The authors have reasonably addressed my comments. The manuscript can be nearly accepted for publication before the following minor revisions could be made:

1. The authors may wish to refer and briefly discuss the coupling of CFD and DEM in the geomechanics setting for related simulations, e.g.:

\* Zhao, J.D., Shan, T. (2013). Coupled CFD-DEM simulation of fluid-particle interaction in geomechanics. Powder Technology. 239, 248-258. doi: 10.1016/j.powtec.2013.02.003.  
\* Shan, T., Zhao, J.D. (2014). A coupled CFD-DEM analysis of granular flow impacting on water reservoir. Acta Mechanica. 225(8): 2449-2470. doi: 10.1007/s00707-014-1119-z

We appreciate the reviewer's recommendation to discuss the coupling of Computational Fluid Dynamics (CFD) and Discrete Element Method (DEM) in the geomechanics context. This is indeed an interesting and relevant topic in our field. CFD, in combination with DEM, offers unique insights into fluid-particle interactions at the micro-scale, which is valuable for understanding granular behavior. We discuss it in the manuscript and refer to those papers as below:

“In such scenarios, Eulerian methods like FVM/CFD are preferred due to their computational efficiency, particularly when turbulence occurs at fine resolutions. CFD has even been employed in combination with the Discrete Element Method \cite{Zhao1, Shan} to study granular grain - fluid interactions, allowing for the examination of micro-scale behavior and realistic grain morphology. However, the computational demands of Discrete Element Methods can be quite challenging when applied to practical scenarios. Therefore, an ideal approach might involve the integration of CFD with particle-based continuum methods. Additionally, MPM can also be coupled with thermal effects\cite{Zhao2, Zhao3, Pinyol1}, opening up the possibility of capturing hydro-thermal-mechanical coupling.”

2. Line 465: please rephrase "To prevent repetition" - do you mean "To avoid (excessive) repetition".  
For the rephrasing of "To prevent repetition," we edit the manuscript accordingly:

"~~To prevent repition,~~ For all simulations, we ..."

3. In the numerical examples section, it is suggested to explicitly differentiate examples for validation (e.g., the first 4 example) with the rest.

Thank you for this suggestion. We have taken it into consideration and have restructured the numerical examples section to “numerical validation” and “numerical examples” to clearly differentiate between examples used for validation and those for illustration.

4. The following two papers on thermo-mechanical coupling by MPM on granular flow modeling is relevant to the study and should be properly referred:

 \* Zhao S.W., Zhao J.D., Liang W.J., Niu F.J. (2022). Multiscale modeling of coupled thermo-mechanical behavior of granular media in large deformation and flow. Computers and Geotechnics. 149: 104855. doi: 10.1016/j.compgeo.2022.104855.

\* Zhao S.W., Chen H., Zhao J.D. (2023). Multiscale modeling of freeze-thaw behavior in granular media. Acta Mechanica Sinica. 39: 722195. doi: 10.1007/s10409-022-22195-x.

We have referred to the paper as suggested as below:

“Additionally, MPM can also be coupled with thermal effects\cite{Zhao2, Zhao3, Pinyol1}, opening up the possibility of capturing hydro-thermal-mechanical coupling.”