Abstract for submission to the 8th International Workshop on Air Quality Forecasting Research -- Jan. 10-12 2017, Toronto Canada
Theme 4: Interactions between Meteorology and Air Quality Prediction
Title: Ozone assimilation and its impact on temperature forecasting
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The development of coupled Chemical Data Assimilation systems for UV index forecasting applications provides an opportunity to evaluate the benefit of ozone assimilation for improving Numerical Weather Prediction (NWP). Results from ozone interactive experiments using the ECCC GEM NWP model show indeed that the implementation of prognostic ozone for the computation of radiative transfer processes has a significant impact on the temperature distribution throughout the stratosphere and upper troposphere regions. The radiative impact of ozone assimilation is particularly significant in the tropopause region where ozone heating in infrared bands is important and species lifetime is relatively long. Results show that the radiative budget in this area is determined by numerous processes including water vapour cooling that need to be assessed for the operational use of chemically coupled systems. The presentation will give an overview of various issues associated with the incorporation of the ozone radiative feedback in global NWP systems.