

## ***Interactive comment on “Personal UV exposure on a ski-field at an alpine site” by A. M. Siani et al.***

### **Anonymous Referee #1**

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#### General comments

The authors present a well done study on personal exposure of skiers.

They provide a lot of interesting data. In some case it would be very helpful to give some additional explanation or discussion e.g. the ER are quite high taking into account a period of 2 hours. How were the skiers brought up the mountain in respect to the sun? Lifting direction is mostly opposite of downhill direction in respect to the sun.

I agree with Rev.2 and 3 that there is a lack in the description of the calibration procedure e.g. also for the broadband meters. It is not clear if the measurements are corrected in respect to solar height and total ozone....

I appreciate very much the application of skin colorimetry. But there is a lack in the description of skin colorimetry. It becomes not clear what  $L^*$ ,  $a^*$  and  $b^*$  and a change

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in these 3 parameters means. For example: What is the range of human skin colour in this colour system? How is a change in pigmentation defined? how is an erythema defined? Can the skin type defined with these measurements? This information should be given to the reader..

Specific comments

2746, I20: It is not necessary to introduce  $L^*a^*b^*$  here: delete "had on average ... exposure e.g. 221";

2747, I13: Reference Bener !!!

2748, I6: There is a paper about building workers in the Alps: Antoine et al., Journal of Exposure Science and Environmental Epidemiology (2007) 17, 58-68, but have used opto-electronic devices

2750 I4: well calibrated? (see above and Rev.2+3)

2750 I12: is it CIE 1987?

2752 I1: Could not found Park et al. 2002 in the list of references 2752 I3: Explain what these filters are used for or delete this sentence. 2752 I4: If the instruments delivers spectra how are the values of  $L^*a^*b^*$  calculated. 2752 I5: give a the reference for: CIE ( CIE 1976) and Skin colour categories using the ITA-angle (arctan of  $L^*$  and  $b^*$ ): Chardon et al. 1990 2752 I6...: What is the range in  $L^*a^*b^*$  of human skin?

2752 I24: Reference Fitzpatrick (1974) and/or WHO 2002 2752 I24: How was the skin type estimated? 2753 I16

2755 I1-I19: This paragraph could be shorted since many of the values e.g. min, max can be found in Table 2. I would not use "not statistical significant"; if p is in the range of 5%-10% maybe weak significance or 230;.

2756 I14-I16: This paragraph is rather discussing, should be moved in conclusions

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Table 2: Column of ER10-12 in winter lists the same values as ER10-12 in spring.

Table 3: day5: median, min and max for skiers are identical?

Figure 2: Dose rate should be given also in units of UV-Index. Figure 2: I can not believe that the length of the day is 4500 min =75hours

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 2745, 2008.

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