

## ***Interactive comment on “Spring and summer time ozone and solar ultraviolet radiation variations over Cape Point, South Africa” by D. Jean du Preez et al.***

### **Anonymous Referee #2**

Received and published: 30 July 2018

Considering the topics of this work, one could separate it in two different parts: The first part includes the climatology of UVB and ozone column at Cape Point, South Africa and the corresponding effect of ozone variations on the surface UVB, while the second part includes the examination of low ozone level cases and their origin at the same station. The used methodology and analysis of the second part is an interesting approach with noteworthy findings. The authors could expand their research on this field and publish a standalone study. In my opinion it does not fit in the first part of the manuscript. My major objections to accept for publishing this manuscript concern its first part. Many related studies have been published, especially during 90's, and the results of this study were quite surprising. This fact makes me very doubtful about the

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quality and/or the analysis made of the used UVI data. Following, I am quoting some concerns: It is difficult to accept the statement of the authors that there is not aerosol loading at the Cape Point station. Even if the aerosols are not anthropogenic, maritime aerosols affect the site and consequently the UV radiation. As the authors report, the instrument detects solar UV radiation in the wavelength range 280-320 nm. The UV index covers the solar wavelength range 280-400 nm. The conversion of MED to UVI is not just a single factor (equation 1 in the manuscript), but it depends also on the solar zenith angle. There is no information about the long-term performance of the instrument and the calibration procedures during the study period. Taking into account the longitude of the station, the maximum UVI should be observed around 11h00 UTC and not between 13h00-15h00 UTC. Even the presence of the cloudy days is not able to shift the time of the maxima observations 2-4 hours in climatology point of view. If there are any special weather phenomena at the station of Cape Point, (i.e. frequency of clear-skies afternoons much higher than clear-skies mornings) the authors should mention it. The results of RAFs at fixed zenith angles convinced me about my previous concerns. I strongly believe that there are serious mistakes in manipulating the UV data or in the quality of UV data or both. According to my atmospheric physics knowledge, it is impossible the correlation of the RAF at 40 deg to be 0.01 and not significant. I could believe it for SZA higher than 70 deg but not for 40 deg. Even the differences in sun-earth distance could not lead in these results. In case I have some satisfactory answers to my concerns, I will be very happy to accept the manuscript for publication.

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Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2018-56>, 2018.

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