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# *Interactive comment on* "ESMValTool (v1.0) – a community diagnostic and performance metrics tool for routine evaluation of Earth System Models in CMIP" *by* V. Eyring et al.

**Anonymous Referee #2**

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[0] Ditto what the first reviewer wrote.

[1] I like that the tool is focused and modularized on "specific scientific themes." Unfortunately for me, the subsequent descriptions are a bit tedious to read because each theme section seems to follow a pattern. That said: the paper does what it has to do! I have no substantive suggestions that would improve the pace of the presentation.

[2] Regridding is mentioned several times in the text and I assume that each module has used the appropriate interpolation method. For example (p7553), "Model output is linearly regridded". I assume this means bilinear interpolation. Most commonly, this method is used because it is fast and simple. However, being 'fast and simple' does

not mean it is the most appropriate. In practice, if the variable being interpolated is smoothly varying, just about any interpolation method will produce reasonable results. However, bilinear interpolation may not be appropriate for variables that are fractal in space such 3-hrly and daily precipitation. I suggest that in each place where regridding is mentioned it should mention the type of interpolation used. This could simply be an adjective: (p7562) "After regridding all .." use "After bilinearly regridding all ..".

[3] The text (p7589) states "One current limitation is the lack of parallelization." The most recent version of the NCAR CVDP (v4.0.0) has a Python driver that uses simple task parallelism to substantially reduce wall clock times. The driver uses standard Python functions (no custom functions). This approach should be investigated for future use by the ESMValTool developers.

[4] I note that there is wiki page (p7590) for developers and contributors. Like model development, developing data processing functionality is 'kinda' fun!!! The authors mention (p7548) a testing framework and code documentation. No details are mentioned. Sometimes developing good test codes can take more time than developing the processing function(s) they are testing. With regard to documentation, cryptic descriptions are better than nothing but *not* much better. I suggest encouraging (?requiring?), simple usage examples.

What is not mentioned at all? Ummm, let me think! Ah yes, now I remember:

USER SUPPORT. I am sure: (a) the tool's implementation and the components are perfect; (b) all users will carefully read the documentation; (c) all users will write clean, unambiguous structured code; and (d) all users will spend time trying to debug their codes. However, in the highly unlikely event that my assertions are not correct, how do users get support? To whom or what should questions be addressed? Should questions be sent to some central location? Will someone monitor the support location? Ultimately, who is responsible for user support?

Based upon experience, user support can be time consuming, tedious and frustrating.



GMDD

8, C4166–C4168, 2016

On the other hand, it can be rewarding. It can expose developers to different ways of thinking. It can offer insight into new development paths.

[5] Some journals have suggested that software tools should be referenced via a DOI or a link. Python, NCL and R are mentioned but there are no references to these tools.

— The original R reference is the following. Ihaka and Gentleman are the original R developers. It is 20 years old but I could not find any better reference. Also, I could not find a specific R language DOI.

R: A Language for Data Analysis and Graphics Ross Ihaka and Robert Gentleman Journal of Computational and Graphical Statistics Vol. 5, No. 3 (Sep., 1996), pp. 299-314 DOI: 10.2307/1390807 —

Python: https://www.python.org/ I could not find a specific DOI. Perhaps this link is the best.

— Should NCL be spelled out in addition to the commonly used acronymn (NCL)?

NCL (NCAR Command Language)

NCL has a DOI. The NCL web page suggests the following citation:

The NCAR Command Language (Version 6.3.0) [Software]. (2016). Boulder, Colorado: UCAR/NCAR/CISL/TDD. http://dx.doi.org/10.5065/D6WD3XH5

— I am happy to see that the ESMValTool will have a DOI!

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Interactive comment on Geosci. Model Dev. Discuss., 8, 7541, 2015.