

140 year daily ensemble streamflow reconstructions over 661 catchments in France

This paper by Devers et al presents a valuable dataset of reconstructed streamflow across France for the extended period 1871-2012 using the GR6J model. The results show the integrity of the dataset compared to other available datasets in France, as well as the added value of the HydREM deterministic set. The paper presents a novel approach to uncertainty estimation, and is within the scope of the HESS journal. The paper is well structured, and makes good use of graphics.

Please note that I did not follow the intricacies of the maths in sections 3.5.2 to 3.5.4 so I can't comment on the validity of the approach.

Q1 It is a shame the dataset can't be extended up to the present for consistency and longevity. Is there a current climate dataset that follows on consistently FYRE that could enable this?

Q2 Does fixing the CemaNeige parameters to the median of the "snowy" catchments for the non-snowy catchments make sense? Should the values not be set to something to indicate there is less snow here? Or should the module not be "switched off"?

Q3 Is sampling the observational error randomly a justifiable choice? Would that not affect the variability of the timeseries? Is measurement error not likely to be systematically over and under for periods of time longer than one day? Is there any literature on this?

Q4 you chose 25 associations randomly and then compared them with all 625 for 3 catchments. What tests did you do to show that the differences were not significant. Would bootstrapping not have been a better test?

Q5 looks to me from Fig 2 that you would benefit from breaking $Q < 1$ into more than 1 residual group, but you don't actually use this?

Q6 Fig 8 it doesn't look like the reconstructions follow the multidecadal variations well at all pre 1970. I think more discussion is needed on this.

Q7 Fig 10 is interesting, but can an example with reliable observations be found to better demonstrate the validity of HydRE and HydREM? Here you are stating that HydRE and HydREM are "more realistic", but this is purely subjective based on the available information.

Q8 the reconstructions reviewed here are all using the GR6J model I believe (except GRUN, which is only reviewed in the multi-decadal variability study). Model uncertainty has not really been commented on. A completely unrelated catchment model could produce quite different results. A vast number of studies have shown the large impact of hydrology model uncertainty, which comes in addition to climate input uncertainty, parameter uncertainty and observation uncertainty. This should definitely be discussed in section 5.2 at the very least. Unless this is somewhat accounted for in the error model maths that I did not fully understand...

Grammar and Spelling

There were a lot of typos, grammar mistakes and strange uses of language. Please proof read the article carefully as I won't have spotted them all! Please especially watch your use of "allow to" and "allows to", which is incorrect in most circumstances.

L15 – "allow to better" doesn't read well, please reformulate the sentence

L18 – change "sole observed-based" to "solely observational"

L19 – change "truncate" to "truncated"

L20 – change "variables closely related to" to "closely related variables"

L68 – change "as their represent" to "as they represent"

L111 – change "model" to "models" or "are" to "is"

L114 - change "is here used" to "is used here"

L116 – change "were done" to "was done"

L131 – change "were the ratio" to "where the ratio"

L147 – change "to evaluate properly this uncertainty" to "to evaluate this uncertainty properly"

L152 – extra n in additional

Wulfmeyer (2010) is not in the reference list

L159 – "Tear" should be "Year"

L160 – change "member" to "members"

L166 – change "show" to "shown"

L187 – change "does account" to "accounts". I don't understand this sentence and the next...

L276 – I wouldn't use the word "globally" here

L290 – "applying" typo

Fig 7 – label the y axes.

Fig 8 – change "anomalie" to "anomaly"

L309 – you say KGE Beta for SCOPE hydro is close to 0. Do you mean close to 1?! Worth noting that this is the optimal.

L309 – change "display" to "displays". Add "The" to the start of the next sentence.

L347 – change "allows to grasp" to "represents"

L365 – change "allow to identify" to "shows" (you have the word identifies already again later in the sentence)

L366 – remove "well" in "is also well seen"

L367 – typo in "seen"

L383 – change “does not allow to comput” to “does not allow the computation of”

L384 – change “demonstrate” to “demonstrates”

L427 – change “an” to “a”, change “apply” to “applied”

L430-431 – change “allows to transform” to “allows the transformation of”

L433 – “comforted”??? do you mean “confirmed”?

L434 – remove “here”, and typo in “strong”

L443 – change “that” to “than”

L444 – change “allow to learn more about” to “enable the identification of”

L469 – change “these” to “this”, or “study” to “studies”

L469 and 472 – change “put forward” to “demonstrated”