**Figure S1.** Annual mean lifetime of NO\textsubscript{x} below 1 km altitude against oxidation to nitrate via reactions that occur only at night (R2+R4+R5).

**Figure S2.** Same as Figure 4 but for the “standard” simulation.
**Figure S3.** Same as Figure 5 but for the “standard” simulation.

**Figure S4.** Same as Figure 6 but for “standard” simulation.
Figure S5. Same as Figure S1 but assuming $\Delta^{17}$O($O_3$) = 35‰.
Figure S6. Same as Figure 3 but for the “standard” simulation.
Figure S7. Calculated surface aerosol pH in the model in each season.

Figure S8. Modeled change in anthropogenic NO emissions (Gg N yr$^{-1}$) from the year 2000 to the year 2015 (2015 − 2000).