

We thank the editorial team for the valuable suggestions! Below we respond to the individual suggestions.

Question: PAN stands for peroxyacetyl nitrate (you misspelled it in line 57 of the track-changes manuscript). Also does this include other nitrates (methyl nitrate, PPN) that play similar roles to PAN?

Answer: The Ox family in the GEOS-Chem model is defined as:

Ox = O3 + NO2 + 2NO3 + PAN + PPN + HNO4 + 3N2O5 + HNO3 + BrO + HOBr + BrNO2 + 2BrNO3 + MPN + ETHLN + MVKN + MCRHN + MCRHNB + PROPNN + R4N2 + PRN1 + PRPN + R4N1 + HONIT + MONITS + MONITU + OLND + OLNN + IHN1 + IHN2 + IHN3 + IHN4 + INPB + INPD + ICN + 2IDN + ITCN + ITHN + ISOPNOO1 + ISOPNOO2 + INO2B + INO2D + INA + IDHNBOO + IDHNDOO1 + IDHNDOO2 + IHPNBOO + IHPNDOO + ICNOO + 2IDNOO + MACRNO2 + ClO + HOCl + ClNO2 + 2ClNO3 + 2Cl2O2 + 2OCIO + IO + HOI + IONO + 2IONO2 + 2OIO + 2I2O2 + 3I2O3 + 4I2O4

As indicated in this question, the Ox family includes other species similar to PAN. The usage of the term “peroxyacylnitrates” follows previous literature (e.g., Zhang et al., 2008, Zhu et al., 2017 and Han et al., 2018). It has been changed to “PANs” in the revised version.

References:

Zhang, L., Jacob, D. J., Boersma, K. F., Jaffe, D. A., Olson, J. R., Bowman, K. W., Worden, J. R., Thompson, A. M., Avery, M. A., Cohen, R. C., Dibb, J. E., Flock, F. M., Fuelberg, H. E., Huey, L. G., McMillan, W. W., Singh, H. B., and Weinheimer, A. J.: Transpacific transport of ozone pollution and the effect of recent Asian emission increases on air quality in North America: an integrated analysis using satellite, aircraft, ozonesonde, and surface observations, *Atmos Chem Phys*, 8, 6117-6136, DOI 10.5194/acp-8-6117-2008, 2008.

Zhu, Y., Liu, J., Wang, T., Zhuang, B., Han, H., Wang, H., Chang, Y., and Ding, K.: The Impacts of Meteorology on the Seasonal and Interannual Variabilities of Ozone Transport From North America to East Asia, *J Geophys Res-Atmos*, 122, 10,612-610,636, 10.1002/2017jd026761, 2017.

Han, H., Liu, J., Yuan, H., Zhuang, B., Zhu, Y., Wu, Y., Yan, Y., and Ding, A.: Characteristics of intercontinental transport of tropospheric ozone from Africa to Asia, *Atmos Chem Phys*, 18, 4251-4276, 10.5194/acp-18-4251-2018, 2018.

Question: Please ensure that the colour schemes used in your maps and charts allow readers with colour vision deficiencies to correctly interpret your findings. Please check your figures using the Coblis – Color Blindness Simulator (<https://www.color-blindness.com/coblis-color-blindness-simulator/>) and revise the colour schemes accordingly.

Answer: Fig. 2, Fig. 4, Fig. 7 and Fig 9 were redrawn by using color tables “BlueWhiteOrangeRed” and “NCV_blu_red”. Maps and charts have been rechecked to ensure they are using simple blue-red color schemes to facilitate the readers with color vision deficiencies.