

## ***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 #1**

Received and published: 28 September 2017

The paper “Reconstruction and analysis of erythemal UV radiation time series from Hradec Králové (Czech Republic) over the past 50 years” partly reconstructs and analyzes a 50-year time series of UV Erythemal UV radiation in Central Europe. The paper is well structured and state-of-the-art methods are used both for the reconstruction and for the analysis of the time series. The paper also includes innovative aspects, especially the relationship of high EUV daily doses and macro-scale circulation patterns is to the best of my knowledge unique.

Therefore I suggest the acceptance of the manuscript in ACP with minor revisions.

remarks:

C1

Page 2 Line 6 and caption figure 1:

suggestions for changes

radiation intensity → irradiance

Why do you show mean daily irradiance [ $\text{W}/\text{m}^2$ ] in figure 1? Daily dose [ $\text{kJ}/\text{m}^2$ ] would be more consistent with the remainder of the paper.

Page 4 Line 15-17:

How long was the training data set? Could you comment on the relationship of the observed short-wave radiation albedo with values one would expect according to land cover and vegetation cycle?

Page 5 Line 17-20:

Which radiative transfer model did you use (DISORT, TWOSTREAM, MYSTIC, ...)? How do you deal with SZA values close to  $90^\circ$ ?

Page 5 Line 30/31:

Can you describe the determination of CMFEUV as  $f(\text{CMFGLB}, \text{SZA})$  in more detail? Did you generate the cloud modification table according to Lindfors et al. 2007 ?

Figure 5:

It would help the reader, if you would use the same scale for each subfigure (e.g. [-50,50]) both to save space (just one color bar needed) and to enable comparison between subfigures. The effect of SZA on radiation daily doses is trivial. I suggest to skip the analysis (table 4, second column and figure 3a) or to investigate the influence of surface albedo instead.

Typos Page 7, line 8 “cover or” → cover of

2017.

C3