ESMValTool and Support for Multiple Programming Languages

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Benefits of supporting multiple languages

- Extend the pool of contributors (promote comfort and confidence)
 Port of existing metrics already written in a given language
- Extended functionality and support for existing libraries that can be easily imported

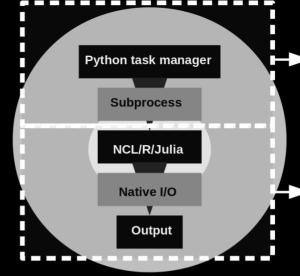
Cons

- Extended dependency environment, difficult to maintain
- Restricticted expertise (especially with obscure languages/dependencies)
- EOL support (e.g. NCL)
- Learn to say NO (not easy!)

Diagnostics: distribution of languages

Support for:

- Python (>=3.6)
 - NCL (>=6.5.0)
 - R (r_base>=3.5)
 - Julia (about >=1.5)
- 244 diagnostic scripts in esmvaltool/diag_scripts:
- 111 Python scripts (.py) -> 45% - 85 NCL scripts (.ncl) -> 35%
- 45 R scripts (.R) -> 18%
- 3 Julia scripts (.jl) -> wee bit



ESMValCore: gathers run parameters, runs preprocessing, constructs dictionary holding diagnostic run parameters and preprocessor files locations on disk, sets up diagnostics tasks via task manager

parameters (executes diagnostic scripts), outputs to disk using native I/O, exits and signalls outcome to the

ESMValTool: receives

diagnostic run

task manager

parameters, runs diagnostics with given

Dependency tree:

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(use: conda-tree depends \$PACKAGE)

- esmvaltool: 36 + 7 for tests

Number of direct dependency packages per language:

- esminactions. 50 + 7 101 test
- Python: 13 - NCL: 32
- CDO: 13 (not a language!)

Some dependencies may be shared at lower levels (like netCDF4, hdf5 etc.)



