ISSN(O): 2320-5407 | ISSN(P): 3107-4928

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: IJAR-55318

Title: Evaluating the ParFlow-CLM Integrated Model in one Dimension: Revisiting Water and Energy Budgets in the Cultivated Sahel (Wankama, Niger)

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality			x	
Techn. Quality	x			
Clarity		x		
Significance		x		

Reviewer Name: Dr. Hari Prashad Joshi

Detailed Reviewer's Report

Decision: Minor Revision

This study presents a rigorous and well-structured evaluation of the ParFlow-CLM integrated model applied to two Sahelian agro-ecosystems. The manuscript is clearly written, methodologically sound, and makes a valuable contribution to hydrological modeling in semi-arid regions. The comparison with the established SiSPAT model is particularly insightful, and the results convincingly demonstrate ParFlow-CLM's ability to simulate key water and energy fluxes. The calibration approach is robust, and the analysis of model performance is comprehensive.

To further strengthen the manuscript and ensure clarity for readers, the following minor revisions are recommended:

- Calibration Procedure Clarification: Please provide a brief additional explanation or a supplementary note on how the final "optimal" parameter set was derived from the 20 best-performing samples (e.g., simple mean, weighted average). This will enhance methodological transparency and reproducibility.

- Discussion of Deep Soil Moisture Performance: The significant drop in model performance (negative NSE/KGE) for deep soil layers under fallow is noted. Please add a short paragraph in the Discussion (Section 4.2) that speculates on the potential causes, such as limitations in representing deep root uptake or subsoil hydraulic connectivity, to provide a more complete interpretation of this result.

- Enhanced Model Comparison: A concise summary table comparing the core process representations, strengths, and limitations of ParFlow-CLM and SiSPAT would be a valuable addition, helping readers quickly grasp the conceptual and practical differences between the models.

ISSN(O): 2320-5407 | ISSN(P): 3107-4928
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

- Figure Availability: Several figures referenced in the text (e.g., Figures 3, 5, 6, 7) were not included in the submission. Please ensure all cited figures are provided in the final manuscript.

The required revisions are straightforward and focus on clarification and elaboration. The core findings and conclusions of this well-executed study remain valid and impactful.