

**Using Genetic Algorithms to Optimize the Analogue Method for  
Precipitation Prediction in the Swiss Alps**

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Minor comments:

Line 29-30	"by using the natural local behaviour in response to synoptic-scale influences" could be rephrased better.
Line 32-33	"eventually for the different traces of an ensemble forecast" is not very clear.
Line 47-48	"realistic precipitation patterns for a region, provided that the analogue dates are the same". I agree but only if the same set of analogues is kept for every forecast lead time. If the AM is optimized at every forecast lead time, the temporal coherence between successive lead times is lost.
Sect 2.1., title	I do not think that the title "Case study description" is appropriate. "Description of study area" would be more appropriate.
Line 124	account -> accounting
Line 135-140	The way you separate the calibration and validation periods is intelligently done.
Line 160	showed
Line 204	"are not as well-predicted by NWP". Written in this way it seems that they are also not predicted.
Line 254	Point d) What do you mean by "initial analogue numbers"? It would be better to use the terminology "ensemble size" or "number of analogues"
Line 241	"reassessed by systematic increments" is not very clear.
Line 369	"analogue number" -> "number of analogues" or "ensemble size" and throughout the paper.
Figure 3	The caption should contain more information, e.g. the differences between the subplots. The legend containing the description of the various lines/dashes should be made larger. It would be more informative to write within the various figure panels the region, e.g. 1 - Swiss Chablais.
Line 379	"was compared on thin and longitudinally extended spatial windows" is not very clear. Did you intend "was characterized by"?
Line 413	crossing -> switching
Line 457	"has never been identified before" is not clear.
Line 463	optimal number of analogues
Line 466	number of analogues
Line 474	"to higher levels" ?

Line 513	"submitted" --> "characterized by"?
Line 545	number of analogues
Line 569	"to approach" -> "to find"
Line 571	"thus far" -> "so far"
Line 595	pressure levels
Line 596-597	"choosing another level may have reduced the consequences on the performance"
Line 602	solutions identified in different regions
Line 627	It would be interesting to briefly describe which parallelization paradigm you employed and an estimation of the computational time needed.
Line 642-644	The extrapolation of extreme values not available in the archive using a gamma fit is very interesting. I am wondering whether it is also possible to do it for spatially distributed fields, e.g. radar rainfall fields.
Conclusion	I think it would be a good idea to start the conclusion with a couple of sentences summarizing the general framework of the study before explaining the detailed results.
Line 448	pressure levels, temporal and spatial windows.
Line 649	"There were clear trends" is not very clear.
Caption, figure 10	"increasing pressure and time". The legend for time is missing. Results are aggregated for the ten subregions?
Caption, table 5	Replace "atmospheric circulation" with "pressure levels" to be consistent with Table 3