



Distinguishing between skill and value in hurricane forecasting

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Significant improvements in hurricane forecasts are sometimes said to be of little value, as the time required to establish the skill of these improvements would be decades or more. It is argued that this mistaken view comes from a confusion of skill with value, often coupled with the use of naïve statistical tests. When making only one forecast per year, it may well take a substantial length of time to establish statistical confidence in the skill of a given forecast scheme. While, of course, the degree of statistical uncertainty increases with decrease in sample size (time duration) there is a fundamental difference between the skill of a forecast and its value. Hurricane numbers appear to reflect slowly changing hydro-meteorological conditions (e.g. the Atlantic multidecadal oscillation) and the evaluation of both skill and value is complicated by long timescales. It is argued that these factors do not compel a risk tolerant decision maker to wait decades until skill is “proven”. The case of a risk neutral decision maker is discussed. Forecasts may well have statistical skill without adding any value for decision-makers. At the same time, imperfect forecast systems can possess non-trivial value long before one might establish that their skill was statistically significant. Relationships between forecast skill and value given imperfect models and the statistical uncertainty in both are also discussed.