Reply (in blue) to Referee #2

We thank the referee #2 for the final comments.
Our reply is included after the referee comments.

- Page 10, lines 29-30: "We conclude that the historical climatologies from OMI and GOME-2 do not properly represent actual snow/ice conditions observed in 2018/2019." This conclusion is very thin and there is no clear evidence supporting this, especially as it is ensured that pixels are well affected by snow/ice for all three instruments for the comparison. That would imply that the albedo of the snow/ice itself has changed between the current conditions and those from a few years ago, which is unlikely. I would guess that it is more related to the L1 calibration issues discussed by the authors in the reply to the reviewers, possibly leading to a high bias in the S5p albedo. In fact, if the S5p albedo was slightly lower at high latitudes, the agreement with CAMS in Fig. 13 would be slightly further improved (currently there is a low bias). Please mention in the paper the L1 version that you used and discuss the possible impact of the future L1 upgrade.

We fully agree that the current S5P L1 calibration issues may have an impact on the retrieved albedo and this could affect the comparison with other datasets, but the intention of this sentence is to emphasize that the retrieved GE_LER in contrast to climatologies can distinguish between snow/ice and normal conditions.

To clarify this point we added the following sentence "*The snow/ice information from VIIRS agrees better with the GE_LER albedo than with climatological LERs, see Figure 12.*" before "*We conclude …*"

The L1 version and possible impact of future L1 upgrades is already mentioned in page 9, line 2: "*version 1 of the TROPOMI Level 1 product has small deficiencies in the UV …. It is expected that these issues will be solved for version 2 of the TROPOMI Level 1 product*"

- Page 2, line 7: I still disagree with the upper limit of 35% cited here. I don't see how the impact of the scene reflectivity uncertainty on the total ozone column, which is mostly located in the stratosphere can be that large. In fact, your Figure 12 gives a good estimate of the error by comparing the panel (f) and (d) and it seems to be around 10%. So 15% as an upper limit would be more reasonable.

Upper limit changed to 15%

- Page 12, line 28: "like Sentinel-5P" instead of "like Sentinle-5P".

Thanks for detecting this typo, it is corrected now