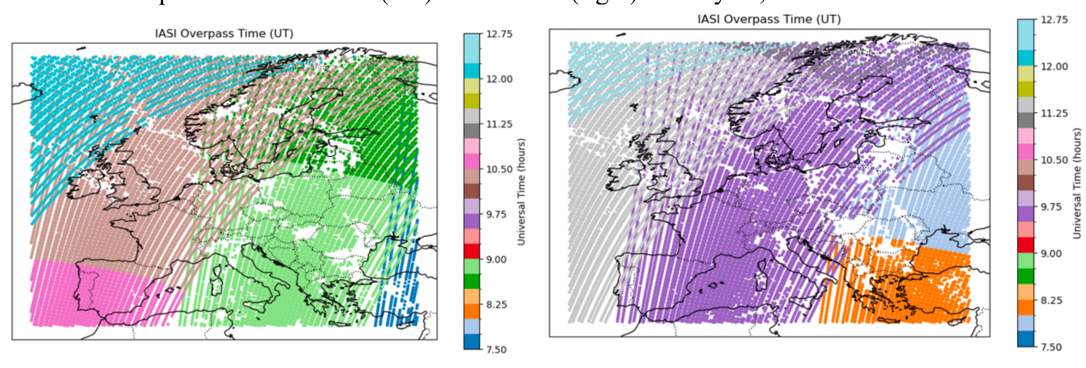
The authors thank the referee for his interest in the manuscript. His suggestions, recommendations and remarks were very useful for improving the manuscript. In the following referee's comments are indicated in italics and grey color and the reply to each comment is given just below.

The paper shows a validation of retrievals using the KOPRA algorithm from the three iterations of the IASI instrument, which show a low bias between the partial ozone columns for different altitude layers of the troposphere.
The paper also provides analysis of the IASI KOPRA product compared to in-situ sonde measurements. The results show that when sonde measurements are convolved with the KOPRA averaging kernel, the bias is close to zero, and there is an RMSE of around 20% when compared to the KOPRA retrievals. Drifts in retrieved measurements are also compared to ozonesonde measurments, showing a small negative drift, with a low p-value for the tropospheric ozone column.
Ozone trends are then analysed for three regions in the northern hemisphere: North America, Europe and East Asia. It is interesting to see that for the lower troposphere, trends are mainly negative for all regions, with mainly low p-values, whereas for the upper troposphere there is little clear signal except in the East China Sea/Pacific region, where trends are positive. It is also interesting to note that the negative trend in the lower tropsophere remains even when the covid period is excluded from the dataset.
The article presents important results relevant for tropospheric ozone analysis, and should be published in AMT with corrections and clarifications noted below.

Specific Comments
It would be useful to specify more precisely any instrumental changes between IASI A, B and C. If there are no instrumental changes at all, this would also be worth highlighting. In case the performance of the instruments is slightly different, it may also be worth plotting the differences in measuremnent response of retrievals from the three instruments.
The three IASI instruments are completely identical. We added the information line 62: "Three **identical** versions of the instrument". For the periods used for this study, the three instruments were functioning nominally and within their specifications. The performances of IASI instruments are remarkably stable and make IASI a reference instrument, in particular in radiometric terms. We refer the referee to the presentations given during the last IASI conference in 2024. To our knowledge, no publication which addresses this point for the three instruments exists.

It is intriguing that both IASI-A and -C have roughly the same bias compared to IASI-B for all partial columns. Could you specify the overpass time separation of the satellites? As the rate of ozone formation and depletion could be quite high at the local time for which observations are made, I wonder if the time separation of the satellite could explain this bias?
The overpass time difference between the satellites is about 45 min. Within our domains, for two different locations, the order in which the locations are sampled by the satellites can be different. If one takes the example of July 1st, 2022, Greece is sampled first by IASI-C at about 8:00 UTC (9:30 LT) and then 45 min later by IASI-B (8:45 UTC, 10:15 LT) but Corsica is sampled first by IASI-B at about 8:45 UTC (9:30 LT) and then 45 min later by IASI-C (9:30 UTC, 10:15 LT). It can be different another day depending on the relative configuration of the swaths. It is then not straightforward to link the bias with the time separation of the satellite. The figure below shows the overpass time of IASI-B (left) and IASI-C (right) for July 1st, 2022.



line 175: "The coincidence criteria used for the validation are ±1° in latitude and ±1° in longitude around the sonde station, a time175 difference shorter than ± 6 hours" - can you confirm that there was no systematic change in the time difference between iasi/sonde observations?
There is no systematic change with time in the time difference for each individual site. It is worth noting that from one site to another the time difference can be different but remain similar over the period.

Section 3.3.1 It would be useful to compare these results with other IASI ozone retrievals, such as those from Boynard et al. (2016, 2018), to note whether the biases and RMSE values observed in here are consistent with other retrieval algorithms

We provide, now, some comparisons with the SOFRID-O3 v3.5 (Barret et al., 2020) and the IASI-CDR O_3 (Boynard et al., 2025) products. We added this paragraph after line 210: "The IASI-O3 KOPRA product has very similar negative bias in the free troposphere compared to the SOFRID-O3 v3.5 product bias, which ranges between -10 % and -5 % (Barret et al., 2020). In the upper troposphere lower stratosphere (UTLS), the biases around 15 % for smoothed profiles are also in good agreement. Compared to the IASI-CDR O_3 product (Boynard et al., 2025), a similar agreement is observed in the UTLS. In the free troposphere, the IASI-CDR O3 product seems to show a larger negative bias (between 15-20%) compared to IASI-O3 KOPRA and SOFRID-O3 v3.5." We added also this statement after line 249: "As for profiles, the mean normalized bias for IASI-O3 KOPRA TrOC is similar to the ones reported for SOFRID-O3 v3.5 (Barret et al., 2020) for smoothed sondes in the northern midlatitudes (about -3 %) and smaller than the one reported for the IASI-CDR O3 product (Boynard et al., 2025) in the midlatitudes (about -10 %). It is worth noting that the set of sonde sites considered for the validation of these different products is different and may explain some of the differences."

line 208: "The largest differences and RMSE in the first two kilometers when comparing to raw sondes are likely due to an issue because high altitude stations (Payerne, OHP, and Boulder) are mixed with low altitude stations." - It is not clear to me why this would create a large bias and rmse, more likely your next point about the lack of sensitivity of satellite observations near the surface.

We finally find a small issue on how the first altitudes were managed for altitude sites. It has been fixed, and the corrected figure is now provided in the revised manuscript. We then remove lines 208-211 in the revised manuscript.

figure 5: This is a nice plot, but seems to be aiming to show different things that could perhaps be better expressed with other plots. For example, to show the drift of IASI retrievals, the raw/smoothed sonde retrievals minus IASI retrievals could perhaps be plotted over time. This might more clearly show a drift. Where the negative anomolies are highlighted in 2020 for example, the problem is that from the combination of sonde datasets, it is not clear how many profiles from each location are used at which time. It may change conclusions if anomolies are not uniformly distributed across all locations.

Figure 5 has been fully revised to improve the contrast in the plot and to add panels with IASI minus raw/sonde to highlight the possible drift. We added also a panel indicated the evolution of the number of profiles for each station. It shows that the contribution of each site is rather stable over time. Lines 235-237 are replaced with: "This effect seems to be more pronounced for IASI till the end of 2022. The contribution from a possible drift in the IASI data cannot be ruled out. Indeed, Fig. 5 (first two rows of the second column) shows the difference between IASI and sondes anomalies. In the free troposphere, this difference is negative and slightly increases with time. This will be analyzed in more detail with the partial columns in the next sections. It is worth noting that mean sonde profiles are mainly driven by Payerne and Uccle sites, and that the relative contribution of each site is rather constant over time (Fig. 5, bottom right panel)." The new Figure 5 looks as follows:

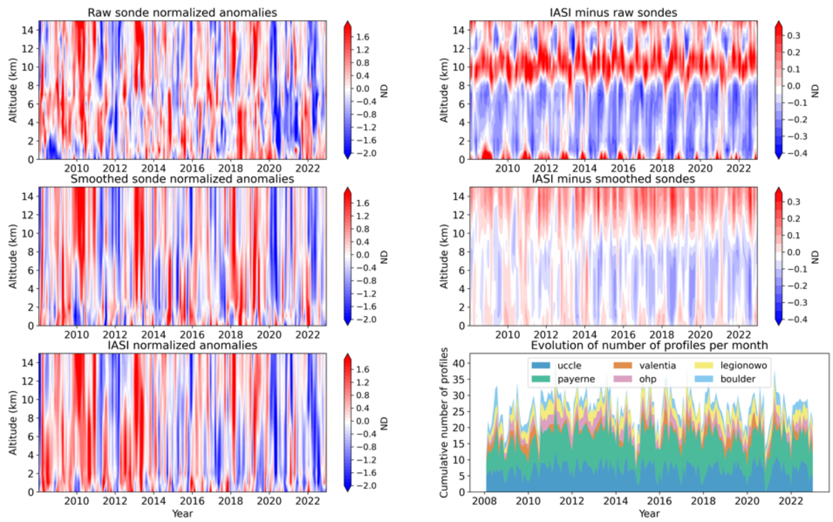


Figure 9: Interesting to see that the trends in the Mediterranean sea, Bay of Biscay and more Southernly part of the North Atlantic Ocean all have negative trends with low P-values, whilst the East China Sea/Pacific have postive trends with low P-values. Are there changes in ozone precursors that could have caused this?

It is out of the scope this validation paper to assess the causes of the trends. We can mention here that the emissions of O_3 precursors, especially NOx, have been slowly decreasing since more than 20 years in Europe. It may influence the negative trend observed in southern Europe depending on the regional chemical regimes. In China, the NOx emissions have started to decrease in the mid-2010s leading to an increase of surface ozone since 2015. However, the positive trend in East Asia is mainly visible in the upper troposphere where the influence of surface emissions is likely small. This would deserve a dedicated study.

Technical Corrections

line 17: Please define KOPRA before first usage

Done

line 20: please correct to make clear: "across the three study domains: Europe, North America, and East Asia." (or similar)

Done

*line 38: ...in addition to **being**...*

Corrected

*line 55: **were** more likely negative*

Corrected

line 59: ...for trend studies...

Corrected

line 95: lower than?

Corrected

Figure 3: I found it quite hard to find and guage the size of some circles on this plot - I wonder if it meets requirements for visual impairments. Perhaps it would be better to remove the topographic shading?

The figure has been revised. We added red edge color circle and provided the number of days with observations for each site in the caption.

Figure 4: Plots require axis labels and units

Done

Figure 5: again no y axis label

Done

Figure 6 (right): I'm not sure if I see the Boulder star. Maybe you can add more colours to the plot to distinguish stations?

We changed the colors. Concerning Boulder, the raw and smoothed statistics for the Taylor diagram are the same. The star is under the circle and then not visible. We added a note in the caption.

Figure 8: is TOC the same as TrOC?

Yes, it is. We harmonized the figure with text and change TOC to TrOC.

line 419: "In this context of uncertain trends and opposite behavior in the lower and upper troposphere which likely compensate for the TrOC, the questions about possible drifts, more pronounced in summertime, between our sample of ozone sonde time series and the IASI retrievals should be investigated in more detail." - this sentence should be rephrased or broken down into two sentences.

The sentence has been rephrased as follow: "The questions raised by our study regarding possible drifts, mainly in summer, between ozone sondes and IASI retrievals, as well as the representativity of the sondes for their correction, should be investigated in more detail in the future."