

We thank the reviewer for the supportive feedback and constructive comments. For clarity, we reproduce each comment below and provide our responses in blue.

Overall, I appreciate this content of this paper / study and the work that the authors did in it and in writing it up. I think this is a valuable resource for the software and information science community, and hope that it will be circulated more widely than in just in the Earth science community.

In particular, Section 3.1 is quite useful.

General comments:

The authors could mention CIG (<https://community.geodynamics.org>) somewhere as complementary to the work studied in this paper.

The reviewer raises an important point, there are indeed several complementary initiatives in this space. We propose to address this in the manuscript by adding the following text at Page 2, Lines 51–57:

“The geoscience community can be broadly organized into several major research domains, each supported by representative organizations that coordinate community efforts, develop shared infrastructure, and accelerate scientific progress. These domains include hydrology (e.g., Consortium of Universities for the Advancement of Hydrologic Science, Inc.), Earth surface dynamics (e.g., Community Surface Dynamics Modeling System), geodynamics (e.g., Computational Infrastructure for Geodynamics), and atmospheric science (e.g., National Center for Atmospheric Research). Each of these domains is supported by organizations that foster collaboration, develop community standards and cyberinfrastructure, and engage researchers to advance understanding within their respective fields.”

Adding blank lines to separate new paragraphs would be helpful. This is done in some parts of the paper, but not others. In particular, it would be helpful in the references section.

If not part of the editorial process, we are happy to include blank lines throughout the paper. We can update the formatting style to better separate references.

I find some of the terminology here a little confusing. When I hear models today, I think of machine learning or AI. The models here are more modeling/simulation programs or functions. Note that the FAIR4RS principles are about Research Software. There is also a group working on FAIR4ML, where ML is machine learning models. If the authors want to keep using "models", it should clearly be defined at the start.

We propose to incorporate the following sentence at page 2, line 1 to address this comment: 'In this study, the term "model(s)" refers broadly to process-based (mechanistic), empirical or statistical, stochastic, reduced-complexity (conceptual), and hybrid modeling approaches.'

Similarly, when looking at Figure 2, it's unclear to me if "publish data model and records" is discussing the software or the data that it produces. And in the F row, what metadata is being discussed? Metadata about data or metadata about the software? This is made more clear in the paper text, but the figure/caption could also be clarified.

We agree with the reviewer that it can be confusing when talking about data models for models. We will add clarifying text to the Figure 2 caption including examples, for clarity.

Proposed caption:

Figure 2: Schematic diagram showing the three phases on the path to FAIR models, along with specific steps related to the principles Findable (F), Accessible (A), Interoperable (I), and Reusable (R). In phases 1 and 2, metadata v1 and metadata v2 refer to metadata about the models (e.g., Supplement Tables 2 and 3). In phase 3, the data model and records refer to the data model and records for the catalog items (e.g., Serna et al., 2025). API: Application Programming Interface.

Specific comments (with line numbers):

46 - perhaps mention <https://www.researchsoft.org/tf-actionable-fair4rs/>

We propose to add the reference as follows:

So, integrating the technical, disciplinary, and community perspectives through user-centric solutions can enhance effective application of FAIR principles (e.g., the [Actionable FAIR4RS Task Force](#))

75 - Please add the names of the two model catalogs to the caption

We propose to edit the caption to name the two catalogs as follows:

New caption first sentence: Figure 1: To illustrate the subject matter contents of the two model catalogs, the CSDMS Model Catalog and the USGS Model Catalog, this figure shows the relative proportion of domain tags (Hydrology, Terrestrial, Coastal, etc.) for the two model catalogs.

332 - I strongly disagree with idea here that using a CC0 dedication/license is appropriate. While Creative Commons says this can be done (https://wiki.creativecommons.org/wiki/CC0_FAQ#May_I_apply_CC0_to_computer_software.If_so.is_there_a_recommended_implementation), it mentions that OSI does not approve this, and given that many projects consider the use of an OSI-approved license the definition of open source, software that has a CC0 dedication may not be considered open source. Also, even CC says that CC0 is a dedication, not a license. See <https://opensource.org/blog/public-domain-is-not-open-source> for OSI's view.

We do not disagree with the reviewer, however, Department of the Interior official policy dictates that we use CC0 - this was decided in order to align with the policy that government-funded work must be public domain and used freely. The CC0 license is specified in the [Department of the Interior SHARE IT Act Memorandum, Attachment A](#).

If the reviewer (or readers of this response letter) are interested, the rest of the Department of the Interior license wording is:

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455 - it might be worth mentioning LLMs here, as this is the technology that is being most tested for this purpose.

We propose to address this comment by including:

"for example through the use of LLMs (large language models)"

So the text will read:

"In the future, using auto-generated descriptions may be part of the solution, for example through the use of large language models (LLMs), e.g., Singh et al. (2025)."

Reference:

Singh, M., Kumar, A., Donaparthi, S., and Karambelkar, G.: Leveraging Retrieval Augmented Generative LLMs For Automated Metadata Description Generation to Enhance Data Catalogs, <https://doi.org/10.48550/ARXIV.2503.09003>, 2025.

551 - JOSS could be cited - One recent paper is <https://doi.org/10.31274/jlsc.18285> (Note that I am an author of this.)

We propose to add the suggested reference to support the mention of the JOSS Journal.

Diehl, P., Soneson, C., Kurchin, R. C., Mounce, R., and Katz, D. S.: The Journal of Open Source Software (JOSS): Bringing Open-Source Software Practices to the Scholarly Publishing Community for Authors, Reviewers, Editors, and Publishers, *Journal of Librarianship and Scholarly Communication*, 12, <https://doi.org/10.31274/jlsc.18285>, 2025.

So the text will read as follows: "CSDMS now relies on the JOSS journal, the Journal of Open Source Software (Diehl et al., 2025), .."

577 - It would be useful to mention SciCodes.org here, and for the authors to participate in it if they don't already, or at least to make sure that their lessons get back to that community.

This is an excellent suggestion, and we propose to mention SciCodes by including the following sentence in section 3.2: "The developer teams of both model catalogs are part of the SciCodes Consortium (<https://scicodes.net>), which aims to foster collaboration and standardization among scientific software registries to improve the discoverability, interoperability, and reuse of research software across disciplines."