Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sky radiance at a coastline and effects of land and ocean reflectivities" *by* Axel Kreuter et al.

Anonymous Referee #1

Received and published: 18 September 2017

The present study deals with spectral sky radiance distribution above a coastline. Measurements of sky radiance distribution are shown and compared with simulations from the Monte Carlo model MYSTIC. In my opinion there is still some need of research in this domain. I agree with the statement of the authors that the findings may be relevant for ground based remote sensing methods among others for the determination of aerosol characteristics. The manuscript is well structured, the methods are sound and include state of the art instrumentation and quality control methods. The 3-D model is a well known high quality radiative transfer model. Conclusion and analysis are reproducible and comprehensible. Since the study includes several innovative aspects and meets the expected level of quality I suggest the acceptance of the manuscript in ACP.

I have following remarks that should - before acceptance - be taken into account.

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Discussion paper

a) 2. Methods: Concerning the accuracy of the radiance measurements some estimation concerning the measurement uncertainty should be given. It should also be mentioned what would be the discrepancy between measurement and modelling if absolute values were compared. The reason for the uncertainties and why you are only comparing relative measured and modelled values should also be mentioned.

b) You should mention problems related to polarisation and why the polarisation of the sky radiance does not influence the spectrometer measurements

c) In the y axis of fig.2 you should add [rel. unit]

d) 4. conclusions The last section about the relevance of the present research should be extended. What do you think are the next interesting questions? Would it be possible by using absolute values (assuming a better measurement accuracy) to obtain more information about ground albedo?

e) If available, you should at the beginning of the results section add a figure showing the radiance distribution over the whole hemisphere at one wavelength.

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