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Geoscientific Model Development Discussions

Interactive comment on "GSFLOW-GRASS v1.0.0: GIS-enabled hydrologic modeling of coupled groundwater–surface-water systems" *by* G.-H. Crystal Ng et al.

Anonymous Referee #3

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This article presents a user interface for the community hydrologic model GS-Flow using the community GIS package GRASS. This manuscript is well written and clearly presented. The interface is well documented. However, I am having trouble seeing the primary goal or take-home message for the readership of GMD. Is there a science or educational motivation for this work that allows users to do something they can't already do with the existing PRMS / Modflow approach? I like this manuscript and think it's well written but as currently framed, for me, misses this key point and reads much more like a user manual than a scientific article. I think revisions are needed to bring this critical point forward.

minor comments p1. lines 1-6. I think a better firs paragraph can help motivate this work's main takeaway point more clearly.

p1. line 9. GS-flow isn't an integrated model, it is coupled. Integrated models are defined to solve 3D richards' equation and the shallow water equations in an implicit framework to capture these coupled, nonlinear processes. This should be clarified in the revised manuscript.

p3. lines 7-11. Is this platform run in parallel? My understanding is not, nor is GS-flow parallel. I'm confused by this statement.

p3. line 10. I think the comment about triangulated grids providing better water balance is unsubstantiated and perhaps false. Most triangulated formulations are not even locally mass conservative which leads to local water balance error. GS-flow also uses structured grinding, which seems contradictory to these statements.

p3. line 24. again, GS-flow isn't integrated (or "integrated") and I don't know what 'integrated-coupled' even means.

p4. line 26+. This paragraph is short and confusing. Please reword.

p22. lines 7+. These don't strike me as conclusions and read a bit like an advertisement. To my central point, what is the scientific motivation and conclusions reached by this work. Reworking this paragraph would help that substantially.

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