Rook

A Web Processing Service for the Copernicus Climate Data Store

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Climate Projection Workshop, 6 May 2021

Rook

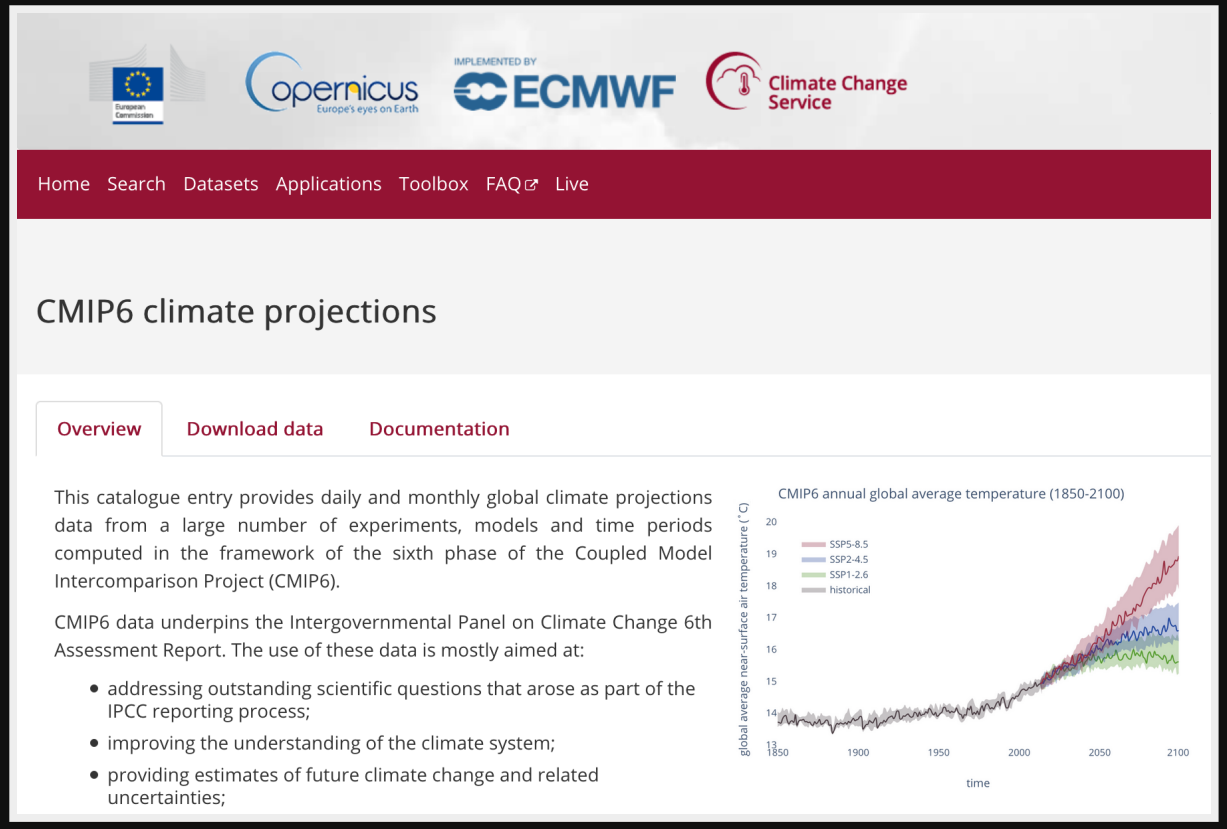
Remote Operations On Klimadaten

(The K is not a typo)

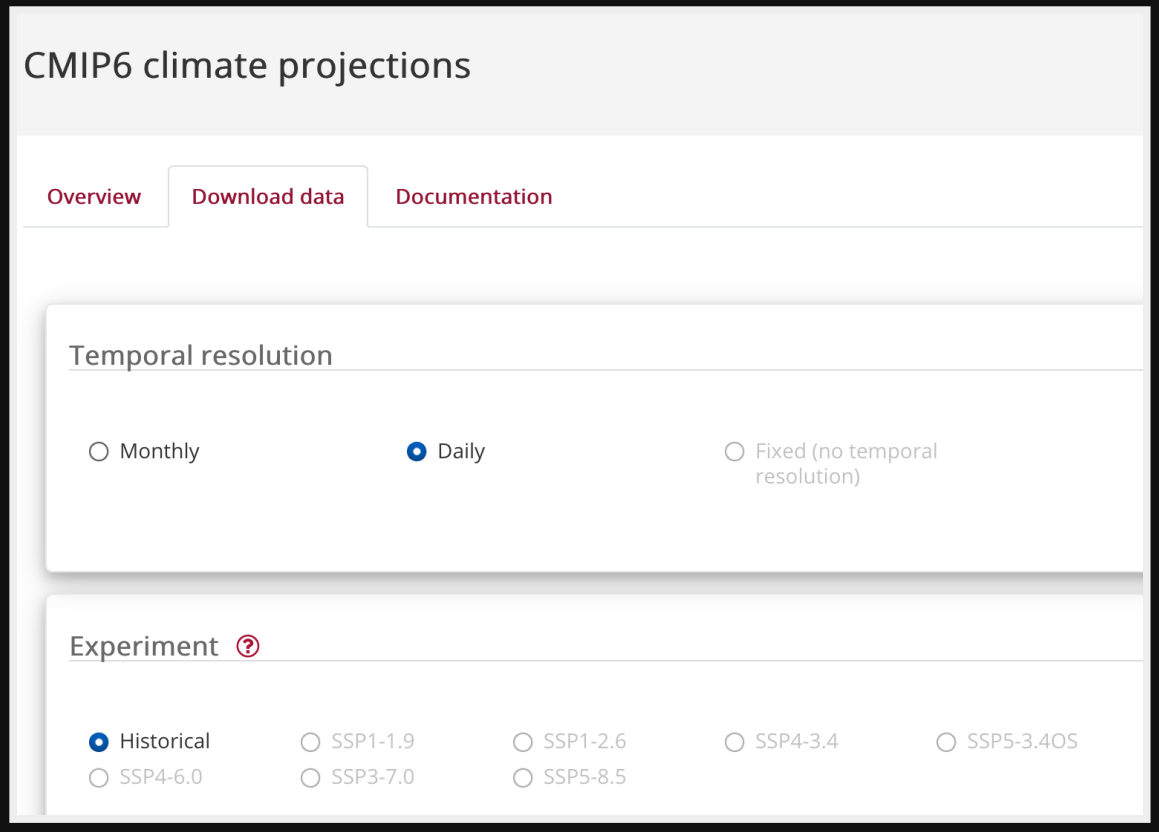
https://rook-wps.readthedocs.io/en/latest/

Climate Data Store

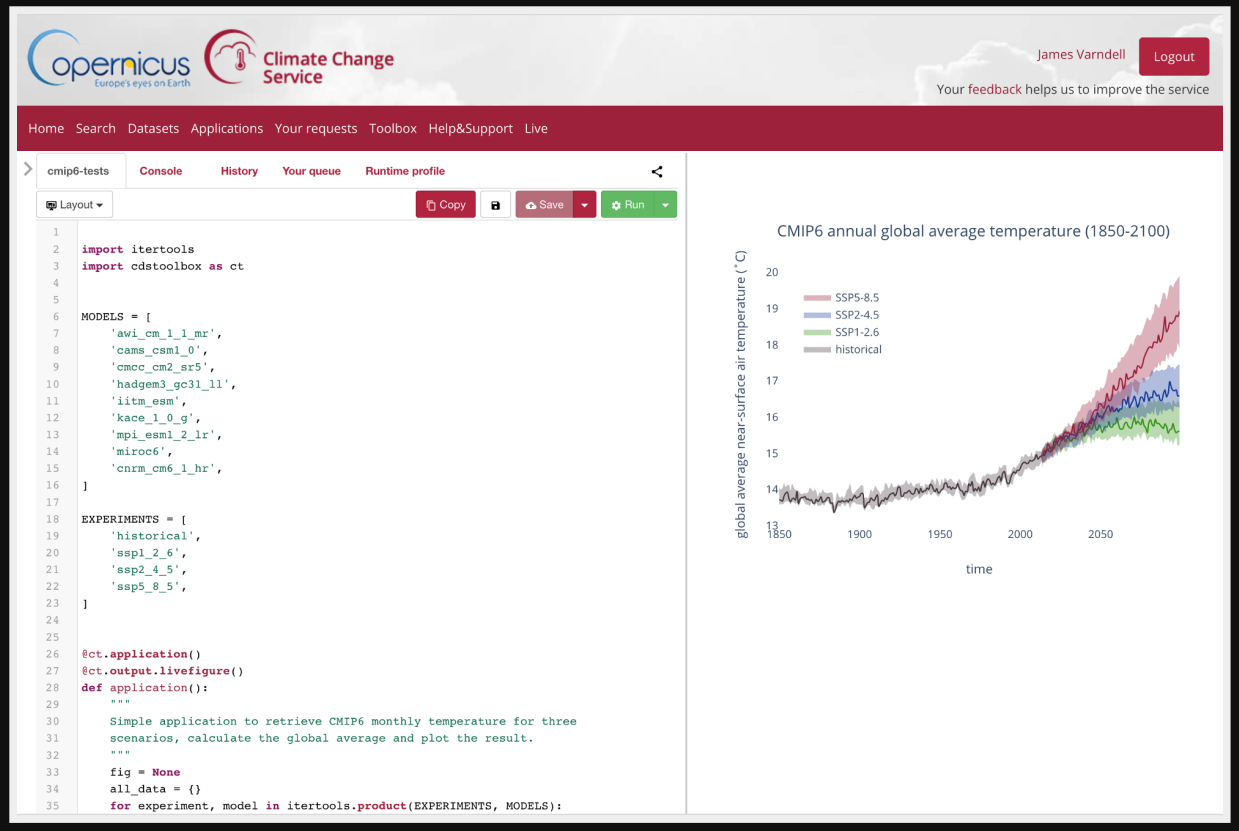
CMIP6 is now live in CDS ... using rook



Climate Data Store - Download data



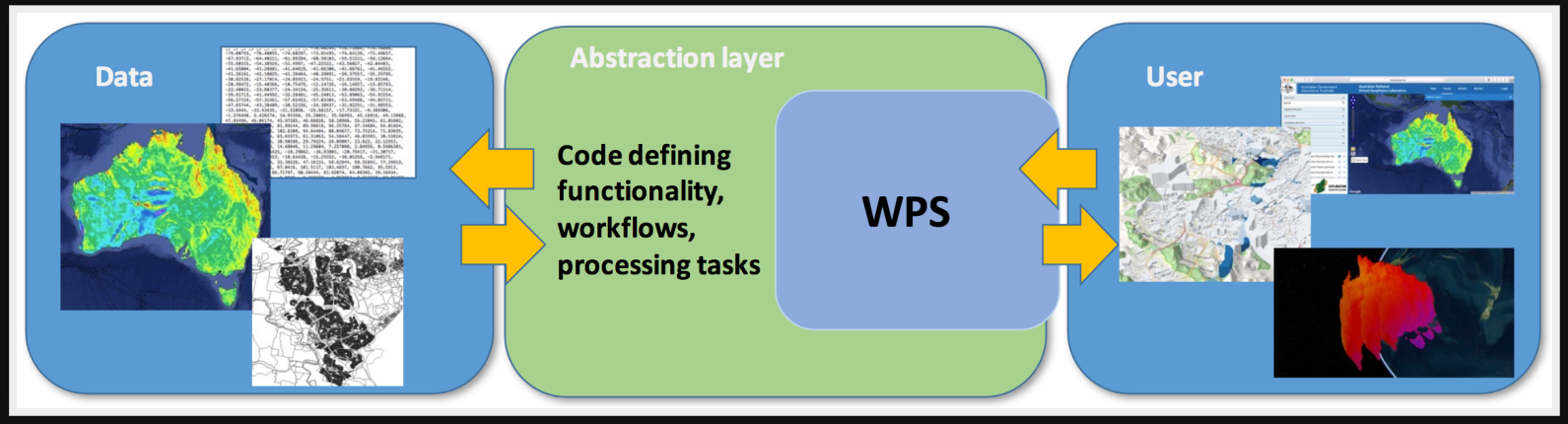
Climate Data Store - Toolbox



Climate Data Store - Rook

- The climate data is accessed remotely
- Using rook: download only a subset of the data
- Example: Temperature, 1990, Africa

Web Processing Service



Call a function remotely

Rook - WPS

- An OGC Web Processing Service
- Using PyWPS - GeoPython
- Providing climate data operators as a service
- Used for data reduction: Temperature, 1990, Africa

Rook - Operators

- Subsetting - time, area, level
- Averaging - over dimensions (time, ...)
- Regridding (a pain!)
- ??? - can be extended

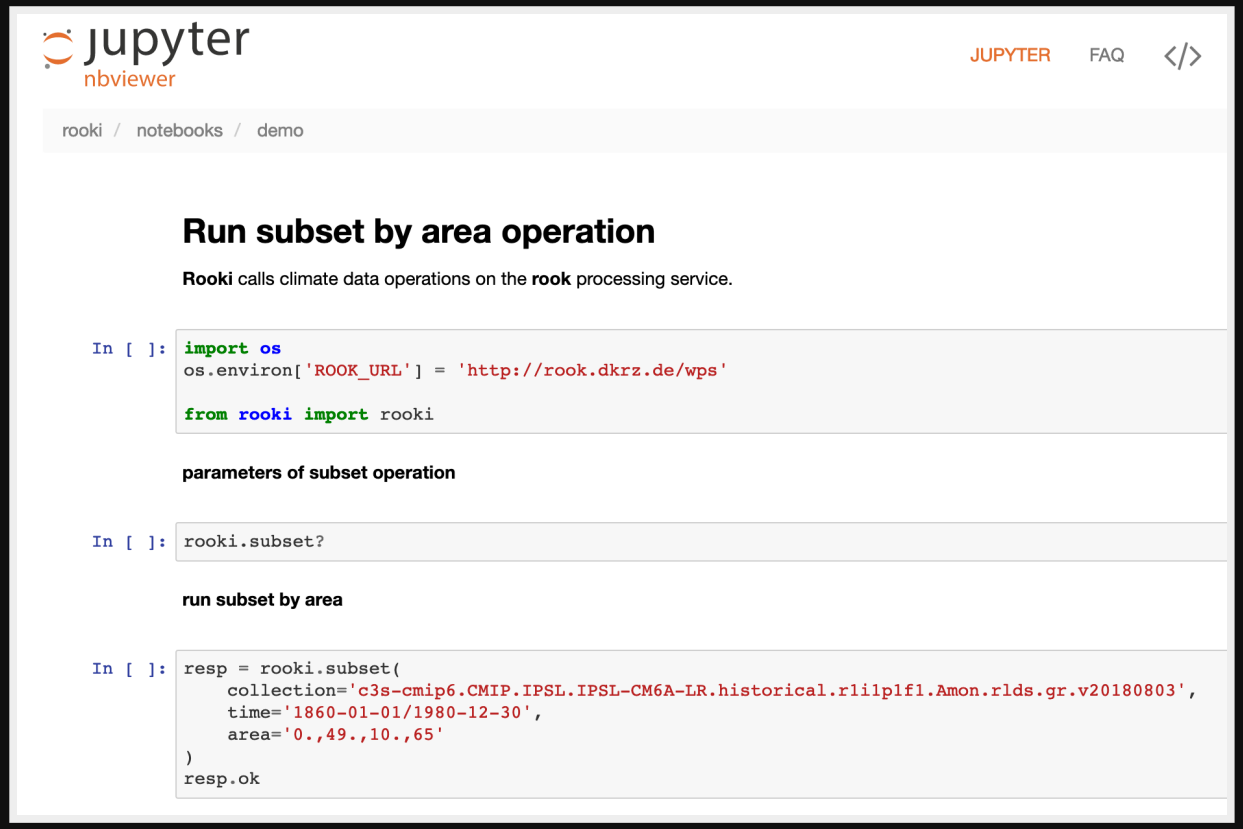
Rook - Clisops

- The Python library implementing these operators
- Using xarray - low level library
- Joint effort together with Ouranos, Canada
  https://clisops.readthedocs.io/en/latest/

Rooki

- Python WPS client - interactive or as library
- Using OWSLib - GeoPython
- Joint effort with Ouranos, Canada
- https://rooki.readthedocs.io/en/latest/

Rooki - Notebook



Deployment - Birdhouse Tools

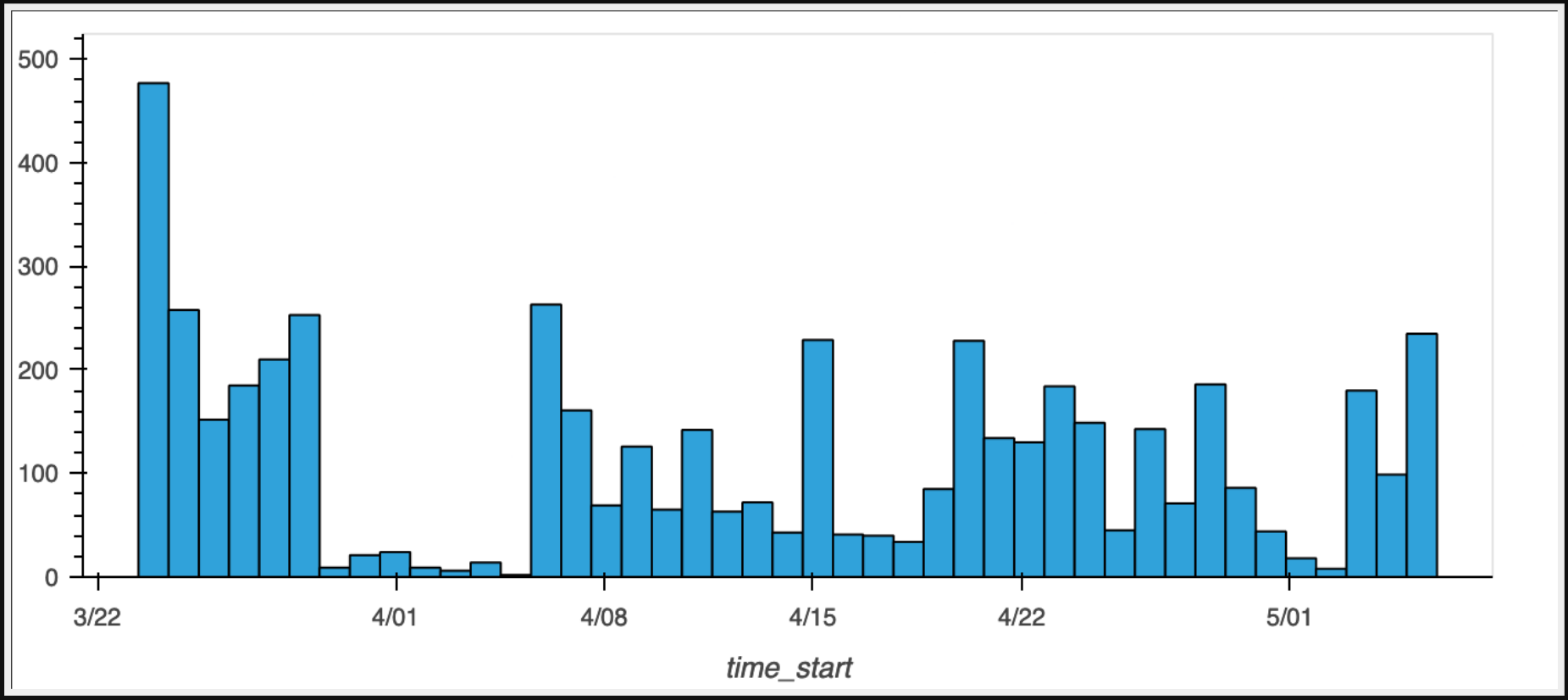
- Rook generated from a Cookiecutter template
- Ansible playbook to roll out on cluster with Slurm scheduler
- Joint effort with Ouranos, Canada

Availability

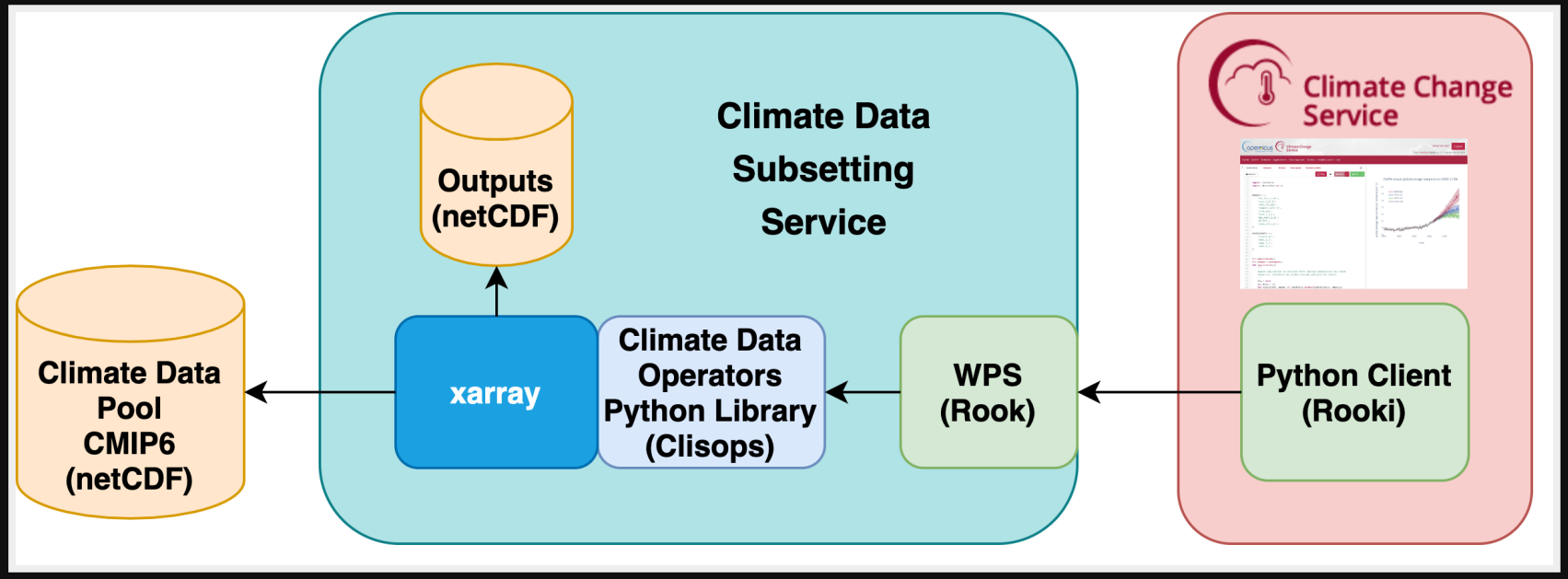
- Data pool is replicated to three sites
- Load-balanced access to rook WPS

Rook - Requests

200 per day ... can serve much more



All together



Status

- Deployed at CEDA and DKRZ
- Used for CMIP6
- Subset (time, area, level) operator
- Original CMIP6 files are downloaded from data nodes

Next steps?

- CMIP6 + Decadal
- CORDEX?
- CMIP5?
- Averaging and Regridding
- Other operations?

Projects

- Coperniucs C3S: https://climate.copernicus.eu/
- Roocs: https://roocs.github.io/
- Birdhouse: http://bird-house.github.io/
- GeoPython: https://geopython.github.io/

Thanks

Questions?