Geophysical Research Abstracts
Vol. 15, EGU2013-1498, 2013
EGU General Assembly 2013

Making and Evaluating Forecasts

Tilmann Gneiting
Institute for Applied Mathematics, Heidelberg University, Heidelberg, Germany (t.gneiting@uni-heidelberg.de)

The future being uncertain, forecasts ought to be probabilistic in nature, taking the form of probability distributions over future quantities or events. Accordingly, a transdisciplinary transition from deterministic forecasts to probabilistic forecasts is well under way. I will present a rigorous, yet usefully applicable mathematical framework for the generation and evaluation of both deterministic and probabilistic forecasts that builds on Murphy and Winkler's joint distribution approach. In a nutshell, we want probabilistic forecasts to be as sharp as possible, subject to them being calibrated. Here, calibration expresses the general idea that, conditional on the forecasts, the realizing observations ought to behave like random draws from the predictive probability distributions. This is a property that can be checked empirically, using tools such as the probability integral transform (PIT), proper scoring rules, and consistent scoring functions, both in univariate and multivariate settings, with close links to decision theory and information theory.