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Title:	Estimating the atmospheric concentration of Criegee intermediates and their possible interference in a FAGE-LIF instrument
Authors:	Sinha, V. (/jspui/browse?type=author&value=Sinha%2C+V.)
Keywords:	atmospheric interference HUMPPA-COPEC
Issue Date:	2017
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Citation:	Atmospheric Chemistry and Physics, 17 (13)
Abstract:	We analysed the extensive dataset from the HUMPPA-COPEC 2010 and the HOPE 2012 field campaigns in the boreal forest and rural environments of Finland and Germany, respectively, and estimated the abundance of stabilised Criegee intermediates (SCIs) in the lower troposphere. Based on laboratory tests, we propose that the background OH signal observed in our IPI-LIF-FAGE instrument during the aforementioned campaigns is caused at least partially by SCIs. This hypothesis is based on observed correlations with temperature and with concentrations of unsaturated volatile organic compounds and ozone. Just like SCIs, the background OH concentration can be removed through the addition of sulfur dioxide. SCIs also add to the previously underestimated production rate of sulfuric acid. An average estimate of the SCI concentration of $\sim 5.0 \times 10^4$ molecules cm^{-3} (with an order of magnitude uncertainty) is calculated for the two environments. This implies a very low ambient concentration of SCIs, though, over the boreal forest, significant for the conversion of SO_2 into H_2SO_4 . The large uncertainties in these calculations, owing to the many unknowns in the chemistry of Criegee intermediates, emphasise the need to better understand these processes and their potential effect on the self-cleaning capacity of the atmosphere.
Description:	Only IISERM authors are available in the record.
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