definition of high quality is discussed in the introduction but only references to literature (Webb et al. and Seckmeyer et al.) are provided. In my opinion, the manuscript would benefit from having a short qualitative description of what actually is considered "standard quality".

2. Likewise, a brief description of the Brewer and its nominal operating mode(s) would be good to have. Perhaps the authors could also describe some of the routine operation challenges, if any, that can or could be effectively tackled by using the QA system rather than on-site routines.

3. (Results and discussion) Does the number of spectra (4656-6724) refer to the annual measurements? Why does this vary? Instrument trouble or do you only carry out measurements when certain criteria are met?

4. (Results and discussion, page 10, lines 22-28) The authors state that a detailed examination of the selected cases provides a more profound understanding of the function and performance of the QA methodology. While I agree that a closer look at the data does help in understanding why a certain flag is there, I don't think a small number of cases is sufficient for generalisation. Are you really sure that you would have arrived to the same conclusions if you had selected different spectra? Wouldn't it be much more useful to collect all spectra with, e.g., Shift1 GREY flag and analyse why the algorithm (built-in to the QA) cannot make any conclusions about wavelength scale shifts? Something like this would be an excellent topic for a follow-up study.

5. (Conclusions) Are the gaps in the time series not recorded in the EUVDB? Would it not be extremely useful for the end-users to quickly find out that there are no spectra for the time they are interested in?

6. (Conclusions) There were 23% of GREY flags for the overall quality. The authors

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state that the majority of these indefinite conclusions could be traced to restrictions in the radiative transfer model FastRT that could not handle solar zenith angles above 84 degrees. Are there better models or has your quality flag analysis highlighted a gap in our knowledge? In both cases, these indefinite cases would probably be of high interest for modellers working on radiative transfer at higher latitudes.

7. (Table 2 and 3) Have you compared the cloudy flag with synoptic observations? Do they agree?

– Some minor comments:

8. (Abstract, page 1, lines 22-24): The sentence "Spectra scanned by..." is very complex. Could be simplified.

9. (Introduction, page 3, lines 21-22: I do not understand the sentence "The quality indicators are examined for their frequency in general..." Do you refer to "occurrence"?

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