REPORT

Title of the project: *CROCO for sediment dynamics along the coastal Mekong Delta.*

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Participants and Roles: *Patrick Marchesiello (supervisor), Guillaume Morvan*

Report of the project:

In September, thanks to the GDRI-Sud CROCO 2022, I had an opportunity to taking part in the CROCO training course in Toulouse and in Barcelonnette.
In Toulouse, during the first two weeks, I was trained directly CROCO by Prof. Marchesiello and Mr. Morvan. I was instructed to install CROCO on my Window OS. It took lots of time because CROCO seems to be more approriate on Linux OS than on Window OS. I do not have a liscence of MATLAB on Linux, so it's also more difficult to create a seamless link between running CROCO and displaying the output data.

Besides, I was introduced to the application of CROCO for the coastal Mekong Delta where I am very interested in the erosion. However, I did not have enough time to really work on it. I introduced with Mr. Patrick and Mr. Morvan about my current project which is building hydro-dynamics and sediment transport map of Xuan Dai Bay, Vietnam and about my intention of applying CROCO for it. I really appreciate them helping me do it.

In Barcelonnette, I learned about how to compile and run CROCO and set up my own test case. Especially, some theories about numerical methods, physical parametrizations, time stepping, sediment transport, nested grid… were presented by CROCO team to help me better understand CROCO's application method and make appropriate choices for my test case.

Here are some of the CROCO practice steps for a test case (NhaTrang, VietNam) that I was guided in the training session; it is rewritten here for me to keep in mind:

In Linux environment

1. vi create_config.bash
   MY_CONFIG_NAME = NHATRANG
2. ./create_config.bash
3. vi "crocotools_param.m" (can modify grid, vertical level ….)
   %grid dimension
   lonmin = …
   lonmax = …
   latmin = …
   latmax = …
   %grid solution (degrees)
   d = …

In Matlab

4. matlab -nodesktop
   start

make_grid
LLm = …
MMm = …

make_forcing
make_bulk
make_bry
make_ini
make_clim
make_tides

If using MERCATOR:
make_OGCM_mercator
obc = [1 1 1 1]
make_ini
make_bry

In Linux environment

5. vi "param.h"
   else defined NHATRANG
   LLm0 = …
   MMm0 = …

Compiling

6. vi "cppdefs.h"
   # define Regionel
   # define NHATRANG

7. vi jobcomp
   Compiler option
8. Compilation
   ./jobcomp

Running

9. ./croco /croco.in

Plotting,

10. vi TEST_CASES/plot_*.m

Finally, I would like to thank you for giving me the opportunity.

TRAN Hai Yen