Impact of NO\textsubscript{x} on secondary organic aerosol (SOA) formation from β-pinene photooxidation

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Secondary organic aerosols (SOA) generated from atmospheric oxidation of volatile organics contributes substantially to the global aerosol load. It has been shown that odd nitrogen (NO\textsubscript{x}) has a significant influence on the formation of this SOA. In this study, we investigated SOA formation from β-pinene photooxidation in the Jülich Plant Atmosphere Chamber (JPAC) under varying NO\textsubscript{x} conditions. At higher-NO\textsubscript{x} levels, the SOA yield was significantly suppressed by increasing the NO\textsubscript{x} concentration. However at lower-NO\textsubscript{x} levels the opposite trend, an increase in SOA with increasing NO\textsubscript{x} concentration, was observed. This increase was likely due to the increased OH concentration in the stirred flow reactor. By holding the OH concentration constant for all experiments we removed the potential effect of OH concentration on SOA mass growth. In this case increasing the NO\textsubscript{x} concentration only decreased the SOA yield. In addition, the impact of NO\textsubscript{x} on SOA formation was explored in the presence of ammonium sulfate seed aerosols. This suggested that SOA yield was only slightly suppressed under increasing NO\textsubscript{x} concentrations when seed aerosol was present.