Review of manuscript :
The analogue model for precipitation forecasting : finding better analog situations at a sub-daily time step.
By Horton, P. and coll.

General comment
The manuscript has been restructured, simplified and largely improved. The manuscript is well organized, and the interest of the MTW approach clearly highlighted and discussed. Some points have for me still to be clarified/precised. See minor comments below.
With these clarifications/corrections, the manuscript is for me of the quality required to be accepted for publication in HESS.

Detailed comments
P. 3 ln 3. You mention "AMs can also be combined with other methods (e.g. Chardon et al., 2014)." This I not what I have retained from the paper you mention. You perhaps refer to the following manuscript, currently in review in HESS : Chardon, J., Hingray, B., and Favre, A.-C.: An adaptive two-stage analog/regression model for probabilistic prediction of local precipitation in France, Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-62, in review, 2017.

This comment applies also for p10. Ln 23 - Another possible approach is to combine AMs with other methods (e.g. Chardon et al., 2014). > This is likely to be not the good ref. to be mentioned there

P8 – first paragraph : there are some repetitions > please reduce / simplify

P9 ln9 : "*The prediction skill for the CP was almost always improved further by reducing the time step of the MTW, but not of the same magnitude*" > do you compare here the results obtained for the two different reanalyses (MERRA / ERA20C) or for different MTW windows (for a given reanalysis) ?

P9 ln22 : you mention "After the introduction of the MTW, the performance score was generally further improved with reduced CRPS for days with higher precipitation than for non-rainy days and small precipitation values" > this results seems to be expected as the CRPS is expected to have greater values when the precipitation amount to be predicted is higher (even if the relative sharpness of the prediction (which roughly corresponds the standard deviation of the distribution divided by its mean) is the same). A comment would be welcome here and likely also in section 4.1.

p10 – ln 30 > rephrase (not clear) : *These higher numbers of analogues were objectively chosen by using the calibration procedure (Sect. 2.3) in order to increase the prediction skill of the methods.*

P11. Ln 23 > rephrase (not clear) : *With the introduction of the MTW, the performance loss related to an eventual reduction of the archive length to meet the length of the sub-daily precipitation archive was indeed compensated.*

P11 ln 28 :: clarify what you mean with : "*Moreover, rather strong serial correlations between successive sub-daily circulation patterns are expected*". I guess you want to say that 2 consecutive 3hourly time steps present in some way redundant information.

P12 – ln 3>7 (last § of section 4.3) *"One can question the interest of using moving daily totals when, for example, 6-h precipitation series can be predicted instead"* I do not see the interest of this paragraph. For me, this is out of scope of the work and could be removed. You focus on the prediction of daily totals, not on subdaily ones. If this paragraph has to be kept, clarify what you mean with : "However, the 6-h time series generated by the AM might not accurately represent the intra-daily precipitation distribution"or variability » > do you refer to the difficulty to produce relevant "multiple 6h00" sequences (e;g. daily sequences with relevant temporal subdaily profiles) ? If yes, this question applies also for predictions produced at a daily time step (i.e. what is the temporal relevance of sequences of 3 days when generated with a daily model?) Could you please clarify this point ?

I do not understand also the last sentence of this paragraph. *"Finally, when using a reconstructed precipitation archive, the errors in intra-daily precipitation distributions have a smaller impact on 24-h totals than on 6-h totals."* Please Clarify

P12. L10 : please clarify what is the time period you consider for daily data in this section.

P12. L 11 : I suggest to change the end of the paragraph "*Therefore, the idea is to reconstruct longer archives of …* "for "One possible approach to get such long time series is to reconstruct moving 24-h totals from existing standard daily precipitation series. For this purpose, disaggregation techniques can be used. In this study, we consider the interest of such reconstruction approach using in turn two simple disaggregation methods".

P12. Ln 23 : I do not understand this sentence : Please rephrase / clarify : "*Time lapses from -12 h to +12 h between both series were introduced to consider the significant distance separating the weather stations and the reanalysis grid point.*

P12. Ln 24 : "*The best proxy variable, precipitable water, was identified through correlation analyses on non-zero values with the 6-h precipitation time series* »
On which period did you do the correlation analysis ?
To which variable refer the "non-zero values" (precipitation ? moisture ?) ?

P12. Ln 27 "*A slight improvement was obtained for the second method*" > Do you mean improvement from the constant "disaggregation" method ? or from the smaller period archive configuration ? Please clarify.

P13 – ln 27 : the logic of this paragraph and of the next one is not optimal.
For me, the critical issue you want to highlight here is the size of the pool of analogs candidate which has to be the largest as possible. Hence, MTW can increase this size (inflation). Another possibility relies on long archives of daily precipitation but requires estimates of sub-daily structures. > Here you can introduce the issue of the quality of the chronology of precipitation at a high resolution (e. 3hourly) time step.

As a perspective, you could also say that another (simpler) strategy would be to use a database relying on two different data sources :
- MTW for the period with 3hourly data (30yrs * 8 equivalent data amount)
- Classical fixed window approach for the period with only daily data (1900> 1980 = 80 years of additional daily data)

P13 – ln 32 : I do not really understand what you suggest as a perspective in the following paragraph.

"The precipitation data archives of high temporal resolution have increased over time. Other possible sources of such archives is the establishment of precipitation reanalysis at a regional scale in addition to the use of reanalysis-driven regional climate models or limited area models over a long period. Even though outputs from these models might be biased or not accurate enough, information regarding the timing of the precipitation events could be useful in disaggregating the station time series."

> I understand the potential interest of precipitation estimates from reanalysis-driven climate models over a long period. But, what do you mean with *"establishment of precipitation reanalysis at a regional scale"* and what is the difference / interest when compared to *"reanalysis-driven regional climate models or limited area models over a long period"*. (why do you use the term "in addition") – what is typically the long period you have in mind ? Do you suggest to use these simulated precipitation data as a proxy to disaggregate daily precipitation observations ? Please Clarify.

P14 – ln 4 > please clarify this paragraph.
I do not understand your statement : *"this [selection] improvement has the potential for application to long meteorological archives."*
Is the main idea to say that the MTW can be used to have a better diagnosis of the current / future weather situation even if no high resolution and high quality precipitation data are available ?
Is the "long archive" issue a key issue here ?
Could you explain why we do not need such quantitative values of precipitation for these analog dates ? (do you consider that you may have other observed values/events in some other historical database (flood events, other hydrometeorological proxies) that allow you to inform on the likely severity of the current weather situation to predict ?)

You finally mention : "Finally, some other predictands might not need sub-daily total values but point observations such as hail or extreme wind gusts, which make them easier to use with the MTW." Do you suggest that the "better easiness" relies on the fact that each point observation can be attributed without any disaggregation issue to each of the different MTW window of a given day ? Please clarify or rephrase…