1 Download the source code from Github

1. Cd to directory where the source code needs to be downloaded.
2. Download the code

```
ml git
git clone https://github.com/jcwarner-usgs/COAWST.git
```

2 Build MCT libraries - (Needs to be done only one time)

```
cd ROOT /COAWST/Lib/MCT
ml intel
ml openmpi
./configure
make
```

1. copy **ROOT**/Lib/MCT/mpeu/ libmpeu.a → **ROOT**/COAWST/Lib/MCT/mct/

2.1 Changes needed to be done in compiler directory

1. Change the value of the following variables in the file **ROOT**/COAWST/Compilers/Linux-ifort.mk
   a. MCT_INCDIR
   b. MCT_LIBDIR

   Change them to **ROOT**/Lib/MCT/mct

3 Compiling COAWST Model

3.1 Changes to script to build COAWST Model (coawst.bash)

1. Copy the coawst.bash to the project directory
2. Change the following variables in coawst.bash

Variable value to be changed	Correct value	remark
COAWST_APPLICATION	Header file name in all caps	
MY_ROOT_DIR	Address to where the project is	
MY_ROMS_SRC	Where the COAWST code is	
MY_HEADER_DIR	${MY_PROJECT_DIR}	Where the .h file is?
MY_ANALYTICAL_DIR	${MY_PROJECT_DIR}	For customized bio model .h files?
BINDIR	${MY_PROJECT_DIR}	Where to create the executable
SCRATCH	${MY_PROJECT_DIR}/Build	Where to out the project specific f90 files.
For WW3 do the same as necessary		

3.2 Building COAWST executable

1. Change to a development node
2. Copy any other .h files that are needed (analytical.h files)

```
ml ufrc
srundev --time=1:00:00
ml intel/2018.1.163 openmpi/3.1.2 netcdf-f/4.4.4 hdf5/1.10.1 netcdf-c/4.5.0
chmod 777 coawst.bash
./coawst.bash
exit
```

4 Running a project

1. Set correct address for the roms.in and swan.in in the coupler.in file
2. Give the number of **processors** (**not nodes really**) needed for roms and swan. The number given for roms should match NtileI X NtileJ.

4.1 Coupler file (coupler.in)

1. Change the address for the ROMS, SWAN and WRF .in files
    a. WAV_name
    b. OCN_name
    c. HYD_name

4.2 SWAN (swan.in)

1.

4.3 ROMS (roms.in)

1. Set the MyAppCPP to the name of the .h HEADER file. (in all caps)
2. Give the needed number of partitions/**processors** in (NtileI and NtileJ) i and j direction.
3. Change the varname **ROOT**/ROMS/EXTERNAL/VARINFO.dat
4. Set the names and address for the following as needed.
    a. GRDNAME
    b. ININAME
    c. BRYNAME
    d. CLMNAME
    e. TIDENAME
    f. SSFNAME
    g. SPOSNAM

5 Submitting the job

1. Make sure the number of tasks (--ntasks) matches the cumulative number of processors requested for each model (roms, swan,WRF).
2. Give the correct CoawstM address.

6 Reading and processing data

6.1 Some info on the variables

1. u,v velocities are locally oriented east and north and NOT global east and north.
2. u_eastward and v_eastward are already rotated velocities in correct global direction and they are also in rho points.
3. ubar and vbar at depth averaged velocities.
4. Hwave the SWAN calculated significant wave height
5. bottom and top wave period (can be different due to wave-current interaction)
6. pm and pn are inverse of delx and dely.

6.2 View data

1. X11 window server for PuTTY to see figures from the HPC; install Xming

```
ml ncview
ncview name of the .nc file
```

7 Notes

Sometimes the file permissions are not given to run the models. When we try to run the script “permission denied”.

To see file permissions in a directory use

```
ls -lrst
```

Change the file permissions by

```
chmod 777 [file name]
```