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Towards a powerful tool to manage large amount of data and analysis

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We present a powerful tool that handles large datasets, categorized and displays the results of several analysis.

The access, evaluation, and visibility of CMIP6 datasets is a big challenge. A possibility to handle datasets is the Freie Universität Evaluation System Framework (Freva – https://freva.met.fu-berlin.de). Freva manages large amounts of data, which can be integrated into evaluation routines and diagnostics. The data and results of the evaluation routines and diagnostics are described with metadata by the system in order to keep the overview and to guarantee the reproduction. For the German contribution of CMIP6, the evaluation is performed with the ESMValTool. The Earth System Model Evaluation Tool (ESMValTool, http://www.esmvaltool.org/) includes a large collection of diagnostics and performance metrics for variables across the atmosphere, ocean, and land, focusing on the mean-state, trends, variability, as well as important processes and emergent constraints. It also includes targeted analysis packages such as the NCAR Climate Variability Diagnostics Package. A set of standard namelists for each scientific topic reproduces specific sets of diagnostics or performance metrics that have demonstrated their importance in ESM evaluation in the peer-reviewed literature. The collection of standard namelists for example also allows reproducingthe figures from the climate model evaluation chapter of IPCC AR5 (Chapter 9) and parts of the projection chapter (Chapter 12).

As a part of the project CMIP6-DICAD, the two powerful tools Freva and ESMValTool were combined to a common user-friendly interface. Freva is modified and new functions were added to the framework. So, results of ESMValTool and thus results of CMIP6 are searchable, findable and visible. In the result browser, the outcome can be filtered and sorted by several facets. Every result has an overall view with a caption, incoming models, variables, software and tool version, references, diagnostics and so on. Every registered user can comment and assess the outcome.

In conclusion, the modified Freva is a platform for the rapid exchange of information for the ESMVal community.