
IHEWAreport Documentation

Release unknown

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Sep 23, 2020

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This is the documentation of **IHEWAreport**.

IHEWAreport is a Reportion of tools to write standard report. This project is fully developed by Water Accounting team at IHE-Delft.

MiKTeX is required to generate tex and pdf file.

pandoc is used to generate word document.

- `.py -> latexmk -> .tex & .run.xml`
- `.tex -> pdflatex -> .bcf`
- `.bcf -> biber -> .bbl`
- `.bbl -> pdflatex -> .pdf` 1st time
- `.bbl -> pdflatex -> .pdf` 2ed time, make sure

INSTALLATION

1.1 Install from pip

IHEWAreport Python package is hosted on [Python Package Index \(PyPI\)](#).

Install from pip.

```
$ pip install IHEWAreport
```

1.2 Install from source code

Download source code from [Github](#).

```
$ git clone https://github.com/wateraccounting/IHEWAreport.git  
$ cd IHEWAreport
```

Install from source code.

```
$ python setup.py install
```

1.3 Uninstall IHEWAreport

```
$ pip uninstall IHEWAreport
```


DOCKER

Set “System -> Base Memory” to max capacity in Virtual Machine.

Set “Shared Folders” in Virtual Machine.

- Folder Path: D:\IHEWAreport
- Folder Name: d/IHEWAreport
- Auto-mount: Yes
- Make Permanent: Yes

Download source code from [Github](#).

```
$ git clone https://github.com/wateraccounting/IHEWAreport.git
$ cd IHEWAreport
```

Restart Docker Virtual Machine image.

```
$ docker-machine restart
```

Pull the IHEWAreport image.

```
$ docker pull wateraccounting/ihewareport
```

Or build from source code.

```
$ docker build -t wateraccounting/ihewareport .
```

Check images.

```
$ docker images
```

Check ip address.

```
$ docker-machine env
export DOCKER_HOST="tcp://192.168.99.100:2376"
```

Run the image with Jupyter Notebook. To access Jupyter <http://192.168.99.100:8888/>

```
$ docker run -it --name ihewareport -p 8888:8888 -v /d/IHEWAreport:/notebooks_
↪wateraccounting/ihewareport
```

Check running image (container), in the new cmd window.

```
$ docker container list
```

Access to running image, in the new cmd window.

```
$ docker exec -it ihewareport bash
$ cd /notebooks/
$ python3 setup.py install
$ python3 ./examples/ex_CFSR_GRIB.py
```

Clean running cache.

```
$ docker system prune -f && docker volume prune -f && docker container prune -f
```

Remove image.

```
$ docker rmi wateraccounting/ihewareport
```

Examples can be found at [examples](#).

```
import os
import IHEWAreport

path = os.getcwd()
config = 'config.yml'
file_config = os.path.join(path, config)

if os.path.exists(file_config):
    IHEWAreport.Report(workspace=path,
                       config=config)
```

)

DEVELOPMENT

In the PyCharm, change “Project Structure -> Source Folders” to “src”

Download source code from [Github](#).

```
$ git clone https://github.com/wateraccounting/IHEWAreport.git
$ cd IHEWAreport
```

From the root of the project

```
$ python setup.py --version
```

Format scripts by PEP8

```
$ autopep8 --in-place --aggressive src/IHEWAreport/base/base.py
```

Flake8, pre-commit

```
$ pre-commit install

$ pre-commit run --all-files
[INFO] Initializing environment for git://github.com/pre-commit/pre-commit-hooks.
[INFO] Initializing environment for https://github.com/pre-commit/mirrors-isort.
[INFO] Installing environment for git://github.com/pre-commit/pre-commit-hooks.
[INFO] Once installed this environment will be reused.
[INFO] This may take a few minutes...
[INFO] Installing environment for https://github.com/pre-commit/mirrors-isort.
[INFO] Once installed this environment will be reused.
[INFO] This may take a few minutes...
```

Unit test

```
$ python setup.py test
```

Read the Docs

```
$ python setup.py doctest

$ python setup.py docs
```

Upload to PyPI

1. In IDE, **commit** the changes “v0.0.1”
2. In IDE, **Version Control -> Log**, select this commit
3. In IDE, add version tag, select **VCS -> Git -> tag**

4. In IDE, **Tag window** -> **Tag Name**, type “**v0.0.1**”
5. In cmd, build package, type `python setup.py sdist bdist_wheel`
6. In cmd, validate build, type `twine check dist/IHEWAreport-0.0.1*`
7. In cmd, upload build, type `twine upload dist/IHEWAreport-0.0.1*`
8. In IDE, **push** the commit, with Tag label: “*HEAD*”, “*master*”, “*v0.0.1*”
9. In Github, select **Release** to “create a new release” or “Draft a new release”
10. In Github, **Tag version**, type “**v0.0.1**”
11. In Github, @ **Target**, select this commit
12. In Github, **Publish release**

TEMPLATES

Details can be found at [Templates](#).

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- Be friendly and patient
- Be welcoming
- Be considerate
- Be respectful
- Be careful in the words that you choose
- When we disagree, try to understand why

CONTENTS

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7.3 Contributing

Welcome to the IHE WaterAccounting Report Tool (IHEWAreport) project. Here's how we work.

7.3.1 Code of Conduct

First of all: the IHEWAreport project has a code of conduct. Please read the `CODE_OF_CONDUCT.txt` file, it's important to all of us.

7.3.2 Rights

The GNU General Public License v3.0 license (see `LICENSE.rst`) applies to all contributions.

7.3.3 Issue Conventions

The IHEWAreport issue tracker is for actionable issues.

Questions about installation, distribution, and usage should be taken to the project's [#issue](https://wateraccounting.slack.com). Opened issues which fall into one of these three categories may be perfunctorily closed.

Questions about development of IHEWAreport, brainstorming, requests for comment, and not-yet-actionable proposals are welcome in the project's [#idea](https://wateraccounting.slack.com).

IHEWAreport is a relatively new project and highly active. We have bugs, both known and unknown.

Please search existing issues, open and closed, before creating a new one.

IHEWAreport employs Geospatial modules, so bug reports very often hinge on the following details:

- Operating system type and version (Windows? Ubuntu 12.04? 14.04?)
- The version and source of GDAL (UbuntuGIS? Homebrew?)

7.3.4 Dataset Objects

Our term for the kind of object that allows read and write access to raster data is *dataset object*. A dataset object might be an instance of *DatasetReader* or *DatasetWriter*. The canonical way to create a dataset object is by using the `IHEWAreport.GIS.OpenAsArray()` function.

This is analogous to Python's use of [file object](#).

7.3.5 Git Conventions

We use a variant of centralized workflow described in the [Git Book](#). We have no 1.0 release for IHEWAreport yet and we are tagging and releasing from the master branch. Our post-1.0 workflow is to be decided.

Work on features in a new branch of the mapbox/IHEWAreport repo or in a branch on a fork. Create a [GitHub pull request](#) when the changes are ready for review. We recommend creating a pull request as early as possible to give other developers a heads up and to provide an opportunity for valuable early feedback.

7.3.6 Code Conventions

IHEWAreport supports Python 2 and Python 3 in the same code base, which is aided by an internal compatibility module named `compat.py`. It functions similarly to the more widely known `six` but we only use a small portion of the features so it eliminates a dependency.

We strongly prefer code adhering to [PEP8](#).

Tests are mandatory for new features. We use [pytest](#).

We aspire to 100% coverage for Python modules [Coveralls](#).

7.3.7 Development Environment

Developing IHEWAreport requires Python 2.7 or any final release after and including 3.4. We prefer developing with the most recent version of Python but recognize this is not possible for all contributors. See the Windows install instructions in the [readme](#) for more information about building on Windows.

7.3.7.1 Initial Setup

First, clone IHEWAreport's `git` repo:

```
$ git clone https://github.com/wateraccounting/ihewareport.git
```

Development should occur within a [virtual environment](#) to better isolate development work from custom environments.

In some cases installing a library with an accompanying executable inside a virtual environment causes the shell to initially look outside the environment for the executable. If this occurs try deactivating and reactivating the environment.

7.3.7.2 Installing GDAL

The GDAL library and its headers are required to build IHEWAreport. We do not have currently have guidance for any platforms other than Linux and OS X.

On Linux, GDAL and its headers should be available through your distro's package manager. For Ubuntu the commands are:

```
$ sudo add-apt-repository ppa:ubuntugis/ppa
$ sudo apt-get update
$ sudo apt-get install gdal-bin libgdal-dev
```

On OS X, Homebrew is a reliable way to get GDAL.

```
$ brew install gdal
```

7.3.7.3 Python build requirements

Provision a virtualenv with IHEWAreport's build requirements. IHEWAreport's `setup.py` script will not run unless Cython and Numpy are installed, so do this first from the IHEWAreport repo directory.

Linux users may need to install some additional Numpy dependencies:

```
$ sudo apt-get install libatlas-dev libatlas-base-dev gfortran
```

then:

```
$ pip install -U pip
$ pip install -r requirements-dev.txt
```

7.3.7.4 Installing IHEWAreport

Installing IHEWAreport in editable mode while developing is very convenient but only affects the Python files.

```
$ python setup.py install
```

7.3.7.5 Uninstalling IHEWAreport

```
$ pip uninstall IHEWAreport
```

7.3.7.6 Running the tests

IHEWAreport's tests live in `python setup.py test` and generally match the main package layout.

To run the entire suite and the code coverage report:

```
$ python setup.py test
```

7.4 Changelog

7.4.1 Version 0.0.1

- Template of CHANGELOG.RST!
- Feature A added
- FIX: nasty bug #1729 fixed

7.5 Templates

Table 1: Product Detail

id	product	account
1	ALEXI	IHEWA

7.6 IHEWAreport

7.6.1 IHEWAreport package

7.6.1.1 Subpackages

IHEWAreport.scripts package

Submodules

IHEWAreport.scripts.skeleton module

This is a skeleton file that can serve as a starting point for a Python console script. To run this script uncomment the following lines in the [options.entry_points] section in setup.cfg:

```
console_scripts = fibonacci = IHEWAreport.skeleton:run
```

Then run *python setup.py install* which will install the command *fibonacci* inside your current environment. Besides console scripts, the header (i.e. until `_logger...`) of this file can also be used as template for Python modules.

Note: This skeleton file can be safely removed if not needed!

```
IHEWAreport.scripts.skeleton.fib(n)
```

Fibonacci example function

Parameters `n` (`int`) – integer

Returns `n`-th Fibonacci number

Return type `int`

```
IHEWAreport.scripts.skeleton.main(args)
```

Main entry point allowing external calls

Parameters `args` (`[str]`) – command line parameter list

```
IHEWAreport.scripts.skeleton.parse_args(args)
```

Parse command line parameters

Parameters `args` (`[str]`) – command line parameters as list of strings

Returns command line parameters namespace

Return type `argparse.Namespace`

```
IHEWAreport.scripts.skeleton.run()
```

Entry point for console_scripts

`IHEWAreport.scripts.skeleton.setup_logging` (*loglevel*)

Setup basic logging

Parameters `loglevel` (*int*) – minimum loglevel for emitting messages

Module contents

IHEWAreport script modules

IHEWAreport.templates package

Subpackages

IHEWAreport.templates.IHE package

Submodules

IHEWAreport.templates.IHE.ADB module

IHEWAreport.templates.IHE.DataAnalysis module

IHEWAreport.templates.IHE.FAO module

IHEWAreport.templates.IHE.Manual module

Module contents

IHEWAreport: IHE Template

Module contents

IHEWAreport template modules

IHEWAreport.utils package

Submodules

IHEWAreport.utils.util module

utils

Utilities for IHEWAreport template modules.

Examples:

```
from IHEWAreport.templates.util import Plot
```

```
class IHEWAreport.utils.util.Plot
    Bases: object
```

Module contents

IHEWAreport template modules

7.6.1.2 Submodules

7.6.1.3 IHEWAreport.exception module

Exception

<https://julien.danjou.info/python-exceptions-guide/>

exception IHEWAreport.exception.IHEClassInitError (*mod, msg=None*)

Bases: `Exception`

IHEClassInitError Class

Parameters

- **mod** (*str*) – Module name.
- **msg** (*bool*) – Extra message.

exception IHEWAreport.exception.IHEFileError (*file, msg=None*)

Bases: `Exception`

IHEFileError Class

Parameters

- **file** (*str*) – File name.
- **msg** (*bool*) – Extra message.

exception IHEWAreport.exception.IHEKeyError (*key, val, msg=None*)

Bases: `Exception`

IHEKeyError Class

Parameters

- **key** (*str*) – Key name.
- **val** (*list*) – Key name list.
- **msg** (*bool*) – Extra message.

exception IHEWAreport.exception.IHEStringError (*vname, msg=None*)

Bases: `Exception`

IHEStringError Class

Parameters

- **vname** (*str*) – Variable name.
- **msg** (*bool*) – Extra message.

exception IHEWAreport.exception.IHETypeError (*vname, rtype, vdata, msg=None*)

Bases: `Exception`

IHETypeError Class

Parameters

- **vname** (*str*) – Variable name.

- **rtype** (*str*) – Required type.
- **vdata** (*float*) – Variable value.
- **msg** (*bool*) – Extra message.

7.6.1.4 IHEWAreport.report module

Download

Before use this module, create `accounts.yml` file. And edit account information in the file.

class IHEWAreport.report.Base

Bases: `object`

This Base class

Load base.yml file.

Parameters

- **product** (*str*) – Product name of data products.
- **is_print** (*bool*) – Is to print status message.

class IHEWAreport.report.Report (*workspace="", config="", isclean=True, **kwargs*)

Bases: `IHEWAreport.report.Base`

Download class

After initialise the class, data downloading will automatically start.

Parameters

- **workspace** (*str*) – Directory to config.yml.
- **config** (*str*) – Configuration yaml file name.
- **kwargs** (*dict*) – Other arguments.

static `get_config(self)`

7.6.1.5 Module contents

IHEWAreport: IHE Water Accounting Report Tools

class IHEWAreport.Report (*workspace="", config="", isclean=True, **kwargs*)

Bases: `IHEWAreport.report.Base`

Download class

After initialise the class, data downloading will automatically start.

Parameters

- **workspace** (*str*) – Directory to config.yml.
- **config** (*str*) – Configuration yaml file name.
- **kwargs** (*dict*) – Other arguments.

static `get_config(self)`

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