5.078 How Will Secondary Organic Aerosols Change in the Future?.

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Abstract:

Secondary organic aerosol (SOA) plays a significant role in Earth system by altering its radiative balance. Here, we use an earth system model coupled with an explicit SOA formation module to estimate the response of SOA concentrations to changes in climate, anthropogenic emissions and human land use in the future. We find that climate change is the major driver for SOA change under the RCP8.5 future scenario. Climate change increases the isoprene emission rate by 18% with the effect of temperature increases outweighing those of the CO_2 inhibition effect. As a result, SOA is increased by 25%. We also separately evaluate the effects of changes in anthropogenic emissions and land use change and find that these decrease SOA. We will present these results and contrast them with results from the existing literature.