Anonymous Referee #1
Received and published: 2 April 2018

Reply to comments

We would like to thank you for reading our manuscript and commenting on it.
The comments are copied and shown below in italic.

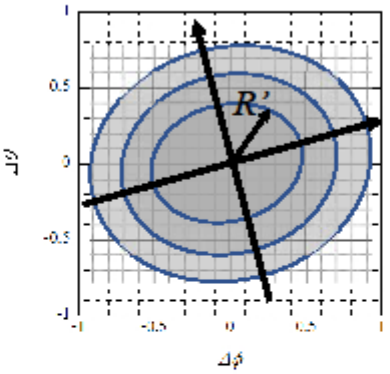
Comment.
"The authors have carried out an analysis to quantify errors in the determination of the solid view angle of SKYNET (POM-02) radiometers. Because of the difficulty of this type of instrumental characterization, the analysis is almost entirely based on theoretical considerations. In general, the work represents a positive contribution that should be published after a few technical corrections.
Specific suggestions are:
- Improve documentation of the reported analysis methods by providing references to the original works."
==>
Reply.
The method to calculate the SVA of skyradiometer POM-02 used in SKYNET is described in Nakajima et al. (1996), but we do not know other references. In the paper by Nakajima et al (1996), the description of the method is brief, and the details are unknown. Therefore, we summarized the theoretical basis in the Appendix by ourselves. In the revised version, a flow chart is added to understand SVA calculation procedure in the SKYRAD package.

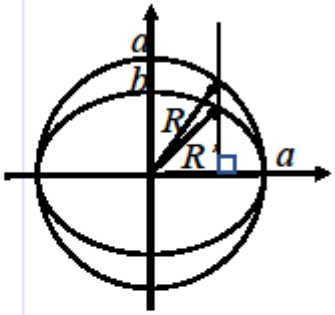
Fig. C1

SVA calculation Flow Chart

(1)

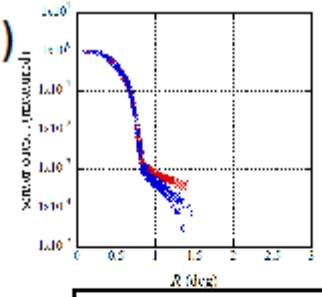
Solar Disk Scan
(21x21 grid)





- Determination of center (x_c, y_c) (~(0,0))
- Determination of elliptic parameters
  direction of major axis of the ellipse
  ratio of minor axis to major axis (b/a< 1)
- Conversion of distance from R' to R
  R'_{max} ~ 1deg x $\sqrt{2}$ =1.41deg
- In the SKYRAD package, the min. value is subtracted from the measured values.

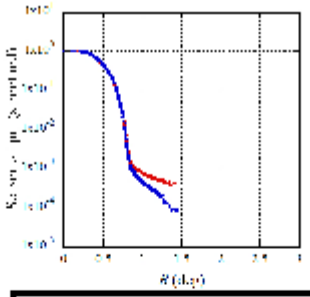
(2)



Measured values

Smoothing

(3)

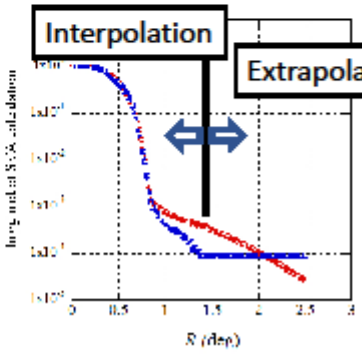


Smoothed values

(4)

Interpolation

Extrapolation



- Integration
- Correction of ellipse

Comment.

"- In the summary session add an statement on the accuracy of the current knowledge of SVA, and list the remaining sources of uncertainty, and ways of addressing in future work."

==>

Reply.

We will add the following sentences.

"According to the method based on the current measurement data, the precision is 1% in the high-altitude mountains area such as MLO and 1.5 to 2% in the low altitude area such as Tsukuba. The causes of the error may be an increase in the scattered light in the case of optically thick, a variation in the solar direct irradiance due to a change in the aerosol during the solar disk scan measurement, and an error in the pointing direction of FOV. In the future we will eliminate scattered light and use measurements of aerosol optical depth by other instruments during the solar disk scan measurement. We also develop methods for measuring SVA on the ground or laboratory."

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-433, 2018.