



HOW GOOD IS AN ENSEMBLE AT CAPTURING TRUTH?

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Ensemble forecasting is used to account for uncertainties of initial conditions and model error. Ensemble forecasting is also seen as a way of obtaining probabilistic forecasts. The question we address is how good is an ensemble forecast? We propose using the probability that the bounding box of an ensemble *\emph{captures}* “truth” as a minimal property of a good ensemble. We see this as an essential first step towards obtaining probability forecasts. This simple measure allows us to address some basic questions, like, what the minimal size of an ensemble should be. Bounding boxes have a number of useful properties that complement commonly used techniques like *\emph{rank histograms}*, indeed bounding boxes can be viewed as a simple generalization of rank histograms to multivariate data. We illustrate the use of bounding boxes by demonstrating that when forecasting with imperfect models, stochastic forecast ensembles provide better forecasts.