



## **Quantifying the influence of boreal biomass burning emissions on tropospheric oxidant chemistry over the North Atlantic using BORTAS measurements**

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We use the GEOS-Chem chemistry transport model to quantify the impact of boreal biomass burning on tropospheric oxidant chemistry over the North Atlantic region during summer of 2011. The GEOS-Chem model is used at a spatial resolution of 1/2 degree latitude by 2/3 degree longitude for a domain covering eastern North America, the North Atlantic Ocean and western Europe. We initialise the model with biomass burning emissions from the Fire Locating and Monitoring of Burning Emissions (FLAMBE) inventory and use a modified chemical mechanism providing a detailed description of ozone photochemistry in boreal biomass burning outflow derived from the Master Chemical Mechanism (MCM). We evaluate the 3-D model distribution of ozone and tracers associated with biomass burning against measurements made by the UK FAAM BAe-146 research aircraft, ozonesondes, ground-based and satellite instruments as part of the BORTAS experiment between 12 July and 3 August 2011. We also use the GEOS-Chem model adjoint to fit the model to BORTAS measurements to analyse the sensitivity of the model chemical mechanism and ozone distribution to wildfire emissions in central Canada.