Professor Lenny Smith: Abstract

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**Towards Intuitive Measures for Real-world Verification of Ensemble
Forecasts (Or: How Much Does a Hi-Resolution Model Run Add to an Ensemble)**

On the assumption that the ultimate goal of weather forecasting is to forecast the weather, an old suggestion (I.J. Good, 1952) for the evaluation of probabilistic forecasts is interpreted in a modern guise (effective interest rates) and applied to questions of theoretical, empirical and industrial interest. How do we compare the information content of a singleton ensemble (say, one hi-res model run) with that of a larger ensemble of lower resolution model runs? Can we demonstrate that combining these two ensembles together has probabilistic skill against climatology at a lead time of 5 days? of 10? Does the weight assigned to the hi-res run at larger lead times justify its greater cost per realization? Does the information in current simulation justify forecasting "beyond the second moment"? How does a "Bayesian Update" strategy compare with ad hoc methods which focus on the information inputs currently available to the forecaster? After a brief introduction to the dangers merely evaluating the "ensemble mean", these questions are discussed in the context of the ECMWF forecast system, as evaluated on physical observations. The importance of distinguishing probabilistic forecast distributions from probability forecasts is noted in passing.