

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

### **Anonymous Referee #2**

Received and published: 19 March 2008

#### General comments

In the manuscript the UV dose of skiers recorded with PS dosimeters is compared to the measured horizontal irradiance. Also the change of skin colour is analysed. The paper gives useful information on use and sensitivity of PS dosimeters. The ER for skiers and instructors are compared, but there is little discussion on about the effect of ambient conditions to the ER. The UV-radiation and the sensitivity of PS dosimeters have strong dependency of altitude. The effect of the skier's altitude to the ER should be estimated and discussed. Times spend indoors and in shade were also asked in the questionnaire, so effect of these should also be discussed. The ER should also be compared to theoretical calculations. Koepke and Mech calculated UV-irradiances to tilted surfaces in various conditions. (Koepke P. and M. Mech.: UV irradiance on arbitrarily oriented surfaces: variation with atmospheric and ground properties, Theor. Appl. Climatol. 81, 25-32, 2005) With snow and 3000 m altitude the highest theoretical

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ER was 1.44 for surface tilted towards sun. In the manuscript the highest ER was 1.72, so some discussion on the results obtained in the study and theoretical results should be made.

### Specific comments

Page 2746, L17: How the UV exposures are not sensitive to sunscreen use? Does this mean that the sunscreen use doesn't affect to dose received by the individual, or the dose measured by the dosimeter or dose this mean that use of sunscreen did not change the behaviour of skiers?

Page 2746, L21: What is inappropriate sunscreen use?

Page 2748, L10: Which international limit (and what weighting is used)? The ICNIRP exposure limit is  $50 \text{ J/m}^2$  with ICNIRP defined weighting.

Page 2748, L29: what is the expected change caused by UV for the colorimetric values?

Page 2749, L5: What is the altitude range for skiers?

Page 2750, paragraph 2.3: What does "well calibrated" mean? If the first meter is well calibrated and nothing is said about the two other meters, does this mean that the two other meters are not well calibrated?

Page 2751, L2: Can the calculation of ER be expressed as a formula?

Page 2751, L19: What does the normalization mean? Were the dose results compared to the ambient dose at 2100 a.s.l.? The coefficient  $c$  for PS dosimeters depended on altitude, what value of  $c$  was used?

Table 3, titles for winter values should be edited; there are three columns and four titles. In table the spring days are 31. March, 2. April, 3. April and 4. April. In the figure 2 there is a new day 1. April and 4. April is missing.

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