

# ***Interactive comment on “Measurements of spectral irradiance during the solar eclipse of 21 August 2017: reassessment of the effect of solar limb darkening and of changes in total ozone” by Germar Bernhard and Boyan Petkov***

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While the results in this paper are certainly intriguing, there are significant differences between the instrument employed by the authors and the TOPS instrument employed by Mims and Mims. The author’s instrument uses filters having a FWHM bandpass of 10 nm, while TOPS has filters with a 5-nm bandpass FWHM. TOPS also measured column ozone at 300nm and 305 nm, which is much more sensitive to ozone variations than the wavelengths used by the authors. TOPS is also a direct sun instrument that can provide measurements in a few seconds, while the author’s instrument is a full-sky

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device with an exceptionally long 2-minute scan time. As we have learned from comparisons with an EPA Brewer placed at our site, the much faster scan time provided by TOPS provides higher resolution results and avoids errors caused by aerosol changes that can occur during minute-duration scans. Moreover, TOPS often detects subtle changes in the ozone column missed by Dobson and Brewer instruments, which both require considerably more time for an ozone measurement. Before our findings are ruled out by this paper, we feel that the authors should point out the very significant instrumental differences, especially the filter wavelengths, the filter bandpasses and the time required per scan. In each of these cases, TOPS offers superior performance when compared with their instrument. Thus, the findings of subtle waves in the ozone layer by TOPS cannot be so quickly discounted by this paper. I close by observing that TOPS uncovered a calibration drift in the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) (Satellite Monitoring Error, Nature 361, 1993). TOPS evolved into Microtops and then Microtops II. All these instruments provide results in close agreement with Brewers and Dobsons at the Mauna Loa Observatory. Thank you for considering the points made herein. Forrest M. Mims III fmimsiii@yahoo.com

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