

A framework for investigating : "How large should an ensemble be?"

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The question "How large should an ensemble be?" is one of the most recurrent questions of modern medium range forecasting. A framework is presented within which this question can be meaningfully addressed. The answer to this question is shown to vary not only with the aims of the forecast, but also with the lead-time of interest, the realism of the model (specifically, the degree of dynamical consistency between the model(s) and the system generating the target verifications), the data assimilation scheme which generates the initial conditions of the ensemble members, the noise-level in the observations and the size of the forecast-verification archive, amongst other things. In short, the appropriate size for an ensemble will depend on the details