# PROGNOS; A new MSC initiative to renew the operational statistical post-processing infrastructure

A. Teakles[1*], J. Baik[2], J. Montpetit, S. Antonopoulos, C. Saad, N. Saran

[1]Meteorological Service of Canada, Environment and Climate Change Canada (ECCC), Dartmouth, Nova Scotia, Canada
[2]Meteorological Service of Canada, ECCC, Vancouver, British Columbia, Canada
[3]Meteorological Service of Canada, ECCC, Montreal, Quebec, Canada

An experimental infrastructure for the statistical post-processing of operational forecasts was applied to support researchers and meteorologists with air quality forecasts during the Toronto 2015 PanAm and ParaPanAm Games. A new Meteorological Service of Canada initiative, named PROGNOS, builds upon this work to extend the capacity of the existing UMOS system for operational post-processing. PROGNOS aims to provide a more versatile, innovative post-processing system. This project has been done in collaboration with the Weather Elements section (CMDW) of the Prediction Development Division (CMDD) at the Canadian Meteorological Centre (CMC).

The system implements an open-source modular design and has extensible statistical modeling capabilities. In development, it currently issues real-time experimental air quality forecasts for cities across Canada and will soon be applied to meteorological fields. Several statistical modeling approaches have been explored with the new modeling environment including linear, random forest, and Kalman filter prototypes for air quality forecasts. Batch updates of the statistical models occur weekly using parallel processing on a cluster computing environment. More computationally efficient, yet less flexible, online updating methods are also viable but are not fully implemented to date.

The presentation overviews the PROGNOS project, its infrastructure renewal efforts, and provides examples of the diagnostic and forecast capabilities of the current system.

*Corresponding Author: Andrew Teakles (e-mail: Andrew.Teakles@canada.ca)

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