Metos3D

Data

Jaroslaw Piwonski*, Thomas Slawig†

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1 Introdution

Metos3D was developed to use data provided by the Transport Matrix Method in the first place (see [1]). This data is maintained by Samar Khatiwala. Metos3D supplies you with a MATLAB[1] script to prepare it for usage.

2 Quick Start

Assuming you are in the same directory as the 'README.txt' file, do the following:

1. Download the required data.

   ```
   $>
   wget http://www.ldeo.columbia.edu/%7Espk/Research/TMM/MIT_Matrix_Global_2.8deg.tar.gz
   wget http://www.ldeo.columbia.edu/%7Espk/Code/Matlab/Matrix.tar.gz
   wget http://www.ldeo.columbia.edu/%7Espk/Code/Matlab/Misc.tar.gz
   wget http://www.ldeo.columbia.edu/%7Espk/Code/Matlab/MITgcm.tar.gz
   wget http://www.ldeo.columbia.edu/%7Espk/Code/Matlab/PETSC.tar.gz
   ```

2. Start MATLAB and call

   ```
   >>
   prepareMetos3DData
   ```

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*jpi@informatik.uni-kiel.de

†ts@informatik.uni-kiel.de, both: Department of Computer Science, Algorithmic Optimal Control – Computational Marine Science, Excellence Cluster The Future Ocean, Christian-Albrechts-Platz 4, 24118 Kiel, Germany.

[1]MATLAB is a registered trademark of The MathWorks, Inc., www.mathworks.com

3 Data

Currently a 2.8125° (2.8° for short) spatial resolution is provided. The vector length, the profile count and the maximum number of layers is 52749, 4448 and 15, respectively. The temporal resolution is 3 hours, assuming 360 days and 2880 steps per year.

3.1 Data Hierarchy

The data is organized in a hierarchy of directories starting with the root directory named `Metos3DData`. The **main distinction** between data files is the **spatial resolution**:

```
.../Metos3DData/
    2.8/
```

For a spatial resolution you will find a distinction into **geometry**, **initialization**, **forcing** and **transport** within that directory:

```
.../Metos3DData/2.8/
    Geometry/
    Initialization/
    Forcing/
    Transport/
```

The geometry and initialization directories have no further subdirectories. The forcing is divided into **boundary** and **domain conditions**.

```
.../Metos3DData/2.8/Forcing/
    BoundaryCondition/
    DomainCondition/
```

The transport matrices are organized within the transport directory. The first level of subdirectories denote the **kind** of matrices (see [1]). The second distinguishes between **temporal resolutions**.

```
.../Metos3DData/2.8/Transport/
    Matrix5_4/
        1dt/
```

References

[1] S. Khatiwala, M. Visbeck, and M.A. Cane. Accelerated simulation of passive tracers in ocean circulation models. *Ocean Modelling*, 9(1):51–69, 2005.