MITgcm Model Performance Measurements

**Overview**: This document will contain quantitative measurements of MITgcm model verification experiment performances according to information specified in the ‘/verifications/testreport’ executable of the MITgcm repository. In particular, the ‘testreport’ executable will be run outside of a docker environment on both stampede2 and sverdrup and performance measurements used to gauge the performance of building and running MITgcm model verification experiments will be documented. These measurements will be used to determine threshold and objective performance requirements for the docker containers to achieve to make the building and execution of MITgcm model problems more efficient inside of docker containers relative to in their current environment.

**Notes:**

1. Running the ‘testreport’ executable iterates through each verification experiment and invokes genmake2 to initiate the build process before ultimately running make depend, make, and running the model. There are interesting output messages that indicate a specified number of decimal places of similarity for different physical properties (like theta and velocity).

Text, table

Description automatically generated

After the executable finishes building and running the models, there is an output message indicating that by default, the script recursively searched through the repository file system and used an optfile optimized for the host machine as shown below.

Text, letter

Description automatically generated

Upon inspecting the 'tr\_report.txt' test report output file, it appears that there are no quantitative measurements on the computing performance of the MITgcm model build and run stages, merely only pass and fail statements for each of the stages in the testreport workflow.

**Structure:**

The testing will be documented in tables where each table will correspond to performance measurements for all of the MITgcm model verification experiment build and run stages for a particular host machine configuration specified in a particular optfile. This document will be continuously updated as more efficient methods of compiling and running MITgcm model problems are determined and documented.

**Measurements**

The table below will be used to document the runtime of the 'testreport' executable on different host machines to be incorporated into the end user's workflow.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **host machine** | **optfile** | **runtime (minutes)** | **Successful?** | **Comments** |  |
| sverdrup.ices.utexas.edu (sverdrup login node) | linux\_amd64\_gfortran | 88.93 | Y |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

*Performance Measurement Considerations*

1) Model compiletime Metrics

a) MakeFile Build wall clock time (elapsed wall clock time used by the process)

b) MakeFile Build user time (cpu time that process uses directly in user mode)

c) Makefile Build system time (cpu time used by system on behalf of the process in

(kernel mode)

d) MakeFile Dependencies Build wall clock time (elapsed wall clock time used by the process)

e) MakeFile Dependencies Build user time (cpu time that process uses directly in user mode)

f) Makefile Dependencies Build system time (cpu time used by system on behalf of the process in (kernel mode)

g) Model Executable Build wall clock time (elapsed wall clock time used by the process)

h) Model Executable Build user time (cpu time that process uses directly in user mode)

i) Model Executable Build system time (cpu time used by system on behalf of the process in (kernel mode)

2) Model Runtime Metrics

a) Model Executable Run wall clock time (elapsed wall clock time used by the process)

b) Model Executable Run Build user time (cpu time that process uses directly in user mode)

c) Model Executable Run system time (cpu time used by system on behalf of the process in (kernel mode)

5) RAM Usage for steps 1-4

6) CPU load for steps 1-4

7)

*Notes:* Consider monitoring and improving runtime and compiletime wall clock, system, and user measurements for each Fortran model routine. For example, see the screenshot below:

Table

Description automatically generated

*Important Definitions:*

1) **Wall Clock Time** - is the total amount of time taken by all compute resources to perform a task

2) **User Time** - is the amount of time the CPU takes for execution of code and excludes time for other actions running such as CPU time spent in kernel and perform system calls

3) **System Time (CPU Time)** - is the amount of time the CPU takes for execution of code and includes time for other actions running such as CPU time spent in kernel and performing other system calls needed for CPU to execute code

- The User Time measurement will likely be the most appropriate for measuring the performance of different jobs/tasks since it will be least affected by other processes happening on the system.

- All tasks can be preceded with the 'time' command-line utility to output each of these three performance measurements for completing a specific job/task

**Sverdrup**

1. **Optfile: linux\_amd64\_ifort\_sverdrup**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. Fortran Compiler: Intel Fortran
7. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort\_ices**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort\_gfortran\_sverdrup**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort+mpi\_sverdrup**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort+mpi\_sverdrup\_async**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort+mpi\_sverdrup\_seaice**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_ifort+mpi\_sverdrup\_tides**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

1. **Optfile: linux\_amd64\_gfortran+mpi\_sverdrup**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

**Stampede2**

**1) Optfile: linux\_amd64\_ifort+mpi\_stampede2**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

**2) Optfile: linux\_amd64\_ifort+mpi\_stampede2\_aste**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

**Stretch Goal: Darwin (Linux) Machines**

**1) Optfile: darwin\_amd64\_gfortran**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

**Stretch Goal: Arm (Mac) Machines**

**1) Optfile: darwin\_arm64\_gfortran**

Host Machine Hardware Specifications

1. Operating System Name: Linux
2. System Node Name: sverdrup.ices.utexas.edu
3. Operating System Release and Version: 3.10.0-1160.83.1.e17.x86\_64
4. Hardware Name: x86\_64 (amd64)
5. Processor Type: GNU/Linux
6. ADD MORE HERE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | MKFBT | MKFDBT | MKBT | MRT | RAM (GB) | CPU Load (%) | Successful? (XXXX) | Comments |
| 1D\_ocean\_ice\_column |  |  |  |  |  |  |  |  |
| adjustment.128x64x1 |  |  |  |  |  |  |  |  |
| adjustment.cs-32x32x1 |  |  |  |  |  |  |  |  |
| advect\_cs |  |  |  |  |  |  |  |  |
| advect\_xy |  |  |  |  |  |  |  |  |
| advect\_xz |  |  |  |  |  |  |  |  |
| aim.5l\_cs |  |  |  |  |  |  |  |  |
| aim\_5l\_Equatorial\_Channel |  |  |  |  |  |  |  |  |
| aim\_5l\_LatLon |  |  |  |  |  |  |  |  |
| bottom\_ctrl\_5x5 |  |  |  |  |  |  |  |  |
| cfc\_example |  |  |  |  |  |  |  |  |
| cheapAML\_box |  |  |  |  |  |  |  |  |
| cpl\_aim+ocn |  |  |  |  |  |  |  |  |
| cpl\_atm2d+ocn |  |  |  |  |  |  |  |  |
| deep\_anelastic |  |  |  |  |  |  |  |  |
| dome |  |  |  |  |  |  |  |  |
| exp2 |  |  |  |  |  |  |  |  |
| exp4 |  |  |  |  |  |  |  |  |
| fizhi-cs-32x32x40 |  |  |  |  |  |  |  |  |
| fizhi-cs-aqualev20 |  |  |  |  |  |  |  |  |
| fizhi-gridalt-hs |  |  |  |  |  |  |  |  |
| flt\_example |  |  |  |  |  |  |  |  |
| front\_relax |  |  |  |  |  |  |  |  |
| global\_ocean.90x40x15 |  |  |  |  |  |  |  |  |
| global\_ocean.cs32x15 |  |  |  |  |  |  |  |  |
| global\_ocean\_ebm |  |  |  |  |  |  |  |  |
| global\_with\_exf |  |  |  |  |  |  |  |  |
| halfpipe\_streamice |  |  |  |  |  |  |  |  |
| hs94.128x64x5 |  |  |  |  |  |  |  |  |
| hs94.1x64x5 |  |  |  |  |  |  |  |  |
| hs94.cs-32x32x5 |  |  |  |  |  |  |  |  |
| ideal\_2D\_oce |  |  |  |  |  |  |  |  |
| internal\_wave |  |  |  |  |  |  |  |  |
| inverted\_barometer |  |  |  |  |  |  |  |  |
| isomip |  |  |  |  |  |  |  |  |
| lab\_sea |  |  |  |  |  |  |  |  |
| matrix\_example |  |  |  |  |  |  |  |  |
| MLAdjust |  |  |  |  |  |  |  |  |
| natl\_box |  |  |  |  |  |  |  |  |
| obcs\_ctrl |  |  |  |  |  |  |  |  |
| offline\_exf\_seaice |  |  |  |  |  |  |  |  |
| OpenAD |  |  |  |  |  |  |  |  |
| rotating\_tank |  |  |  |  |  |  |  |  |
| seaice\_itd |  |  |  |  |  |  |  |  |
| seaice\_obcs |  |  |  |  |  |  |  |  |
| short\_surf\_wave |  |  |  |  |  |  |  |  |
| so\_box\_biogeo |  |  |  |  |  |  |  |  |
| solid-body.cs-32x32x1 |  |  |  |  |  |  |  |  |
| tidal\_basin\_2d |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_0 |  |  |  |  |  |  |  |  |
| tr\_sverdrup\_20230425\_1 |  |  |  |  |  |  |  |  |
| tutorial\_advection\_in\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_baroclinic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_barotropic\_gyre |  |  |  |  |  |  |  |  |
| tutorial\_cfc\_offline |  |  |  |  |  |  |  |  |
| tutorial\_deep\_convection |  |  |  |  |  |  |  |  |
| tutorial\_dic\_adjoffline |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_biogeo |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_in\_p |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_latlon |  |  |  |  |  |  |  |  |
| tutorial\_global\_oce\_optim |  |  |  |  |  |  |  |  |
| tutorial\_held\_suarez\_cs |  |  |  |  |  |  |  |  |
| tutorial\_offline |  |  |  |  |  |  |  |  |
| tutorial\_plume\_on\_slope |  |  |  |  |  |  |  |  |
| tutorial\_tracer\_adjsens |  |  |  |  |  |  |  |  |
| vermix |  |  |  |  |  |  |  |  |

**Questions/Concerns**

1. How to interpret the output of the ‘testreport’ executable; in particular, the ‘x’ decimal places of similarity in ‘y’ variable’ statements

A: