Dear authors,

Thank you for your revised manuscript that addresses many of the Reviewers' comments. However, while I don't share Reviewer 1's concern about the fact that your manuscript would not fit GMD standards for publication, I think that you don't fully address Reviewer 2' more concrete comments.

My main concern rejoins Reviewer 2' comments #1, #3, and #5 about the resulting layout of the components of a MOSSCO application on the available computing ressources and the related question of performance. While I fully understand that each application will be specific and that no general assertion can be formulated, I still think that these aspects need clarification in the manuscript. In particular :

- New section 4.4 : Thanks for adding this section but it is quite difficult to follow without an illustration. Please add a figure sketching the layout of the components on the computing resources used and the coupling interactions between them.
- p.6, l.15 to 22 : Thanks for adding this paragraph but I am still not sure which component layout would result from the notation in Fig 3b. As B runs after A and C after B, does it necessarily mean they run sequentially on the same set of computing resources? Or could it be that A and B have each their own set of computing ressources, so that A runs for the first coupling period on its resources, then B runs for that first coupling period on its resources with A also running concurrently on its ressources for the next coupling period?
- p.6, l.13 : why do you qualify of “sequential” the coupling of Fig 2; in this example
- the components A, B and C obviously run concurrently.
- p.17, last paragraph : This assertion on scalability is not meaningful; you have to state that the scalability of MOSSCO applications directly depends on the scalability of the components and on the fact that the coupling workflow does not introduce bottleneck. The statement on the ESMF overhead is OK although a little too qualitative.
- p.18, first paragraph : the added sentences on speedup are not meaningful either ; this is a speedup with compare to what; it looks like you say that the elapse time is 3000 smaller when running on 192 processors instead of running on 1 processor but I strongly doubt this is the case.

Other comments :

- p.6, l.7 : I think this sentence is not right ; in Balaji (2016), « the atmospheric radiative transfer component has been configured to run in parallel with a composite component consisting of every other atmospheric component, including the atmospheric dynamics and all other atmospheric physics components. », please correct.
- p.7, last paragraph : What does “scaling”means in this context? Is it just that MOSCCO can couple 0-, 1-, 2-, 3-D models? If so I am not sure that “scaling” is the right word to use.
- p.11, l.30 : I would not write « identical to the output component » because the output component, when used in a parallel model, produces multiple partial files; here the input component will read the different elements in parallel from one global file.
- p.13, l.22, I think you cannot write « ranging from one-dimensional water-column to three-dimensional ... » while in your reply to reviewer 2, you write “There is no coupling between 1D and 3D components in the examples that we currently operate. »
- p.17, l.14&15 : This is misleading ; mediator components will of course have to ensure mass and energy flux when they will include regridding

Other minor comments :

- p.3, l.1 : for OASIS reference, please use : A. Craig, S. Valcke, L. Coquart, 2017: Development and performance of a new version of the OASIS coupler, OASIS3-MCT_3.0, Geosci. Model Dev., 10, 3297-3308, https://doi.org/10.5194/gmd-10-3297-2017, 2017.

- p.3, l.2 : for ESMF reference, I think it is better to use : Theurich, G., Deluca, C., Campbell, T., Liu, F., Saint, K., Verten- stein, M., Chen, J., Oehmke, R., Doyle, J., Whitcomb, T., Wall- craft, A., Iredell, M., Black, T., Da Silva, A. M., Clune, T., Fer- raro, R., Li, P., Kelley, M., Aleinov, I., Balaji, V., Zadeh, N., Ja- cob, R., Kirtman, B., Giraldo, F., McCarren, D., Sandgathe, S., Peckham, S., and Dunlap IV, R.: The Earth System Prediction Suite: Toward a Coordinated U.S. Modeling Capability, B. Am. Meteor. Soc., 97, 1229–1247, https://doi.org/10.1175/BAMS-D- 14-00164.1, 2016.
- p.3, l.5 : What do you mean by ”very differently represented”?
- p.3, l.18 : Given MOSSCO, I think you should not start by « Currently, there is no ... » ; maybe replace this by something like « Up to now, there was no ... »
- p.3, l.29 : This sentence is a bit too heavy, please rephrase it ; I don't think that the design of a software should emphasize the needs of researchers, instead it should answer them !
- p. 5, l.5 : I am not sure « coupleability » is a real English word ; maybe put this word between quotes, at least the first time it appears in the text.
- p.5, l.7 : maybe change « For the run phase, it is mandatory that this phase refers to » for « For the run phase, it is mandatory to refer to »
- p.5, l.13 : why is « operation » between brackets ? I think this level of (unclear) detail is not needed here.
- p.6, l.15 : I don't understand what « recursive acronym YAML Ain't Markup Language » means.
- p.15, l.24 : « … components. In the ...» instead of « … components. in the ...»
- p.16, l.17 : Please remove « indeed » or move it at the beginning of the sentence.
- p.18, l.6 : This sentence is awkward ; maybe replace it by a simpler sentence like : « Multi-component systems may also suffer from low acceptance by the research community. »
- p.18, l.13 : I am not sure what « up-scaling » means in this context.
- p.18, l.24 : « benefit from each others’ progress » ; is the English correct ? Maybe replace by « benefit from each other's progress » or « benefit from all others' progress » ?
- p.19, l.33 : please replace OASIS/MCT by OASIS3-MCT

With best regards,
Sophie Valcke