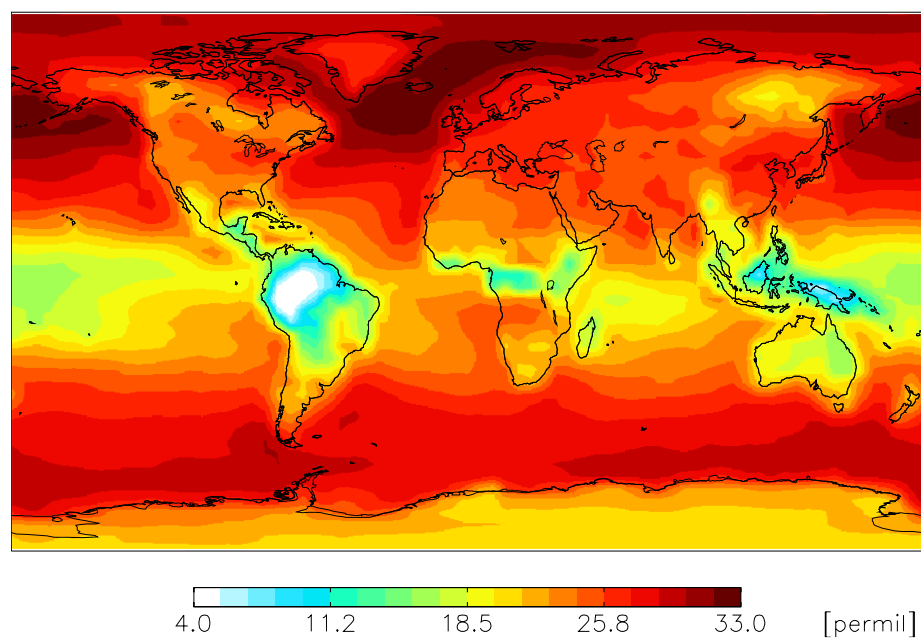
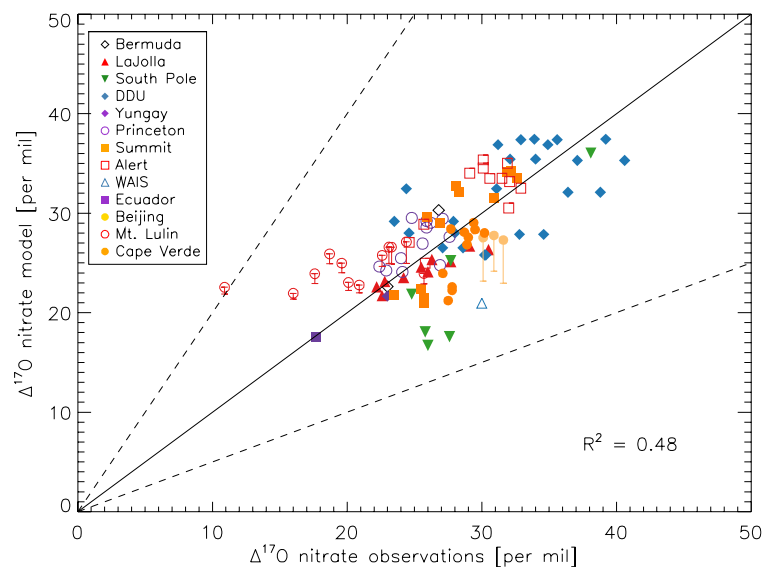


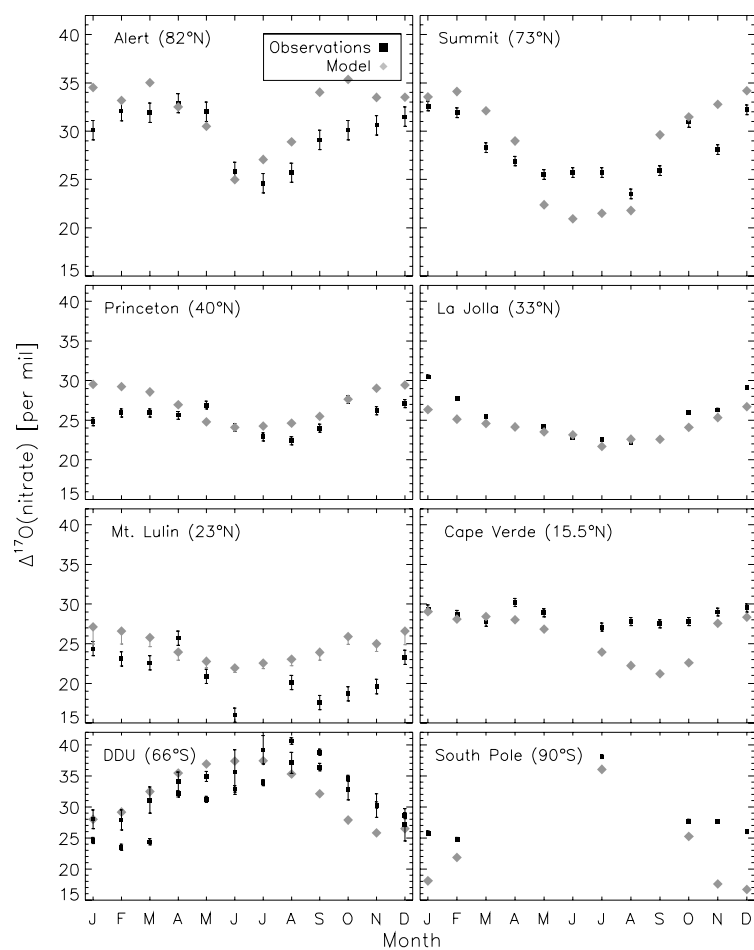
**Figure S1.** Annual mean lifetime of NO<sub>x</sub> below 1 km altitude against oxidation to nitrate via reactions that occur only at night (R2+R4+R5).



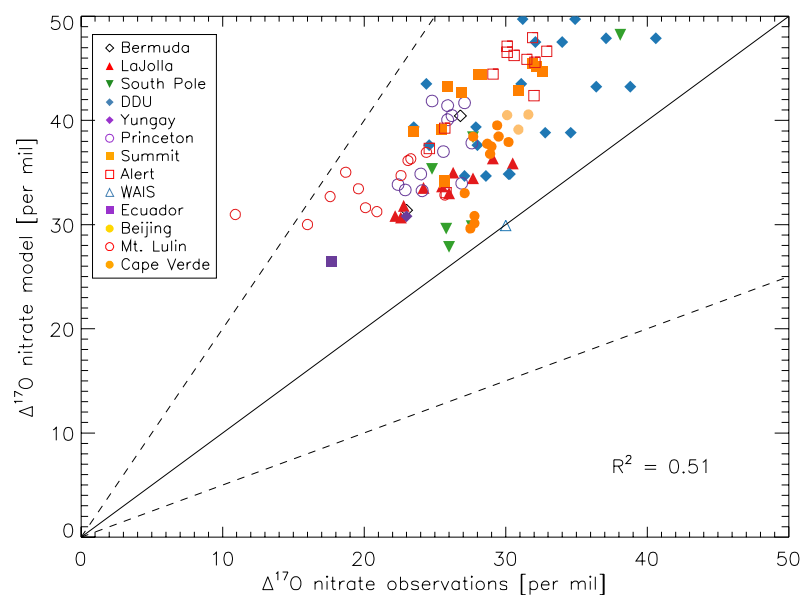
**Figure S2.** Same as Figure 4 but for the “standard” simulation.



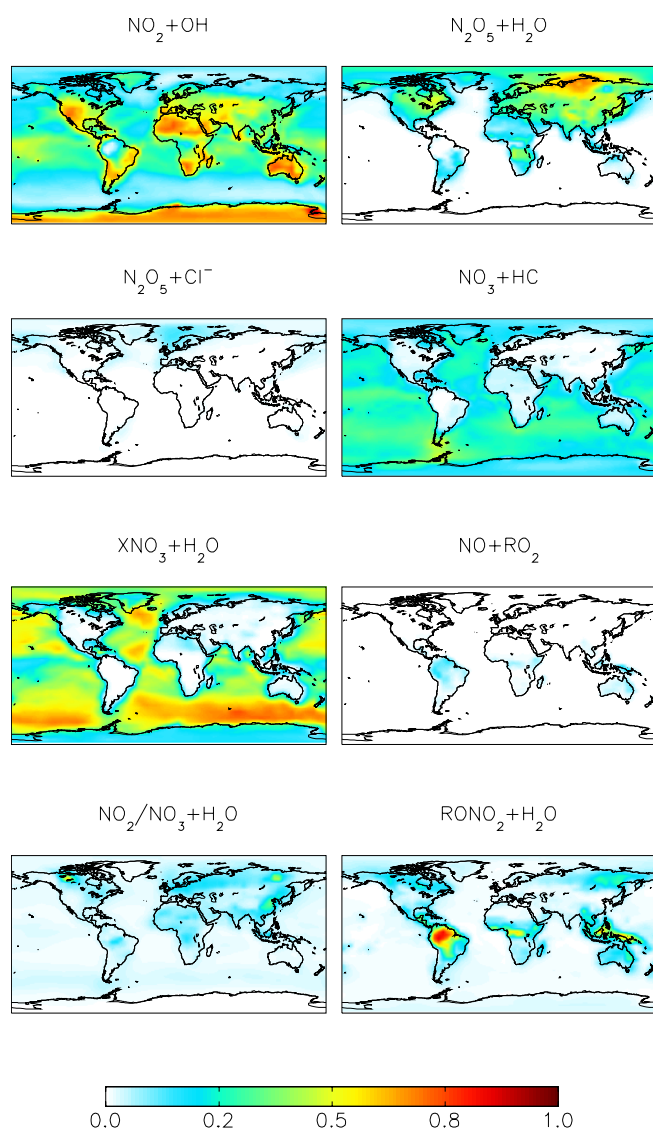
**Figure S3.** Same as Figure 5 but for the “standard” simulation.



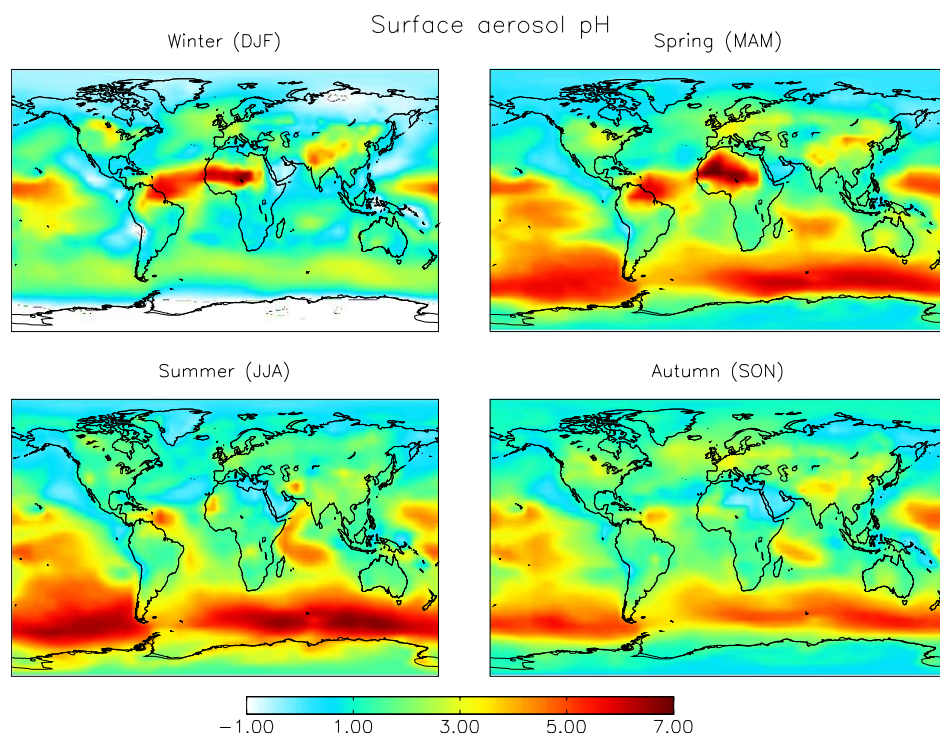
**Figure S4.** Same as Figure 6 but for “standard” simulation.



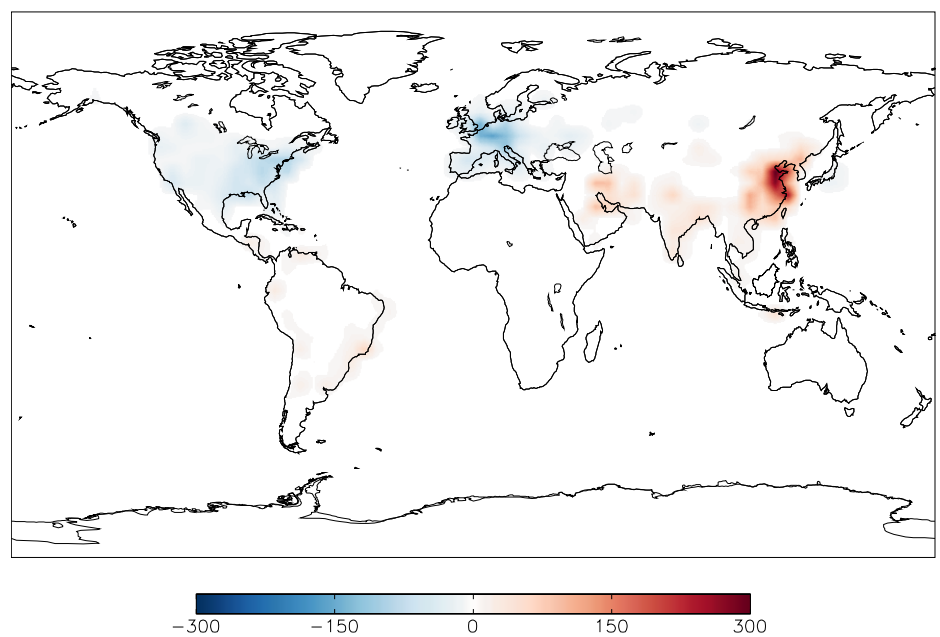
**Figure S5.** Same as Figure S1 but assuming  $\Delta^{17}\text{O}(\text{O}_3) = 35\text{‰}$ .



**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 ( $\text{Gg N yr}^{-1}$ ) from the year 2000 to the year 2015 ( $2015 - 2000$ ).