Response to Reviewer 2
The authors thank the reviewer for the careful review and for providing constructive comments on the paper.

Specific comments

1. We made changes in the abstract and conclusions. We provided the following quantitative information about the NAH and its uncertainty: global means of the net atmospheric heating (NAH) due to NO_2 for January and July, general uncertainties of NAH computations, cloud impact on NAH in percent, estimates of surface albedo error, and diurnal averaging error.

2. We clarified this in the revised paper. We adjusted the model NO_2 profiles to the NO_2 column data from OMI at 13:30 local time only. We neglect the NO_2 diurnal cycle in our computations. However, we provide information about uncertainties in NAH that are due to this simplifying assumption.

3. At the global scale, the NO_2 absorption if included in a model will not alter GCM results because the global radiation effect of NO_2 is small. However, the NO_2 absorption can be noticeable for regional, high spatial resolution models. At the moment, it is difficult to estimate how regional model results will change when the NO_2 absorption is included in the model. We can give an insight into the possible change of the model results by providing a rough estimate of the atmospheric temperature change. Because most tropospheric NO_2 in polluted areas resides in the planetary boundary layer (PBL), the NAH values can be associated with the atmosphere within the PBL height. Assuming no temperature adjustment, we can roughly calculate the atmospheric temperature change as $NAH/(c_p*\rho*H)$, where $c_p \approx 10^3$ J/kg/K is the specific heat capacity of air, $\rho=1.29$ kg/m^3 is the air density, $H \sim 10^3$ m is the PBL height. Thus, NAH values of 2-4 W/m^2 correspond to 0.16-0.32 K/day. These numbers are significantly lower than the average solar heating rate at the surface (about 1K/day at the solar zenith angle of 45^0) but not negligible. We have now included this in the revised manuscript.