Nonlin. Processes Geophys. Discuss.,
https://doi.org/10.5194/npg-2019-49-RC2, 2019

Nonlinear Processes in Geophysics
Discussions
Open Access
EGU

Interactive comment on "Remember the past: A comparison of time-adaptive training schemes for non-homogeneous regression" *by* Moritz N. Lang et al.

Anonymous Referee #2

Received and published: 25 October 2019

This work investigates the effect of different types of training periods on predictive performance of postprocessing models at different types of locations (plain, alpine foreland, alpine). The presentation is concise, the aims of the work and the used methods are presented in a clear way. Especially the graphical illustration of the different types of training periods and of the situations in the considered data situations is very helpful. This comparative study is highly relevant for applications. The approaches for constructing training data presented here are all discussed in individual papers and applied to quite different situations, even based on different types of postprocessing models. Therefore, it is quite interesting to have a unified study of the effects of these training periods under the same conditions.

Printer-friendly version

Discussion paper

However, some other settings might be included in the study, and some more details in the already presented results could be interesting, see below.

General comment:

The presented study is only based on NR for the Gaussian case. It would be useful to include at least one other (NR) scenario with quite different behaviour to see whether in a case like precipitation or wind (gust) speed the results concerning the performance of the different training data sets is the same. Both precipitation and wind speed are more heavy tailed than temperature, and there can be much more localized phenomenons on maybe sub-model-grid scales. Investigation of a non-Gaussian scenario is therefore recommended.

Specific comments:

Figure 5, possible extensions: The boxplots are aggregations of all scores over the 5 stations and over all forecast horizons. It would be interesting to see these boxplots with values aggregated over the stations but for a specific forecast horizon only, e.g. exemplarily for 12h and 72h ahead. It could be interesting to see whether different forecast horizons affect the predictive performance in different ways – in conjunction with the situations (model change included or not) in datasets A, B, C.

It seems that both, SW plus and the smooth model tend to improve the forecast skill, in some scenarios in Figure 5 there is not so much difference between the two. On the contrary, the smooth model exhibits much more variation in the skill. Therefore it might be interesting to include a table or figure regarding the computation time of the different approaches. In case e.g. that the smooth model takes much more computation time than the SW and SW plus approach, then this could maybe lead to a recommendation/rule of thumb for practical use, like the more sophisticated smooth model does not provide so much more improvement than the SW plus, but has much higher computation time, so for practical use the SW plus suffices.

In that regard, the question could be addressed whether these two models indeed do not significantly differ. You might consider adding p-values of some statistical (student-t, wilcoxon, or diebold mariano) test comparing whether the average performance is significantly different or not

Technical comments:

Section 2.2.2.: You introduce the regularized sliding window approach of Scheuerer (2014). You only mention that the approach yielded better results in case of precipitation. But you do not really mention that another distribution was used in Scheuerer (2014). As your case study is only based on the normal distribution, it should be explicitly stated that the results in Scheuerer (2014) are for a non-Gaussian distribution.

Figure 3 and 4: The two validation years in data set A are both plotted in each of the panels representing a specific sliding window approach, both as dashed lines. It is really difficult to distinguish the lines belonging to the different years. Maybe you could try two different line types, and/or line thicknesses, so that one can distinguish the trajectories of the two years more easily.

Figure 5: The flat bar representing the "boxplot" for the standard sliding window approach could removed from the figure. As the standard SW approach is the reference model for the skill scores, this flat boxplot does not really provide any additional information, but it confuses at first sight

---

Interactive comment on Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2019-49, 2019.

Printer-friendly version

Discussion paper