https://www.esmvaltool.org/
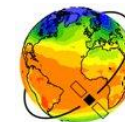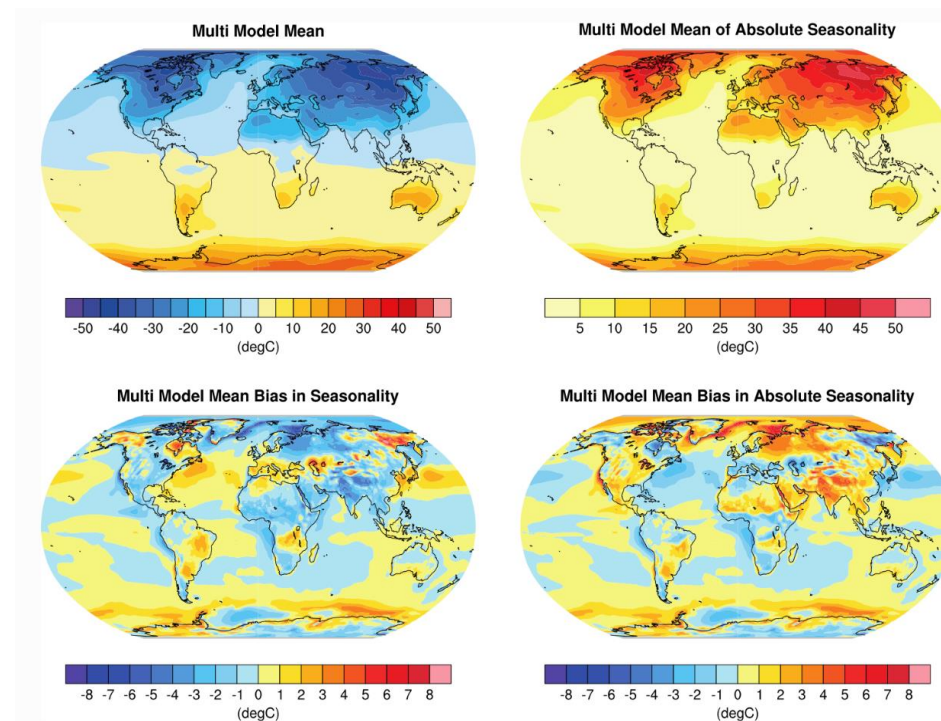
Earth System Model Evaluation with ESMValTool in a Jupyter notebook

25 May, EGU 2022

What is ESMValTool?

It facilitates the analysis of Earth system model's data.
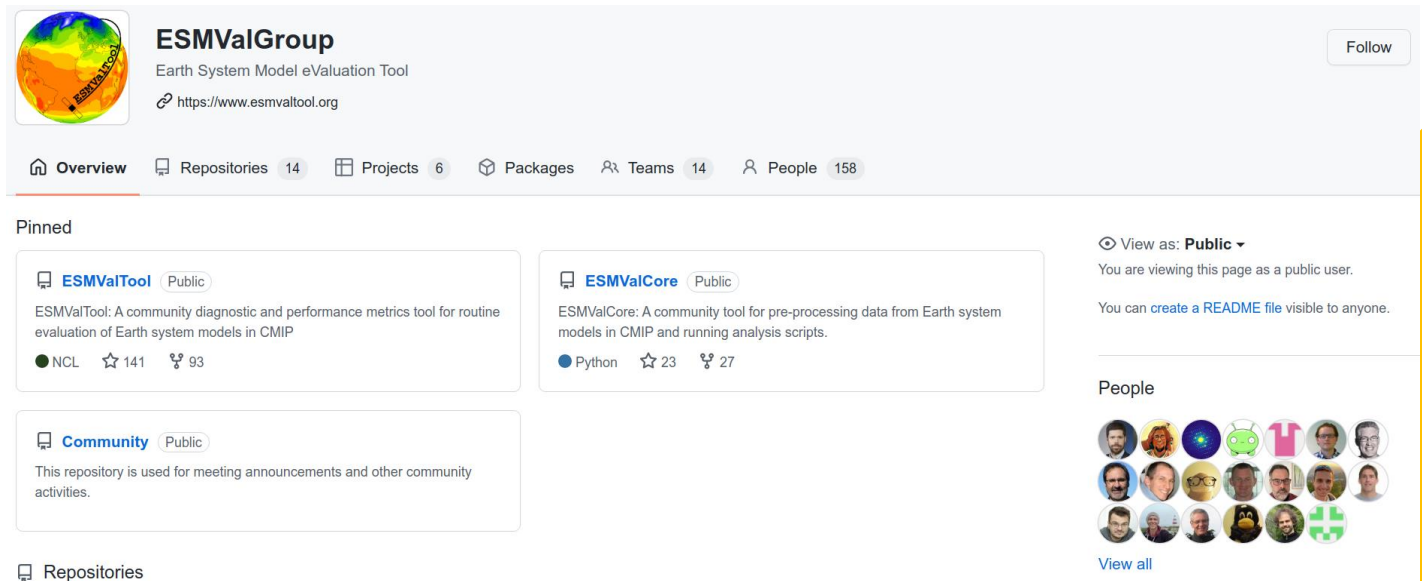

IPCC AR5 Chapter 9

What is ESMValTool?

By an international community of scientists and software engineers

ESMValTool — Earth System Model Evaluation Tool

What is ESMValTool?

Developments, maintenance, discussions, and collaborations in **public** https://github.com/esmvalgroup
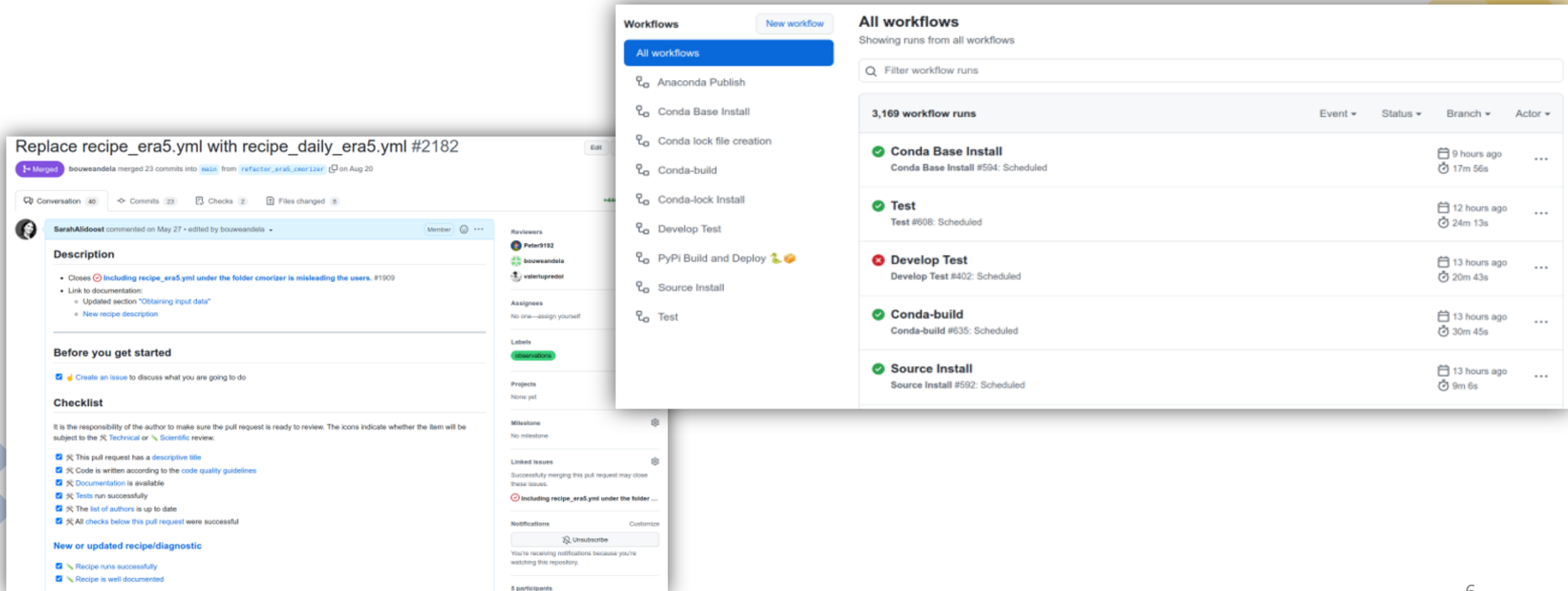
What can ESMValTool do for you?

- Helps to analyze climate data
- Provides provenance and citation information.
- Supports several programming languages and operating systems.
- Helps efficient data processing.
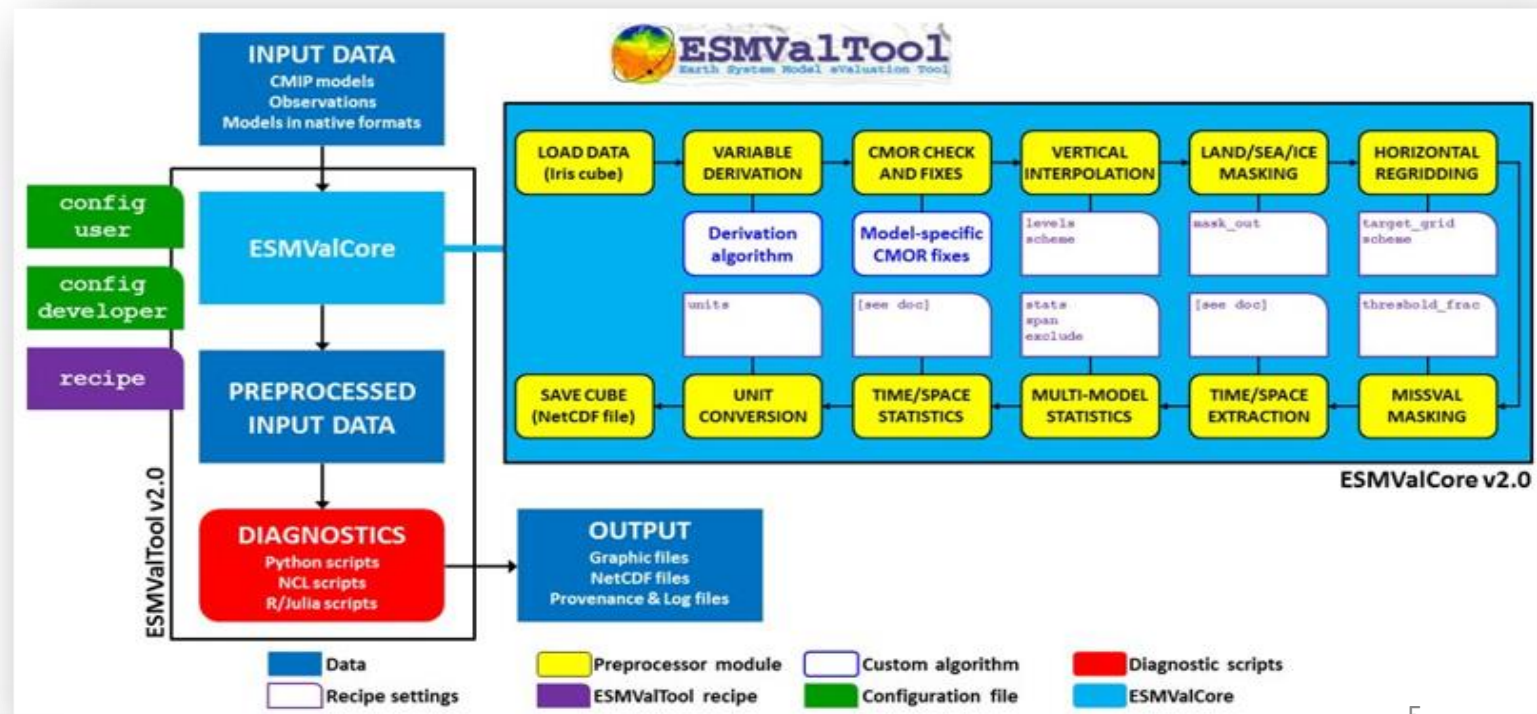
What can ESMValTool do for you?

- Provides automated testing and review processes.

What can ESMValTool do for you?

- A collection of scripts with extensive documentation.

https://docs.esmvaltool.org/

- An online tutorial

https://esmvalgroup.github.io/ESMValTool_Tutorial/

recipe_flato13ipcc.yml

recipe_perfmetrics_CMIP5.yml

recipe_ecs_scatter.yml

recipe_flato13ipcc.yml

recipe_flato13ipcc.yml

recipe_diurnal_index.yml

recipe_crem.yml

recipe_collins13ipcc.yml

recipe_autoassess_stratosphere.yml

recipe_clouds.yml

recipe_zmnam.yml

recipe_russell18jgr.yml
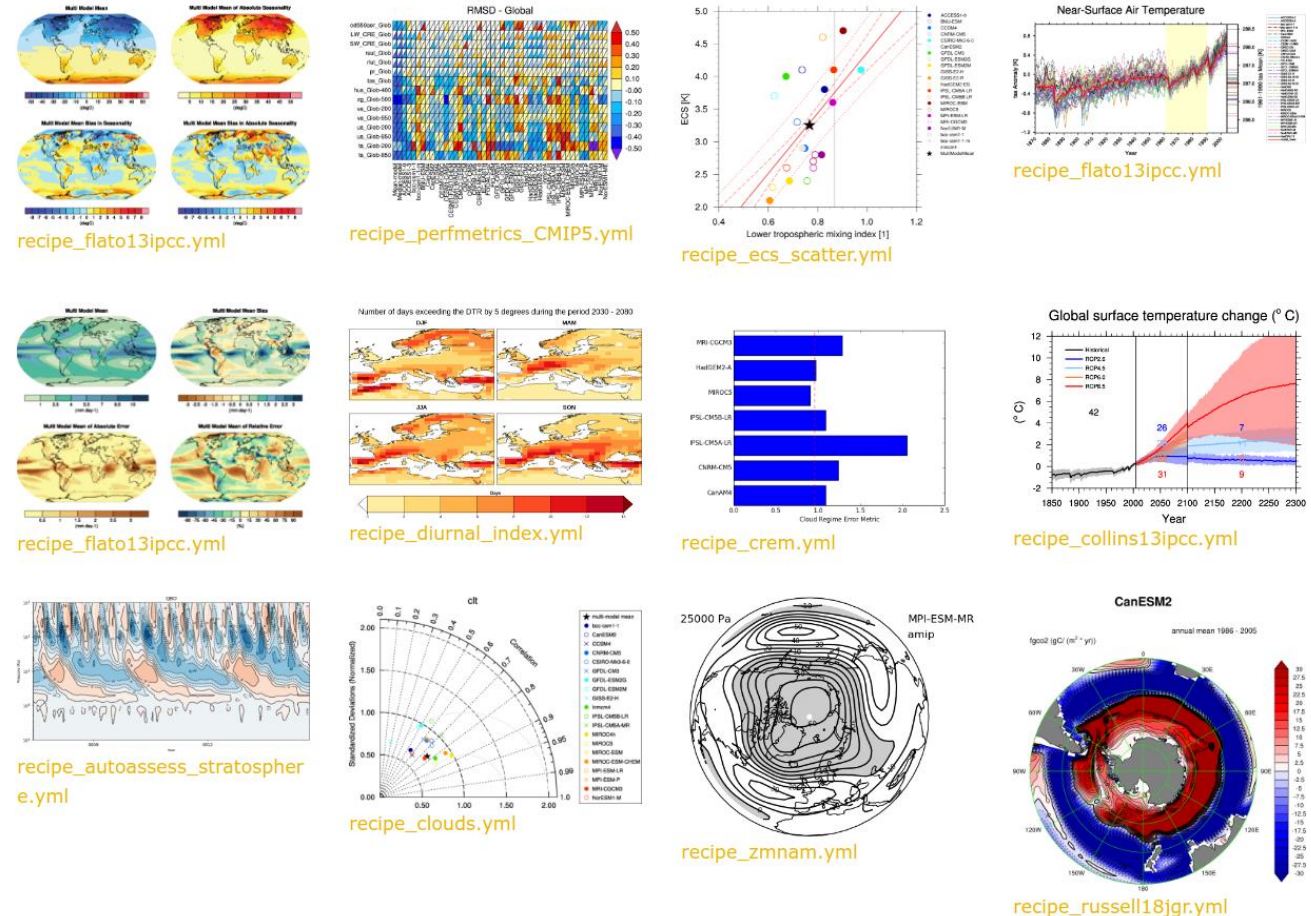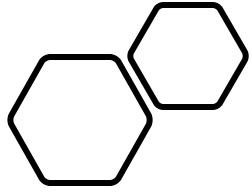
using ESMValTool:

others can understand our analyses
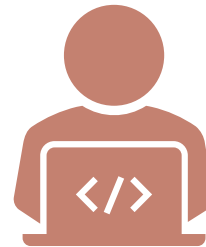
we can re-use code instead of re-implementing it
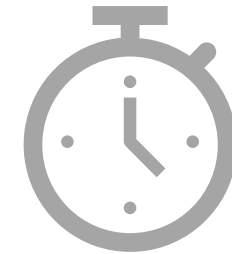
we spend less time on developing code
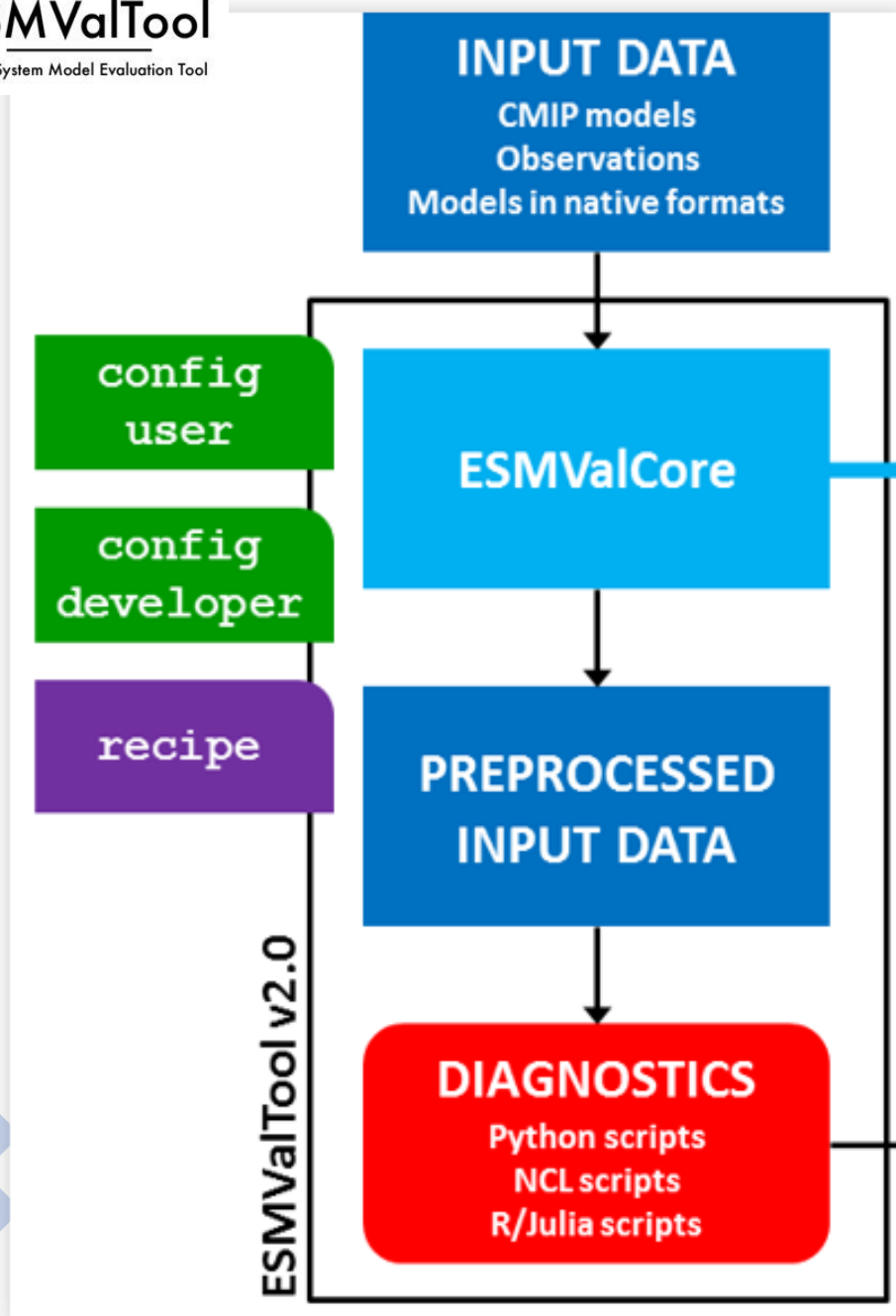
Earth System Model Evaluation with ESMValTool
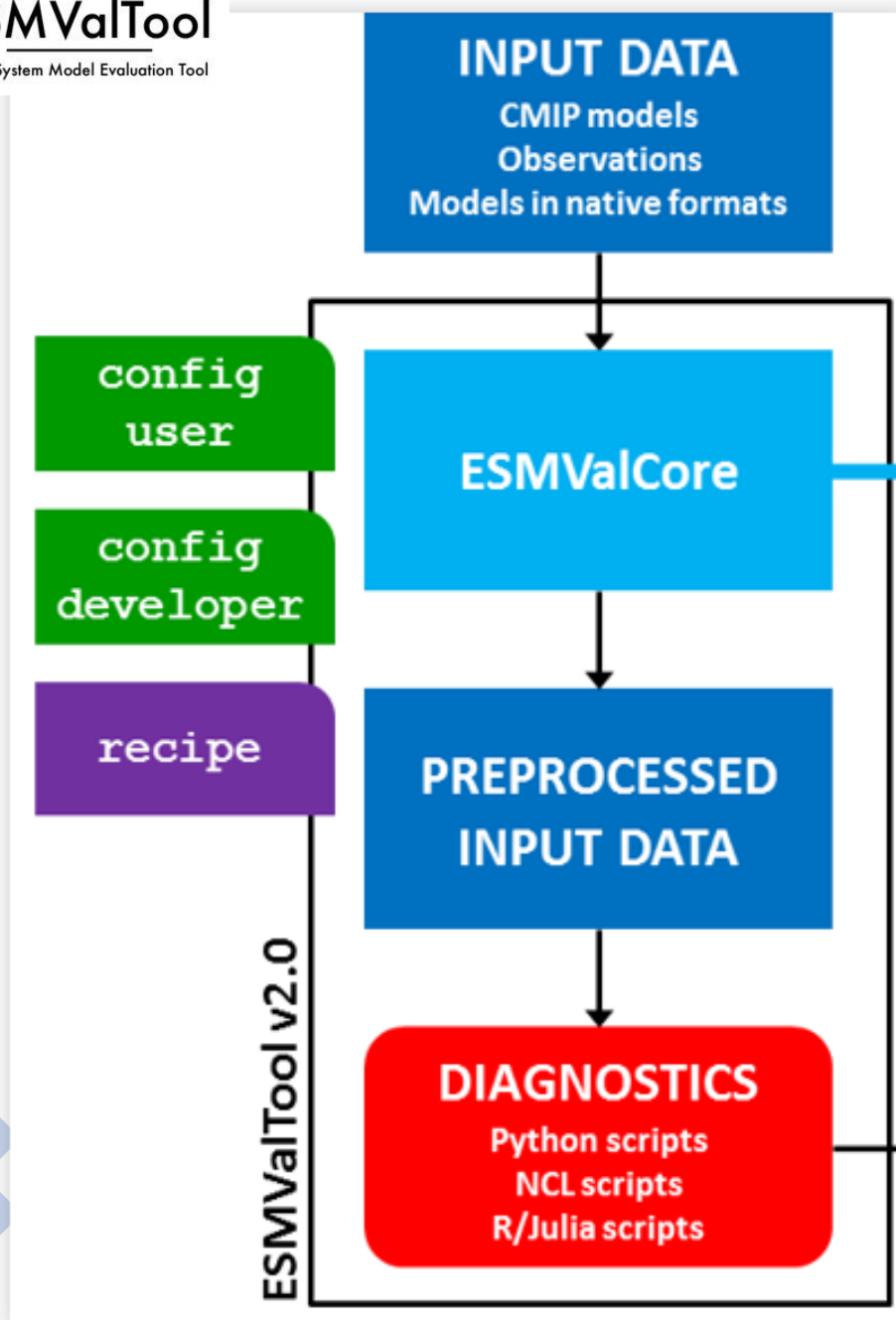
Earth System Model Evaluation with ESMValTool

```
# Run ESMValTool as a command-line tool:
```

```
esmvaltool run examples/recipe_python.yml
```

Earth System Model Evaluation
with ESMValTool

```
# Run ESMValTool as a command-line tool:
```
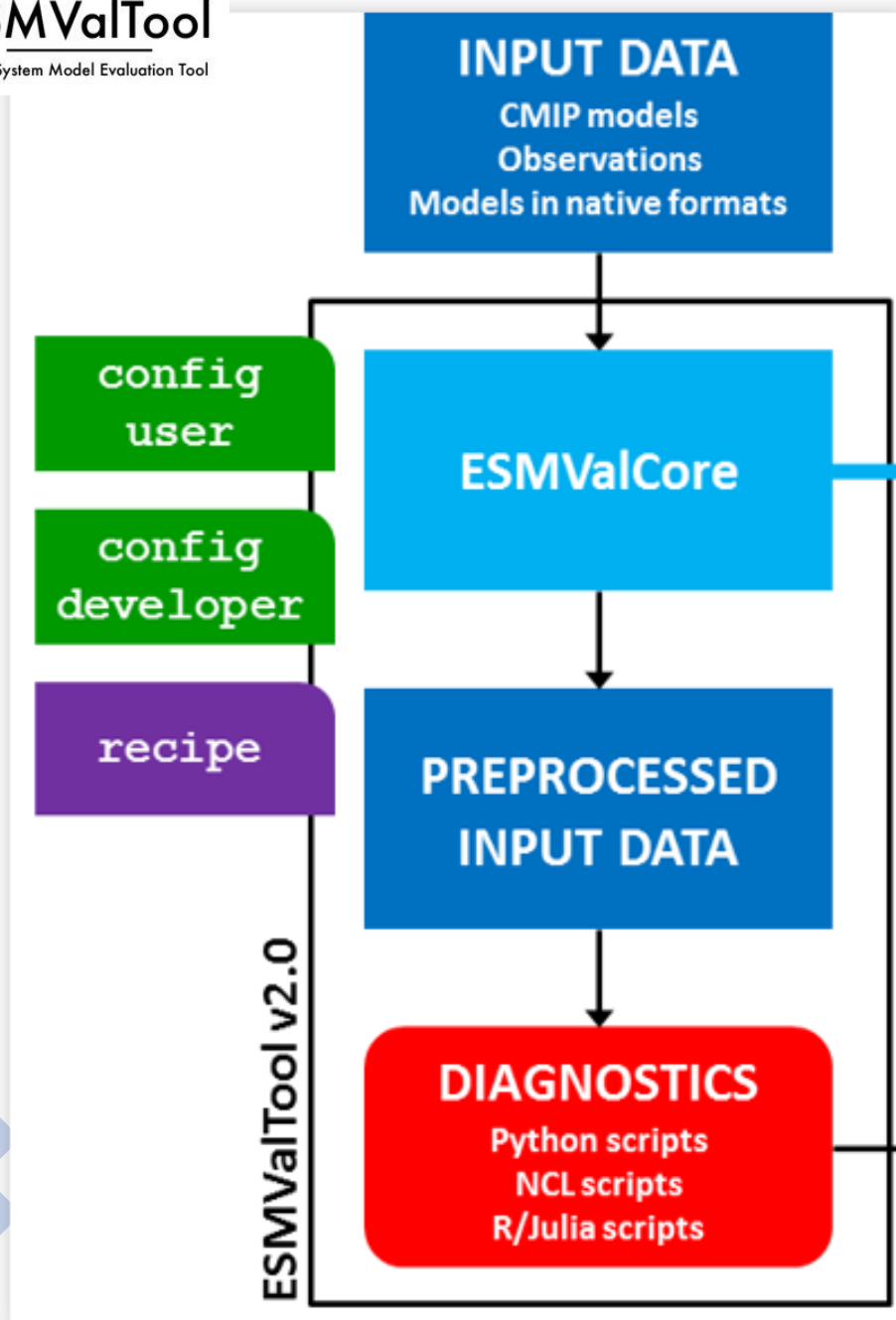
```
esmvaltool run examples/recipe_python.yml
```

Instructions are given to esmvaltool using a YAML script called a recipe.

Instructions like:
- the **datasets** which need to be analyzed,
- the **preprocessors** that need to be applied,
- the model-specific analysis called **diagnostic** script.

Available recipes:
https://docs.esmvaltool.org/en/latest/recipes/index.html

Access to CMIP and observational data and a suitable compute cluster

Use a computing cluster with an Earth System Grid Federation (ESGF) node:

- German Climate Computing Center (DKRZ), Germany
- Center for Environmental Data Analysis (CEDA), UK
- Institut Pierre-Simon Laplace (IPSL), France
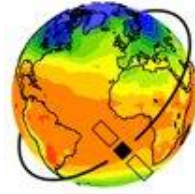- Swiss Federal Institute of Technology Zurich (ETHZ), Switzerland
- National Supercomputer Centre (NSC), Sweden
- Barcelona Supercomputing Center (BSC), Spain

![ESMValTool - Earth System Model Evaluation Tool logo]

Related projects:

- IS-ENES3 has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824084

- EUCP has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776613

Earth System Model Evaluation

with ESMValTool in a Jupyter notebook