CROCO-WRF Coupling

First copy the croco code:
cp –r /home/student33/lustre/AirSea/croco .

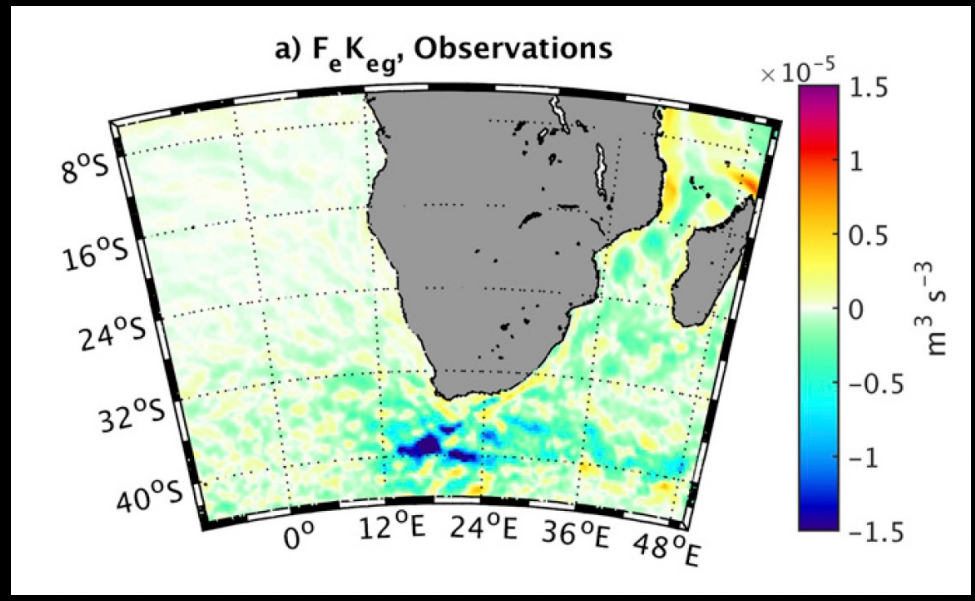
In the CROCO directory, we will create a new configuration

vi create_config.bash
→ Edit :
MACHINE="WCHPC"

MY_CONFIG_NAME=Run_coupled

MY_CONFIG_HOME=/home/studentXX/lustre/AirSea/
MY_CONFIG_WORK=/home/studentXX/lustre/AirSea/

options=(all-prod-cpl)



→ It will create new folders with (almost) all the files you need to run a coupled simulations

CROCO-WRF Coupling

Now we go to our directory:
cd /home/studentXX/lustre/AirSea/

We have several files to copy
1) Machines files (PBS header, etc):
cp –r /mnt/lustre/users/student33/WCHPC /mnt/lustre/users/studentXX/Run_Coupled/SCRIPTS_TOOLBOX/MACHINE/

2) Slight change in a WRF namelist file:
cd /mnt/lustre/users/studentXX/Run_Coupled/WRF_IN
Edit namelist.input.base.complete and remove the following line :
max_cpldom = <max_cpldom>,

3) Now we have to copy the input files (BRY, INI, etc)

- Go to WRF_FILES : ln –fs /mnt/lustre/users/student33/Data/wrf* .
- Go to CROCO_FILES: ln –fs /mnt/lustre/users/student33/Data/croco*nc .

→ Now we have all the files we need to coupled WRF and CROCO over the Benguela Upwelling System ☺ !

CROCO-WRF Coupling

Link the WRF model:
cd /mnt/lustre/users/studentXX
mkdir WRF_Compil
cd WRF_Compil
ln –fs /home/apps/chpc/earth/WRF-4.2.1_cc_intel2020/WRF/* .
rm run
cp –r /home/apps/chpc/earth/WRF-4.2.1_cc_intel2020/WRF/run .

Go to /mnt/lustre/users/studentXX/Run_Coupled and have a look on the available files

We have four main files :

myenv_mypath.sh -→ to configure our environment (eg where is MPI, NetCDF, etc)
myjob.sh → Define the period we want to run
mynamelist.sh → What kind of simulation we want to do, here a WRF-CROCO simulation
submitjob.sh → To submit the job

CROCO-WRF Coupling

Edit myenv_mypath.sh following:

```
#################################################################
#################### FOR COMPILATIONS ###########################
#################################################################
module purge
source /home/apps/chpc/earth/WRF-4.2.1_cc_intel2020/setWRF.sh

# -- Option for job launching
export MPI_ext="-configfile"
export ncomod='chpc/earth/NCO/4.9.3'

#-------------------------------------------------------------
# Environment variables related to compilers
#-------------------------------------------------------------
export CC=icc
export FC=ifort
export F90=ifort
export F77=ifort
export MPIF90=mpiifort
export MPICC=mpiicc
#-------------------------------------------------------------------------------
# Model source paths #Insert the full path ( do not use "~" for home )
#-------------------------------------------------------------------------------

export CPL=" /home/apps/chpc/earth/OASIS3-MCT_3.0_branch/oasis3-mct/CHPC_oa3-mct_intel2020"
export OCE="/home/student33/Models/croco/OCEAN"
#export ATM="/home/apps/chpc/earth/WRF-4.2.1_cc/WRF/"
export ATM="/mnt/lustre/users/student33/WRF_Compil/"
export WAV="${HOME}/WW3/model"
export TOY="${CHOME}/TOY_IN"
export XIOS="${HOME}/XIOS"
```

CROCO-WRF Coupling

Edit mynamelist.sh following:

```
#################################################################
########################## USER CHANGES #########################
#################################################################
#
export CEXPER=Run_exp_OA  # (max 30. CHAR) Name of the experiment
export RUNtype=oa # Kind of run launched. Summaries which models
o,w,a order details
#
export USE_ATM=1
export USE_XIOS_ATM=0
export USE_OCE=1
```

```
#-------------------------------------------------------------------------------
# Exe paths
# ------------------------------------------------------------------------------

export OCE_EXE_DIR=/home/student33/lustre/AirSea//Run_Coupled/CROCO_IN
export ATM_EXE_DIR=${ATM}/run/
export WAV_EXE_DIR=${WAV}/exe_${RUNtype}
export TOY_EXE_DIR=/home/student33/lustre/AirSea//Run_Coupled/TOY_IN
export XIOS_EXE_DIR=${XIOS}/bin
#-------------------------------------------------------------------------------
 # forcing files
 export ini_ext='ini_SODA' # ini extension fi
 export bdy_ext='bry_SODA' # bry extension fi
 export surfrc_flag="FALSE" # Flag if surface
 export interponline=0 # switch (1=on, 0=off)
 export frc_ext='blk_ERA5' # surface forcing
```

CROCO-WRF Coupling

Edit myjob.sh following:

```
#-----------------------------------------------------------
# Job submission settings
#-----------------------------------------------------------
# Job walltime
export TIMEJOB=300

# Project Id (on which hours are taken, if needed)
export projectid="express"
```

MPI_LAUNCH=mpirun

Which Computer?

```
elif [ ${MACHINE} == "WCHPC" ]; then
   export QSUB="qsub "
   export COMPUTER="WCHPC"
   export jobname="job_${ROOT_NAME_1}.pbs"
```

CROCO-WRF Coupling

Compiling CROCO

cd CROCO_IN

Which files do we have to edit ?

You have to define
 # define OA_COUPLING and MPI, undef CLIM and define BRY

→ **Jobcomp**
→ **mv croco croco.oa**
→ **cd ..**
→ **./submitjob.sh**

→ The simulation should be running in the rundir directory