

## ***Interactive comment on* “Typical distribution of the solar erythemal UV radiation over Slovakia” by A. Pribullová and M. Chmelík**

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Response to referee #1

1. The UV biometers SL501A are installed at all stations except Bratislava with the SL501 version of the instrument and Stará Lesná where the YES UV radiometer with analog output was installed. Information will be added in the paper.
2. The Brewer spectrophotometer MKIV #97 is installed in Poprad-Gánovce. Spectral range of the instrument is 290–325 nm, resolution is 0.6 nm, stability of the instrument is 0.01 nm in temperature range from -40 to +50°C. An accuracy of direct sun total ozone measurements expressed as RMS error is  $\pm 1\%$ . Information will be included in the paper.
3. The Total Ultraviolet Visible model (TUV) is spectral radiative transfer model tak-

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ing into account multiple scattering of solar radiation in the atmosphere. Version V4.1b (version 4.4 is available now) was used. The spectral range of the model is 121 nm 8211;- 750 nm. Two schemes of the radiative transfer modeling can be applied8211;two stream and n-stream discrete ordinates calculation methods (calculation with 7 streams were used in the modeling). The model allows calculations with assumption of pseudo-spherical atmosphere. Step and range of calculations in vertical direction can be selected (atmosphere with thickness of 80 km was assumed and vertical step of calculations of 1 km was used). The program is written in the FORTRAN code, the main program calls several subroutines. Basic input data files (extraterrestrial radiation, profiles of some meteorological parameters, profile of aerosol vertical distribution) and some biological weighting functions are included in the TUV model package and can be replaced by input data file selected by user.

4. the correction was accepted

5. Erythema UV radiation is stored with different time steps at 5 stations. Hourly doses have been stored at Bratislava, Stará Lesná and Skalnaté Pleso, 10 min doses have been stored at Košice and instant values are stored every 10s at Poprad-Gánovce. Interval of model calculation of 0.5 h was selected as value in range of time steps used for instrumental measurement storage. The erythema UV radiation daily doses under clear-sky condition can be calculated also with larger time step without effect on calculated daily dose (see response to referee 2, point 3).

6. Probability of snow cover 100% was determined at mountains only (Štrbské Pleso and Skalnaté Pleso – altitudes above 1300 m a.s.l.). The snow presence probabilities above 90% and 80% are at mountains and foot-hill places (Stará Lesná, Poprad-Gánovce in January and at mountains only from February to April and in December. The snow occurrence with probability above 70% was determined also at more inhabited low altitudes (Bratislava, Košice) in January and from February to December at altitudes around 700 m a.s.l. (Poprad-Gánovce). Snow covers the whole investigated territory at least during one month (January) with probability of 50%. The probabilities

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of snow cover 50% and 70% were selected to describe snow distribution also at inhabited valleys and low-lands with probability levels still interesting from statistical point of view. The higher probability limits of snow cover are concentrated to mountain areas. The probability levels significantly lower than 50% are of less interest from climatological point of view. The snow presence is still possible at Skalnaté Pleso in June with probability of 4%, but this is extreme situation. Investigation of less probable or extreme situations is more appropriate for separate case-studies. It was not goal of presented climatic study.

7. comment was accepted

8. February, March, October and November are months when the cmfUVM dependence on altitude is changed from winter mode to summer mode and vice versa (see response to referee 2 point 5).

9. comment was accepted

10. comment was accepted

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