

Interactive comment on “Improving weather and climate predictions by training of supermodels” by Francine Schevenhoven et al.

Anonymous Referee #1

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This is a fine manuscript which needs only a few minor revisions before publication. The authors test two different methods of producing a weighted supermodel using versions of the SPEEDY atmospheric model with differing parametric settings in a coupled system (SPEEDO). The 'truth' model to which the supermodel is trained is also a version of SPEEDO with different parameter setting. The two different training methods used are Cross Pollination in Time and a variant of synchronization both of which produce weighted supermodels with more skill than the models which are combined. The manuscript details in a comprehensive manner the experiments run in both forecast and climate simulation mode along with the strengths and weaknesses of the experimental design. The discussion of weaknesses leads naturally to a discussion of next step experiments and open questions regarding the ultimate success of supermodeling

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when trained to nature.

Suggested Minor Edits pg 2 line 1 replace 'hands' with 'hand' pg 2 line 25 replace 'evidences' with 'demonstrates' pg 3 line 29 replace 'complex' with 'complexity' pg 3 line 31 replace 'original' with 'new' or 'novel' pg 7 line 2 replace 'noisy' with 'noise' pg 22 line 4 replace 'become' with 'becoming' pg 22 line 5 replace 'precipitate' with 'precipitating' and delete 'achieve to' pg 25 line 4 replace 'linear' with 'linearly' pg 25 line 13 replace 'Largest' with 'The largest' pg 25 Should 'sampling error' be replaced by 'natural variability' ? pg 28 line 29 replace 'appear not linear' with 'do not appear linearly' pg 29 line 20 replace 'noisy' with 'noise'

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2019-32>, 2019.

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