
OOIPY

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OOIPY is a python toolbox designed to aid in scientific analysis of Ocean Observatories Initiative (OOI) data. Some data (such as broadband hydrophone data) is not available through the OOI API (M2M). This package is designed to help with the acquiring of datasets from the OOI Raw Data Server. Additionally, tools to analyze the data, such as spectrogram and power spectral density plotting are also provided.



1.1 How to Install OOIPY

To fork our project, you can visit our Github Repository.

OOIPY is available on PyPI.

1.1.1 Install Instruction

OOIPY is designed to run on Python version 3.9 and above. To install OOIPY, run the following command:

```
pip install ooipy
```

Please see our Getting Started Guide for a tutorial on basic OOIPY usage.

1.2 How to setup OOIPY development environment

1. Navigate into the folder where you wish to setup ooipy and clone the repository using this command:

```
git clone https://github.com/Ocean-Data-Lab/ooipy.git
```

2. Setup a new Conda environment using this command:

```
conda create --name env_name python=3.10 pip
```

3. Activate the environment using this command:

```
source activate env_name
```

4. Install ooipy using this command in the same directory where the repository has been cloned:

```
pip install -e ooipy
```

5. Install the development environment package requirements :

```
cd ooipy  
pip install -r dev-requirements.txt
```

5. When this runs successfully, open a python prompt to verify if installation is proper, using this command:

```
python  
import ooipy  
print(ooipy.__file__)
```

If the path printed out matches the `__init__.py` from your local installation path for the ooipy github repository, your development environment has been properly setup.



1.3 How to Cite OOIPY

Please cite our project as

Schwock, Felix, Ragland, John, Munson, Matthew, & Abadi, Shima. (2020, December 1). OOIPy: A Python toolbox designed to aid in the scientific analysis of Ocean Observatories Initiative (OOI) data (Version v1.0.3). Zenodo. <http://doi.org/10.5281/zenodo.4300725>

You can also find our project on [Zenodo](#) and [GitHub](#).



1.4 OOIPY Demos

This section is under development. Demos can currently be found on GitHub repository

- [ooipy/hydrophone_demo.ipynb](#)
- [ooipy/ctd_demo.ipynb](#)

CHAPTER 2

API Documentation



2.1 Basic Hydrophone Functions



2.2 Basic CTD Functions



2.3 Request Module

This module provides the tools to download OOI data from the OOI Raw Data Server.

2.3.1 Hydrophone Nodes

- **Oregon Shelf Base Seafloor ($F_s = 64$ kHz)**

- ‘LJ01D’
- **Oregon Slope Base Seafloor (Fs = 64 kHz)**
 - ‘LJ01A’
- **Slope Base Shallow (Fs = 64 kHz)**
 - ‘PC01A’
- **Axial Base Shallow Profiler (Fs = 64 kHz)**
 - ‘PC03A’
- **Offshore Base Seafloor (Fs = 64 kHz)**
 - ‘LJ01C’
- **Axial Base Seafloor (Fs = 64 kHz)**
 - ‘LJ03A’
- **Axial Base Seafloor (Fs = 200 Hz)**
 - ‘Axial_Base’
 - ‘AXABA1’
- **Central Caldera (Fs = 200 Hz)**
 - ‘Central_Caldera’
 - ‘AXCC1’
- **Eastern Caldera (Fs = 200 Hz)**
 - ‘Eastern_Caldera’
 - ‘AXEC2’
- **Southern Hydrate (Fs = 200 Hz)**
 - ‘Southern_Hydrate’
 - ‘HYS14’
- **Oregon Slope Base Seafloor (Fs = 200 Hz)**
 - ‘Slope_Base’
 - ‘HYSB1’

2.3.2 Hydrophone

2.3.3 CTD



2.4 Tools Module

This module provides some additional tools for visualizing and saving spectrogram and power spectral density objects

2.4.1 Visualization

2.4.2 Workflow



2.5 Scripts

There are a collection of useful scripts that can be used to download and process data. The scripts are included in the package if downloaded with pypi, but can also be downloaded and run individually from the [github repo](#).

2.5.1 download_hydrophone_data

location: ooipy/scripts/download_hydrophone_data.py

This script downloads hydrophone data that is specified in a csv.

Here is an example csv file:

```
node,start_time,end_time,file_format,downsample_factor
LJ03A,2019-08-03T08:00:00,2019-08-03T08:01:00,mat,64
AXBA1,2019-08-03T12:01:00,2019-08-03T12:02:00,mat,1
```

The script can be run with the following command: