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# **AWI-CM3 hands-on-course:**

## **Part 4: Running AWI-CM3**

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# Default run



- 1 cd your `${HOME}` directory  
cd to `esm_tools/runscripts/awicm3/v3.1`
- 2 Open `awicm3-v3.1-${HPC}-TC095L91-CORE2.yaml` in the editor of your choice.
- 3 Check that all is well
  - paths
  - project account

- 4 Exit and make a check run with `-c`

```
esm_runscripts awicm3-v3.1-${HPC}-TC095L91-CORE2.yaml -e default1  
--open-run -c
```

- 5 If the check run was successful, start without `-c`

```
esm_runscripts awicm3-v3.1-${HPC}-TC095L91-CORE2.yaml -e default1  
--open-run
```



Use `--open-run` for tests and `--contained-run` for production simulations  
More info see `esm_tools` documentation: <https://esm-tools.readthedocs.io/>


# Default run



Example output upon successful job submission:

```
Made new file: /work/ab0246/a270092/runtime/awicm3-v3.1/workshop_test/run_20000101-20000131/input/oifs///specwavein with date 20000101
Made new file: /work/ab0246/a270092/runtime/awicm3-v3.1/workshop_test/run_20000101-20000131/input/oifs///uwavein with date 20000101
Run number for internal OpenIFS timekeeping: 1
nproc: 128
tasks: 128
nproc: 128
tasks: 256
nproc: 1
tasks: 257
nproc: 4
tasks: 261
resubmit tasks: 261
Submitting jobscript to batch system...

Output written by slurm:
Submitted batch job 1820358
```

 Your path will be slightly different and starts with `${base_dir}` from your yaml file.

Once in the queue, this job will write its logfile at:

```
cd /work/ab0246/a270092/runtime/awicm3-v3.1/workshop_test/
```

The simulation is running at:

```
cd /work/ab0246/a270092/runtime/awicm3-v3.1/workshop_test/run_20000101-20000131/work/
```

Once the simulation is done, output files will be moved to:

```
cd /work/ab0246/a270092/runtime/awicm3-v3.1/workshop_test/output/
```

# Namelists Changes



Available **FORTTRAN** namelists are:

FESOM2:            `namelist.config` `namelist.forcing` `namelist.ice` `namelist.io` `namelist.oce`

OpenIFS:           `fort.4` `wam_namelist`

Runoff mapper:    `namelist.runoffmapper`

Modification from the default is best done using `esm_tools add_namelist_changes`

OpenIFS uses XIOS parallel IO server. **XIOS** makes use of **XML “namelists”** which **cannot yet be modified through `esm_tools`**.

# namelist\_changes

▶ a yaml **dictionary** with an extended functionality in ESM-Tools

▶ Allows changing the namelists through the **runscripts** and the **configuration files**

▶ **Syntax**

```
namelist_changes:  
  <namelist_name>:  
    <namelist_section-1>:  
      <variable-1>: <value-1>  
      <variable-2>: <value-2>  
  ...
```

# namelist\_changes

## Use cases

- In the **runscripts**:
  - Make modifications in the namelists specific to the current experiment

## Example

### your\_runscript.yaml

```
fesom:
  namelist_changes:
    namelist.config:
      paths:
        MeshPath: "/work/ab0995/a270152/fesom2/input/FESOM2/meshes/core2"
```

### namelist.config

```
&paths
MeshPath='/work/oilie/projects/clidyn/FESOM2/meshes/core2/'
ClimateDataPath='/work/oilie/projects/clidyn/FESOM2/hydrography/phc3.0/'
ResultPath='../result_tmp/'
/
```

## Purpose

- User only needs to modify the runscript -> reproducibility

# namelist\_changes

## Use cases

- In the **configuration files**:
  - Define the yaml variables through the ESM-Tools extended-syntax (i.e. **choose\_blocks**, **variable calls**, ...)
  - Use those variables to make automatic changes into the namelists

## Example

```
fesom:  
  add_namelist_changes:  
    namelist.oce:  
      oce_dyn:  
        easy_bs_return: "2"  
        leith_c: "2"  
      oce_tra:  
        use_momix: true
```

For XML namelist changes you currently have to change the template files under:  
esm\_tools/namelists/oifs/43r3/xios/\${OIFS\_resolution}\_\${FESOM2\_mesh}

## XIOS XML files for OpenIFS

- **iodef.xml**: it contains basic XIOS parameters.
- **context\_oifs.xml**: it contains FullPos parameters to tune the vertical interpolations.
- **axis\_def\_oifs.xml**: it defines the different types of vertical levels available.
- **domain\_def\_oifs.xml**: it defines the different domains (or types of grids) available.
- **grid\_def\_oifs.xml**: it defines the grids (XIOS terminology) available used to map fields.
- **field\_def\_oifs.xml**: it defines all the available fields to be output.
- **file\_def\_oifs.xml**: it defines netCDF files to be written.



# Namelists Changes



In esm\_tools/namelists/oifs/43r3/xios/TCO95\_CORE2/file\_def.xml

Find section for monthly pressure level output

Add compression level line:

```
<file
  enabled="true"
  timeseries="only"
  output_freq="1mo"
  name_suffix="_1m_pl"
  compression_level="1"
  description="ECE4/OIFS 6hourly pressure level fields">

  <field_group grid_ref="regular_pl" freq_op="6h" operation="average">
    <field field_ref="z_pl" name="z"/>
    <field field_ref="t_pl" name="t"/>
    <field field_ref="u_pl" name="u"/>
    <field field_ref="v_pl" name="v"/>
    <field field_ref="q_pl" name="q"/>
    <field field_ref="w_pl" name="w"/>
    <field field_ref="vo_pl" name="vo"/>
    <field field_ref="r_pl" name="r"/>
  </field_group>
</file>
```

# Submit modified run



- 1 cd your `${HOME}` directory  
cd to `esm_tools/runscripts/awicm3/v3.1`

- 2 Run the model (check with `-c` first if you like)

```
esm_runscripts awicm3-v3.1-${HPC}-TC095L91-CORE2.yaml -e modified1  
--open-run
```

# Feedback



Provide feedback at:

<https://github.com/AWI-CM3/hands-on-course/discussions/3>

The screenshot shows a GitHub discussion interface. At the top is a navigation bar with links for Discussions, Actions, Projects, Wiki, Security, Insights, and Settings. The discussion title is "03 Were you able to run simulations with AWI-CM3?". The author is JanStreffing, a maintainer, who posted it yesterday. The content of the discussion is a poll with the same title: "03 Were you able to run simulations with AWI-CM3?". The poll options are: "Yes, default and modified", "Yes, but only the default one", "No, I'm stuck waiting in the queue", "No, I was unable to submit", "No, even the check run failed", and "No, I'm still on the last question (logging in / installing)". On the right side, there are sections for "Category" (Polls), "Labels" (feedback), "1 participant" (with a profile picture), and "Notifications".

Discussions Actions Projects Wiki Security Insights Settings

03 Were you able to run simulations with AWI-CM3?

JanStreffing yesterday Maintainer edited ...

Feel free to share issues here and help each other.

03 Were you able to run simulations with AWI-CM3?

☐ Yes, default and modified

☐ Yes, but only the default one

☐ No, I'm stuck waiting in the queue

☐ No, I was unable to submit

☐ No, even the check run failed

☐ No, I'm still on the last question (logging in / installing)

Category

Polls

Labels

feedback

1 participant

Notifications

You're receiving n