eddytools

Python package to detect, track, sample, cluster, and average eddies and their properties based on ocean model output from the NEMO model on ORCA grids.

Based on work by Tobias Schulzki, Klaus Getzlaff and Rafael Abel, the original algorithm was implemented in `matlab` by Christopher Bull.

The package works based on output loaded with `load_xorca_dataset` from the xorca module and additionally requires xgcm.

Install a minimal environment

```
# clone the git repository
git clone git@git.geomar.de:jan-klaus-rieck/eddytools.git
cd eddytools
# create and activate the environment
conda env create -f environment.yml
conda activate py3_eddy
# install modules not installed through environment.yml
pip install git+https://github.com/willirath/xorca.git@master
pip install git+https://github.com/xgcm/xgcm.git@master
# install eddytools
pip install -e .
```

Note that we install `xgcm` from directly from github although it is available from conda channels. This is because right now, only the recent version of `xgcm` on github contains some functionalities that are used by `eddytools`. This will probably change in the future.

Install in existing environment

1. Make sure you have `python` 3, `numpy`, `scipy`, `pandas`, `xarray`, `xesmf`, `xgcm`, `xorca`, `operator` and `pip` installed.
2. Install from the repository using

```
pip install git+https://git.geomar.de/jan-klaus-rieck/eddytools.git@master
```

Usage

See the example notebook.