

Interactive comment on “Spectral UV measurements in Austria from 1994 to 2006: investigations of short- and long-term changes” by S. Simic et al.

Anonymous Referee #2

Received and published: 25 March 2008

General Comments:

In this paper, influences of ozone, clouds and albedo on short term UV changes, as well as time series analysis is discussed using the 1994-2006 spectral UV time series of the Sonnblick observatory. Even if the method follows mostly Arola et al. 2003, the results are interesting as they represent a mountain top cite in the middle of Europe, which can be compared with results from the Arctic cite of Sodankylä and the Mediterranean cite of Thessaloniki presented in Arola et al. 2003. More discussion about similarities and differences of results between these two papers should be added. Also results about influences of ozone, albedo and clouds on long term UV changes would have

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been interested to include in this paper.

Before the paper can be accepted for publication in ACP, the authors should address carefully the issues given below.

Specific comments:

1. Please discuss more about possible reasons for the significant downward trends at SZA 55.
2. Page 2408, line 16-17. Please use a reference for the exact numbers of 16% and 88%, or explain how they are obtained.
3. Chapter 2.1. Please tell about the harmonization of your irradiance scale over the whole measurement period. Are the irradiance scales of the two instruments comparable with each other?
4. Chapter 2.2. Please discuss the influence of studying a SZA band of 4deg (SZA 61-65).
5. Chapter 2.2.1., Albedo. For those who are not familiar with the determination of "snow line", please specify, where is the distance measured from; a.s.l.?
6. Page 2409, line 22, please specify that this is true for UVA and visible wavelengths.
7. Aerosols, Figure 3. Do you have an explanation for the high value (0.15) of 2002 compared to the other monthly means?
8. Page 2410, chapter 2.3. Have you used measurements from the Brewer or the Bentham or a combination of both? How regular are the measurements? Do you have gaps in your time series?
9. Page 2411, line 1, How much is "too few data" or "too high cloud cover"? How many months did you have to exclude from your analysis? How did this affect the results?
10. Page 2411, line 22. As you have calculated trends for clear-sky spectra only, this

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should be mentioned more clearly in the results and the Abstract as well. Actually, the influence of clouds has been excluded from your analysis, and your trend is influenced only by other factors than clouds.

11. Page 2412, line 18: Please discuss the reasons, why the influence of albedo is highest in April.

12. Page 2412: Please make more clear what is the difference between results of the Table 1 and results from Figure 7. Are Table 1 results calculated from daily values and Figure 7 results from monthly means?

13. Chapter 3.1. Please add more discussion about the differences/ similarities of your results and the results of Arola et al. What is the influence of different geographical location? Arctic, Mediterranean / Mountain site?

14. Figure 8: 324 nm and CIE is missing from the figure.

15. Chapter 3.2. Please add more discussion about the length of your time series, influence and the possibility of trend detection. Do you have lack of data during some months? Please refer also to Weatherhead et al. 1998: Weatherhead, E.C. et al., Factors affecting the detection of trends: Statistical considerations and applications to environmental data, J. Geophys. Res., 103, 17149- 1761, 1998.

16. Chapter 3.2. Please include some discussion about possible long term effect of changing albedo and cloud conditions.

17. Page 2415, point 4. Please add that the long term change is calculated from clear sky data.

Technical corrections:

Figures 4,5 and 6: Please clarify the explanations of different lines.

Page 2413: lines 1 and 2: typing mistake, please correct ozon

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Figure 8: 324 nm and CIE is missing from the figure.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 2403, 2008.

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