

Impact of North American Forest Fire Emissions on the Arctic Atmospheric Composition in Summer Time

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As the Arctic environment is changing rapidly, Environment and Climate Change Canada (ECCC) is undertaking an initiative to develop an air quality prediction capacity for the Canadian North and Arctic region, in the context of assessing the impacts of the current and future air contaminant emissions from various sources on the northern environment and human health. In this study, model simulations, using the ECCC on-line air quality forecast model (GEM-MACH), were carried out for a field campaign conducted over the Canadian High Arctic during the summer of 2014. The model results were compared with detailed observational data from various platforms. The study shows that the Canadian High Arctic was impacted by North American regional biomass burning emissions particularly during the late July and early August time period. Tests were carried out to investigate the impact of fire plume injection algorithms on model predictions.