Title: Evaluate Wildfire Emissions in the Canadian GEM-MACH Air Quality Forecast System

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A new emissions framework for wild and prescribed fire emissions was recently developed for Environment Canada's real-time GEM-MACH air quality forecast system. For modelling domain encompassing both US and Canada, the framework incorporates modules from the US Forest Service's BlueSky framework for fire events in the US, and the Canadian Forest Service's CWFIS (Canadian Wild Fire Information System) for fire events across Canada. Hourly fire emissions are incorporated into the GEM-MACH model as major point sources and individual hotspot emissions are parameterized into elevated layers with online meteorology for transport and chemistry during model runtime. The system was applied to simulate a historical fire event in summer 2010 in British Columbia, Canada. In an operational mode, the emissions framework can be executed twice daily to match GEM-MACH operation forecast and with updated fire ignition data from both BlueSky and CWFIS. The presentation will outline the new emissions framework, present quantitative comparison of wildfire emissions, and evaluate the implementation of the online plume-rise algorithm on air quality forecast results.