SDDS Documentation

Release 0.1.0

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Contents:

Software Dependency and Deployment Solution.

CHAPTER 1

Examples

1.1 Example: CliMAF WPS

In this example we are creating a Web Processing Service for CliMAF.

1.1.1 Create WPS using Cookiecutter

We create an initial WPS with Cookiecutter and the bird-house/cookiecutter-birdhouse WPS template.

Install Cookiecutter using Conda:

```
$ conda install -c conda-forge cookiecutter
```

Run Cookiecutter with the WPS template:

```
$ cookiecutter https://github.com/bird-house/cookiecutter-birdhouse.git
```

Cookiecutter will ask you a few questions, here the answers for the CliMAF WPS:

```
full_name [Full Name]: Mary Stuart
email [your@email]: mary@stuart
github_username [bird-house]: cp4cds
project_name [Babybird]: CliMAF WPS Demo
project_slug [climaf_wps_demo]: climafwps
project_repo_name [climafwps]: climaf_wps_demo
project_short_description [A Web Processing Service for Climate Data Analysis.]: A␣
↪Web Processing Service for CliMAF.
version [0.1.0]: 1.1.0
Select open_source_license:
1 - Apache Software License 2.0
2 - MIT license
3 - BSD license
4 - ISC license
```

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```
5 - GNU General Public License v3
Choose from 1, 2, 3, 4, 5 [1]: 1
http_port [5000]: 5000
```

A project folder `climaf_wps_demo` is created with a fully functional WPS and example processes.

Push this project now to GitHub.

You can find the result in our CP4CDS GitHub project.

1.1.2 Add a CliMAF process

We will add now a *time series plot* process based on CliMAF functionality to the WPS.

First, we need to add the `climaf` dependency to the existing Conda environment:

https://github.com/cp4cds/climaf-wps-demo/blob/master/environment.yml

Then we add a new Python module for a *time series plot* generation:

https://github.com/cp4cds/climaf-wps-demo/blob/master/climafwps/tsplot.py

We need to define a WPS process definition for the *time series plot* where we describe the input and output parameters and provide a short documentation:

https://github.com/cp4cds/climaf-wps-demo/blob/master/climafwps/processes/wps_tsplot.py

You need to activate this process in the `__init__` module:

https://github.com/cp4cds/climaf-wps-demo/blob/master/climafwps/processes/__init__.py

You should extend the tests for the new `tsplot` process:

https://github.com/cp4cds/climaf-wps-demo/blob/master/tests/test_wps_caps.py

An initial Sphinx documentation is part of the WPS (`docs/`) and can be made available on ReadTheDocs.

1.1.3 Test CliMAF WPS

You can install the WPS using a `Makefile`:

```
$ make clean install
```

Start the WPS with customized configuration for CMIP5 data archive:

```
$ source activate climafwps
$ climafwps start -c etc/ceda.cfg -d
```

The service will be available at the URL:

http://localhost:5000/wps

Check the documentation on ReadTheDocs for details.

1.1.4 Use Ansible for Deployment

We can deploy CliMAF WPS on a host using Ansible.

First, you need to clone the Ansible playbook for WPS:

```
$ git clone https://github.com/bird-house/ansible-wps-playbook.git
$ cd ansible-wps-playbook
```

If Ansible is not installed you can bootstrap the installation:

```
$ bash bootstrap.sh
```

To install CliMAF WPS you need to edit the `custom.yml` configration with the approriate options (hostname, port, CMIP5 archive), for example:

```
---
# Configuration for CliMAF WPS
wps_name: climafwps
wps_repo: https://github.com/cp4cds/climaf-wps-demo.git
wps_version: master
wps_hostname: wps.demo
wps_port: 80
wps_archive_root: /badc/cmip5/data
wps_config_template: "{{ wps_location }}/{{ wps_name }}/templates/pywps.cfg"
```

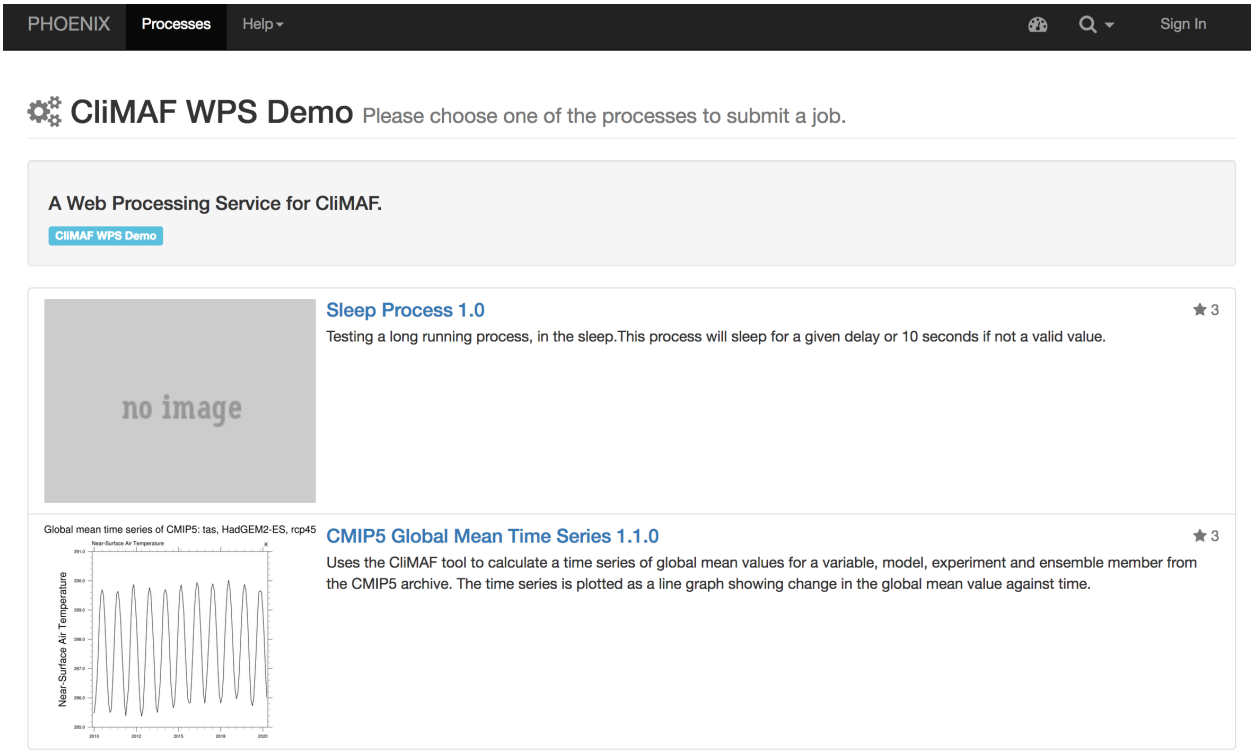
Run Ansible with this configration using a `Makefile`:

```
$ make play
```

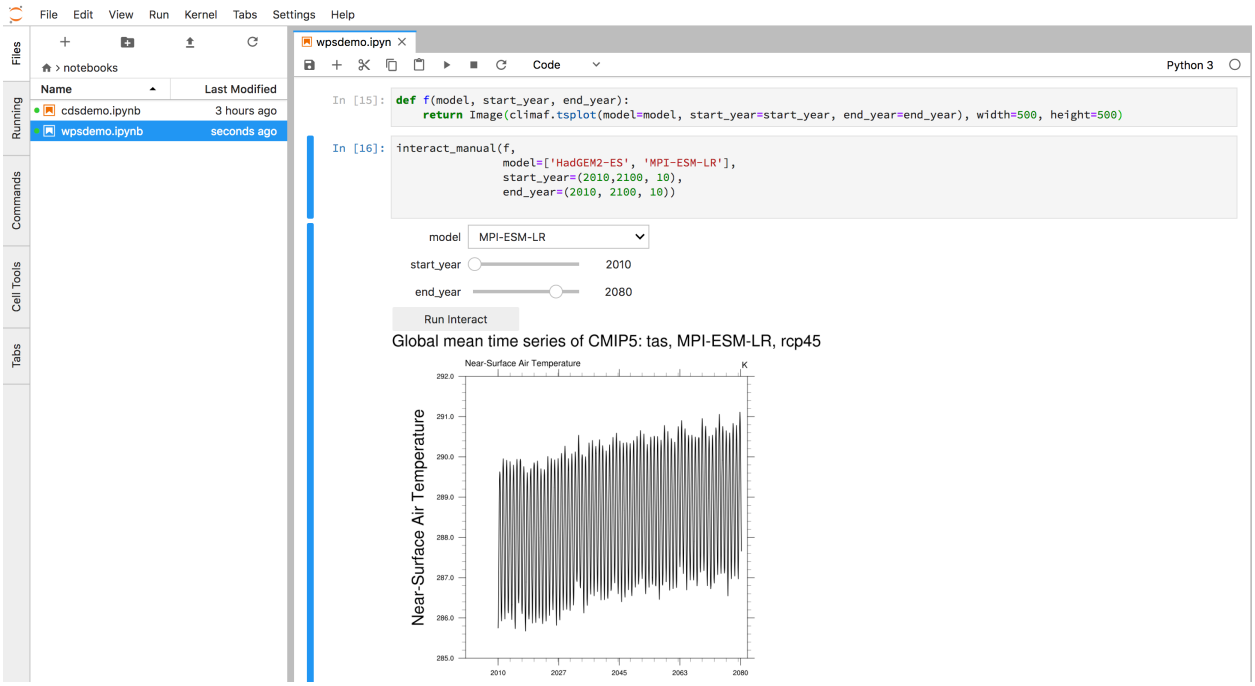
Check the documentation on ReadTheDocs for details.

1.1.5 CliMAF Demo

There is a online demo availble with a deployed CliMAF WPS.



You can also try a JupyterLab notebook with a CliMAF example:



This notebook is using the birdy client to interact with the CliMAF WPS service.

CHAPTER 2

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