c4cds-wps Documentation

Release 0.1.0

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Contents:

1 Credits 3

2 Indices and tables 9

c4cds-wps (the bird) *c4cds-wps is a bird . . .*

A WPS Compute Service for Climate Data Store

- Free software: Apache Software License 2.0
- Documentation: https://c4cds-wps.readthedocs.io.

CHAPTER 1

Credits

This package was created with Cookiecutter and the bird-house/cookiecutter-birdhouse project template.

1.1 Installation

- *Install from Conda*
- *Install from GitHub*
- *Start c4cds-wps PyWPS service*
- *Run c4cds-wps as Docker container*
- *Use Ansible to deploy c4cds-wps on your System*

1.1.1 Install from Conda

Warning: TODO: Prepare Conda package.

1.1.2 Install from GitHub

Check out code from the c4cds-wps GitHub repo and start the installation:

```
$ git clone https://github.com/cp4cds/c4cds-wps.git
$ cd c4cds
$ conda env create -f environment.yml
$ source activate c4cds
$ python setup.py develop
```

... or do it the lazy way

The previous installation instructions assume you have Anaconda installed. We provide also a `Makefile` to run this installation without additional steps:

```
$ git clone https://github.com/cp4cds/c4cds-wps.git
$ cd c4cds
$ make clean    # cleans up a previous Conda environment
$ make install  # installs Conda if necessary and runs the above installation steps
```

1.1.3 Start c4cds-wps PyWPS service

After successful installation you can start the service using the `c4cds` command-line.

```
$ c4cds --help # show help
$ c4cds start  # start service with default configuration

OR

$ c4cds start --daemon # start service as daemon
loading configuration
forked process id: 42
```

The deployed WPS service is by default available on:

http://localhost:5000/wps?service=WPS&version=1.0.0&request=GetCapabilities.

Note: Remember the process ID (PID) so you can stop the service with `kill PID`.

You can find which process uses a given port using the following command (here for port 5000):

```
$ netstat -nlp | grep :5000
```

Check the log files for errors:

```
$ tail -f  pywps.log
```

... or do it the lazy way

You can also use the `Makefile` to start and stop the service:

```
$ make start
$ make status
$ tail -f pywps.log
$ make stop
```

1.1.4 Run c4cds-wps as Docker container

You can also run c4cds-wps as a Docker container.

Warning: TODO: Describe Docker container support.

1.1.5 Use Ansible to deploy c4cds-wps on your System

Use the Ansible playbook for PyWPS to deploy c4cds-wps on your system.

1.2 Configuration

1.2.1 Command-line options

You can overwrite the default PyWPS configuration by using command-line options. See the c4cds-wps help which options are available:

```
$ c4cds start --help
--hostname HOSTNAME        hostname in PyWPS configuration.
--port PORT                port in PyWPS configuration.
```

Start service with different hostname and port:

```
$ c4cds start --hostname localhost --port 5001
```

1.2.2 Use a custom configuration file

You can overwrite the default PyWPS configuration by providing your own PyWPS configuration file (just modifiy the options you want to change). Use one of the existing `sample-*.cfg` files as example and copy them to `etc/custom.cfg`.

For example change the hostname (*demo.org*) and logging level:

```
$ cd c4cds
$ vim etc/custom.cfg
$ cat etc/custom.cfg
[server]
url = http://demo.org:5000/wps
outputurl = http://demo.org:5000/outputs

[logging]
level = DEBUG
```

Start the service with your custom configuration:

```
# start the service with this configuration
$ c4cds start -c etc/custom.cfg
```

1.3 Developer Guide

- *Building the docs*
- *Running tests*
- *Run tests the lazy way*
- *Bump a new version*

1.3.1 Building the docs

First install dependencies for the documentation:

```
$ make bootstrap_dev
$ make docs
```

1.3.2 Running tests

Run tests using pytest.

First activate the `c4cds` Conda environment and install `pytest`.

```
$ source activate c4cds
$ conda install pytest flake8  # if not already installed
```

Run quick tests (skip slow and online):

```
$ pytest -m 'not slow and not online'"
```

Run all tests:

```
$ pytest
```

Check pep8:

```
$ flake8
```

1.3.3 Run tests the lazy way

Do the same as above using the `Makefile`.

```
$ make test
$ make testall
$ make pep8
```

1.3.4 Bump a new version

Make a new version of c4cds-wps in the following steps:

- Make sure everything is commit to GitHub.
- Update `CHANGES.rst` with the next version.
- Dry Run: `bumpversion --dry-run --verbose --new-version 0.8.1 patch`

- Do it: `bumpversion --new-version 0.8.1 patch`
- … or: `bumpversion --new-version 0.9.0 minor`
- Push it: `git push`
- Push tag: `git push --tags`

See the bumpversion documentation for details.

1.4 Processes

- *CMIP5 Regridder*
- *CORDEX Subsetter*

1.4.1 CMIP5 Regridder

class `c4cds.processes.wps_cmip5_regridder.`**`CMIP5Regridder`**

`cmip5_regridder` CMIP5 Regridder (v1.0)

CMIP5 Regridder using CDO.

Parameters

- **`model`** (*`{'HadGEM2-ES', 'IPSL-CM5A-MR', 'MPI-ESM-MR'}`*) – Choose a model like HadGEM2-ES.
- **`experiment`** (*`{'historical', 'rcp26'}`*) – Choose an experiment like historical.
- **`variable`** (*`{'pr', 'tas', 'tasmax', 'tasmin'}`*) – Choose a variable like tas.

Returns

- **output** (*`application/x-netcdf`*) – Regridded Dataset.
- **ncdump** (*`text/plain`*) – ncdump of regridded Dataset.
- **preview** (*`image/png`*) – Preview of subsetted Dataset.

References

- CP4CDS Portal
- Documentation
- Media

1.4.2 CORDEX Subsetter

class `c4cds.processes.wps_cordex_subsetter.`**`CordexSubsetter`**

`cordex_subsetter` CORDEX Subsetter (v1.0)

CORDEX Subsetter using CDO.

Parameters

- **country** (*{'Egypt', 'UK', 'France', 'Germany'}*) – Choose a Country like UK.
- **model** (*{'MOHC-HadRM3P'}*) – Choose a model like MOHC-HadRM3P.
- **experiment** (*{'evaluation'}*) – Choose an experiment like evaluation.
- **variable** (*{'tas', 'tasmax', 'tasmin'}*) – Choose a variable like tas.
- **year** (*{'1990', '2000', '2010'}*) – File should match this year.

Returns

- **output** (*application/x-netcdf*) – Subsetted Dataset.
- **ncdump** (*text/plain*) – ncdump of subsetted Dataset.
- **preview** (*image/png*) – Preview of subsetted Dataset.

References

- CP4CDS Portal
- Documentation
- Media

1.5 Changes

1.5.1 0.1.0 (2018-10-22)

- First release.

CHAPTER 2

Indices and tables

- genindex
- modindex
- search

Index

C

CMIP5Regridder (class in c4cds.processes.wps_cmip5_regridder), 7
CordexSubsetter (class in c4cds.processes.wps_cordex_subsetter), 7