

**Supplement**

<b>Parameters</b>	<b>wo_ODMS</b>	<b>CTRL</b>	<b>2X_ODMS</b>
<b>SO<sub>2</sub> (Tg)</b>	0.0645	0.1407	0.2545
<b>H<sub>2</sub>SO<sub>4</sub> (Tg)</b>	2.0*10 <sup>-4</sup>	4.38*10 <sup>-4</sup>	5.61*10 <sup>-4</sup>
<b>Num_act (1/m<sup>3</sup>)</b>	1.24*10 <sup>9</sup>	2.69*10 <sup>9</sup>	3.47*10 <sup>9</sup>
<b>AOD</b>	0.136	0.167	0.201

**Table S1.** Absolute values (DJF mean) (a) SO<sub>2</sub> column burden (b) H<sub>2</sub>SO<sub>4</sub> column burden (c) vertically integrated number of activated particles (Num\_act) and (d) aerosol optical depth (AOD) at 0.55 μm over 30S-75S in wo\_ODMS, CTRL and 2X\_ODMS simulations.