

## ***Interactive comment on* “Sensitivity of forecast skill to the parameterisation of moist convection in a limited-area ensemble forecast system” by Matteo Vasconi et al.**

### **Anonymous Referee #1**

Received and published: 27 March 2018

The manuscript by Vasconi et al. is a short and useful contribution on the skill of limited area ensembles in predicting summertime precipitation and its dependence on the formulation of subgrid convective transport.

I only have some minor comments and corrections:

Title: change "forecast skill" in "precipitation forecast skill"

-Abstract line 3: I suggest to change "Bechtold scheme,.. in ECMWF model" in something like "an evolved" or "revised version of the Tiedtke scheme, referred to as Bechtold scheme as implemented in the ECMWF global model"

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-the appropriate references are Bechtold et al. (2008, QJRMS) and Bechtold et al. (2014, JAS). Please delete reference to Bechtold et al. (2001) as this article was on a completely different scheme

-the main shortcoming of the "Bechtold" scheme in COSMO is as you rightly discuss the overestimation of drizzle over land - while it should in principle provide a much improved climatology overall including 2m T. Maybe it is worthwhile to add a Figure with a Pdf of rainfall, from Tiedtke, Bechtold and Obs. Is there anything to say on other surface variables, maybe in one additional sentence or so ?

-Page 2 , line 16: "at calculating" -> "calculate"

-Page 2, line26: please remove Bechtold et al., 2001 and replace by Bechtold et al. 2008

-Page 2, line 34: "closure assumptions."->"closure assumptions and the entrainment of environmental air."

-Page 3, line 6: do not make paragraph

-Page 3, line 6: "out is"->"out"

-Page 3, line9:"parameterisation"->"parameterisations"

-Page 3, line 6: "mode, by"->"mode by"

-Page 3, line 11: "as regards"->"in" or "regarding"

-Page 3, line 15: "Tiedke"-."Tiedtke"

-Page 3, line 15: "estimate"->"estimates"

-Page 3, lines15-18: Please add a reference here on the usefulness on multi model or physics formulations

-page 4, line 19 and ff; "consequence"->"consequence"

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-page 4, line 24: 2forecast"->"forecasts"

-page 4, line 27: delete "one"

-page 4, line 30: rewrite as "... for the 15 mm/6-h threshold, while for the highest thresholds (25, 50 mm/6-h), .."

-page 6, line 6: "the the"->"the"

-page 6, line 9: "seems to be .... ", rewrite as ".. are "mixed" appears to be appropriate to retain the advantages in both the lower and higher precipitation classes and/or shorter and longer forecast ranges."

-page 6, line 10: delete "It is worth pointing out" and start with "The implementation .."

-page 6, line 14: suggested rewrite is "identical, as should be its climatology,in order not to introduce systematic errors in the ensemble distribution"

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Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2018-21>, 2018.

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