

## ***Interactive comment on “Reconstruction and analysis of erythemal UV radiation time series from Hradec Králové (Czech Republic) over the past 50 years” by Klára Čížková et al.***

### **Anonymous Referee #2**

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#### General comments

The paper discusses the reconstruction and analysis of 50-year time series of Erythemal UV radiation (UV-Ery) over the central European station Hradec Králové. The paper also addresses the connection of UV-Ery long-term changes (examining also the evolution of high UV-Ery doses) to large circulation patterns over Europe. The statistical methods applied are well suited for this type of analysis, and the paper contains new material.

However, the paper needs minor improvements before accepted for publication.

The way the statistical methods are applied and the quantities used are not clearly

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described, and in some paragraphs may be even confusing. For example, in Page 1, line 18 (Abstract) it is written that “the number of days with very high EUV radiation increased by 22% per decade”, a statement that cannot be easily deduced by either the description of methods (paragraph 4) or the discussion in the relevant paragraph (5.3)

#### Specific comments:

Page 3, lines 24-26: Is it possible to give an indication of the number of missing obs

Page 4, lines 7-8 (3.1.2 AOD): The meaning of this last sentence is not clear. Do you mean that the number of data available for the calculation of the AOD320 climatology was 61% of the total?

Page 5, lines 25 – 30: Please give more details. Is there a reference you can give here? last line (30-31): “To obtain the best fit function..” Where is this best-fit function used?

Page 6 line 1: Please change “The verification..” to “The validation..” lines 3-4: “used to develop the model and the second ...” Which model are you referring to here? LibRadtran? Please clarify. line 30: “because 1995 was the year when the long-term ozone lowering stopped” It is better to write “because stratospheric (or total) ozone reached its minimum in 1995 over Europe”

Page 7 line 8: typo “or” -> “of” line 8: “..therefore, low cloud cover was specified this way”. Do you mean that the threshold for low cloud cover was set to 4 octas or less? lines 10-15: Please give the period you used from the NCEP reanalysis line 15: Why do you use both indices? They are not independent from each other. See also comment below

Page 8-9, Par. 5.2 and in connection to Figure 3. Please correct or discuss why this is done this way the figure. Are the correlation coefficients you found and discuss negative or positive? The text says negative, while the figure suggests otherwise.

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Page 9, paragraph 5.3: There is no clear description of the methods you used here, nor a clear description of what Figure 4 presents and how it was calculated. Here you discuss only days with high erythemal dose, not all available days. It seems that this is a result of partial correlation performed separately on the EUV90 or how was it done? How was the number referred to in the Abstract (22% per decade increase in the number of days) calculated?

Page 10, lines 8 and below: Why do you use separately NAO and AO for your table 5 correlations? Do you have an explanation as to their individual effects and why they should be examined separately? They are very closely connected, and there is no need to present both. It is better to discuss the effects as joined, as you do in the rest of the paragraph with the PCA analysis.

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