



## **Verification of the Canadian GDPS-YY25 (Global Deterministic Prediction System) using bootstrapping procedure**

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The bootstrap method, introduced by Bradley Efron (1979) is a very general resampling procedure for estimating the distributions of verification statistics. Scientists have become more aware of the fact that data dependency plays a crucial role in test statistic limiting distributions, a role which had hitherto been ignored to a large extent. Unfortunately, meteorological data is spatially and temporally correlated which forces the use of bootstrapping in blocks to account for the dependence structure of neighbouring observations.

This poster will present an application of the latest version of a verification package of surface weather variables developed at the Environment Canada's Meteorological Research Division. The procedure calculates confidence intervals by using a bootstrapping technique based on resampling with replacement over 3-day blocks. The width of the confidence interval provides an estimate of the uncertainty inherent in the process of population sampling. Verified variables are temperature, dew point temperature, wind, cloud amount and precipitation. One of the goals of this system is to evaluate the improvement of a new numerical model compared to the current operational model running at the Canadian Meteorological Centre. The error displays a clear diurnal signal, highlighting the difficulty of models to capture this essential feature of the atmospheric boundary layer.