

# ***Interactive comment on “Coupling Library Jcup3: Its philosophy and application” by Takashi Arakawa et al.***

**Anonymous Referee #3**

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The manuscript summarizes the state of the JCUP coupling software, which is tested with an atmosphere-ocean and an atmosphere-landsurface-ocean-rivers system. In the beginning of the manuscript some general remarks on the authors' opinion on coupling are given. In the current state, the manuscript is not suitable for publication in GMD for two reasons: a) the general statements about coupling do not build on a complete review of the existing strategies, nor they provide new concepts, and b) the description of the JCUP coupler is more a technical report and does not describe new functionality to be adopted by other systems. The functionality of the JCUP coupler might be sufficient for the tested applications, but seems rather weak compared to existing systems like OASIS/MCT, ESMF, or YAC. It remains unclear, why the authors have not adopted an existing, more flexible system.

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some more specific remarks:

P1L17: it is unclear, why the number of components contributes to the trade-off in performance.

P1L22: this is not true these days, since the model setup (incl. number of components) is mainly determined by the research question, not by the computer power

P2L2: double citation

P2L5: 1990s is a vague statement, references are needed

P2L10: which analogy is seen by the authors? This section is rather philosophical.

P2L29: other coupling software like ESMF, YAC are missing - this is a weak review of the state of the art.

Section 3.1-3.3: The statements are not referenced and read as personal opinions of the authors more than a description of their system or a review of the state of the art.

P6L17: research communities do not use black-box tools, in my experience, most researchers build on open-source community tools, where it is possible to detect, trace and fix a bug.

P6, Section 3.3 is not well written and is not generic - the scheduler of the coupled system is missing. "appropriate timing" is not explained. It is also unclear, why the model timesteps have to be dependent on the exchange timing. (although it is obviously easier to implement the coupled system like this)

P6 Section 3.4: minimize number of bugs and response time to new grid requirements are not performance requirements of a coupling system

P7, Section 3.4.1: time control works as expected, this does not need to be mentioned here, this is not a technical report.

P8L5: the usefulness of a model coupler also lies in the possibility to calculate mapping

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tables. This is a weak point, not a feature.

P8L18: in general, it cannot be assumed that the mapping can be calculated before the simulation - the interpolation weights have to be recalculated during the simulation for varying grids (e.g. vertical movement of layers in an ocean model).

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2018-147>, 2018.

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