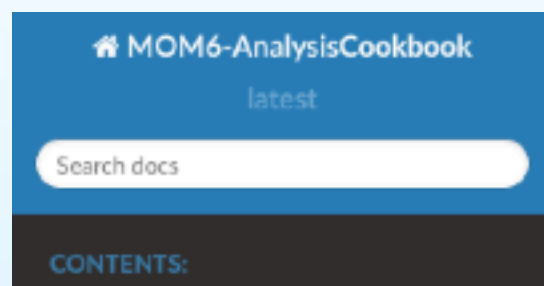




Useful doc for MOM6

<https://mom6-analysiscookbook.rtfld.io>



📖 Cookbook

Setting up a DASK cluster using dask-jobqueue

Setting up a DASK cluster on your local machine

Getting started with MOM6

Time-based operations

Spatial Operations

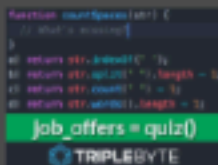
Vorticity-based diagnostics

Computations for Potential density, buoyancy and geostrophic shear

Horizontal Remapping

Creating nice maps with xarray

Comparing MOM6 data to hydrographic section



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Cookbook

Here are recipes for doing some xarray-based analysis with MOM6.

- [Setting up a DASK cluster using dask-jobqueue](#)
 - [Your DASK cluster at work](#)
- [Setting up a DASK cluster on your local machine](#)
 - [Sample computation:](#)
- [Getting started with MOM6](#)
 - [grid variables](#)
 - [building a xgcm grid object](#)
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 - [Relative vorticity](#)
 - [Potential vorticity \(\$\zeta + f\$ \)/h](#)
- [Computations for Potential density, buoyancy and geostrophic shear](#)
 - [Potential density](#)
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 - [Geostrophic shear](#)
- [Horizontal Remapping](#)
 - [Remapping model output to a 1x1 degree grid](#)
 - [Remapping onto the model grid](#)
- [Creating nice maps with xarray](#)
 - [Polar projections](#)
- [Comparing MOM6 data to hydrographic section](#)



Useful doc for MOM6

<https://xgcm.rtfd.io>

 **XGCM** 0.3 Site ▾ Page ▾ » MITgcm ECCOV4 Example Generate miss... »

Getting started with xgcm for MOM6

[xgcm grid definition](#)

[A note on geographical coordinates](#)

[Vorticity computation](#)

[Plotting](#)

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GETTING STARTED WITH XGCM FOR MOM6

- MOM6 variables are staggered according to the Arakawa C-grid
- It uses a north-east index convention
- center points are labelled (xh, yh) and corner points are labelled (xq, yq)
- important: variables xh/yh, xq/yq that are named “nominal” longitude/latitude **are not** the true geographical coordinates and are not suitable for plotting (more later)

See [indexing](#) for details.

```
[1]: import xarray as xr
from xgcm import Grid
import warnings
import matplotlib.pyplot as plt
from cartopy import crs as ccrs
import numpy as np
```

```
[2]: %matplotlib inline
warnings.filterwarnings("ignore")
```

For this tutorial, we are going to use sample data for the $\frac{1}{2}^\circ$ global model OM4p05 hosted on a GFDL thredds server:

```
[3]: dataurl = 'http://35.188.34.63:8080/thredds/dodsC/OM4p5/'

ds = xr.open_dataset(f'{dataurl}/ocean_monthly_z.200301-200712.nc4',
                    chunks={'time': 1, 'z_l': 1}, drop_variables=['average_DT',
                                                                    'average_T1',
                                                                    'average_T2'],
                    engine='pydap')
```

```
[4]: ds
```

```
[4]: <xarray.Dataset>
Dimensions:      (nv: 2, time: 60, xh: 720, xq: 720, yh: 576, yq: 576, z_i: 36, z_l
Coordinates:
  * nv           (nv) float64 1.0 2.0
  * xh           (xh) float64 -299.8 -299.2 -298.8 -298.2 ... 58.75 59.25 59.75
  * xq           (xq) float64 -299.5 -299.0 -298.5 -298.0 ... 59.0 59.5 60.0
```