**Downloading** **additional component models for coupled models**

The model simulations indicated in this manuscript were run on NOAA’s Research and Development High Performance Computing System (RDHPCS), Gaea platform. This document has information on downloading additional component models for coupled models on Gaea. The details on this document are extracted from [here](https://github.com/NOAA-GFDL/MOM6-examples/wiki/Getting-started) (last accessed on January 15, 2026). This study used ocean-ice, coupled model, Modular Ocean Model version 6.0 – Sea Ice Simulator version 2.0, MOM6-SIS2, the details for downloading additional component model, SIS2 are explained here.

To build and run coupled models you will need the source code for the other components in the coupled system. Some of these are only available from within the GFDL firewall. We place all of these packages under the src/ directory within MOM6-examples; from the MOM6-examples directory execute the commands:

cd src

All of the commands below take place in this src/ directory.

**Which components do I need?**

|  |  |
| --- | --- |
| Experiment group | Components under src/ |
| ice\_ocean\_SIS2/ | MOM6 SIS2 FMS atmos\_null coupler land\_null ice\_param icebergs |

***coupler***

coupler is needed for any configuration other than ocean-only. The version of coupler on GitHub is now included as a sub-module (ie. src/coupler is obtained when you do a git clone --recursive for MOM6-examples).

***atmos\_null***

atmos\_null is a "dummy" set or modules that provide the atmosphere's APIs but do nothing. It is now a sub-module of MOM6-examples/src/atmos\_null

***land\_null***

land\_null is a "dummy" set or modules that provide the land's APIs but do nothing. It is now a sub-module, MOM6-examples/src/land\_null

***ice\_param***

ice\_param is also needed to run any coupled model. It is now a sub-module, MOM6-examples/src/ice\_param.

***SIS2***

SIS2 is needed to run coupled models not using the SIS1 ice model. It is a sub-module, MOM6-examples/src/SIS2.

**Build tools and compilation templates**

MOM6 relies on tools that are part of the Flexible Runtime Environment (FRE) to help with the build process. Those tools are provided in the [NOAA-GFDL/mkmf](https://github.com/NOAA-GFDL/mkmf) repository which you should find in MOM6-examples/src/mkmf/.

The workflow described in this document generally compiles the model in a user created directory MOM6-examples/build/:

***cd MOM6-examples***

***mkdir build***

After downloading all of the above the directory tree should look like:

% cd MOM6-examples

% tree -d -L 2

.

|-- build

|-- coupled\_AM2\_LM2\_SIS

| |-- AM2\_MOM6i\_1deg

| `-- CM2G63L

|-- coupled\_AM2\_LM3\_SIS

| `-- AM2\_MOM6i\_1deg

|-- coupled\_AM2\_LM3\_SIS2

| |-- AM2\_SIS2B\_MOM6i\_1deg

| `-- AM2\_SIS2\_MOM6i\_1deg

|-- ice\_ocean\_SIS

| |-- Amery

| |-- \*

| `-- OM4\_025

|-- ice\_ocean\_SIS2

| |-- Baltic

| |-- \*

| `-- SIS2\_icebergs

|-- ocean\_only

| |-- DOME

| |-- \*

| `-- torus\_advection\_test

|-- src

| |-- FMS

| |-- MOM6

| |-- SIS2

| |-- atmos\_null

| |-- coupler

| |-- ice\_param

| |-- icebergs

| |-- land\_null

| `-- mkmf

`-- tools

|-- analysis

|-- matlab

|-- python

`-- tests

**Downloading input data**

Some experiments have input data sets that are placed in an INPUT/ subdirectory of the example. For example, tree ocean\_only/global yields:

% tree ocean\_only/global

ocean\_only/global

|-- INPUT

| |-- 31Layer\_zgrid.nc -> .datasets/global/siena\_201204/INPUT/31Layer\_zgrid.nc

| |-- GOLD\_IC.2010.11.15.nc -> .datasets/global/siena\_201204/INPUT/GOLD\_IC.2010.11.15.nc

| |-- OM3\_zgrid.nc -> .datasets/global/siena\_201204/INPUT/OM3\_zgrid.nc

| |-- README -> .datasets/global/siena\_201204/mosaic.unpacked/README

| |-- atmos\_hgrid.nc -> .datasets/global/siena\_201204/mosaic.unpacked/atmos\_hgrid.nc

| |-- atmos\_mosaic.nc -> .datasets/global/siena\_201204/mosaic.unpacked/atmos\_mosaic.nc

| |-- atmos\_mosaic\_tile1Xland\_mosaic\_tile1.nc -> .datasets/global/siena\_201204/mosaic.unpacked/atmos\_mosaic\_tile1Xland\_mosaic\_tile1.nc

| |-- atmos\_mosaic\_tile1Xocean\_mosaic\_tile1.nc -> .datasets/global/siena\_201204/mosaic.unpacked/atmos\_mosaic\_tile1Xocean\_mosaic\_tile1.nc

| |-- geothermal\_heating\_cm2g.nc -> .datasets/global/siena\_201204/INPUT/geothermal\_heating\_cm2g.nc

| |-- grid\_spec.nc -> .datasets/global/siena\_201204/mosaic.unpacked/grid\_spec.nc

| |-- gustiness\_qscat.nc -> .datasets/global/siena\_201204/INPUT/gustiness\_qscat.nc

| |-- land\_hgrid.nc -> .datasets/global/siena\_201204/mosaic.unpacked/land\_hgrid.nc

| |-- land\_mask.nc -> .datasets/global/siena\_201204/mosaic.unpacked/land\_mask.nc

| |-- land\_mosaic.nc -> .datasets/global/siena\_201204/mosaic.unpacked/land\_mosaic.nc

| |-- land\_mosaic\_tile1Xocean\_mosaic\_tile1.nc -> .datasets/global/siena\_201204/mosaic.unpacked/land\_mosaic\_tile1Xocean\_mosaic\_tile1.nc

| |-- mosaic.nc -> .datasets/global/siena\_201204/mosaic.unpacked/mosaic.nc

| |-- ocean\_forcing\_daily.nc -> .datasets/global/siena\_201204/INPUT/ocean\_forcing\_daily.nc

| |-- ocean\_forcing\_monthly.nc -> .datasets/global/siena\_201204/INPUT/ocean\_forcing\_monthly.nc

| |-- ocean\_hgrid.nc -> .datasets/global/siena\_201204/mosaic.unpacked/ocean\_hgrid.nc

| |-- ocean\_mask.nc -> .datasets/global/siena\_201204/mosaic.unpacked/ocean\_mask.nc

| |-- ocean\_mosaic.nc -> .datasets/global/siena\_201204/mosaic.unpacked/ocean\_mosaic.nc

| |-- ocean\_precip\_monthly.nc -> .datasets/global/siena\_201204/INPUT/ocean\_precip\_monthly.nc

| |-- ocean\_vgrid.nc -> .datasets/global/siena\_201204/mosaic.unpacked/ocean\_vgrid.nc

| |-- seawifs\_1998-2006\_GOLD\_smoothed\_2X.nc -> .datasets/global/siena\_201204/INPUT/seawifs\_1998-2006\_GOLD\_smoothed\_2X.nc

| |-- sgs\_h2.nc -> .datasets/global/siena\_201204/INPUT/sgs\_h2.nc

| |-- tideamp.nc -> .datasets/global/siena\_201204/INPUT/tideamp.nc

| `-- topog.nc -> .datasets/global/siena\_201204/mosaic.unpacked/topog.nc

|-- MOM\_input

|-- MOM\_memory.h

|-- MOM\_override

|-- MOM\_parameter\_doc.all

|-- MOM\_parameter\_doc.short

|-- available\_diags.000000

|-- diag\_table

|-- input.nml

|-- ocean.stats.gnu

|-- ocean.stats.intel

`-- ocean.stats.pgi

The files are actually links relative to a non-existent link .datasets. This link can be pointed to either a local installation of the data sets or a shared installation (.e.g /archive/gold/datasets or /lustre/f1/pdata/gfdl\_O/datasets).

Follow the instructions below to create a .datasets link.

Linking data sets on Gaea (This study used NOAA’s RDHPCS Gaea platform for running simulations)

***cd MOM6-examples/***

***ln -sf /gpfs/f5/gfdl\_o/world-shared/datasets .datasets***

You only have to do this once.