

Should Forecasters Aim for a Collection of Good Models or “One model to rule them all”?

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Abstract

Given significant but finite resources, is it more effective to approach a forecasting task with a collection of good but structurally imperfect models, or to invest time and resources into building one “best available” structurally imperfect model? While answering such questions may require a rather precise notion of the particular forecast task, some general observations can be made. These include conditions in which many good models may be preferable to one “best available” model. Some fairly clear differences between the preferred choice in weather-like tasks and in climate-like tasks are made. Embracing the fact that none of our models is structurally (mathematically) perfect opens the door to many creative ways of using multiple models which make. One of these, second generation cross-pollination in time (CPT2)(Du, H. and Smith, L.A. (2017) ‘Multimodel cross pollination in time’, *Physica D: Nonlinear Phenomena*, Vol. 353-4), will be discussed in some detail in the context of other approaches. The aim of the forecaster is argued to be of critical importance in answering the question in the title.