Forecasting Long-Range Transport of Wildfire Smoke in North America with the FireWork Air Quality Forecast System

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The wildfire season in Canada generally starts in the spring and ends in the late fall. ECCC has been running an AQ system with near-real-time biomass burning emissions named FireWork during the Canadian wildfire season since 2013. ECCC objectives for FireWork are not limited to AQ forecasts for regions close to wildfires. Long-range transport and the associated pollution at different atmospheric levels are also a priority. And in fact, over the last four years, a number of major wildfire events have occurred in western Canada and the western U.S., where smoke from these fires has been transported long distances, affecting air quality even in eastern North America. In particular, in both 2014 and 2015, smoke from wildfires in northwestern Canada travelled thousands of kilometers across North America, reaching the east coast and the Gulf of Mexico. In this work, analyses of forecasted long-range transport of wildfire smoke using surface observations and satellite images will be presented. Lessons learned, model weaknesses, and potential improvements will also be reviewed in this presentation.