We would like to express appreciation to the reviewers for their insights and detailed review as well as for the suggested references. Our responses (in blue) for each comment (in black) are provided below.

Authors' response to minor comments of referee #1

This revised manuscript was mostly corrected the reviewers' comments, and the manuscript is well constructed. However, I would like to suggest that some additional corrections for the improvement of manuscript.

1) Section 2: The specifications of instruments are too omitted and not standardized. For Gk2B instruments, the manuscript wrote the wavelength, spatial coverage, and resolution. However, the AMI is not. Please add and unify the instrument explanations.

The details of the AMI observations are added as "As a meteorological imager, AMI has spectral channels in the VIS–IR range (Kim et al., 2021), which is 3 VIS channels, 1 near-IR channel, and 10 IR channels from 0.47 μm to 13.3 μm. A 0.65 μm channel has 0.5 km spatial resolution, and 0.47, 0.51 μm channels has 1.0 km spatial resolution. The IR channels has 2.0 km spatial resolution. AMI scans full-disk every 10 minutes, and local area near Korean peninsula every 2 minutes.". (L112)

2) Section 2.2.2: Please add the advantage and disadvantage of type classification for GEMS AOD retrieval.

The advantage and disadvantage of the GEMS type classification is added as "The type classification of the GEMS AOD retrieval is superior to the other algorithms using visible wavelengths because of the sensitivity of UV wavelength to scattering characteristic of aerosols. Yet, relatively short range of observation wavelength in VIS region of GEMS compared to AMI and GOCI-II lacks sensitivity to aerosol size information.". (L180)

Minor Comments

1) L165: hyperspectral 'radiance' observations

Done. Thank you. (L168)

2) L174: The GEMS > the GEMS

Done. Thank you. (L177)

3) L191: AERONET AODs is known to be 0.010-0.021 à for version 3?

Yes, according to Giles et al. (2019) and Sinyuk et al. (2020), the AOD uncertainty was 0.01-0.02, depending on the wavelength. AOD uncertainty was spectrally dependent with the higher errors in the UV. We revised the manuscript to make it clear that the AOD uncertainty depends on the wavelength as "The estimated uncertainty in precision in AERONET AODs is known to be 0.010–0.021 depending on the wavelength". (L198)

4) L198: Please add the reference

Park, S. S., Kim, S. -W., Song, C. -K., Park, J. -U., and Bae, K.: Spatio-Temporal Variability of Aerosol Optical Depth, Total Ozone and NO2 Over East Asia: Strategy for the Validation to the GEMS Scientific Products, Remote Sens, 2020, 12(14), 2256

Done. Thank you. (L203)