

## General remarks

Juseon Bak et al. provide the first comprehensive characterization of the GEMS operational ozone profile retrieval, including detailed descriptions of the spectral and radiometric calibration enhancements introduced in the version 3.0 algorithm. These improvements are fundamental for the exploitation of the full potential of the geostationary ozone profile data, not only for application in air-quality monitoring but also for investigating local transport processes. Furthermore, the calibration methodologies described and the retrieval show cases are a valuable reference for the ozone profile retrieval community. Therefore, I believe this work aligns closely with the AMT journal's scope and I recommend the publication after addressing the comments below.

## Introduction

- Is a reference available demonstrating the capabilities of the OMI ozone profile product (cited at lines 62-64)?
- It is not very clear to me the citation at line 67 of (Keppens et al., 2024), which does not explicitly refer to GEMS L2 assessment in the context of the PEGASOS project. Is there an explicit reference available for the PEGASOS project?
- Please look into line 642, which seems to contain an incorrect doi of 2015

**Section 2.4** When I first read the manuscript it was not clear to me that the algorithm updates would be described in this section. Could it be an idea to add "Implementation details and algorithms updates"? It seems to me that this section is mostly about the algorithm updates introduced in v3.0.

**Figure 7** I find the choice of these retrieval show cases very helpful to understand the retrieval capabilities. I find the higher DFS (orange) region in Fig.7b and lower DFS (darker green, around Vietnam-Laos) in Fig.7c quite interesting, but they don't seem to be correlated to their corresponding ozone distribution in Suppl. Fig. 2. However, it seems that the higher DFS region in Fig. 7b has some correlation to Fig. S2 (d), which I was curious to know if you were expecting it.

**Figure 8** I was not expecting this behavior for the retrieval offset, looking at the quite well-behaved shape of the averaging kernel, shown in Figure 6. If I compare this figure with the one of the TROPOMI ozone profile (Fig. 11a, Keppens et al., 2024), the offset trend is driven by the higher information content, but this doesn't seem the case for

Figure 8. So I am wondering if this could be related to the different algorithm settings or if it is more instrument related.

**Conclusions** It might be helpful to add some information regarding the time of the implementation of the updates of version 3 in the operational stream, or if they are already publicly available.

**Minor comments**

- Line 76 I think the “and” can be omitted in point (3)
- Line 297, repetition of Fig. 7c and the first one should refer to Fig.b as the text refers to the troposphere
- Reference Bak et al (2019) in line 347 is missing