2.009 A large ensemble based data assimilation experiment with a global aerosol transport model.

Presenting Author:

KEIICHI KONDO, Meteorological Research Institute, Atmospheric Environment and Applied Meteorology Research Department, Tsukuba, Ibaraki, Japan, keiichi.kondo@mri-jma.go.jp

Co-Authors:

Taichu Y. Tanaka, Meteorological Research Institute, Atmospheric Environment and Applied Meteorology Research Department, Tsukuba, Ibaraki, Japan

Tsuyoshi T. Sekiyama, Meteorological Research Institute, Atmospheric Environment and Applied Meteorology Research Department, Tsukuba, Ibaraki, Japan

Keiya Yumimoto, Research Institute for Applied Mechanics, Kyushu University, Kasuga, Fukuoka, Japan

Takashi Maki, Meteorological Research Institute, Atmospheric Environment and Applied Meteorology Research Department, Tsukuba, Ibaraki, Japan

Abstract:

Data assimilation methods are applied to various researches not only for atmospheric models but also for aerosol transport models to estimate more accurate analysis. In the ensemble based data assimilation methods, the background error covariance is estimated from ensemble forecasts. Sampling errors due to a limited ensemble size influence to the analysis accuracy, and covariance localization techniques are generally applied to remove the sampling errors. Although the covariance localization plays an essential role in the ensemble based filters, the covariance localization may remove important information between distant grid points or between different variables. Therefore, in this study, we apply the local ensemble transform Kalman filter (LETKF) known as one of ensemble based filters to a global aerosol transport model developed in Meteorological Research Institute and investigate the structure of covariance by increasing the ensemble size with 10 petaflops supercomputer named as K computer. This presentation will include the most recent results up to the time of the symposium.