2. Technical ESMValTool Workshop 2020

The Technical ESMValTool Workshop took place via video call from 24-26 November 2020 with 23 participants from U Bremen, NLeSC, BSC, U Reading, PML, SMHI, ENEA, ETH and DLR. The main goal of the workshop was to work on open pull request and draft guidelines for reviewing pull requests. Specifically, the workshop included the following topics:

- New team structure on GitHub
- Importing native model / observational data
- Guidelines for reviewing pull requests
- User Engagement Team
- Presentations: (1) ESMValTool Tutorial, (2) Automated testing, (3) Running ESMValTool in Jupyter Hub
- ESMValTool related IS-ENES3 tasks and deliverables
- Reviewing and merging open pull requests

Figure 1 Participants of the Technical ESMValTool Workshop in November 2020.

New team structure on GitHub

The new team structure has been discussed. The new GitHub teams agreed upon and implemented at the end of the workshop are schematically shown in Figure 2 (see also https://github.com/orgs/ESMValGroup/teams):

- The old teams „Core Developer" and „ESMValTool Developer" stay in place (for now).
- People are not automatically assigned to the new teams. Developers are requested to join new teams as they see they fit (e.g. science-reviewers).
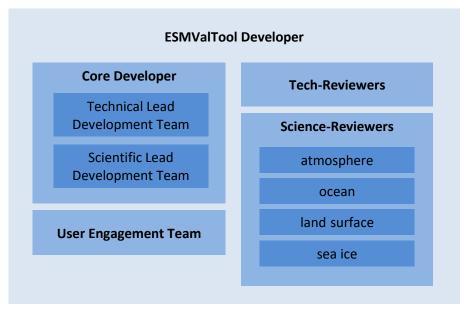
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Figure 2 Schematic of the new team structure on GitHub.

Importing native model / observational data

A new implementation for allowing the ESMValTool to import native model and observational data is planned for the following data sources:

- EMAC (DLR)
- EC-Earth (SMHI)
- UK-ESM (U Reading)
- ERA5-Land (U Bremen)

It was agreed to start this task in close collaboration along the lines of the already implemented "on-the-fly cmorizer" for ERA5 data. First steps by SMHI and DLR will be defined and coordinated with a telcon to be organized within the next weeks.

Guidelines for reviewing pull requests

Guidelines for developers opening and reviewing pull request have been drafted and added to the ESMValTool user's guide. The document contains a description of the review procedure and checklists for technical and scientific reviews of pull requests. The guidelines are available here: https://docs.esmvaltool.org/en/latest/community/review.html

User Engagement Team

The User Engagement Team used the ESMValTool technical workshop for a side meeting to catch up with the team members and to discuss several topics that came up over the course of the last months:

- Creation of a separate User Engagement Team email list

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- Possibilities how new users can be statistically counted, either if they go through the tutorial themselves, or if the tutorial is taught by instructors; also, courses that introduce the ESMValTool and are not based on the tutorial should be counted; it was decided to open a single webpage via GitHub to allow access for all members of the User Engagement Team

- The possibility was discussed to move the Webpage from the DLR server to GitHub to allow access (and distribute maintenance) to different users and contributors (not just DLR personnel); it was decided to test the GitHub webpage possibilities with the user statistics first and possibly move the webpage at a later time

- Possible episodes that could be added to the tutorial to make it more comprehensive

- At the moment some information is available in the documentation and the tutorial, therefore at two different places. It was decided to add links in the documentation to the tutorial to make it more visible, and to update the documentation to avoid duplication in the future

- It was discussed if there should be a release strategy of updates to the Tutorial, and if yes, if it should be timed together with the releases of the ESMValCore and ESMValTool; there was no decision finalized

- New Tutorial Coding sprint: a doodle for dates will be sent around at the beginning of 2021 to find suitable dates.

Presentations

Three presentations by ESMValTool developers were scheduled during the ESMValTool technical workshop. All three described new developments from the last months that could be of interest to other developers. 30 minutes presentation and discussion time were scheduled for each of the presentation, but the time was not strictly enforced if the participating developers had more comments and questions. The three presentations covered the topics ESMValTool tutorial, Automated testing and bot, running ESMValTool in Jupyter Hub (Figure 3).

Figure 3 Presentations given at the Technical ESMValTool Workshop in November 2020.

(1) Introduction ESMValTool Tutorial

In this presentation the new ESMValTool Tutorial was introduced. It is available on Github and can be used by new users individually or in the framework of a taught introduction course to the ESMValTool. There are several episodes available, starting with instructions to personalize the necessary ESMValTool configuration file to how to run and modify diagnostics.

(2) Automated testing and bot at DKRZ

Testing recipes can be very time consuming. A new development within the ESMValTool community tries to speed up this process by using a bot for the testing. Simple recipes can already be tested in

an automatized way on a virtual machine at DKRZ. Further developments are planned to allow the bot to also run on different other • machines and make its application more flexible.

(3) Running ESMValTool in Jupyter Hub

A new framework is developed where it is possible to run the ESMValTool within a Jupyter Hub environment. First steps of this development were introduced, as well as the planned extensions which would allow more flexibility in running the ESMValTool with Jupyter.

ESMValTool related IS-ENES3 tasks and deliverables

ESMValTool related tasks and deliverables within IS-ENES3 (WP9) have been discussed.

Deliverables:

- D9.1: waiting for the internal revision.
- D9.2: waiting for MetOffice answer about the possible delay. Once there is a date, a telco will be organized to coordinate contributions.
- D9.3: June 2021. We should look for individual subtasks in task 7 (a, b, c, d) and task 8. A telco will be scheduled in January 2021 to start working on it and bring partners working on related tasks in other WPS (i.e. DKRZ).

Tasks:

- #2: This core task is in good shape. Many of the developments are completed so it could be a good idea to start writing the deliverable (D9.5).
- #4: BSC has been working with decadal experiments with promising results. SMHI will start to work on regional climate next year with CMCC. This deliverable is due December 2021.
- #6: BSC created a prototype with the ENSO package, but this work should be completed. CVDP has already been integrated into ESMValTool.

A WP9 task leader telco will be scheduled after holidays to:

- review current status tasks
- update WP9 contact list
- discuss the under resources consumption of some partners reported in RP1

Reviewing and merging open pull requests

In total, 11 pull requests could be merged successfully into the master branches of ESMValTool and ESMValCore. Another 7 pull requests could be finalized and are now ready for review. A GitHub project has been used to monitor the workshop progress. It has been agreed at the workshop to keep this GitHub project alive as it allows for an easy and quick overview on ongoing reviewing and merging activities of open pull requests. The GitHub project is available here: https://github.com/orgs/ESMValGroup/projects/14

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