

Interactive comment on “Ensemble forecasting with a stochastic convective parametrization based on equilibrium statistics” by P. Groenemeijer and G. C. Craig

P. Groenemeijer and G. C. Craig

pieter.groenemeijer@gmail.com

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Author comment to Anonymous referee #2.

We are sorry that the referee does not find the article interesting in its present form. We have presented this material at various conferences and workshops, where many people indicated that they find the work of great interest. Referee 1 apparently has the same opinion.

The key result, that in our opinion makes the paper worthy of publication, is that a physically-based representation of convection, without any tuning of the amplitude of the fluctuations, has significant impact on the spread of ensemble forecasts. In the

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common approach to stochastic parameterisation, the amplitude of the disturbances is adjusted after implementation in the model to produce the desired variability, and may not be directly related to the physics of the processes being parameterised. In the Plant-Craig scheme, the convective variability is determined mainly by a single parameter: the mean mass flux for an individual cloud. This parameter is set based on idealised simulations using a high resolution model, and the convection scheme is left to do what it will in the forecasts. The fact that the resulting ensemble forecasts do show significant variability is a validation of the hypothesis that convection is a substantial source of uncertainty in forecasting of precipitation, and that the approach taken here is a potentially useful way of quantifying it.

We do recognize the referee's point that a verification against data is important, but this involves obtaining appropriate data and verification software, and constitutes a project in itself: a project that George Craig's group has started working on.

Pieter Groenemeijer and George Craig

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 30457, 2011.