

Reviews comments to manuscript gmd-2024-108 by S. Molins et al., entitled “Alquimia v1.0: A generic interface to biogeochemical codes– A tool for interoperable development, prototyping and benchmarking for multiphysics simulators”

Abstract: not clear what is a “call signature”

Introduction: “We present...” is not a good style for a scientific publication, rather “it is presented” should be used

L 65: c_i is the concentration of species i per unit volume of water?

L 75: there is no N_c in Eq (2). Is N_c the number of primary species implicitly?

L 90: ... does not stipulate **that** any specific mathematical form that is used. ...

L 114: Eqs (~~5-7~~)

L 117: Eqs (~~5-7~~)

L 133-135: What does it mean “enforcing a **signature** for geochemical subroutines using a single-cell model”? Why “signature” in this context? Is this a metadata structure? This needs more explanation...

L 183: Would it be nice to provide a link to GitHub repository (<https://github.com/LBL-EESA/alquimia-dev>) here?

L 215 on: Would it be nice to point at “call signature” or “signature for geochemical subroutines” in code block 1 or 2, to give the reader some idea of what it really is?

P 19, Figure 2 caption: in the last 3 lines, the text regarding Langmuir and Freundlich isotherms seems to miss something, e.g. “The Langmuir and Freundlich sorption isotherms presented for CrunchFlow as they are not directly available in CrunchFlow, ...”

L 653: what can be non-zero? (R_{i_n} from eq 12?)

L 779: The statement “Alquimia can be used even when there is no transport” sounds like a paradox in the context of Multiphysics and needs more explanation.