Scoring Probabilistic Forecasts: The Importance of Being Proper

J. Broecker (1), L. A. Smith (1)

(1) Centre for the Analysis of Time Series, London School of Economics, United Kingdom, (cats@lse.ac.uk)

Questions remain regarding how the skill of operational probabilistic forecasts is most usefully evaluated or compared, even though probability forecasts have been a longstanding aim in meteorological forecasting. The importance of employing proper scores when selecting beween the various measures of forecast skill is stressed. It is demonstrated that only proper scores provide internally consistent evaluations of probability forecasts, justifying the focus on proper scores independently of any attempt to influence the behaviour of a forecaster.

Another property of scores, locality, is discussed. Several scores are examined in this light. Locality also appears to be a desirable property of a score, yet the case for local scores is less compelling than for proper scores. Recently, arguments against the Ignorance score have been put forward, and since the Ignorance is effectively the only proper, local score for probability forecasts of a continuous variable, this would even be a case against local scores. It is discussed why the arguments against the Ignorance are unconvincing, but it would still be interesting to identify and investigate more compelling reasons for using nonlocal scores for continuous variables. It is also noted that operational needs of weather forecasts suggest that the current concept of a score may be too narrow; a possible generalisation is motivated and discussed in the context of propriety and locality.

J BrÃűcker, LA Smith (2006) Scoring Probabilistic Forecasts: On the Importance of Being Proper. Weather and Forecasting (in press). Preprint: www.lse.ac.uk/collections/cats/papersPDFs/DRAFT_Scoring_beingproper_2006.pdf