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Developing operational uses of the Canadian ensemble prediction system

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The Canadian Ensemble Prediction System (CEPS) has been running operationally at the Canadian Meteorological Centre (CMC) since February 1996, and its operational usage is increasing. It is recognized that it is becoming important to include an assessment of the forecast uncertainty as part of the forecasts. This assessment will come from our CEPS. It is acknowledged that it will take some effort to explain this concept of forecast uncertainty to clients. The first step is to start with operational forecasters. To that effect, a two-day workshop was presented across the Meteorological Service Canada (MSC) in 2007. The idea was to introduce the basic concepts of ensemble forecasting. Forecasters are now in a better position to incorporate information from the CEPS in their forecasts using currently available tools. They will also be able to help defining what additional tools and CEPS-based products are needed.

This presentation will describe some of these operational tools and products already available at large and some upcoming tools. We also have internal products such as probability density function (PDF) for temperature forecasts based on the Bayesian Model Averaging. Examples will be shown.

Furthermore, the MSC and the National Weather Service (NWS) of the United States exchange data in the North American Ensemble Forecast System (NAEFS) framework since 2005. Different joint products have been developed, including a week 2 temperature anomaly forecast.

All the products described so far are designed to help forecasters in their decision making processes. We also want to have some automatic forecasts generated from the

CEPS. To that effect, we are developing a prototype which will feed outputs from the CEPS to an automatic text generator for public type forecasts. The prototype will determine the most likely scenario based on probability of precipitation (POP) associated with each member. The different forecast parameters (temperature, cloud cover, wind, precipitation types) will be produced using only members associated with the retained scenario. At a later stage, it will be possible to generate all CEPS-based products from the NAEFS grand ensemble.