Atmos. Chem. Phys. Discuss., 8, S756–S758, 2008
www.atmos-chem-phys-discuss.net/8/S756/2008/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Reconstruction of erythemal UV-levels for two stations in Austria: a comparison between alpine and urban regions" *by* H. E. Rieder et al.

Anonymous Referee #1

Received and published: 14 March 2008

The paper "Reconstruction of erythemal UV-levels for two stations in Austria: a comparison between alpine and urban regions" by Rieder et al. presents reconstructed UV dose data on the base of measured erythemal UV irradiance in Vienna and at Sonnblick as well as radiation transfer calculations. The authors use established methods and obtain new results regarding the area of interest. However, the quality of the English needs to be improved. In particular the logic and reasoning is often difficult to follow. It is a challenge for the reader to untangle the logical organization of the paper. Therefore, the paper requires substantive editing. The scope of the paper meets the criteria of ACP and I recommend its publication after revision.

Generally:

1.) The authors give values e.g. for the increase of erythemally effective irradiance. But they don't give any information about the significance or the uncertainty of the results. One example (P970, L4): "...(HMC) shows the best agreement..." Was this result tested on significance?

2.) The number of figures and tables can be reduced without the lost of information.

3.) How do the authors treat snow spots (that means that the surface is not completely covered with snow) in your albedo model?

4) How do the authors determine the aerosol optical depth as input for the radiation transfer model?

5) The authors very often use phrases like "UV level" or "UV radiation" instead of well defined quantities.

Specific:

Title: Please avoid "UV-level".

Abstract:

Line 5: What is the purpose of the correction factor as input for your method (correction factor for ...)?

Line 11-13: Please try to avoid the repeatition of e.g. listing input parameters. (I would change the structural and logical configuration of the abstract anyway)

P960 - L14: What do you mean with "daily values"?

P963 - L9: "A comparison against..." -> A comparison of ??? against...?

P964 - L14: "We therefore used global irradiance data [...] only if global irradiance data were missing." What do you mean?

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L23: "Two" -> "To"

P965 - L2: Please give a definition of snow depth, snow amount and snow cover (also Line 9).

L15: Here I prefer to use the verb "to simulate" instead of "to model".

L20 and following: Which physical unit is described with UV-radiation? Please specify.

P966 - L19: Quantity of "UV level"?

P967 - L7: What is "potential global irradiance"?

L8: The same question for the sunshine duration. Please specify.

Equation (4) and (5):

1. Please delete equation (4) or (5)

2. The transformation of the equation (4) to (5) yields GOBS=a*GPOT + b*(n/N)*GPOT or GOBS= [a + b*(n/N)]*GPOT .

3. Please use the same nomenclature for all equations (e.g. multiplying is represented by a blank or *?)

L13: How are the correction factors a, b and X defined (fitting parameters?)?

L14: Again, what is "potential sunshine duration"?. Please clarify.

P 968 - L3: Please specify UV radiation.

L15-18: typing error: UVMOD(H), UVMOD(D) -> the first inferior brackets

P969 - L4: Please describe the independent data sets.

L4-11 and P970, L4: Can you give an explanation why HMC shows the best agreement?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 957, 2008.

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Interactive Comment