



## **A 4D-Ensemble-Variational System for Data Assimilation and Ensemble Initialization**

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The Met Office has been developing a four-dimensional ensemble variational (4DEnVar) data assimilation system over the past four years. The 4DEnVar system is intended both as data assimilation system in its own right and also an improved means of initializing the Met Office Global and Regional Ensemble Prediction System (MOGREPS). The global MOGREPS ensemble has been initialized by running an ensemble of 4DEnVars (En-4DEnVar). The scalability and maintainability of ensemble data assimilation methods make them increasingly attractive, and 4DEnVar may be adopted in the context of the Met Office's LFRic project to redevelop the technical infrastructure to enable its Unified Model (MetUM) to be run efficiently on massively parallel supercomputers. This presentation will report on the results of the 4DEnVar development project, including experiments that have been run using ensemble sizes of up to 200 members.