

## ***Interactive comment on “Naturally driven variability in the global secondary organic aerosol over a decade” by K. Tsigaridis et al.***

**K. Tsigaridis et al.**

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With regard to the temperature impact on evaporation of SOA (ref #1 comment) we wish to provide a more accurate reply for the impact of temperature on evaporation of SOA. This is derived from the calculated changes of partitioning coefficients of secondary organic matter based on the temperature dependencies adopted in our model and for temperature ranges that largely cover the range of temperatures observed in the troposphere. Therefore, the new text in section 4 on the effect of temperature added in page 1265, first line is modified as follows: “Temperature changes affect almost all processes involved in the chemical production of SOA. They affect (i) the emissions (7% increase from 1986 to 1990), (ii) the reaction rates of the emitted VOC, thus affecting the rate of chemical production of the gas-phase aerosol precursors; this resulted

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in 0.3% enhancement of the contribution of O<sub>3</sub> reaction to the chemical loss of BVOC, (iii) the partitioning of secondary organic matter between gas and aerosol phase leading to reduced production of the SOA with increasing temperature (about 16% to 8% reduction in the partitioning coefficients for 1 deg increase, for temperatures around 220 and 320, respectively).”

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Interactive comment on Atmos. Chem. Phys. Discuss., 5, 1255, 2005.

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