This is a re-review of « Simultaneous calibration of hydrological models in geographical space » by Bàrdossy et al.

I have read the revised manuscript with interest and I am satisfied with the answers given by the authors to my previous review comments. However I believe there is still a little work needed to iron out the last minor issues identified below. I suggest Minor revision and I think the scope is small enough to limit the final review to the editorial board.

The main issue I have remaining is the estimation of parameter « n ». The authors say its estimation is not in the scope of the paper, however I believe this is a major limitation and must be adressed adequately. The tone of the paper seems to indicate that this is a simple task, but I would prefer if the authors did one of the two following options :

1- Demonstrate that the estimation of « n » is simple on ungauged basins, using actual ungauged basin data; OR
2- Reword their assertions so as to acknowledge that it is a limitation that must be adressed in future work, but that in this particular case it was an easy task.

At least make sure that there are warnings about the use of this parameter, namely the hypothsesis that the « n » parameter is spatially coherent in the study region.

Minor details :

L95; is=are;

L150 : « The HYMOD model (Boyle...) »

L230 : Awkward sentence. I suggest: « Thus parameter n depends on the catchment and parameter vector (theta). »
L264-265 : Basically, the parameter sets display large equifinality?

L279-280 : I think more emphasis should be put on the fact that we must find a way to estimate the real water balance on an ungauged basin at this point. The reader still does not know that the parameter must be estimated on the ungauged basin, which leads to confusion.

L286 : is=are

L295 : well = adequately

L390 :heterogeneous OR non-homogeneous;

L432-436 : Reading this gives a conflicting message. From what I understand, the authors recommend limiting the number of catchments used for common calibration to a select few in the near geographic region. But the sentence: "Thus the parameters obtaine through common calibration can be regarded to describe the common dynamical behavior of many very different

catchments over a large geographical area" gives the impression that the larger the area (and the more calibration catchments), the better.

L-438-446 : This paragraph contains the word very 4 times, please tone down.

L474: matching=match

L476: n-s = n values.

I suggest rewriting lines 476 and 477: "Parameter n is estimated because it controls the water balance and can be estimated at other catchments. The remainder of the parameters (the dynamic ones) are regionally calibrated (all catchments are given the same parameter set). Therefore only n varies between the catchments."

L478 : explain "n remains different after regionalization"

L483 : For this region perhaps, but add a caution for other regions where this might not hold true! For example, mountainous regions in Canada see lots of precipitation (ex 2000mm), whereas 100 km downrange the amount can drop to 400. This high variability might not be appropriate for this method.

L589 : « rather have » = « have rather »

L589 : "on smaller temporal scales (e.g. hourly)."