**Test of the artificial SWAMP Case**

**These are tests for the WAM programs for**

* Set-up of coarse grid, including two nests for boundary value output,
* Set-up of two fine grids,
* Model runs including restart,
* Use of boundary values from the coarse grid in the fine grids
* Different model options,
* Post-processing

**1 Compile and build the PREPROC, CHIEF and the post-processing programs**

* Adapt the makefiles in directory *mk* to the environment of your computer system
* Give the correct path in *.dirset* (in directory *mk*) and execute the *create\_binaries* – that will generate all the binaries that are required

**2 Set-up of a coarse grid including two nests with the pre-processing program Preproc :**

* The program will use the control file *Preproc\_User* and the topographic data file *TOPOCAT.DAT*.
* The program generates the protocol file *preproc\_prot\_coarse* and the set-up file *Grid\_info\_COARSE\_GRID*.

**3 Execution of WAM :**

* Copy the wind data file *WIND\_INPUT.DAT* into your temporary directory for execution of your binaries
* Execute WAM. There are two possibilities available – default treatment of the source terms after Janssen/Bidlot (JAN, ST3) or Ardhuin (ARD, ST4).
* The program will use the control file *WAM\_User*, wind data file *WIND\_INPUT.DAT* and the set-up file *Grid\_info\_COARSE\_GRID*.
* The program generates the protocol file *wam\_prot\_coarse*, result files containing integrated wave parameters: *MAP19780906060000, MAP19780907060000*,

wave spectra: *OUT19780906060000, OUT19780907060000,*

boundary values for nest 1: *C0119780906060000, C0119780907060000*,

boundary values for nest 2: *C0219780906060000, C0219780907060000,*

and the restart file *BLS19780907060000*.

**4 Execution of WAM (restart)**

* Adapt *WAM\_User* to the corresponding restart option
* Execute WAM (JAN or ARD)
* The program will use the control file *WAM\_User*, wind data file *WIND\_INPUT.DAT* the restart file *BLS19780907060000*, and the set-up file *Grid\_info\_COARSE\_GRID*.
* The program overwrites the protocol file *wam\_prot\_coarse*, generates results files for integrated wave parameters: *MAP19780908060000,*

wave spectra: *OUT19780908060000*,

boundary values for nest 1: *C0119780908060000*,

boundary values for nest 2: *C0219780908060000,*

and the restart file: *BLS19780908060000.*

**5 Post-processing** **PRINT\_GRID\_FILE (pgrid in directory abs)**

* Execute PRINT\_GRID\_FILE
* The program will use the control file *Grid\_User* and all integrated parameter results files starting with *MAP*. It provides a print out of selected integrated parameter fields for all active model grid points.

The program generates the protocol file *pgrid\_prot\_coarse*.

**6 Post-processing PRINT\_TIME (ptime in directory abs)**

* Execute PRINT\_TIME
* The program will use the control file *Time\_User* and all integrated parameter results files starting with *MAP*. It provides time series of integrated parameters at selected locations.

The program generates the protocol file *ptime\_prot\_coarse*.

**7 Post-processing** **PRINT\_SPECTRA\_FILE (pspec in directory abs)**

* Execute PRINT\_SPECTRA\_FILE
* The program will use the control file *Spectra\_User* and all wave spectra results files starting with *OUT*. It provides a print out of the two-dimensional spectrum at selected model grid points.

The program generates the protocol file *pspec\_prot\_coarse*.

**8 Post-processing NETCDF (pnetcdf in directory abs)**

* Execute NETCDF
* The program will use the control file *nlnetcdf (namelist)* and all wave integrated parameter results files starting with *MAP.* It will convert the MAP files including the integrated wave parameters in binary code to NetCDF.

The program generates the protocol file *pnetcdf\_prot\_coarse*.

**9 Set-up of the fine grid (NEST 1) :**

* Execute PREPROC for the first nest.
* The program will use the control file *Preproc\_User* in the directory *const/Fine\_1* (JAN or ARD), the topographic data file *TOPOCAT.DAT* the *Grid\_info\_COARSE\_GRID*.
* It generates the protocol file *preproc\_prot\_fine\_1* and the set-up file *Grid\_info\_fine\_1\_GRID*.

**10 Execution of CHIEF :**

* Copy the 3 boundary files starting with C01 from the folder COARSE\_Grid into your temporary folder for execution.
* Execute CHIEF
* The program will use the control file *WAM\_User*, wind data file *WIND\_INPUT.DAT* and the set-up file *Grid\_info\_fine\_1\_GRID*.
* The program generates the protocol file *wam\_prot\_fine\_1*, results files containing integrated wave parameters: *MAP119780906060000, MAP119780907060000*, *MAP119780908060000*,

wave spectra: *OUT119780906060000, OUT119780907060000*, *OUT119780908060000*

and restart file *BLS119780907060000, BLS119780908060000*.

**11 Post-processing**

* The post-processing has do be done in the analogy to steps 5, 6 and 7 and 8.

**12 Set-up of the fine grid (NEST 2) in analogy to the Set-up of NEST 1.**

Example batch jobs for the execution of WAM for the coarse grid and the two nests are given in the directories jobs (coarse grid with the default physics ST3), jobs\_ARD (coarse grid with the ST4-physics), jobs\_f1 for the first nest and jobs\_f2 for the second nest. All corresponding output listings are available in the directory *dayfiles*. Those can be used to check whether your set-up was successful.

For a real application, it will be necessary to adapt the subroutine *read\_wind\_input.f90* in the directory *chief* to the wind fields that are available at your institute.

Furthermore, there are a lot of additional options available to run the wave model for example with ice, currents and water level deviations or data assimilation.