MPAS-Ocean Release/Coupling Update

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Topics to discuss

- MPAS-O Coupling Efforts:
  - CESM Related
  - Stand-alone with Land Ice
- MPAS-O Release Update
MPAS-O within the CESM

- Coupling efforts have been progressing
- Initial testing using a C compset
- T62 Atmosphere coupled to 120km Ocean
- This setup currently runs for at least 5 years

Special thanks go to Mariana Vertenstein, Jim Edwards, and Mike Levy for help related to this coupling effort.
MPAS-O Temperature Flux

Surface temperature flux as seen by MPAS-O, passed from CESM.
MPAS-O Mass Flux

Surface mass flux as seen by MPAS-O, passed from CESM.
MPAS-O Surface Pressure

Surface pressure as seen by MPAS-O, passed from CESM.
Some preliminary work has been done to couple MPAS-Ocean to MPAS-Land-Ice.

- Offline python based coupler
- Coupling fields are passed by writing new input files
- Involves 2-way feedbacks that affect both models
- Models run on the same grids currently
MPAS-O Release

MPAS-O was publicly released on June 14th, 2013.

- Versions 1.0 and 0.0
- Through GitHub
- Includes:
  - User’s Guide
  - API Reference
  - Test Cases
  - Developer’s Guide
- Doesn’t Include: (Will be released at a later date)
  - Grid Generation Tools
  - Initial Condition Modification Tools
MPAS-O Release on GitHub

MPAS-O has been released using GitHub. As such, we have shifted from svn to git.

- GitHub provides several useful "social coding" features.
  - Including:
    - Forks
    - Pull Request
- External collaborators can **easily** contribute changes to MPAS through the use of GitHub by following our Developer’s Guide.
- CESM currently uses a version of MPAS through svn using GitHub’s git-svn bridge.
The MPAS website can be found at: http://mpas-dev.github.com

Mailing lists are through Google groups. mpas-ocean-users@googlegroups.com
MPAS Overview

The Model for Prediction Across Scales (MPAS) is a collaborative project for developing atmosphere, ocean and other earth-system simulation components for use in climate, regional climate and weather studies. The primary development partners are the climate modeling group at Los Alamos National Laboratory (COSIM) and the National Center for Atmospheric Research. Both primary partners are responsible for the MPAS framework, operators and tools common to the applications; LANL has primary responsibility for the ocean model, and NCAR has primary responsibility for the atmospheric model.

The defining features of MPAS are the unstructured Voronoi meshes and C-grid discretization used as the basis of the model components. The unstructured Voronoi meshes, formally Spherical Centriodal Voronoi Tesselations (SVCTs), allow for both quasi-uniform discretization of the sphere and local refinement. The C-grid discretization, where the normal component of velocity on cell edges is prognosed, is especially well-suited for higher-resolution, mesoscale atmosphere and ocean simulations.
MPAS-O Release - Visual Tour

MPAS-Ocean releases can be found below. Please ensure you are using a combination of users guide, input file, source code, and api reference for the same version number as information can change between versions.

Please download the appropriate version from the table below:

<table>
<thead>
<tr>
<th>Version Number</th>
<th>Release Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 1.0</td>
<td>June 14th, 2013</td>
</tr>
<tr>
<td>Version 0.0</td>
<td>June 14th, 2013</td>
</tr>
</tbody>
</table>

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MPAS-O Release - Visual Tour

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MPAS-O Release 1.0

MPAS Source Code

Users Guide (pdf)

MPAS-O API Reference (html)

test case: overflow
overflow_10km_40layer.tgz
overflow_1km_100layer.tgz

test case: baroclinicChannel
paroclinic_channel_10000m_20levs.tgz
paroclinic_channel_4000m_20levs.tgz
paroclinic_channel_1000m_20levs.tgz

test case: worldOcean
worldOcean_QU_60km.tgz
worldOcean_QU_30km.tgz
worldOcean_QU_15km.tgz
worldOcean_NA_15km_75km.tgz
PLEASE READ THIS ENTIRE PAGE BEFORE DOWNLOADING ANY OF THE MPAS SOURCE CODE.

NOTE: If you intend to collaborate on a project, please read the Developer's guide before beginning work. The access method for the MPAS source code you choose will impact development efforts.

The easiest way to acquire the MPAS source code is through the archive file below. Although this is the easiest method, it is also the least flexible. The method used will largely be determined by your use case. You should choose the method that aligns best with your use case.

Archive files are provided both in zip and tar.gz formats. Each tag provides an archive file, and users should download the archive file for the most relevant tagged version.

Archive file  Here

Our recommended method is to use git. This will allow users to easily update the version they are working with, and it facilitates the most direct method for contributing development back into the MPAS code base. This comes with the caveat of having to know how to use git. There are a few links at the bottom of this page that can help you get started with git. The most immediately useful tutorial is the GitHub fork tutorial, but the other tutorials will help you with learning how to make use of git.

GitHub Page  Here

Git related resources:
- GitHub Fork Tutorial  Here
- Ry's Git Tutorial  Here
- GitHub code school  Here
- Git simple guide  Here
- Git "cheat sheet"  Here
MPAS-O Release - Visual Tour

Repository for MPAS models and shared framework releases. — Read more

ZIP HTTP SSH Git Read-Only https://github.com/MPAS-Dev/MPAS-Release.git

branch: master

88 commits

Atmosphere: minor cleanup

mgduda authored 15 hours ago

src

15 hours ago Atmosphere: minor cleanup [mgduda]

.gitignore

3 days ago Atmosphere: move the core_atmos_physcis directory to a subdirectory o... [mgduda]

LICENSE

7 days ago Initial setup of MPAS Repository. [douglasjacobson]

Makefile

2 days ago Modifications to top-level Makefile. [mgduda]

README.md

3 days ago Adding links to README that point to components. [douglasjacobson]

nameist.input

7 days ago Initial setup of MPAS Repository. [douglasjacobsen]

nameist.input.atmosphere

15 hours ago Atmosphere: minor cleanup [mgduda]

nameist.input.init_atmosphere

7 days ago Minor updates to MPAS-A: [mgduda]

nameist.input.ocean

7 days ago Remove variables: config_visc_vorticity_term [mark-petersen]

nameist.input.sw

7 days ago Initial setup of MPAS Repository. [douglasjacobsen]
The End

Any Questions?
http://mpas-dev.github.com