

## ***Interactive comment on “Temperature dependent ozone absorption cross section spectra measured with the GOME-2 FM3 spectrometer and first application in satellite retrievals” by W. Chehade et al.***

### **Anonymous Referee #3**

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The paper presents GOME2-FM ozone absorption cross-sections and describes how these were measured in the laboratory and put on an absolute scale using published cross-section data at selected wavelengths from the literature. The integrated cross-section data from this work are compared with literature data for different wavelength regions (Hartley band, Huggins band, Chappuis band) and temperatures (203–293K). They show general good agreement within 3%. The application of the new cross-section data on the ozone retrieval by GOME2 is discussed. The work appears to be

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thorough and the paper is mostly well written. For publication, the following technical changes should be made. Acronyms and abbreviations (e.g. MetOp-A) need to be explained. The whole paper should be checked for grammar and typographical errors (e.g. p.7984, line17: 'atmospheric trace gas'; p. 7985, line 7: 'inferred'; lines18-20: 'data set', 'high-quality', 'the instrument's own'; etc.) Abstract, last sentence: please specify the meaning of 'routinely'. Section 2.2: how stable was the ozone concentration during the measurement of the absorption cross-sections? Does the stability of the ozone concentration influence the accuracy of the measured results? How much time did it take to go through the measurement steps 1. - 3. (line 15-19)? Section 4.3: please explain briefly the meaning of 'DOAS retrieval window' Page 7994, line 22: was the scaling factor applied to the differential structure, or to the absolute absorption cross section? Fig. 5: the figure caption should state clearly that the figure compares absorption cross sections; a corresponding y-axis label is missing and should be added; units are missing in the line at figure top and should also be added. For better readability the legend could be shifted to the right part of the figure. Fig. 6: what is the meaning of 'ozone fit residual' ? What is the unit (should be given on the y-axis)? Fig. 7+8: the black dots can hardly be seen. Try a different colour for better readability.

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