

Author's response to comments from C. Ritz (Comment 3, send by email via Copernicus)

Thank you very much for having read the manuscript and for your suggestions. We have now revised our manuscript in light of these and other comments that we have received. A point-by-point reply is given below.

The main points I have concern the initial state (spinup procedure)

1- As mentioned by reviewer 1 (p6L25) the initial state will be the same for AOGCM-ISM, XXX-withism and ism-XXX-self simulations and this initial state will come from the coupled AOGCM-ISM runs. I am afraid, this choice will prevent the groups that do not have the coupling working at the beginning of the intercomparison, to do XXX-withism and ism-XXX-self. Could you comment?

We would first like to clarify that in our terminology “XXX-withism” stands for a specific AOGCM-ISM experiment. Therefore, we distinguish only two types of experiments (XXX-withism and ism-XXX-self) for the point the reviewer is raising here.

XXX-withism requires the coupled spin-up to be done. If the spin-up and models were perfect, the initial states would be the same (see also response to reviewer 1, p6L25). The ism-XXX-self experiment is only meaningful in combination with a completed XXX-withism with the same combination of climate and ice sheet models, which implies the existence of the coupled initial state. Note also that XXX-withism is an ice sheet only experiment forced by AOGCM output and therefore likely easy to run, once the coupling technology has been developed for XXX-withism.

If a coupled spin-up is not available, we recommend doing the ism-XXX-self with what ever initial ice sheet state is available and repeat the experiment at a later date, starting from the coupled spin-up version. Doing this would in fact be useful to investigate the concern of reviewer 1 (how much difference does the initial state makes). The steering committee had discussed the possibility of including this has an additional experiment. In the end it was decided against, in order to minimize the number of simulations requested from the modeling centers.

2- Do you plan to take advantage of the results of the initMIP project to refine the initial state procedure or simply use these result to quantify the trends related to the spinup procedure

Results of the initMIP project are expected to point to specific aspects of ice sheet initialisation that have a crucial impact on sea-level projections and may be improved. While the initialisation procedures used by the different participating groups are not prescribed by ISMIP6, it is expected that individual groups will take advantage of the initMIP results to improve their initialisation procedures.

We have included a sentence in the manuscript to clarify the intention of initMIP further.

3- I found difficult to follow which initial state will be used in the various simulations, would it be possible to add a column in table 1 to clarify this point?

The manuscript has been rewritten to clarify this, as indirectly asked from reviewers 1 and 2. The experiment description table now includes a column to indicate the initial state for each simulation.