

## ***Interactive comment on “Optimal use of Prede POM sky radiometer for aerosol, water vapor, and ozone retrievals” by Rei Kudo et al.***

### **Anonymous Referee #3**

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This paper is well written and includes new results with a new algorithm for sky radiometer measurements. If the authors consider the following specific comments and revise the draft, the paper will be improved.

(1) Page 5, lines 136-137 : It is better to show the concrete value of view angle, so that discussion on the minimum angle of forward scattering and size distribution will be easily understood. This is related to the comments (2) and (3) below.

(2) Page 8, lines 236-241 : The size limit of large particle might be 20 micron even if the diffuse radiances of 1627 and 2200 nm at scattering angle of 2 degree are used (lines 237-239). What is the reason for the extension of size retrieval range to 30 micron with a scattering angle of 3 degree? Is it appropriate for the size range?

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(3) Page 16, 3rd paragraph, Fig.7b and Fig.8 : According to Figure A2, authors discuss the information contained in the wavelength and scattering angle. Why the results from ALM-SW and PPL-SW are not discussed here? The dataset are the same among ALM-SW, PPL-SW, and V42. Why did ALM-SW and PPL-SW succeed and V42 did not for retrieving VSD?

(4) Same part as (3) and Fig. 8 : If the view angle of the sky radiometer is 1.0 or 1.5 degree, forward scattering signal at 2.5 or 2.25 degree is included for the measurement of scattering angle of 3.0 degree. The phase function of forward scattering varies largely and is not linear with scattering angle. The variation of phase function of aerosol at small scattering angle becomes larger with smaller scattering angle, so that the radiance data at 3.0 degree may be overestimated, and then large particles around 10µm might be overestimated.

(5) Page 17, 5.1.3 Surface solar radiation : The difference between the results with LW and those with SW is quite small even for the direct irradiance as shown in Figure 14. So, the superiority of ALM-LW and PPL-LW as written in the line 546 is not obvious.

(6) Page 18, lines 549 and 566 : POM01 should be POM-01 in line with other pages.

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