

Imaginative Insights or Flights of (Forecast) Fantasy?

Leonard Smith

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Abstract

Embracing the possibility that weather prediction will never provide accountable probabilities frees us to do much more insightful things with the models we have today, things much more relevant and more useful for the consumers of weather information. This discussion will be framed in the context of anticipatory disaster risk reduction and the energy sector; it is trivially generalised to a host of other applications in the insurance sector, agricultural sector, satellite launches and elsewhere.

First we illustrate the value (and need) for easing practitioners' ability to explore bespoke forecast evaluation statistics. The aim here is to make it easier to judge the strengths and weaknesses of a forecast for particular targets at a particular (reference class of) locations; this will significantly aid those tasked with deciding whether today's best available forecast system is adequate for their purpose. It is useful to keep in mind the value of getting even the best available forecast off the table when it does not inform decision of the day. Second, letting go of the drive for "fantastic objects" (for example probability forecasts, useable as such) frees physical scientists to reorient resource allocation toward providing more valuable forecast information. Examples from the Just Enough Decisive Information (JEDI) framework, including the use of sculpted ensembles, illustrate why this approach is attractive to the consumers of forecasts and conceivable given the resources of an evolving Global Weather Enterprise (GWE). Accepting that the probabilities issued will never reflect the true probability of future conditions can significantly increase the value of our forecasts and the speed with which our understanding of the Earth System increases. While physical scientists may imagine things beyond the limits of mathematical possibility, we will soon see more forecast products for the heavens and the earth than are dreamt of in our philosophy.