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## ESMValTool - introducing a powerful model evaluation tool

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The Earth System Model eValuation Tool (ESMValTool) is a powerful community-driven diagnostics and performance metrics tool. It is used for the evaluation of Earth System Models (ESMs) and allows for routine comparisons of either multiple model versions or observational datasets. ESMValTool's design is highly modular and flexible so that additional analyses can easily be added; in fact, this is essential to encourage the community-based approach to its scientific development. A set of standardized recipes for each scientific topic reproduces specific diagnostics or performance metrics that have demonstrated their importance in ESM evaluation in the peer-reviewed literature. Scientific themes include selected Essential Climate Variables, a range of known systematic biases common to ESMs such as coupled tropical climate variability, monsoons, Southern Ocean processes, continental dry biases and soil hydrology-climate interactions, as well as atmospheric CO<sub>2</sub> budgets, tropospheric and stratospheric ozone, and tropospheric aerosols. We will outline the main functional characteristics of ESMValTool Version 2; we will also introduce the reader to the current set of diagnostics and the methods they can use to contribute to its development.