02/09/2017

**PERIODIC WAVE GENERATOR**

1. **download NHWAVE\_ROGUE from GitHub:**

<https://github.com/fengyanshi/NHWAVE_ROGUE>

1. **Makefile, specify**

FLAG\_1 = -DDOUBLE\_PRECISION

FLAG\_2 = -DPARALLEL

1. **input.txt (example)**

Mglob = 1024

Nglob = 128 (must be 2^n for periodic boundary conditions)

Kglob = 6 (3-10, depends on water depth. For deep water or short waves kh>3, should use more layers)

PERIODIC\_X = F

PERIODIC\_Y = T (means periodic in y direction)

BOUNDARY = TID\_FLX\_LR (for current case)

BoundaryFile = ../input/boundary\_flume.txt (current data in the file)

WAVEMAKER = INT\_SPC (2D spectral wave data, monochromatic wave also works)

Spc2D\_File = wave2d.txt (2D spectral data file, if no specification, use default ‘spc2d.txt’)

DEP = 30.0 ( depth in wavemaker location, distance from x=0, in meters)

Xsource\_West = 50.0 (wavemaker west boundary, in meters)

Xsource\_East = 53.0 (wavemaker east boundary, in meters)

Ysource\_Suth = 0.0 (wavemaker south boundary, in meters)

Ysource\_Nrth = 1000000.0 (wavemaker north boundary, in meters, give a bigger number so that it cover the whole y-axis)

SPONGE\_ON = T

Sponge\_West\_Width = 30.0 (make sure it doesn’t overlap wavemaker)

Sponge\_East\_Width = 30.0

TID\_LOW\_PASS = T (for the case with current)

1. **Data format**

2D spectral data (example2):

1. two wave components for short crested waves

1 1 - ndir, nfreq

0.10 - freq

0.0 - angle in degrees

0.5 - wave height

b) 2D spectrum

26 41 - NumFreq NumDir

0.044 - Freq

0.054 - Freq

0.064 - Freq

0.074 - Freq

0.084 - Freq

0.093 - Freq

…

-18.000 - Dire

-16.000 - Dire

-14.000 - Dire

-12.000 - Dire

-10.000 - Dire

-8.000 - Dire

-6.000 - Dire

…

0.0010291 0.0014662 0.0035744 …

The 2D array contains wave height for each component. Reading format in Fortran is

do i = 1,NumFreq

read(14,\*) Freq(i)

enddo

do i = 1,NumDir

read(14,\*) Dire(i)

enddo

do j = 1,NumFreq

do i = 1,NumDir

read(14,\*) Wave\_Spc2d(i,j)

enddo

enddo

in Matlab:

fname='wave2d.txt';

% write data

fid=fopen(fname,'w');

fprintf(fid,'%5i %5i - NumFreq NumDir \n',length(Freq\_model),length(Dire\_model));

% fprintf(fid,'%10.3f - PeakPeriod \n',PeakPeriod); % this is for

% funwave

fprintf(fid,'%10.3f - Freq \n',Freq\_model');

fprintf(fid,'%10.3f - Dire \n',Dire\_model');

dlmwrite(fname,Amp\_input,'delimiter','\t','-append','precision',5);

fclose(fid)

**5) Example**

Two examples are included in /TESTS/