

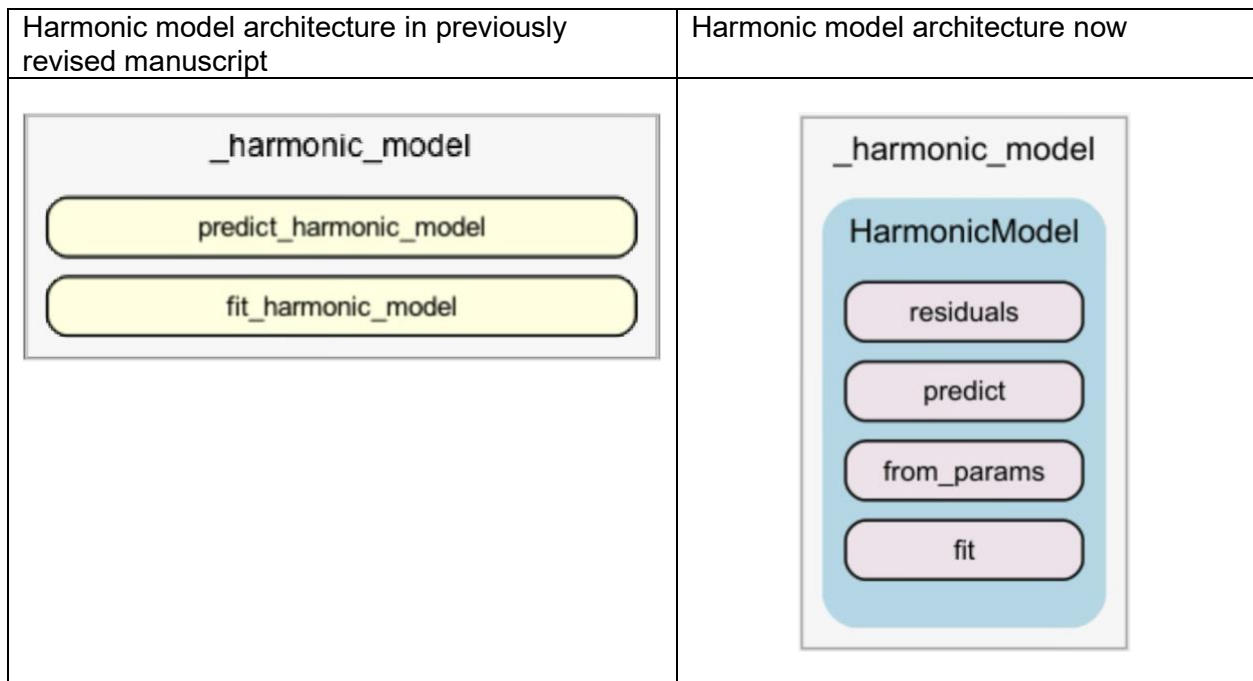
MESMER v1.0.0: Consolidating the Modular Earth System Model Emulator into a Sustainable Research Software Package

Minor Revisions from the authors

Due to ongoing developments of the MESMER code base we want to make some minor revisions to the manuscript.

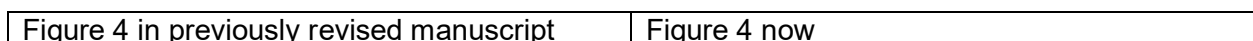
Changes to Figure 2:

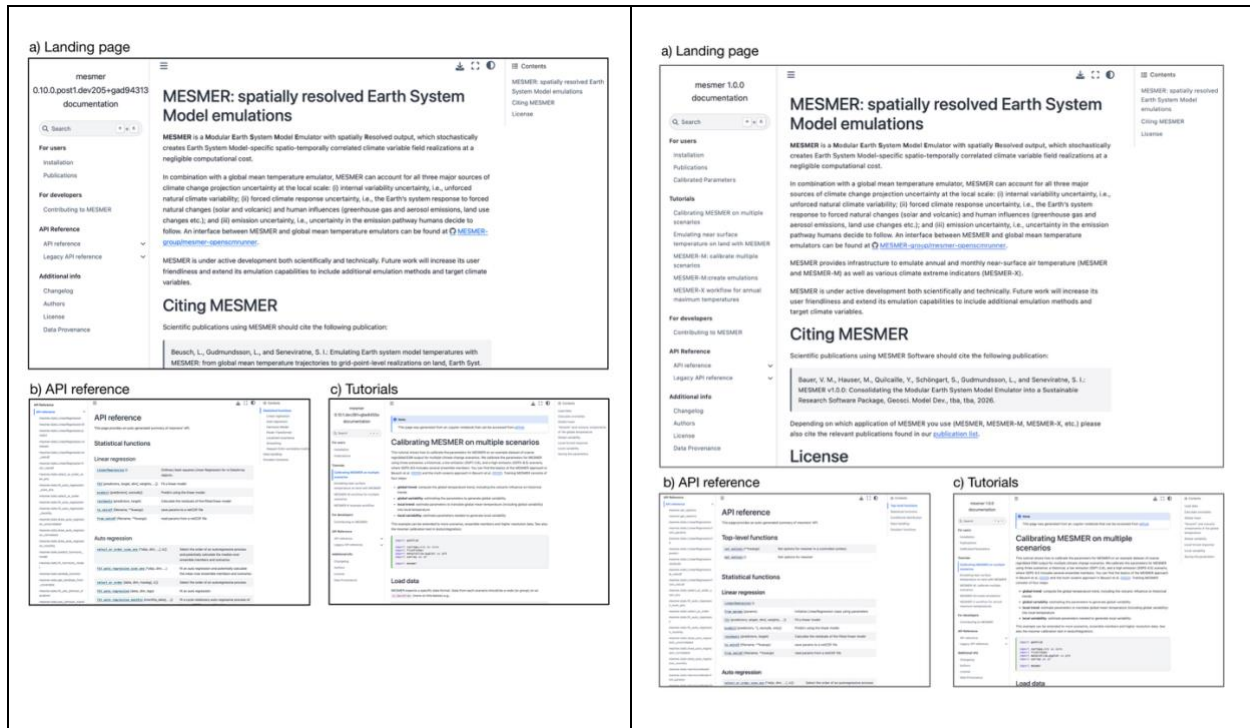
We have updated Figure 2 of the architecture, where the Harmonic Model module now consists of a class instead of two functions.



Changes to Figure 4:

We have updated Figure 4 of the documentation pages, which now show the v1.0.0 release tag.





Changes to Section 3.6 Assessment of the redesigned Code base

There are minor changes of the numbers concerning lines of code and the pylint score in Section 3.6. These do however not change any of the conclusions of the paper.

List of changes in this section:

- Line 228: *On average, source code files in MESMER v1 have ~~248~~ 254 lines of code...*
- Line 232 f.: *The longest source code file in MESMER v1 has ~~1219~~ 1246 lines. [...] the second largest file has ~~642~~ 645 lines.*
- Line 234 f.: *In total, the MESMER v1 code base ~~consists of about 8.200~~ 8.400 lines of code in total and ~~219~~ 226 defined objects...*
- Line 239: *The refactored code base reaches a score of ~~8.64~~ 8.63...*
- Line 253: *MESMER has a test coverage of 99%, meaning that ~~1981 of 1991~~ 2034 of ~~2047~~ of tracked source code lines [...] are covered by at least one test.*
- Revised Table 2:

Target	Metric	Value
Modularity	Average number of lines of code per object	37
	Number of lines of code per file (avg [min, max])	248.254 [7, 12191246]
Code quality	Pylint score	8.648.63
Data structure	Numpy arrays to xarray data structure	Completed
Documentation	% of public API documented	99 %
	% of private API documented	53 %
Testing	% of lines covered by tests	99 %

Updates to the code and data availability statement

We have updated the DOIs and references in the code availability statement to point towards the v1.0.0 release and the updated analysis scripts (not highlighted in track changes):

The ~~pre-release version of the source code published for the initial submission of this manuscript~~ source code for MESMER v1 is available on Github (<https://github.com/MESMER-group/mesmer/releases/tag/v1.0.0rc1>) and Zenodo (<https://doi.org/10.5281/zenodo.17209019> ~~20156753~~, Hauser et al. ~~2025~~ 2026). The code used to produce the analyses in this paper are available on Zenodo (<https://doi.org/10.5281/zenodo.19203528> ~~20153653~~, Bauer et al. 2026). CMIP6 data is available at <https://esgf-node.llnl.gov/projects/esgf-llnl/> (Eyring et al., 2016), the CMIP6-ng data can be requested under cmip6-archive@env.ethz.ch (Brunner et al., 2020). The reduced example data used for measuring performance improvements is part of the MESMER package. Pre-calibrated parameters for emulating selected variables are available to the community at <https://doi.org/10.3929/ethz-c-000798034> (Quilcaille et al., 2026).

Other minor changes

- Line 10 f.: *We facilitate the adoption of MESMER for the broad research community by providing pre-calibrated parameters, ~~in a first step, for the emulation of annual mean temperature for multiple variables.~~*
- Line 458: added [Gregor et al., 2026](#)
- Line 467: *Pierini et al., ~~2025~~ 2026* (changed to final paper from preprint)
- Line 481 ff. (Acknowledgements): *We would like to acknowledge [...], as well as the FASTMIP initiative for which the parameters were calibrated. Moreover, we want to thank [...] and Christopher Womack for fruitful discussions...*