Simple User guide

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The software is the surface wave model named MASNUM Wave Numerical Model version 2.2 (Abbreviation: masnum\_wam 2.2), which is developed by FIO (First Institute of Oceanography), SOA (State Oceanic Administration), China. Here only the quick start description of compiling and setting up two examples procedures is given in this simple user guide. The detail of masnum\_wam 2.2 can be found in the MASNUM\_WAVE\_Userguide\_20100710.pdf file.

1. Software/Operating System Prerequisites

(1) UNIX like operating system (LINUX, AIX, OSX)

(2) csh scripting languages

(3) Fortran 90 compilers, pgi, intel, and xlf are recommended options

(4) MPI

(5) netcdf 3.6.2 or greater

2. Structure of masnum\_wam 2.2

Figure 1 Structure of MASNUM Wave Model for ASC

Table 1 the meaning of the directory

|  |  |
| --- | --- |
| Directory | Description |
| doc | User guide |
| exp | Examples   1. exp1: west-northern pacific example (99-150E, 0-50N) 2. exp2: global ocean example (0-360E, 72S-72N) |
| inputdata | Inputdata for wave model   1. forcing: the forcing data such as 10-m wind fields 2. topo: the topography data |
| source | Source code of wave model   1. bin: makefile 2. wave\_coe: source code 3. mpi\_mod: source code associated with MPI parallelization |
| validation | Validation data  exp1: example 1 validation data (pac\_ncep\_wave\_20090228\_ standard.nc)  exp2: example 2 validation data (global\_ncep\_wave\_20090630\_standard.nc) |

3. Compile procedures

(1) Enter the directory masnum\_wave/source/bin

(2) Modify the necessary parameters in the “makefile” file

(3) then “make”

(4) If there’s no error messages and “masnum.wam.mpi” is generated, it indicates the compiling successes.

Table 2 the meaning of the parameters in the makefile

|  |  |
| --- | --- |
| Directory | Description |
| F77 | Fortran compiler |
| F77OPT | Link options |
| FFLAGS | Compiling options |
| EXE | The name of executable file  Default: masnum.wam.mpi |
| NETCDF\_PATH | The home directory of NetCDF library |
| LIBS | The Library path and library |
| INC | The include path |
| SRC | The list of the source files (.f90) of masnum\_wam2.2 |
| INC | The list of the include files (.inc) of masnum\_wam2.2 |
| VPATH | The Path of the SRC and INC  Defaults: ../wave\_cor/:../ympi\_mod/ |

4. Setting up the example 1 (exp1)

The example is the experiment to simulate the western Pacific (99-150E, 0-50N) ocean surface wave from January 1 and February 28, 2009. The resolution is 1/6 degree and the length of time step is 7.5 minutes.

Steps to run example 1

(1) Enter directory “masnum\_wave/exp/exp1”

(2) Modify the necessary parameters (Table 3) in the “exp1\_run.csh” file

(3) Modify the execute command according to the job submitted system. In this example, the command is

“mpirun -np $nproc ./masnum.wam.mpi > out.qrunout”

Table 3 the meaning of the parameters in the exp1\_run.csh

|  |  |
| --- | --- |
| Directory | Description |
| needmake | Flag for make the executable file, YES or NO  YES: make the executable file  NO: do not make the executable file |
| nproc | The number of processors for MPI  Should be set >= 2 |
| masnum\_home | The path for wave model home directory |

(4) Validation: After finish the example run, compare the variable “hs” in the “pac\_ncep\_wav\_20090228.nc” with it in the “pac\_ncep\_wav\_20090228\_standard.nc”.

a. Enter the directory masnum\_wave/validation/exp1, then

b. Modify the necessary parameters in the makefile

c. Execute the command:

“make”

if everything is ok and the executable file “compare\_exp1” is generated, it indicates the compiling successes.

d. Execute the command:

“compare\_exp1”

if “Compare Success” is printed on screen, it indicates the validation is pass.

5. Setting up the example 2 (exp2)

The example is the experiment to simulate the global (0-360E, 72S-72N) ocean surface wave from January 1 and June 30, 2009. The resolution is 1 degree and the length of time step is 15 minutes.

Steps to run example 1

(1) Enter directory “masnum\_wave/exp/exp2”

(2) Modify the necessary parameters (Table 4) in the “exp2\_run.csh” file

(3) Modify the execute command according to the job submitted system. In this example, the command is

“mpirun -np $nproc ./masnum.wam.mpi > out.qrunout”

Table 4 the meaning of the parameters in the exp1\_run.csh

|  |  |
| --- | --- |
| Directory | Description |
| needmake | Flag for make the executable file, YES or NO  YES: make the executable file  NO: do not make the executable file |
| nproc | The number of processors for MPI  Should be set >= 2 |
| masnum\_home | The path for wave model home directory |

(4) Validation: After finish the example run, compare the variable “hs” in the “global\_ncep\_wav\_20090228.nc” with it in the “pac\_ncep\_wav\_20090228\_standard.nc”.

a. Enter the directory masnum\_wave/validation/exp2, then

b. Modify the necessary parameters in the makefile

c. Execute the command:

“make”

if everything is ok and the executable file “compare\_exp2” is generated, it indicates the compiling successes.

d. Execute the command:

“compare\_exp2”

if “Compare Success” is printed on screen, it indicates the validation is pass.

简单的用户指南

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本软件是面波模型命名MASNUM海浪数值模式版本2.2（简称：masnum\_wam 2.2），它是由Fio（第一海洋研究所）、SOA（国家海洋局）、中国。这里只给出了简单的开始描述的编译和设置两个示例程序，在这个简单的用户指南。masnum\_wam 2.2的细节可以在masnum\_wave\_userguide\_20100710.pdf文件中找到。

1。软件/操作系统的先决条件

（1）Unix操作系统（Linux，AIX，OSX）

（2）CSH的脚本语言

（3）Fortran 90的编译器、PGI、英特尔、和XLF是推荐选项

（4）MPI

（5）NetCDF 3.6.2或更大

2。2.2结构的masnum\_wam

图1为ASC MASNUM波模型结构

表1目录的意义

目录描述

doc用户指南

口的例子

A. EXP1：西北太平洋的例子（99-150e，0-50n）

B. EXP2：全球海洋的例子（0-360e，72s-72n）

输入数据输入波模型

A.强迫：迫使数据如10米的风场

B.地形：地形数据

波浪模型源代码

A.本：makefile

B. wave\_coe：源代码

C. mpi\_mod：源代码与MPI并行相关

验证数据

实验1：实例验证数据（pac\_ncep\_wave\_20090228\_标准，NC）

实验二：例2验证数据（global\_ncep\_wave\_20090630\_standard，NC）

三.编译程序

（1）进入目录masnum\_wave /来源/箱

（2）修改必要的参数在makefile文件

（3）然后“作出”

（4）如果没有错误信息和“MASNUM。WAM。MPI”产生的，它表明成功编译。

表2在makefile中参数的含义

目录描述

F77的Fortran编译器

f77opt链接选项

fflags编译选项

exe可执行文件的名称

默认值：masnum.wam.mpi

netcdf\_path NetCDF图书馆目录

库库路径和库

包括路径

SRC的源文件的列表（。F90）的masnum\_wam2.2

公司的清单包括文件（公司）的masnum\_wam2.2

vpath的src和公司的路径

默认值：/ / / / ympi\_mod wave\_cor：..

4。设置示例1（EXP1）

这个例子是实验模拟了西太平洋（99-150e，0-50n）从1月1日和2009年2月28日的海面波。分辨率为1 / 6度和时间步长的长度为7.5分钟。

运行示例1的步骤

（1）进入目录”masnum\_wave /经验/实验”

（2）修改必要的参数（表3）中的“exp1\_run。CSH”文件

（3）根据作业提交系统修改执行命令。在这个例子中，命令是

“mpirun - NP nproc美元。/ masnum.wam.mpi >了。qrunout”

表3在exp1\_run.csh参数的含义

目录描述

needmake旗使可执行文件，是或否

是：使可执行文件

不做的可执行文件

nproc处理器数量的MPI

应设置> = 2

masnum\_home波模型的主目录的路径

（4）验证：完成实例运行后，将变“HS”中的“pac\_ncep\_wav\_20090228。数控”与它的“pac\_ncep\_wav\_20090228\_standard。数控”。

A.输入目录masnum\_wave /验证/ EXP1，然后

B.修改必要的参数在makefile

执行命令：

“使”

如果一切都是好的，可执行文件“compare\_exp1”产生的，它表明成功编译。

执行命令：

“compare\_exp1”

如果“比较成功”是印在屏幕上，它表明验证是通过。

5。设置示例2（EXP2）

例子的实验来模拟全球（0-360e，72s-72n）从1月1日和2009年6月30日的海面波。分辨率为1度，时间步长为15分钟。

运行示例1的步骤

（1）进入目录”masnum\_wave /经验/ EXP2”

（2）修改必要的参数（表4）中的“exp2\_run。CSH”文件

（3）根据作业提交系统修改执行命令。在这个例子中，命令是

“mpirun - NP nproc美元。/ masnum.wam.mpi >了。qrunout”

表4在exp1\_run.csh参数的含义

目录描述

needmake旗使可执行文件，是或否

是：使可执行文件

不做的可执行文件

nproc处理器数量的MPI

应设置> = 2

masnum\_home波模型的主目录的路径

（4）验证：完成实例运行后，将变“HS”中的“global\_ncep\_wav\_20090228。数控”与它的“pac\_ncep\_wav\_20090228\_standard。数控”。

A.输入目录masnum\_wave /验证/ EXP2，然后

B.修改必要的参数在makefile

执行命令：

“使”

如果一切都是好的，可执行文件“compare\_exp2”产生的，它表明成功编译。

执行命令：

“compare\_exp2”

如果“比较成功”是印在屏幕上，它表明