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Kayo Ide* (ide@umd.edu), Department of Atmospheric and Oceanic Science, College Park, MD 20742. *Fitness of the ensemble approach in ensemble-var data assimilation system.*

In ensemble-var data assimilation, ensemble is used in the two ways. One is to provide the dynamically-estimated prior (background) error covariance information for the analysis process. The other is to propagate the posterior (analysis) uncertainty information during the model forecast. While both are critical to the performance of ensemble data assimilation system, quite often the emphasis is placed on more on the former. This talk will focus on the latter. We propose a practical procedure to evaluate the fitness of the ensemble approach in place for the approximation to the tangent linear and adjoint model. We also present a simple diagnostics tool to evaluate its spread in the relative sense with respect to the observation error covariance and the necessity of the inflation. We apply them to the current NOAA operational hybrid 4D-EnVar global data assimilation system and discuss the applicability and fitness of the ensemble approach to the hybrid system. (Received September 26, 2018)