

Catalysts

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Interactive Application Service

a virtual laboratory for the 21st century



Agenda

- What is the IAS?
- Why are we doing this?
- How does it work?
- Showcase



IAS - what is it?

- web based tool
- provides access to both web-based apps and remote desktop connections
- start/stop/share your apps
- every app can be made available

Service

SNAP	Sentinel Toolbox	Start new
SNAP-and-SAGA-GIS	Sentinel Toolbox, System for Automated Geoscientific Analyses and Anaconda	Start new
Ubuntu	Virtual Desktop	Start new
QGIS	Free and Open Source GIS	Start new
QGIS		↶ ⏸ ✖
Jupyter	Python Notebook	Start new
JupyterLab	Python Notebook Lab	Start new
JupyterLab		↶ ⏸ ✖
DC-Demo	Disaster Charter Demonstrator Access	Start new



IAS - why are we doing this?





IAS - why are we doing this?

“It is tedious to access the data.”

“It is complicated to work with the software.”

“The environment is not fast enough.”

It doesn't have to be like that.

Classic



1. **Register for software usage and download** and select (the right) version (nightly builds, latest, stable, developer, etc.)
2. **Download data** (this may take a while...)
3. **Install software**
4. **Go through licensing process(es)** (think of IT regulations, license servers, etc.)
5. **Setup environments on your machine(s)** (and fight your previously set up environments...e.g. Python, prepare configurations, etc.)
6. **Work**
7. **In case of large-scale (...) processing: Have a powerful Workstation**

Classic



vs.

Cloud



Two different approaches

1. **Register for software usage and download** and select (the right) version (nightly builds, latest, stable, developer, etc.)
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7. **In case of large-scale (...) processing: Have a powerful Workstation**

1. **Register**
2. **Access**
3. **Work**





Technical background

- Docker
- Persistent home over all instances
- Readonly archive available
- Shared folder per project
- Every webapp natively supported, e.g. jupyterlab, cloud9 IDE, ...
- For non-webapps: ubuntu + noVNC is used, e.g. SNAP, QGIS, ...

C

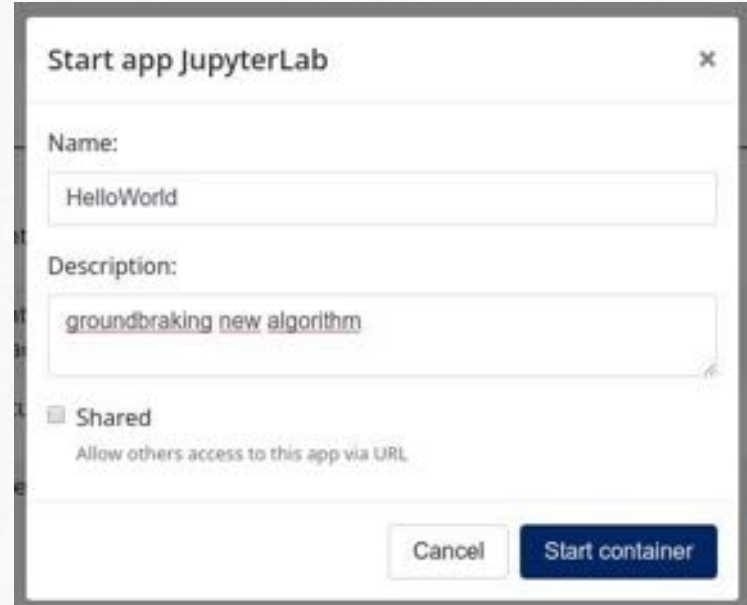
Example: Prototype new algorithm

- Using e.g. jupyterlab
- It takes only a few seconds to spawn a new instance and get going

Example: Visualize data

- Spawn a new instance with QGIS pre-installed
- Select data from archive or project folder

Get things done!



Start app JupyterLab

Name:
HelloWorld

Description:
groundbraking new algorithm

Shared
Allow others access to this app via URL

Cancel Start container


```
import requests
from requests.auth import HTTPBasicAuth
import glob
```

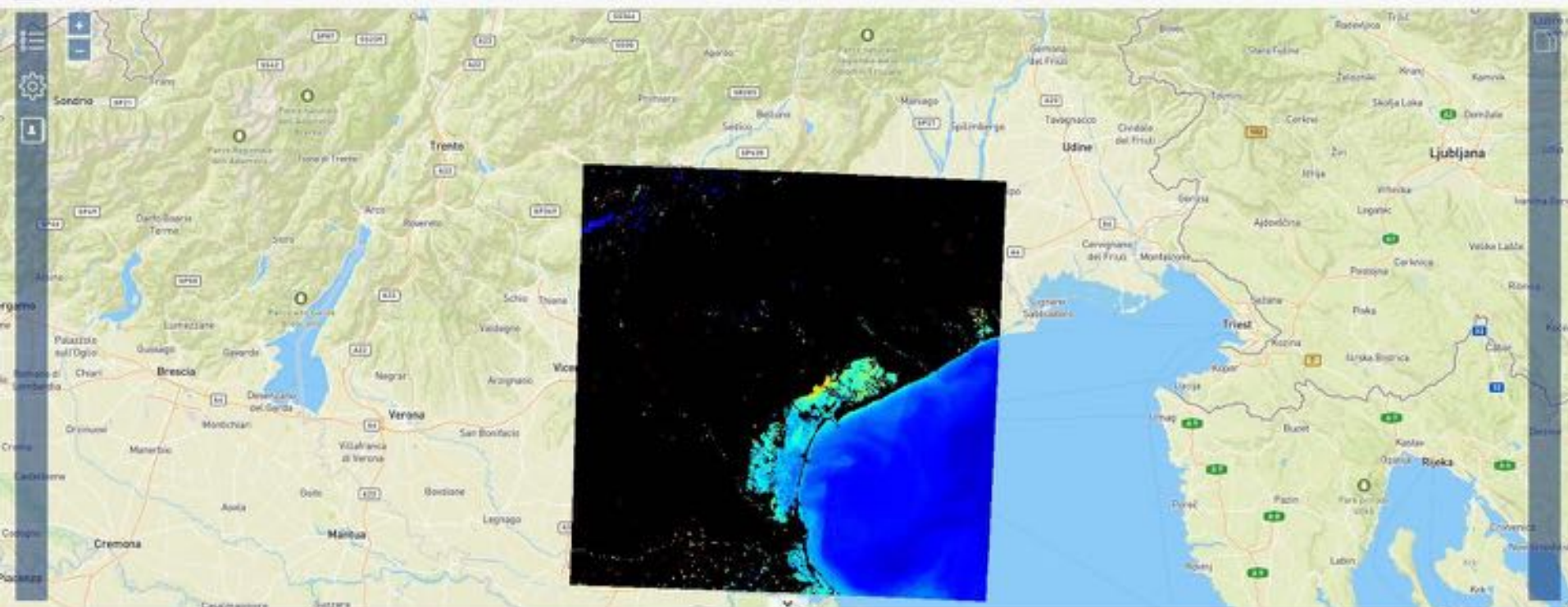
```
user = "ctep_demo"
password = "ctep_demo!"
```

```
PROCESSOR_NUMBER = 188
DATA_DIR = "/shared/phiweek/*"
BASKET = "/mount/dmz31/apps/ctep/basket/"
WPS_URL = "https://www.coastal-tep.eu/wps/"
```

```
xml_template = '<wps:Execute service=\\"WPS\\" version=\\"1.0.0\\" xmlns:wps=\\"http://www.opengis.n
<!-- template-version: 0.21 --><ows:Identifier>urn:ctep:processor:{processor_number}</o
<wps>DataInputs>\
  <wps:Input>\
    <ows:Identifier>file_S2</ows:Identifier>\
    <wps:Reference xlink:href=\\"file://{file}\\" mimeType=\\"image/tiff\\"/>\
  </wps:Input>\
</wps>DataInputs>\
<wps:ResponseForm>\
<wps:ResponseDocument storeExecuteResponse=\\"true\\" status=\\"true\\">\
  <wps:Output>\
    <ows:Identifier>outputFiles</ows:Identifier>\
```

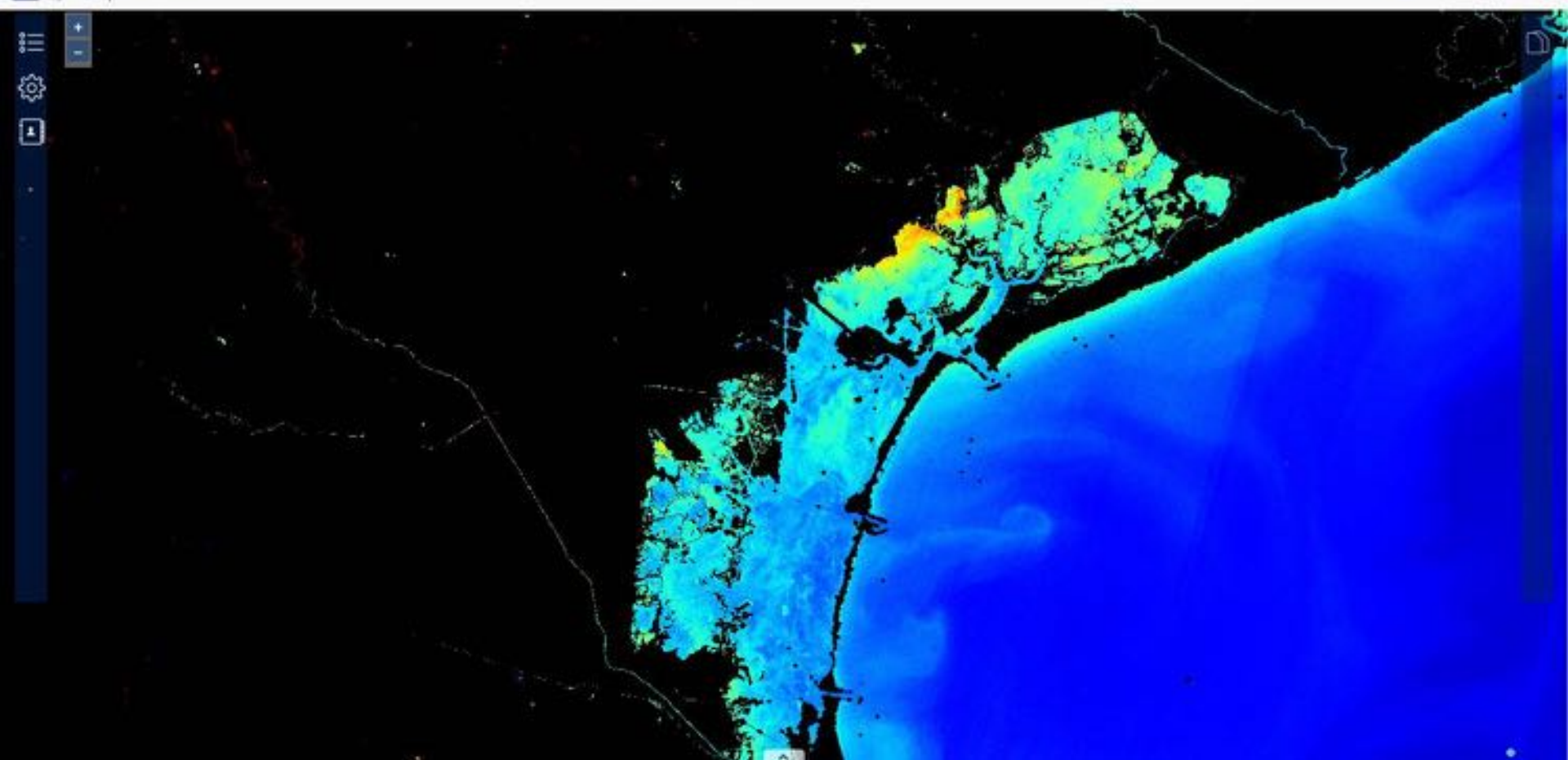
```
session = requests.Session()
headers = {'Content-Type': 'text/xml', 'X-CTEP-JobName': 'jupyter_phiweek_demo'}
auth = HTTPBasicAuth(user, password)
```

```
for file in glob.glob(DATA_DIR):
    data = xml_template.format(processor_number=str(PROCESSOR_NUMBER),
                               file="{}/{}".format(BASKET, file))
    response = session.post(WPS_URL, data=data, headers=headers, auth=auth).text
    print(response)
```



Search results: ACQs Uploaded Files Processing results Shared Files

- show_054_20180916T123046_0022_T32TQR.tif
- execute_log.txt
- show_005_20180916T123046_0022_T32TQR_data.tif
- show_004_20180916T123046_0022_T32TQR_data.tif
- show_005_20180916T123046_0022_T32TQR.tif





Try & Give Feedback

<https://www.coastal-tep.eu/ias/>

user / pass: ctep_demo / ctep_demo! (as in the python snippet before...)

Contact me or the C-TEP team for your own account + with your opinion.



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Questions?