

Interactive comment on “Modular System for Shelves and Coasts (MOSSCO v1.0) — a flexible and multi-component framework for coupled coastal ocean ecosystem modelling” by Carsten Lemmen et al.

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Dear Colleagues,

here are some short notes / clarifications about the Modular Earth Submodel System (MESSy), which you cite as (page 4, lines 4-7):

"Vice versa, a typical process coupling infrastructure like the Modular Earth Submodel System (MESSy, Jöckel et al., 2005) has been proposed to link processes across domains, but so far includes mostly atmospheric processes."

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Since the development cycle 2 of MESSy (Jöckel et al., 2010), we do not longer distinguish between process and domain coupling from the technical perspective, but consider more the "granularity" on which model components are coupled, and whether internal or external coupling is more feasible (see Kerkweg & Jöckel (2012a), Appendix A, for a definition of coupling approaches).

A useful approach largely depends on the desired application and on the structure of the used legacy codes. If there would be no legacy code used, the finer the granularity the better it is in terms of flexibility, and this is indeed possible without deteriorating high performance computing (HPC) performance.

As documented by Pozzer et al. (2011), we use for instance the MESSy middleware for a domain coupling (atmosphere - ocean). This proves already your statement that "The differentiation between domain and process coupling is not a technical necessity". Indeed, it is not!

Moreover, as shown by Kerkweg & Jöckel (2012a,b), the MESSy middleware (with the extension of MMD, the multi-model driver) is used for on-line nesting of regional models into a global model in a MPMD (multiple program multiple data) approach. This is neither domain nor process coupling in the classical sense.

References:

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