# *Interactive comment on* "The Oceanographic Multipurpose Software Environment" *by* Inti Pelupessy et al.

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We have prepared a new version of the manuscript with the comments from the editor and anonymous referee #1 taken into account. Below we list the comments and our response to each point raised.

Comments from the executive editor —————————————-

In order to simplify reference to your developments, please add a version number and consider to add the models acronym in the title of your article in your revised submission to GMD.

RESPONSE: We have changed the title.

Additionally, I like to point out, that the Code Availability and the Acknowledge-

ment Sections are distinctive parts of the overall paper structure (see the sec- tion "manuscript composition" on http://www.geoscientific-model-development.net/for_ authors/manuscript_preparation.html). In contrast to this, "Extending OMUSE" is not part of this overall structure. Therefore this section is in the wrong place. It should be either a section in the main body of the paper or an appendix section, but it should definitely not be placed between Code Availability section and Acknowledgements .

RESPONSE: We have moved the section "Extending OMUSE" to be subsection 3.4.

Comments from anonymous referee #1 —————————————-

- Title: Please provide more details about OMUSE in the title (not just its name) so to better reflect the content of the paper. Also, it is recommended to provide in the title a version number of the latest OMUSE version available (see also A. Kerweg's comments).

RESPONSE: We have changed the title to conform to journal guidelines

- L15: I am not sure the application examples described show the efficiency of OMUSE; I would insist more on the flexibility but less on the efficiency.

RESPONSE: We have have removed "efficient"

- L63: You write "This has the benefit of the parallelism and . . ." . This seems incoherent to me with what you write in the discussion L716-L717: "limitation of the current design of OMUSE is the fact that the communication between solvers is handled by the master script. This imposes a bottleneck for the performance of the communication between e.g. two parallel codes." Also, L105: What is the benefit of providing built-in parallelism in the MPI-based remote function protocol if, as written in the discussion the handling of the communication through the master script imposes a bottleneck? Can you clarify?

RESPONSE: The current setup provides for independent and parallel running different codes, while the current communication implementation still has a bottleneck (which

can be removed). We have added clarification and a reference to the discussion (in section 6) to the description of the interface in section 2.1.

- L64 and other places: You mention the "bookkeeping inherent to code coupling". Can you explain what you mean by bookkeeping? In particular, what do you mean precisely L441-442 by "extensive automation of bookkeeping operations"?

RESPONSE: We agree that its use was not clear. We explain the meaning of book-keeping in section 2.4 (Data model) now, and clarify it in section 4. The "extensive automation of bookkeeping operations" has been rephrased.

- L116: What do you mean by "the sockets channel is mainly useful for cases were a component process is to be run on one machine". Of course, a process is always run on a machine! Do you mean" "the sockets channel is mainly useful for cases where a component process is to be run a different machine".

RESPONSE: In the current setup, the sockets communication is mainly used for inter process communication within a machine. This is clarified now.

- L126: you write: "the communication requirements between processes must not be too demanding. Where this is not the case (e.g. when a strong algorithmic coupling is necessary) a different approach may be more appropriate." Why should the (MPI) communication be "not too demanding"? What do you mean by "a different approach"? Do you mean something else that OMUSE?

RESPONSE: "Demanding" referes to the amount of communication necessary be-tween processes. We have removed these sentences ("Additionally ... more appropi-ate"), since this referes more too the communication bottlenecks discussed later on.

- L190-191: I am not sure I understand the difference between Cartesian and Regular. What do you mean by "constant"? constant in time (I suppose not)? Constant with respect to the dimension? Please clarify.

RESPONSE: Cartesian = same constant cellsize in each dimension, Regular = con-

stant cellsize in each dimension, potentially different for each dimension. We have clarified this in the text.

- L241: can you clarify what you mean by "This functionality is preferably not used within OMUSE." Does OMUSE support code using their own I/O library or not? The word "preferably" is ambiguous.

RESPONSE: We now explicitly state that use of the original I/O is supported (and give a potential reason to do so).

- L385-388: What is the relation between these two sentences (starting with "In case of stationary . . ." ) and the restrictions on the forcings discussed in this paragraph?

RESPONSE: None. A new paragraph is started now.

- L401-402: SCRIP library is included in OASIS but it is not in MCT, even if MCT can use grid remapping weights and addresses generated (separately) by SCRIP.

RESPONSE: we have clarified the text to make this distinction.

- L422-423: the source grid has to be structured not because of the way SCRIP com-putes the area integrals but for the calculation of the gradients needed for the 2nd order.

RESPONSE: We have changed this in the text.

- L486: Section 4.1.2 is about non-overlapping domains. Why is it named "Domain decomposition"? Also, are you talking here really about "non-overlapping" domains or more precisely "partially-overlapping" domains, as in the 5.2 example?

RESPONSE: The solution is obtained on the union of overlapping domains, so its a matter of viewpoint whether to call this "Domain decomposition." We have thought about another heading to this subsection, but we prefer the current one as the most concise. The domains can be non-overlapping in so far a small overlap is necessary for the boundary conditions on the respective domains. We have added "partially over-

lapping" in parentheses.

- L507: What do you mean by "preceding examples"? Are these the 4.1.1 and 4.1.2 couplings? If so, maybe put the numbers 4.1.1 and 4.1.2 for clarity.

RESPONSE: added the section numbers.

Minor comments: - L14: Remove the , after "solver"

RESPONSE: fixed

- L23: I would not write "current CMIP5" as CMIP5 is over now and CMIP6 is on-going.

RESPONSE: fixed (removed "current")

- L123: maybe replace "the requested subroutine calls" by "the requested simulation code subroutine calls" (if I got this right)?

RESPONSE: yes, implemented suggestion.

- L144, change "OMUSE implements a" for "OMUSE implements also a"

RESPONSE: done

- L509, add a ) after viewpoint.

RESPONSE: fixed

Please also note the supplement to this comment:
http://www.geosci-model-dev-discuss.net/gmd-2016-178/gmd-2016-178-AC2-supplement.pdf

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