

To whom it may concern,

Thank you for giving me the opportunity to review your paper.

From my understanding, the main aspect of this paper is “Dynamic Parameter Updating.” The method uses different parameter values over time based on the changing land cover. The parameter values are updated from the same look-up table at each flood event based on the land cover present at the event.

I recommend rejection as I do not believe the methods shown are novel enough to solicit publication in HESS. I believe that comparing Particle Swarm with other algorithms has already been done many times. I recommend going beyond a simple case study to better prove your lookup values are applicable to other urban catchments, or by adding more algorithms to compare against.

I wish you the best of luck moving forward,

Tadd Bindas

Major Comments:

1. Can the figures be added in line with more descriptive captions? This seems minor but can deter readers from wanting to read your content if they cannot find your figures easily. I had to open two tabs when reviewing this, one for figures and one for the text, as I didn't want to lose my spot when reading.
2. Line 282-283: Is there a citation for the referring look-up values?
3. Lines 293-296. Can you better describe the initial values and the process that the Liuxihe model uses to attain them? This would benefit the reader as you refer to these metrics heavily in your paper, say they are, “experience-based,” but don't provide a method to calculate them/reproduce them.
4. Line 377: Is there a citation on why PSO is effective with getting parameters and is “proven effective” when only using one flood event? Given the small amount of flood events used or parameter calibration, there is a chance that parameters are overfit
5. Line 430, 436: Can there be a simpler flood naming convention? Using a long name with little formatting, parameter-20080625-2008, seems complex. Perhaps calling it

Parameter set A, and then have a look-up table that maps your set letter to your dates. Using parameter-20080625-2008-updated could be called Parameter set B.

6. The following comments are for Figure 6:
 - a. For panel (a), what is the adjusting factor?
 - b. For panel (b), what is your objective function? This is not described in the paper.
 - c. For panel (c), it looks like your evaluation metrics (R, NSE, etc) start extremely close to their final values (after evolution 50)
 - d. For panel (d), Can you provide a simulation with initial parameters as well?
Based on the slight changes in metrics over all 50 epochs, my hypothesis is the initial parameters hydrograph would look very similar since your metrics in panel (c) didn't vary much. A suggestion would be to compare the percent error of the initial simulation vs observations and the optimal parameter simulation vs observations. If your routing timing, and flood matching is more stable (closer to 0) after PSO, you can state that your optimal solutions are of a good fit.
 - e. Line 391-394: You stated that because there was good fitting, the PSO algorithm worked. Can you add a quantitative metric/comparison with initial values to better show this?
7. Line 461: Are the initial parameters the ones used in Section 4.1, or the parameters generated from PSO at parameter-20080625-2008?
8. Figure 8: Can this figure be reworked? The text is very small/un-readable in the middle figures, and the precipitation varying with time change is hard to see.
9. For the conclusions, I'm not convinced by Conclusions 3, and 5. There was no experiment outlined for how the PSO algorithm was run, and if the data was overfit or not (only results were shown in Figure 6). Furthermore, the initial lookup table is based on "current experiences," which are not mentioned in this paper.

Minor Comments:

1. Line 163: The number 6 should be written out as a word, six.
2. Figures 2, 4: Is there a better way to highlight the LUC change without having four similar basin plots? I can't really tell the difference between any of the yearly changes.
3. Line 306, 376: You already defined PSO, no need to redefine it.
4. Line 376: There needs to be a space inserted between Optimization and the (
5. Line 376: It's *Particle Swarm*, not Particle Swam. This needs to be corrected in a few places.
6. Line 376: What algorithm/coding package was used for PSO?

7. Line 436: the number 8 should be written out as a word, eight.
8. Line 436: There needs to be a space inserted between events and the (
9. Line 564: spelling error: *physically*