Public justification (visible to the public if the article is accepted and published):
I agree with referee#1 that the discrepancies between OMI and Pandora NO2 and HCHO data deserves a better discussion. To my point of view, the current response lacks substance and should be enhanced with:
(1) a better review of the possible sources of bias, on both satellite and ground-based data sets. Beyond the issue of the different FOVs (that mainly affect NO2 since one expects the HCHO horizontal distribution to be more homogeneous than the NO2 one), satellite data can possibly be biased due to a number of retrieval issues, some of them affecting slant columns, others airmass factor calculations.

This paper does not examine the horizontal distribution of either TCNO2 or TCHCHO to see how their spatial distribution may cause the Pandora results to differ from those measured by OMI. Frequently TCNO2(Pan) > TCNO2(OMI) and TCHCHO(Pan) < TCHCHO(OMI). Aside from the effect of spatial averaging by OMI compared to Pandora the effective Airmass factor for OMI retrievals is a large source of error compared to the geometric Airmass factor for Pandora direct sun measurements. The following paragraph has been added, which also includes additional references.

Previous validation studies of $TCNO_2$ and TCHCHO have been made with emphasis on the amount of bias between ground-based and satellite retrievals of total column NO_2 and HCHO (Pinardi et al., 2020; de Smedt et al., 2021) and references therein. Validation studies using Pandora measurements have shown that OMI TCNO2 retrievals tend to underestimate the degree of NO_2 pollution, especially in urban areas where the coarse OMI spatial resolution tends to reduce the spatially averaged amount (Celarier et a., 2008; Lamsal et al., 2014; Judd et al., 2019; Zhao et al., 2019). In addition to the different field of view, the agreement between OMI and Pandora depends strongly on determining the OMI effective air mass factor for a wide variety of observing and solar zenith angles (Lorente et al., 2017), whereas Pandora uses a simple geometric direct sun airmass factor (Herman et al., 2009, Eq 3). Studies of TCHCHO involving Pandora prior to 2020 are probably not valid because of a problem with internal generation of HCHO in the Pandora instrument (Spinei et al., 2021). More recent studies (Wang et al. 2022) obtain a seasonal dependence of surface concentrations similar to the TCHCHO in this study. The largest sources of error in TCHCHO retrievals are the determinations of the air mass factor for satellite observations and the fact that ozone and formaldehyde have overlapping absorption spectra so that a small error in ozone retrieval can affect the formaldehyde results. A comparison of direct-sun Pandora TCHCHO retrievals with Geostationary Environment Monitoring Spectrometer GEMS shows a similar seasonal dependence (Fu et al., 2025).

(2) a better review of the existing litterature on satellite NO2 and HCHO validation. For NO2, there a several relevant papers, see e.g. https://amt.copernicus.org/articles/13/6141/2020/

, and references therein. For HCHO, see e.g. https://www.atmos-meas-tech.net/13/3751/2020/, and https://acp.copernicus.org/articles/21/12561/2021/

See the above paragraph

. How do the results presented here, compare with already published validation results?

The seasonal behavior is similar in that HCHO usually peaks in the summer and NO2 in the winter at mid latitudes.