# Comparing error reduction in interactive and non-interactive ensemble approaches

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Recently, methods for model fusion by dynamically combining model components in an interactive ensemble have been proposed. In these proposals, fusion parameters have to be learned from data. However, in studies with low dimensional dynamical sytems, promissing results have been reported even when fusion parameters are taken to be uniform. Ensemble methods in general have a two-fold advantage over single run methods.
The first is that that they give information about uncertainty about
model outcomes in the presence of model error. The second is that by averaging model outcomes better predictions may be obtained due to cancelation of independent errors in the model outcomes.
One could view interactive ensembles with uniform fusion parameters as a dynamical model averaging method. The question then arises whether there is an advantage in such an dynamical approach compared to the more straightforward a posteriori averaging in a conventional uncoupled ensemble of models. In this paper we address this question in the context of estimating attractor statistics in low dimenensional chaotic systems using ensembles of imperfect models.