



## **Comparison of two different lateral boundary and initial condition perturbation strategies for regional ensemble prediction systems**

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Regional ensemble prediction systems (REPSs) are often based on short-term limited-area model integrations. The quality of these ensemble of integrations is sensitive to initial condition perturbations, as well as to the lateral boundary perturbation strategy. This work compares two different approaches for regional ensemble predictions at model resolution 30 km over the North American continent. A REPS based on perturbing the initial and lateral boundary conditions with targeted moist singular vectors (TMSVs) is compared to a system for which the initial and lateral boundary conditions are provided by the operational global EPS at the Canadian Meteorological Centre. This global EPS is initialized from an ensemble Kalman filter (EnKF). The TMSV approach tends to generate very localized perturbations over supposedly sensitive regions, whereas the EnKF-based perturbations are more homogeneously distributed in space.

A variety of probabilistic scores are used to evaluate the respective qualities/drawbacks of these two systems for 48 hour forecasts in winter and summer.