acp-2014-75 Submitted on 28 Jan 2014
"Heterogeneous reaction of N_2O_5 with airborne TiO_2 particles and its implication for stratospheric particle injection"
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The research carried out on the uptake of N2O5 on TiO2 was done very systematically and the manuscript is well written. The manuscript describes the determination of the uptake coefficient of N2O5 on TiO2 particles at room temperature for the first time. Since the refractive index of TiO2 is more than 60% greater than that of H2SO4 particles, main light scattering particles in the stratosphere, it requires much less amount to inject into the stratosphere to reduce the global warming. Unlike H2SO4, TiO2 would not presumably activate chlorine production to cause ozone-destructing chain reaction. Consequently, it would increase stratospheric ozone, thereby lowering photolysis rates in the troposphere and increases in N2O5 concentration.

I have only some minor comments:

1. page 4424, para 1: How much TiO2 has to be injected into the stratosphere to have a perceptible impact?
2. What are other pathways for N2O5 loss on TiO2 than just hydrolysis? Is it possible to have NO2 produced as a result of the uptake? In such a situation, what would be the impact in terms of ozone depletion?
3. page 4430, lines 15-24: This assumption is fine on a relative scale. However, one N2O5 does not give one NO2 and one NO3. There is always some loss of NO3 to give NO2 + O2.
4. Page 4434, line 10- 25: It is good to see a detailed and rigorous of the diffusion correction. However, diffusion correction for small uptake coefficient values is negligible.
Page 4438, line 13: "P25" should be "P2.5"

This paper is by no means a complete study as pointed out by authors regarding the photocatalytic activity of TiO2. However, it did a comprehensive experiment and discussion of the results on the uptake of N2O5 on TiO2 particles

Page 4441, line 29 (last line): "feebacks" should be "feedbacks".

This manuscript should be accepted after addressing a few minor points.