

## ***Interactive comment on “Biogeochemical protocols and diagnostics for the CMIP6 Ocean Model Intercomparison Project (OMIP)” by James C. Orr et al.***

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Firstly, thanks to the authors for coordinating the OMIP-BGC effort and putting together this very comprehensive documenting paper. I have a few comments, which I think will be relevant to modelling centres trying to perform the simulations and diagnostics you describe:

- For the diagnostic output (section 3 and tables 9 to 14), no indication is given on which variables are expected only for the OMIP-BGC ocean model runs; and which variables are expected from the Earth System Models doing the “full” CMIP6 runs (historical etc), unless I missed this somewhere. It would be good to mark clearly if there are variables expected only for OMIP-BGC runs, but not the rest of CMIP6.

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- Table 5 and 9 mark all variables as “priority 1”. My understanding of a priority 1 variable is from the CMIP6 data request: “all participating groups must commit to supplying all priority 1 variables”. Thus, priority 1 variables should be the lowest common denominator that all groups can provide. In tables 5 and 9, there are multiple variables (like 13C, and all the “abiotic” terms) which are not carried in all (or even most) BGC models. Thus, groups face the significant coding and computation expense of adding 7+ new tracers if they are “required” to provide all these terms to participate in OMIP-BGC. If these variables are not indeed “required”, please mark them as priority 2, in which case it is clear they can be provided optionally, if available. Otherwise, as I understand it, any group not providing all these variables will end up not “participating” [at least officially].

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