

Response to reviewer Giuliano di Baldassarree

We thank Giuliano for his outstanding review, which added significantly to the discussion of the paper.

Comments 1 & 2 will be addressed and examples will be made clearer in a revision.

Giuliano is right that increases in model complexity will generally lead to a decreased bias in calibration mode and increased uncertainty (probably independent from the definition chosen – see response to other review). This may not be the case in forecasting (where higher complexity will also lead often to an increased bias). Giuliano raises the interesting philosophical question of what model ‘quality’ might mean and whether the atmospheric modelling community has respected the principle of parsimony so famously expounded by Albert Einstein. That is a very important discussion, but it goes far beyond the focus of this opinion paper. In our paper we are using the term ‘quality’ to refer to meteorological process representation and spatial resolution, though we also recognize that ‘quality’, like ‘persistence’, is a slightly slippery term that can mean different things in different contexts. We will clarify these terms in the revised paper.

The point raised in paragraph 3 whether it would be better to add (in)consistency to the total uncertainty is discussed in the response to the 1st reviewer (Uwe Ehret).

Text on page 1229 (commented on by both reviewers) will be changed to:

"NWP models were more consistent 20–30 years ago because the poverty of their representations of atmospheric processes and their low spatio-temporal resolutions made them less sensitive to variance in the specification of initial conditions. Thus reducing the quality of the NWP model with respect to variability, for example by reducing the resolution or putting in diffusion would improve consistency, but reduce overall predictive skill." (Simmons et al., 1995)

Simmons, A.J., R. Mureau and T. Petroliajgis 1995: Error growth and predictability estimates for the ECMWF forecasting system. *Quart. J. Roy. Meteor. Soc.*, 121, 1739–1771

We agree with all technical corrections and will address them in a revised document