ARTEMIS

Reference Manual

Version v8p5
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Contents

1. Detail list of keywords

1.1 ALPHA

Type :	Real
Dimension :	0
Mnemo	ALFABJ
DEFAULT VALUE :	1.0
French keyword :	`ALPHA`

Fixes the coefficient α used in the formulation of the dissipation coefficient through breaking proposed by Battjes & Janssen, 1978 for random waves.

1.2 AMPLITUDE AND PHASE FILE

Type :	String
Dimension :	0
Mnemo	ART_FILES(ARTAMP)%NAME
DEFAULT VALUE :	”
French keyword :	`FICHIER DES PHASES ET AMPLITUDES`

Name of the results file corresponding to the computations and which contains the phase and amplitude at every point for all the periods and directions specified in the steering file.

1.3 AMPLITUDE AND PHASE FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTAMP)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	`FORMAT DU FICHIER DES PHASES ET AMPLITUDES`

Format of the `AMPLITUDE AND PHASE FILE`. Possible choices are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.4 AUTOMATIC CALCULATION OF PHASE

Type : Logical
Dimension : 0
Mnemo LPHASEAUTO
DEFAULT VALUE : NO
French keyword : `CALCUL AUTOMATIQUE DE LA PHASE`
TRUE: automatic calculation of incident phase (based on reference water depth).

1.5 AUTOMATIC TETAP CALCULATION

Type : Logical
Dimension : 0
Mnemo LANGAUTO
DEFAULT VALUE : NO
French keyword : `CALCUL AUTOMATIQUE DE TETAP`
If = TRUE: automatic calculation of θ_p (based on velocity direction).

1.6 BEGINNING PERIOD FOR PERIOD SCANNING

Type : Real
Dimension : 0
Mnemo PERDEB
DEFAULT VALUE : 0.
French keyword : `PERIODE DE DEBUT POUR LE BALAYAGE EN PERIODE`
Used with the option `PERIOD SCANNING` = YES. Fixes the minimum value (in seconds) of the period range to be used for the period scanning.

1.7 BINARY DATA FILE 1

Type : String
Dimension : 1
Mnemo ART_FILES(ARTBI1)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DE DONNEES BINAIRE 1`
Data file, written in binary mode, at the disposal of the user.

1.8 BINARY DATA FILE 1 FORMAT

Type : String
Dimension : 1
Mnemo ART_FILES(ARTBI1)%FMT
DEFAULT VALUE : ’SERAFIN’
French keyword : `FORMAT DU FICHIER DE DONNEES BINAIRE 1`
`BINARY DATA FILE 1` format. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.9 BINARY DATA FILE 2

Type : String
Dimension : 1
Mnemo ART_FILES(ARTBI2)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DE DONNEES BINAIRE 2`
Data file, written in binary mode, at the disposal of the user.

1.10 BINARY DATA FILE 2 FORMAT

Type : String
Dimension : 1
Mnemo ART_FILES(ARTBI2)%FMT
DEFAULT VALUE : ’SERAFIN’
French keyword : `FORMAT DU FICHIER DE DONNEES BINAIRE 2`
`BINARY DATA FILE 2` format. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.11 BINARY RESULTS FILE

Type : String
Dimension : 1
Mnemo ART_FILES(ARTRBI)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DES RESULTATS BINAIRE`
Results file, written in binary mode, at the disposal of the user.

1.12 BOTTOM FRICTION LAW

Type : Integer
Dimension : 0
Mnemo FORMFR
DEFAULT VALUE : 1
French keyword : `FORMULATION DU FROTTEMENT DE FOND`
Used with the option `FRICTION` = YES. Fixes the formulation used for bottom friction law:

- 1: Kostense et al., 1986,
- 2: Putnam & Johnson, 1949.

1.13 BOTTOM TOPOGRAPHY FILE

Type : String
Dimension : 1
Mnemo ART_FILES(ARTFON)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DES FONDS`
Name of a potential bathymetry file. If this keyword is specified, the bathymetry which it is defining is accounted for.

1.14 BOTTOM TOPOGRAPHY SMOOTHING

Type :	Integer
Dimension :	1
Mnemo	LISFON
DEFAULT VALUE :	0
French keyword :	`LISSAGES DU FOND`

Number of smoothings done on the topography. Each smoothing, using a mass matrix, is conservative. It is used when bathymetric data provide too irregular results after interpolation.

1.15 BOUNDARY CONDITIONS FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTCLI)%NAME
DEFAULT VALUE :	'MANDATORY'
French keyword :	`FICHIER DES CONDITIONS AUX LIMITES`

Name of the boundary conditions file. It is automatically built by STBTEL or by the mesh generator MATISSE.

1.16 BREAKING

Type :	Logical
Dimension :	0
Mnemo	DEFERL
DEFAULT VALUE :	NO
French keyword :	`DEFERLEMENT`

Yes, if one wants to account for breaking process (see also reals of index 18, 19, 20, 21, 22, 23, and integer of index 12, 13).

1.17 BREAKING LAW

Type :	Integer
Dimension :	0
Mnemo	IBREAK
DEFAULT VALUE :	1
French keyword :	`FORMULATION DU DEFERLEMENT`

Specifies the formulation chosen for calculating the dissipation coefficient through breaking. Only effective for monochromatic wave mode.

- 1: Formulation of Battjes & Janssen, 1978,
- 2: Formulation of Dally et al., 1984.

In random wave mode, the formulation of B & J, 1978 is the only one to be used.

1.18 CHECKING THE MESH

Type :	Logical
Dimension :	1
Mnemo	CHECK_MESH
DEFAULT VALUE :	NO
French keyword :	`VERIFICATION DU MAILLAGE`

If this keyword is equal to YES, a call to subroutine **CHECKMESH** will look for errors in the mesh, superimposed points, etc.

1.19 CONCATENATE PARTEL OUTPUT

Type :	Logical
Dimension :	1
Mnemo	CONCAT_PARTEL
DEFAULT VALUE :	NO
French keyword :	`CONCATENATION SORTIE PARTEL`

With this option, partel no more generates a file (GEO/CLI/PAR) per process but a single concatenate file of them, associated to an index file. Then instead of having partel generating 3P files, it only generates 6 files.

1.20 COORDINATES OF THE REFERENCE F SPECTRUM

Type :	Real
Dimension :	2
Mnemo	X_SFREF,Y_SFREF
DEFAULT VALUE :	-99999.9;-99999.9
French keyword :	`COORDONNEES POUR LE SPECTRE F DE REFERENCE`

Coordinates for the frequency spectrum reference point.

1.21 CURRENT

Type :	Logical
Dimension :	0
Mnemo	COURANT
DEFAULT VALUE :	NO
French keyword :	`COURANT`

If = TRUE: Wave refraction due to current is described using Kostense model (1988).

1.22 DEBUGGER

Type :	Integer
Dimension :	1
Mnemo	DEBUG
DEFAULT VALUE :	0
French keyword :	`DEBUGGER`

If 1, calls of subroutines will be printed in the listing.

1.23 DIAMETER50

Type :	Real
Dimension :	0
Mnemo	DIAM50
DEFAULT VALUE :	0.10E-3
French keyword :	`DIAMETRE50`

DIAM50 is the maximum grain diameter, in m, which defines 50 % of the total weight of sediment. Usually, we have **DIAM90** = 1.5 $\times$ **DIAM50**. **DIAM50** is a more common value used.

- 0.66E-3: for very coarse sand,
- 0.33E-3: for coarse sand,
- 0.17E-3: for medium sand,
- 0.083E-3: for fine sand,
- 0.040E-3: for very fine sand,
- 0.10E-3: default value.

1.24 DIAMETER90

Type :	Real
Dimension :	0
Mnemo	DIAM90
DEFAULT VALUE :	0.15E-3
French keyword :	DIAMETRE90

DIAM90 is the maximum grain diameter, in m, which defines 90 % of the total weight of sediment.

- 1.0E-3: for very coarse sand,
- 0.5E-3: for coarse sand,
- 0.25E-3: for medium sand,
- 0.125E-3: for fine sand,
- 0.062E-3: for very fine sand,
- 0.15E-3: default value.

1.25 DICTIONARY

Type :	String
Dimension :	1
Mnemo	
DEFAULT VALUE :	'artemis.dico'
French keyword :	DICTIONNAIRE

Key word dictionary.

1.26 DIRECTION OF WAVE PROPAGATION

Type :	Real
Dimension :	0
Mnemo	TETAH
DEFAULT VALUE :	0.0
French keyword :	DIRECTION DE PROPAGATION DE LA HOULE

Fixes the direction towards the incident waves at boundaries go to. It is counted in degrees and positively in the trigonometric sense relatively to the x axis. This value is prescribed as a constant value along all the wave incident type boundaries. If one wants to specify a non uniform value, the user has to specify the value **TETAB** in the subroutine **BORH**.

1.27 DISSIPATION RELAXATION

Type : Real
Dimension : 0
Mnemo RELDIS
DEFAULT VALUE : 0.5
French keyword : `RELAXATION SUR LA DISSIPATION`

Fixes the relaxation coefficient used between two sub-iterations for the computation of the dissipation term.

1.28 ENDING PERIOD FOR PERIOD SCANNING

Type : Real
Dimension : 0
Mnemo PERFIN
DEFAULT VALUE : 0.
French keyword : `PERIODE DE FIN POUR LE BALAYAGE EN PERIODE`

Used with the option `PERIOD SCANNING` = YES. Fixes the maximum value (in seconds) of the period range to be used for the period scanning.

1.29 FIRST TIME IN THE FREE SURFACE FILE

Type : Real
Dimension : 0
Mnemo TINIFS
DEFAULT VALUE : 10000.
French keyword : `PREMIER TEMPS DANS LE FICHIER DE SURFACE LIBRE`

Determines the time from which the results are written in the `FREE SURFACE FILE`.

1.30 FLUID KINEMATIC VISCOSITY

Type : Real
Dimension : 0
Mnemo VISCO
DEFAULT VALUE : 1.0E-6
French keyword : `VISCOSITE CINEMATIQUE DU FLUIDE`

Kinematic viscosity of the fluid (water) in m^2/s.

- 1.793E-6: for a temperature of 0 C,
- 1.567E-6: for a temperature of 4 C,
- 1.237E-6: for a temperature of 12 C,
- 1.112E-6: for a temperature of 16 C,
- 1.011E-6: for a temperature of 20 C,
- 0.802E-6: for a temperature of 30 C,
- 0.661E-6: for a temperature of 40 C,
- 1.0E-6: default value.

1.31 FLUID SPECIFIC MASS

Type : Real
Dimension : 0
Mnemo MVEAU
DEFAULT VALUE : 1000.0
French keyword : `MASSE VOLUMIQUE DU FLUIDE`

Fluid specific weight (water) in kg/m^3.

1.32 FORMATTED DATA FILE 1

Type : String
Dimension : 1
Mnemo ART_FILES(ARTFO1)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DE DONNEES FORMATE 1`

Data file, written in ASCII mode, at the disposal of the user.

1.33 FORMATTED DATA FILE 2

Type : String
Dimension : 0
Mnemo ART_FILES(ARTFO2)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DE DONNEES FORMATE 2`

Data file, written in ASCII mode, at the disposal of the user.

1.34 FORMATTED RESULTS FILE

Type : String
Dimension : 1
Mnemo ART_FILES(ARTRFO)%NAME
DEFAULT VALUE : ”
French keyword : `FICHIER DES RESULTATS FORMATE`

Results file, written in ASCII mode, at the disposal of the user.

1.35 FORTRAN FILE

Type : String
Dimension : 1
Mnemo NOMFOR
DEFAULT VALUE : ”
French keyword : `FICHIER FORTRAN`

Name of the FORTRAN file to be submitted, including specific subroutines of the model.

1.36 FREE SURFACE ANIMATION

Type : Logical
Dimension : 0
Mnemo ANIMFS
DEFAULT VALUE : NO
French keyword : `ANIMATION DE LA SURFACE LIBRE`

This option informs that the phase and amplitude file is to be generated. This file will be used to

determine the free surface elevation throughout the model area. Remember to give AMPLITUDE AND PHASE FILE and FREE SURFACE FILE.

1.37 FREE SURFACE FILE

Type :	String
Dimension :	0
Mnemo	NOMFST
DEFAULT VALUE :	”
French keyword :	FICHIER DE SURFACE LIBRE

Name of the results file corresponding to the computations and which contains the free surface at every point as a function of time. This file can be animated to check free surface variations with time.

1.38 FREE SURFACE FILE FORMAT

Type :	String
Dimension :	1
Mnemo	?????
DEFAULT VALUE :	’SERAFIN’
French keyword :	FORMAT DU FICHIER DE SURFACE LIBRE

Format of the FREE SURFACE FILE. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.39 FRICTION

Type :	Logical
Dimension :	0
Mnemo	FROTTE
DEFAULT VALUE :	NO
French keyword :	FROTTEMENT

Yes, if one wants to include dissipation through bottom friction in the computation.

1.40 FRICTION COEFFICIENT

Type :	Real
Dimension :	0
Mnemo	FFON
DEFAULT VALUE :	0.
French keyword :	COEFFICIENT DE FROTTEMENT

Do not confuse with the FRICTION FACTOR. Not used in ARTEMIS. It is let here for consistence with TELEMAC-2D.

1.41 FRICTION FACTOR

Type : Real
Dimension : 0
Mnemo FWCOEF
DEFAULT VALUE : 0.
French keyword : `FACTEUR DE FROTTEMENT`
Used with the option `FRICTION FACTOR IMPOSED` = YES. Fixes the value of the friction factor uniform over the domain.

1.42 FRICTION FACTOR IMPOSED

Type : Logical
Dimension : 0
Mnemo ENTFW
DEFAULT VALUE : NO
French keyword : `FACTEUR DE FROTTEMENT IMPOSE`
Used with the option `FRICTION` = YES. If YES, enables the user to impose a friction factor, by a keyword for a constant value (see real of index 29) or by programming in the **FWSPEC** subroutine for non-uniform value. If NO, ARTEMIS automatically computes the friction factor assuming that the bottom is sandy and uses the characteristics of sediment and of motion.

1.43 GAMMA

Type : Real
Dimension : 0
Mnemo GAMMA
DEFAULT VALUE : 3.3
French keyword : `GAMMA`
Used with option `MONODIRECTIONAL RANDOM WAVE` = YES or `MULTIDIRECTIONAL RANDOM WAVE` = YES. Fixes the γ value tor the JONSWAP wave energy spectrum:

- GAMMA = 1: Pierson-Moskowitz,
- GAMMA = 3.3: mean JONSWAP spectrum (default value).

1.44 GAMMAS

Type : Real
Dimension : 0
Mnemo GAMMAS
DEFAULT VALUE : 0.88
French keyword : `GAMMAS`
Fixes the coefficient γ_s used in the criterion of the critical breaking wave height. Do not confuse with coefficient γ used in the JONSWAP spectrum.

1.45 GDALLY

Type : Real
Dimension : 0
Mnemo GDALLY
DEFAULT VALUE : 0.4
French keyword : `GDALLY`
Fixes the Γ coefficient used in the formulation of Dally et al., 1984, for the dissipation coeffi-

cient in surf-breaking. Do not confuse with the coefficient γ used in the JONSWAP formulae and coefficient gammas used to determine the breaking wave height criterion.

1.46 GEOMETRY FILE

Type :	String
Dimension :	1
Mnemo	NOMGEO
DEFAULT VALUE :	'MANDATORY'
French keyword :	`FICHIER DE GEOMETRIE`

Name of the file which contains the computational mesh.

1.47 GEOMETRY FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTGEO)%FMT
DEFAULT VALUE :	'SERAFIN'
French keyword :	`FORMAT DU FICHIER DE GEOMETRIE`

Format of the `GEOMETRY FILE`. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.48 GRAPHIC PRINTOUT PERIOD

Type :	Integer
Dimension :	1
Mnemo	LEOPRD
DEFAULT VALUE :	1
French keyword :	`PERIODE DE SORTIE GRAPHIQUE`

Fixes the period, in number of wave periods, for the writing of the `VARIABLES FOR GRAPHIC PRINTOUTS` (see this keyword) in the `RESULTS FILE`.

1.49 GRAVITY ACCELERATION

Type :	Real
Dimension :	1
Mnemo	GRAV
DEFAULT VALUE :	9.81
French keyword :	`ACCELERATION DE LA PESANTEUR`

Sets the value of the acceleration due to gravity in m/s^2.

1.50 HYDRAULIC REGIME IMPOSED

Type :	Logical
Dimension :	0
Mnemo	ENTREG
DEFAULT VALUE :	NO
French keyword :	`REGIME HYDRAULIQUE IMPOSE`

Used with the option FRICTION = YES. Enables to impose the hydraulic regime in the case of an automatic calculation of the friction factor for sandy beds.

1.51 HYDRAULIC REGIME TYPE

Type :	Integer
Dimension :	0
Mnemo	REGIDO
DEFAULT VALUE :	1
French keyword :	TYPE DU REGIME HYDRAULIQUE

Used with option HYDRAULIC REGIME IMPOSED = YES. Determines the type of the hydraulic regime (laminar, smooth-turbulent, rough-turbulent, transient).

- laminar regime,
- smooth-turbulent regime,
- rough-turbulent regime,
- transient regime.

1.52 INFORMATIONS ABOUT SOLVER

Type :	Logical
Dimension :	1
Mnemo	INFOGR
DEFAULT VALUE :	YES
French keyword :	INFORMATIONS SUR LE SOLVEUR

Gives the iterations number which was necessary for the solver to converge.

1.53 INITIAL CONDITIONS

Type :	String
Dimension :	1
Mnemo	CDTINI
DEFAULT VALUE :	'ZERO ELEVATION'
French keyword :	CONDITIONS INITIALES

Enables to define the initial conditions on water depths. The possible values are as follows:

- ZERO ELEVATION: fixes the free surface level to 0. Water depths are then equal to the difference between free surface level and bottom level,
- CONSTANT ELEVATION: fixes the free surface level to the value specified by the keyword INITIAL WATER LEVEL. Water level are then computed as before,
- ZERO DEPTH: initializes the water depths to 0,
- CONSTANT DEPTH: initializes the water depths to the value specified by the keyword INITIAL DEPTH,
- SPECIAL: initial conditions on water depths are to be precised in the subroutine **CONDIH**.

1.54 INITIAL DEPTH

Type :	Real
Dimension :	0
Mnemo	HAUTIN
DEFAULT VALUE :	0.
French keyword :	`HAUTEUR INITIALE`

Value to be used along with the option `INITIAL CONDITIONS`: ”CONSTANT DEPTH”.

1.55 INITIAL WATER LEVEL

Type :	Real
Dimension :	1
Mnemo	COTINI
DEFAULT VALUE :	0.
French keyword :	`COTE INITIALE`

Value to be used with the option `INITIAL CONDITIONS`: ”CONSTANT ELEVATION”.

1.56 INSTANT FOR READING TOMAWAC SPECTRUM

Type :	Real
Dimension :	0
Mnemo	TPSTWC
DEFAULT VALUE :	0.
French keyword :	`INSTANT DE LECTURE DU SPECTRE TOMAWAC`

Give the instant of the TOMAWAC computation at which we want to import the spectrum for ARTEMIS.

1.57 KDALLY

Type :	Real
Dimension :	0
Mnemo	KDALLY
DEFAULT VALUE :	0.1
French keyword :	`KDALLY`

Fixes the coefficient K used in the formulation of the dissipation coefficient proposed by Dally et al. 1984.

1.58 LISTING PRINTOUT

Type :	Logical
Dimension :	1
Mnemo	LISTIN
DEFAULT VALUE :	YES
French keyword :	`SORTIE LISTING`

If NO is specified for this keyword, the printout listing just contains the head and the sentence END OF PROGRAM. It is advised not to use this way.

1.59 LISTING PRINTOUT PERIOD

Type :	Integer
Dimension :	1
Mnemo	LISPRD
DEFAULT VALUE :	1
French keyword :	`PERIODE DE SORTIE LISTING`

Fixes the period, in number of wave periods, for the writing of the `VARIABLES TO BE PRINTED` (see this keyword).

1.60 MATRIX STORAGE

Type :	Integer
Dimension :	1
Mnemo	OPTASS
DEFAULT VALUE :	3
French keyword :	`STOCKAGE DES MATRICES`

Defines the method to store matrices. The possible choices are:

- 1: classical EBE,
- 2: assembled EBE,
- 3: edge-based storage.

Beware, with option 2, a special numbering of points is required.

1.61 MATRIX-VECTOR PRODUCT

Type :	Integer
Dimension :	1
Mnemo	PRODUC
DEFAULT VALUE :	1
French keyword :	`PRODUIT MATRICE-VECTEUR`

Possible choices are:

- 1: Classical Product,
- 2: New Frontal Product.

1.62 MAXIMUM ANGLE OF PROPAGATION

Type :	Real
Dimension :	0
Mnemo	TETMAX
DEFAULT VALUE :	180.
French keyword :	`ANGLE MAXIMUM DE PROPAGATION`

Used with the option `MULTIDIRECTIONAL RANDOM WAVE` = YES. Fixes the maximum value (in degrees) of the directions range. It is counted positively in the trigonometric sense relatively to the x axis.

1.63 MAXIMUM NUMBER OF ITERATIONS FOR SOLVER

Type :	Integer
Dimension :	1
Mnemo	SLVART%NITMAX
DEFAULT VALUE :	60000
French keyword :	`MAXIMUM D'ITERATIONS POUR LE SOLVEUR`

Algorithms used for solving the matrix system are iterative. It is then necessary to limit the maximum number of iterations.

1.64 MAXIMUM OF SUB-ITERATIONS

Type :	Integer
Dimension :	0
Mnemo	NITDIS
DEFAULT VALUE :	15
French keyword :	`MAXIMUM DE SOUS-ITERATIONS`

Fixes the maximum number of sub-iterations for the computation of dissipation.

1.65 MAXIMUM OF SUB-ITERATIONS FOR TETAP

Type :	Integer
Dimension :	0
Mnemo	NITTP
DEFAULT VALUE :	15
French keyword :	`MAXIMUM DE SOUS-ITERATIONS POUR TETAP`

Fixes the maximum number of sub-iterations for the automatic computation of θ_p.

1.66 MAXIMUM SPECTRAL PERIOD

Type :	Real
Dimension :	0
Mnemo	PMAX
DEFAULT VALUE :	200.
French keyword :	`PERIODE MAXIMUM DU SPECTRE`

Maximum period value requested in seconds if it is necessary to alter the energy spectrum for the computation of the periods in the case of random waves (see **PERALE** subroutine).

1.67 MINIMUM ANGLE OF PROPAGATION

Type :	Real
Dimension :	0
Mnemo	TETMIN
DEFAULT VALUE :	-180.
French keyword :	`ANGLE MINIMUM DE PROPAGATION`

Used with the option `MULTIDIRECTIONAL RANDOM WAVE` = YES. Fixes the minimum value (in degrees) of the directions range. It is counted positively in the trigonometric sense relatively to the x axis.

1.68 MINIMUM SPECTRAL PERIOD

Type : Real
Dimension : 0
Mnemo PMIN
DEFAULT VALUE : 0.02
French keyword : `PERIODE MINIMUM DU SPECTRE`

Minimum period value requested in seconds if it is necessary to alter the energy spectrum for the computation of the periods in the case of random waves (see **PERALE** subroutine).

1.69 MONODIRECTIONAL RANDOM WAVE

Type : Logical
Dimension : 0
Mnemo ALEMON
DEFAULT VALUE : NO
French keyword : `HOULE ALEATOIRE MONODIRECTIONNELLE`

Yes, if one wants to run computation in random monodirectional waves (see real keywords of index 12, 13 and integer of index 10).

1.70 MULTIDIRECTIONAL RANDOM WAVE

Type : Logical
Dimension : 0
Mnemo ALEMUL
DEFAULT VALUE : NO
French keyword : `HOULE ALEATOIRE MULTIDIRECTIONNELLE`

Yes, if one wants to run computation in random multidirectional waves (see real keywords of index 12, 13 and integer of index 10).

1.71 NESTING WITHIN TOMAWAC OUTER MODEL

Type : Integer
Dimension : 0
Mnemo CHAINTWC
DEFAULT VALUE : 0
French keyword : `CHAINAGE AVEC MODELE GLOBAL TOMAWAC`

Remember to give NUMBER OF DIRECTIONS IN TOMAWAC SPECTRUM and NUMBER OF FREQUENCIES IN TOMAWAC SPECTRUM with option 1. Remember to give `TOMAWAC OUTER RESULT FILE`, `TOMAWAC OUTER SPECTRAL FILE` and `COORDINATES OF THE REFERENCE F SPECTRUM` if using option 2. `INSTANT FOR READING TOMAWAC SPECTRUM` required in cases 1 and 2.

1.72 NUMBER OF DIRECTIONS

Type : Integer
Dimension : 0
Mnemo NDALE
DEFAULT VALUE : 5
French keyword : `NOMBRE DE DIRECTIONS DE DISCRETISATION`

Used with the option `MULTIDIRECTIONAL RANDOM WAVE` = YES. It fixes the number of iso-energy bands which discretizes the wave directional spectrum.

1.73 NUMBER OF PERIODS

Type :	Integer
Dimension :	0
Mnemo	NPALE
DEFAULT VALUE :	5
French keyword :	`NOMBRE DE PERIODES DE DISCRETISATION`

Used with option `MONODIRECTIONAL RANDOM WAVE` = YES or `MULTIDIRECTIONAL RANDOM WAVE` = YES. It fixes the number of iso-energy frequency bands which discretize the energy spectrum.

1.74 NUMBER OF PRIVATE VARIABLES

Type :	Integer
Dimension :	1
Mnemo	NPRIV
DEFAULT VALUE :	0
French keyword :	`NOMBRE DE VARIABLES PRIVEES`

Give the number of private variables.

1.75 NUMBER OF TIME STEPS

Type :	Integer
Dimension :	1
Mnemo	NITFS
DEFAULT VALUE :	0
French keyword :	`NOMBRE DE PAS DE TEMPS`

Specifies the number of time steps in `FREE SURFACE FILE`.

1.76 ORIGIN COORDINATES

Type :	Integer
Dimension :	2
Mnemo	I_ORIG,J_ORIG
DEFAULT VALUE :	0;0
French keyword :	`COORDONNEES DE L'ORIGINE`

Value in metres, used to avoid large real numbers, added in SERAFIN format, but so far no other treatment.

1.77 ORIGINAL DATE OF TIME

Type :	Integer
Dimension :	3
Mnemo	MARDAT
DEFAULT VALUE :	0;0;0
French keyword :	`DATE DE L'ORIGINE DES TEMPS`

Give the date of the time origin of the model when taking into account the tide generating force.

1.78 ORIGINAL HOUR OF TIME

Type : Integer
Dimension : 3
Mnemo MARTIM
DEFAULT VALUE : 0;0;0
French keyword : `HEURE DE L'ORIGINE DES TEMPS`
Give the time of the time origin of the model when taking into account the tide generating force.

1.79 PARALLEL PROCESSORS

Type : Integer
Dimension : 1
Mnemo NCSIZE
DEFAULT VALUE : 0
French keyword : `PROCESSEURS PARALLELES`
Number of processors for domain partition:

- 0: 1 machine, compiling without parallel library,
- 1: 1 machine, compiling with a parallel library,
- 2: 2 processors or machines in parallel. etc...

1.80 PARTITIONING TOOL

Type : String
Dimension : 1
Mnemo
DEFAULT VALUE : 'METIS'
French keyword : `PARTITIONNEUR`
Partitioning tool selection:

- 1: METIS,
- 2: SCOTCH,
- 3: PARMETIS,
- 4: PTSCOTCH.

1.81 PEAK PERIOD

Type : Real
Dimension : 0
Mnemo PERPIC
DEFAULT VALUE : 10.0
French keyword : `PERIODE DE PIC`
Used with option `MONODIRECTIONAL RANDOM WAVE` = YES or `MULTIDIRECTIONAL RANDOM WAVE` = YES. Fixes the peak period (in seconds) of the energy spectrum.

1.82 PERIOD SCANNING

Type : Logical
Dimension : 0
Mnemo BALAYE
DEFAULT VALUE : NO
French keyword : `BALAYAGE EN PERIODE`

Yes, if one wants to run computations by scanning a period range (resonance computations, see also reals of index 8, 9, and 10).

1.83 PHASE REFERENCE COORDINATES

Type : Real
Dimension : 2
Mnemo X_PHREF,Y_PHREF
DEFAULT VALUE : 0.;0.
French keyword : `COORDONNEES DE REFERENCE POUR LA PHASE`

Coordinates of reference point for phase. Will not change the wave height computed.

1.84 PRECONDITIONING

Type : Integer
Dimension : 1
Mnemo SLVART%PRECON
DEFAULT VALUE : 2
French keyword : `PRECONDITIONNEMENT`

Enables to apply preconditionning the matrix system to accelerate the convergence of the solver.

- 0: no preconditionning,
- 2: diagonal preconditionning,
- 3: block-diagonal preconditionning,
- 5: diagonal preconditionning in absolute value,
- 7: Element Crout preconditionning.

Few of them can be combined (numbers 2 or 3 with the other). To combine some preconditionnings, impose the product of the previous numbers: example 6 means preconditioning 2 and 3 applied.

1.85 RAPIDLY VARYING TOPOGRAPHY

Type : Integer
Dimension : 0
Mnemo IPENTCO
DEFAULT VALUE : 0
French keyword : `VARIATION RAPIDE DE LA BATHYMETRIE`

Extension of mild-slope equation with second order bottom effects

- 0: mild-slope equation,
- 1: gradient second order term: grad$(h)^2$,

- 2: curvature second order term: laplacian(h),
- 3: gradient + curvature second order terms.

Model used for functions E1 and E2 expression: Chamberlain and Porter (1995).

1.86 REFERENCE FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTREF)%NAME
DEFAULT VALUE :	”
French keyword :	`FICHIER DE REFERENCE`

Binary-coded result file for validation.

1.87 REFERENCE FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTREF)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	`FORMAT DU FICHIER DE REFERENCE`

`REFERENCE FILE` format. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.88 REFERENCE WATER DEPTH FOR AUTOMATIC PHASE

Type :	Real
Dimension :	0
Mnemo	DEPREF
DEFAULT VALUE :	-1.0
French keyword :	`PROFONDEUR DE REFERENCE POUR LA PHASE AUTOMATIQUE`

Water depth for automatic incident phase calculation. Try to put the incident wave boundary on a regular topography zone. The reference water depth should be representative of the water depth on the boundary.

1.89 RELAXATION ON TETAP

Type :	Real
Dimension :	0
Mnemo	RELTP
DEFAULT VALUE :	1.
French keyword :	`RELAXATION SUR TETAP`

Fixes the relaxation coefficient used between two sub-iterations for the computation of automatic θ_p.

1.90 RESULTS FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTRES)%NAME
DEFAULT VALUE :	”
French keyword :	FICHIER DES RESULTATS

Name of the results file corresponding to the computations and which contains the variables specified by the keyword VARIABLES FOR GRAPHIC PRINTOUTS.

1.91 RESULTS FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(ARTRES)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	FORMAT DU FICHIER DE RESULTATS

Format of the RESULTS FILE. Possible values are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.92 RIPPLES COEFFICIENT

Type :	Real
Dimension :	0
Mnemo	RICOEF
DEFAULT VALUE :	0.7
French keyword :	COEFFICIENT DE RIDES

Fixes the ripples coefficient used in the formulae of Van Rijn to calculate the friction factor:

- 1.0: for single ripples,
- 0.7: for ripples superimposed to sand waves.

1.93 S EXPONENT

Type :	Real
Dimension :	0
Mnemo	EXPOS
DEFAULT VALUE :	20.
French keyword :	EXPOSANT S

Used with the option MULTIDIRECTIONAL RANDOM WAVE = YES. Fixes the maximum value of exponent S in the Goda formula used to express the directional wave energy spreading. See GODA Y., Random Seas and Design of Maritime Structures - Univ. of Tokyo Press, 1987.

1.94 SEDIMENT SPECIFIC WEIGHT

Type :	Real
Dimension :	0
Mnemo	MVSED
DEFAULT VALUE :	2650.0
French keyword :	`MASSE VOLUMIQUE DU SEDIMENT`

Sediment specific weight in kg/m^3.

1.95 SKIN ROUGHNESS ONLY

Type :	Logical
Dimension :	0
Mnemo	ENTRUG
DEFAULT VALUE :	NO
French keyword :	`RUGOSITE DE PEAU SEULE`

Used with the option `FRICTION = YES`. Enables to restrict the total roughness to the skin roughness in the case of an automatic calculation of the friction factor for sandy beds.

1.96 SOLVER

Type :	Integer
Dimension :	1
Mnemo	SLVART%SLV
DEFAULT VALUE :	8
French keyword :	`SOLVEUR`

Enables to choose the solver used for solving the matrix system. They are:

- 1: conjugate gradient,
- 2: conjugate residual,
- 3: conjugate gradient on the normal equation,
- 4: minimum error,
- 5: squared conjugate gradient (not programmed),
- 6: CGSTAB conjugate gradient,
- 7: GMRES,
- 8: direct solver.

1.97 SOLVER ACCURACY

Type :	Real
Dimension :	1
Mnemo	SLVART%EPS
DEFAULT VALUE :	1.E-4
French keyword :	`PRECISION DU SOLVEUR`

Accuracy requested for the linear system solver.

1.98 SOLVER OPTION

Type :	Integer
Dimension :	1
Mnemo	SLVART%KRYLOV
DEFAULT VALUE :	3
French keyword :	`OPTION DU SOLVEUR`

Defines the dimension of the Krylov space when using the solver 7 (GMRES).

1.99 STEERING FILE

Type :	String
Dimension :	1
Mnemo	NOMCAS
DEFAULT VALUE :	”
French keyword :	`FICHIER DES PARAMETRES`

Name of the steering file used for the computation.

1.100 STEP FOR PERIOD SCANNING

Type :	Real
Dimension :	0
Mnemo	PERPAS
DEFAULT VALUE :	0.
French keyword :	`PAS POUR LE BALAYAGE EN PERIODE`

Used with the option `PERIOD SCANNING` = YES. Fixes the value of the period step (in seconds) to be used for the period scanning.

1.101 SUB-ITERATIONS ACCURACY FOR CURRENT

Type :	Real
Dimension :	0
Mnemo	EPSDIR
DEFAULT VALUE :	1.E-2
French keyword :	`PRECISION SUR LES SOUS-ITERATIONS POUR COURANT`

Fixes the accuracy requested for sub-iterations necessary to determine the wave vector.

1.102 SUB-ITERATIONS ACCURACY FOR DISSIPATION

Type :	Real
Dimension :	0
Mnemo	EPSDIS
DEFAULT VALUE :	1.E-2
French keyword :	`PRECISION SUR LES SOUS-ITERATIONS POUR LA DISSIPATION`

Fixes the accuracy requested for sub-iterations necessary to determine the dissipation coefficients.

1.103 SUB-ITERATIONS ACCURACY FOR TETAP

Type :	Real
Dimension :	0
Mnemo	EPSTP
DEFAULT VALUE :	1.E-2
French keyword :	`PRECISION SUR LES SOUS-ITERATIONS POUR TETAP`

Fixes the accuracy requested for sub-iterations necessary to determine value of θ_p (criterion on $\cos(\theta_p)$).

1.104 TIME STEP

Type :	Real
Dimension :	1
Mnemo	DTFS
DEFAULT VALUE :	0.25
French keyword :	`PAS DE TEMPS`

Specifies the time step in seconds in `FREE SURFACE FILE`.

1.105 TITLE

Type :	String
Dimension :	1
Mnemo	TITCAS
DEFAULT VALUE :	”
French keyword :	`TITRE`

Title of the studied case.

1.106 TOMAWAC LIQUID BOUNDARY FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACLQD)%NAME
DEFAULT VALUE :	”
French keyword :	`FICHIER DE FRONTIERES LIQUIDES TOMAWAC`

Name of a file containing the liquid boundaries derived from an outer TOMAWAC wave model.

1.107 TOMAWAC LIQUID BOUNDARY FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACLQD)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	`FORMAT DU FICHIER DE FRONTIERES LIQUIDES TOMAWAC`

Format of the `TOMAWAC LIQUID BOUNDARY FILE`. Possible choices are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.108 TOMAWAC OUTER RESULT FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACRES)%NAME
DEFAULT VALUE :	”
French keyword :	`FICHIER DE RESULTATS GLOBAL TOMAWAC`

Name of a file containing the results of an outer TOMAWAC wave model.

1.109 TOMAWAC OUTER RESULT FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACRES)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	`FORMAT DU FICHIER DE RESULTATS GLOBAL TOMAWAC`

Format of the `TOMAWAC OUTER RESULT FILE`. Possible choices are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.110 TOMAWAC OUTER SPECTRAL FILE

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACSPE)%NAME
DEFAULT VALUE :	”
French keyword :	`FICHIER DE SPECTRE GLOBAL TOMAWAC`

Name of the spectral file from an outer TOMAWAC wave model.

1.111 TOMAWAC OUTER SPECTRAL FILE FORMAT

Type :	String
Dimension :	1
Mnemo	ART_FILES(WACSPE)%FMT
DEFAULT VALUE :	’SERAFIN’
French keyword :	`FORMAT DU FICHIER DE SPECTRE GLOBAL TOMAWAC`

Format of the `TOMAWAC OUTER SPECTRAL FILE`. Possible choices are:

- SERAFIN : classical single precision format in TELEMAC,
- SERAFIND: classical double precision format in TELEMAC,
- MED : MED double precision format based on HDF5.

1.112 VALIDATION

Type :	Logical
Dimension :	1
Mnemo	VALID
DEFAULT VALUE :	NO
French keyword :	`VALIDATION`

This option is primarily used for the validation documents. The `REFERENCE FILE` is then

considered as a reference which the computation is going to be compared with. The comparison is made by the subroutine **BIEF_VALIDA**, which can be modified as to so as to include, for example, a comparison with an exact solution.

1.113 VARIABLES FOR GRAPHIC PRINTOUTS

Type :	String
Dimension :	1
Mnemo	VARDES
DEFAULT VALUE :	'HS,PHAS,ZS,ZF'
French keyword :	`VARIABLES POUR LES SORTIES GRAPHIQUES`

Names of the variables that the user wants to write in the `RESULTS FILE`. Separators between variable names can be choosen free. The allowable values are:

- HS=wave height,
- PHAS=wave phase,
- U0=velocity u (free surface at $t = 0$),
- V0=velocity v (free surface at $t = 0$),
- ZS=free surface elevation (at $t = 0$),
- ZF=bottom elevation,
- HW=still water height,
- C=phase velocity,
- CG=group velocity,
- K=wave number,
- PHIR=real potential,
- PHII=imaginal potential,
- D=prive(1,1),
- E=prive(1,2),
- F=prive(1,3),
- G=prive(1,4),
- T01=first mean spectral period,
- T02=second mean spectral period,
- TM=third mean spectral period,
- FX=force along X,
- FY=force along Y,
- INC=wave incidence radian,

- QB=breaking rate,
- SXX=SXX stress,
- SXY=SXY stress,
- SYY=SYY stress.

The user has 4 free variables at his/her disposal to create other variables by him/herself. These variables have to be computed in the **CALRES** subroutine, and the name that we want to attribute has to be precibed in the **NOMVAR** subroutine. The 4 free variable fields are: **D, E, F, G** which corresponds to the private arrays **PRIVE(1,1), PRIVE(1,2), PRIVE(1,3) and PRIVE (1,4)**. Contrary to the previous variables, these are conserved all through the computation, and can be used again. Do not forget to specify the number of private arrays you want to use in the principal programme (variable **NPRIV**).

1.114 VARIABLES TO BE PRINTED

Type :	String
Dimension :	0
Mnemo	VARIMP
DEFAULT VALUE :	”
French keyword :	`VARIABLES A IMPRIMER`

Name of variables taht the user whishes to write on the screen. Possibilities are the same as for graphic outputs.

1.115 VECTOR LENGTH

Type :	Integer
Dimension :	1
Mnemo	LVMAC
DEFAULT VALUE :	1
French keyword :	`LONGUEUR DU VECTEUR`

Vector length on vector machines.

1.116 WAVE HEIGHTS SMOOTHING

Type :	Logical
Dimension :	0
Mnemo	LISHOU
DEFAULT VALUE :	NO
French keyword :	`LISSAGE DES HAUTEURS DE HOULE`

YES when one wants to smooth the wave heights to improve the radiation stresses computation (only used in regular wave mode). Default value = NO.

1.117 WAVE PERIOD

Type :	Real
Dimension :	0
Mnemo	PER
DEFAULT VALUE :	10.
French keyword :	`PERIODE DE LA HOULE`

Defines the wave period for monochromatic mode.

1.118 ZERO

Type :	Real
Dimension :	0
Mnemo	SLVART%ZERO
DEFAULT VALUE :	1.E-12
French keyword :	ZERO

Non active at the moment.

2. List of keywords classified according to type

2.1 BOUNDARY CONDITIONS

PHASE REFERENCE COORDINATES

2.1.1 AUTOMATIC PHASE

AUTOMATIC CALCULATION OF PHASE
REFERENCE WATER DEPTH FOR AUTOMATIC PHASE

2.1.2 AUTOMATIC TETAP ANGLE

AUTOMATIC TETAP CALCULATION
MAXIMUM OF SUB-ITERATIONS FOR TETAP
RELAXATION ON TETAP
SUB-ITERATIONS ACCURACY FOR TETAP

2.1.3 MONOCHROMATIC WAVE

DIRECTION OF WAVE PROPAGATION
WAVE HEIGHTS SMOOTHING
WAVE PERIOD

2.1.4 PERIODS SCANNING

PERIOD SCANNING

DATA

BEGINNING PERIOD FOR PERIOD SCANNING
ENDING PERIOD FOR PERIOD SCANNING
STEP FOR PERIOD SCANNING

2.1.5 RANDOM WAVE

GAMMA
MAXIMUM SPECTRAL PERIOD
MINIMUM SPECTRAL PERIOD
NUMBER OF PERIODS
PEAK PERIOD

MONODIRECTIONAL

MONODIRECTIONAL RANDOM WAVE

MULTIDIRECTIONAL

MAXIMUM ANGLE OF PROPAGATION
MINIMUM ANGLE OF PROPAGATION
MULTIDIRECTIONAL RANDOM WAVE
NUMBER OF DIRECTIONS
S EXPONENT

2.2 COMPUTATION ENVIRONMENT

2.2.1 GLOBAL

CHECKING THE MESH
PARALLEL PROCESSORS
TITLE
VECTOR LENGTH

2.2.2 INPUT

DATA

BINARY DATA FILE 1
BINARY DATA FILE 1 FORMAT
BINARY DATA FILE 2
BINARY DATA FILE 2 FORMAT
BOTTOM TOPOGRAPHY FILE
BOTTOM TOPOGRAPHY SMOOTHING
BOUNDARY CONDITIONS FILE
FORMATTED DATA FILE 1
FORMATTED DATA FILE 2
FORTRAN FILE
GEOMETRY FILE
GEOMETRY FILE FORMAT
REFERENCE FILE
REFERENCE FILE FORMAT
VALIDATION

2.2.3 OUTPUT

FREE SURFACE

AMPLITUDE AND PHASE FILE
AMPLITUDE AND PHASE FILE FORMAT
FIRST TIME IN THE FREE SURFACE FILE
FREE SURFACE ANIMATION
FREE SURFACE FILE
FREE SURFACE FILE FORMAT
NUMBER OF TIME STEPS
TIME STEP

LISTING

INFORMATIONS ABOUT SOLVER
LISTING PRINTOUT
LISTING PRINTOUT PERIOD
VARIABLES TO BE PRINTED

RESULTS

BINARY RESULTS FILE
FORMATTED RESULTS FILE
GRAPHIC PRINTOUT PERIOD
NUMBER OF PRIVATE VARIABLES
RESULTS FILE
RESULTS FILE FORMAT
VARIABLES FOR GRAPHIC PRINTOUTS

2.3 GENERAL PARAMETERS

DEBUGGER

2.3.1 LOCATION

ORIGIN COORDINATES

2.3.2 TIME

ORIGINAL DATE OF TIME
ORIGINAL HOUR OF TIME

2.4 INTERNAL

CONCATENATE PARTEL OUTPUT
DICTIONARY
PARTITIONING TOOL
STEERING FILE

2.5 NESTING WITH TOMAWAC

COORDINATES OF THE REFERENCE F SPECTRUM
INSTANT FOR READING TOMAWAC SPECTRUM
NESTING WITHIN TOMAWAC OUTER MODEL

2.5.1 INPUT

DATA

TOMAWAC LIQUID BOUNDARY FILE
TOMAWAC LIQUID BOUNDARY FILE FORMAT
TOMAWAC OUTER SPECTRAL FILE
TOMAWAC OUTER SPECTRAL FILE FORMAT

2.5.2 OUTPUT

RESULTS

TOMAWAC OUTER RESULT FILE
TOMAWAC OUTER RESULT FILE FORMAT

2.6 NUMERICAL PARAMETERS

MATRIX STORAGE
MATRIX-VECTOR PRODUCT
ZERO

2.6.1 DISSIPATION

DISSIPATION RELAXATION
MAXIMUM OF SUB-ITERATIONS
SUB-ITERATIONS ACCURACY FOR DISSIPATION

2.6.2 SOLVER INFO

MAXIMUM NUMBER OF ITERATIONS FOR SOLVER
PRECONDITIONING
SOLVER
SOLVER ACCURACY
SOLVER OPTION

2.7 PHYSICAL PARAMETERS

GRAVITY ACCELERATION

2.7.1 CURRENT INFO

CURRENT
SUB-ITERATIONS ACCURACY FOR CURRENT

2.7.2 DISSIPATION

BATHYMETRIC BREAKING

ALPHA
BREAKING
BREAKING LAW
GAMMAS
GDALLY
KDALLY

BOTTOM FRICTION

BOTTOM FRICTION LAW
DIAMETER50
DIAMETER90
FLUID KINEMATIC VISCOSITY
FLUID SPECIFIC MASS
FRICTION
FRICTION COEFFICIENT
FRICTION FACTOR
FRICTION FACTOR IMPOSED
HYDRAULIC REGIME IMPOSED
HYDRAULIC REGIME TYPE
RIPPLES COEFFICIENT
SEDIMENT SPECIFIC WEIGHT
SKIN ROUGHNESS ONLY

2.7.3 INITIALIZATION

INITIAL CONDITIONS
INITIAL DEPTH
INITIAL WATER LEVEL

2.7.4 VARYING TOPOGRAPHY

RAPIDLY VARYING TOPOGRAPHY

3. Glossary

3.1 English/French glossary

ALPHA	ALPHA
AMPLITUDE AND PHASE FILE	FICHIER DES PHASES ET AMPLITUDES
AMPLITUDE AND PHASE FILE FORMAT	FORMAT DU FICHIER DES PHASES ET AMPLITUDES
AUTOMATIC CALCULATION OF PHASE	CALCUL AUTOMATIQUE DE LA PHASE
AUTOMATIC TETAP CALCULATION	CALCUL AUTOMATIQUE DE TETAP
BEGINNING PERIOD FOR PERIOD SCANNING	PERIODE DE DEBUT POUR LE BALAYAGE EN PERIODE
BINARY DATA FILE 1	FICHIER DE DONNEES BINAIRE 1
BINARY DATA FILE 1 FORMAT	FORMAT DU FICHIER DE DONNEES BINAIRE 1
BINARY DATA FILE 2	FICHIER DE DONNEES BINAIRE 2
BINARY DATA FILE 2 FORMAT	FORMAT DU FICHIER DE DONNEES BINAIRE 2
BINARY RESULTS FILE	FICHIER DES RESULTATS BINAIRE
BOTTOM FRICTION LAW	FORMULATION DU FROTTEMENT DE FOND
BOTTOM TOPOGRAPHY FILE	FICHIER DES FONDS
BOTTOM TOPOGRAPHY SMOOTHING	LISSAGES DU FOND
BOUNDARY CONDITIONS FILE	FICHIER DES CONDITIONS AUX LIMITES
BREAKING	DEFERLEMENT
BREAKING LAW	FORMULATION DU DEFERLEMENT
CHECKING THE MESH	VERIFICATION DU MAILLAGE
CONCATENATE PARTEL OUTPUT	CONCATENATION SORTIE PARTEL
COORDINATES OF THE REFERENCE F SPECTRUM	COORDONNEES POUR LE SPECTRE F DE REFERENCE
CURRENT	COURANT
DEBUGGER	DEBUGGER
DIAMETER50	DIAMETRE50
DIAMETER90	DIAMETRE90
DICTIONARY	DICTIONNAIRE
DIRECTION OF WAVE PROPAGATION	DIRECTION DE PROPAGATION DE LA HOULE

DISSIPATION RELAXATION	RELAXATION SUR LA DISSIPATION
ENDING PERIOD FOR PERIOD SCANNING	PERIODE DE FIN POUR LE BALAYAGE EN PERIODE
FIRST TIME IN THE FREE SURFACE FILE	PREMIER TEMPS DANS LE FICHIER DE SURFACE LIBRE
FLUID KINEMATIC VISCOSITY	VISCOSITE CINEMATIQUE DU FLUIDE
FLUID SPECIFIC MASS	MASSE VOLUMIQUE DU FLUIDE
FORMATTED DATA FILE 1	FICHIER DE DONNEES FORMATE 1
FORMATTED DATA FILE 2	FICHIER DE DONNEES FORMATE 2
FORMATTED RESULTS FILE	FICHIER DES RESULTATS FORMATE
FORTRAN FILE	FICHIER FORTRAN
FREE SURFACE ANIMATION	ANIMATION DE LA SURFACE LIBRE
FREE SURFACE FILE	FICHIER DE SURFACE LIBRE
FREE SURFACE FILE FORMAT	FORMAT DU FICHIER DE SURFACE LIBRE
FRICTION	FROTTEMENT
FRICTION COEFFICIENT	COEFFICIENT DE FROTTEMENT
FRICTION FACTOR	FACTEUR DE FROTTEMENT
FRICTION FACTOR IMPOSED	FACTEUR DE FROTTEMENT IMPOSE
GAMMA	GAMMA
GAMMAS	GAMMAS
GDALLY	GDALLY
GEOMETRY FILE	FICHIER DE GEOMETRIE
GEOMETRY FILE FORMAT	FORMAT DU FICHIER DE GEOMETRIE
GRAPHIC PRINTOUT PERIOD	PERIODE DE SORTIE GRAPHIQUE
GRAVITY ACCELERATION	ACCELERATION DE LA PESANTEUR
HYDRAULIC REGIME IMPOSED	REGIME HYDRAULIQUE IMPOSE
HYDRAULIC REGIME TYPE	TYPE DU REGIME HYDRAULIQUE
INFORMATIONS ABOUT SOLVER	INFORMATIONS SUR LE SOLVEUR
INITIAL CONDITIONS	CONDITIONS INITIALES
INITIAL DEPTH	HAUTEUR INITIALE
INITIAL WATER LEVEL	COTE INITIALE
INSTANT FOR READING TOMAWAC SPECTRUM	INSTANT DE LECTURE DU SPECTRE TOMAWAC
KDALLY	KDALLY
LISTING PRINTOUT	SORTIE LISTING
LISTING PRINTOUT PERIOD	PERIODE DE SORTIE LISTING
MATRIX STORAGE	STOCKAGE DES MATRICES
MATRIX-VECTOR PRODUCT	PRODUIT MATRICE-VECTEUR
MAXIMUM ANGLE OF PROPAGATION	ANGLE MAXIMUM DE PROPAGATION
MAXIMUM NUMBER OF ITERATIONS FOR SOLVER	MAXIMUM D'ITERATIONS POUR LE SOLVEUR
MAXIMUM OF SUB-ITERATIONS	MAXIMUM DE SOUS-ITERATIONS
MAXIMUM OF SUB-ITERATIONS FOR TETAP	MAXIMUM DE SOUS-ITERATIONS POUR TETAP
MAXIMUM SPECTRAL PERIOD	PERIODE MAXIMUM DU SPECTRE
MINIMUM ANGLE OF PROPAGATION	ANGLE MINIMUM DE PROPAGATION
MINIMUM SPECTRAL PERIOD	PERIODE MINIMUM DU SPECTRE

MONODIRECTIONAL RANDOM WAVE	HOULE ALEATOIRE MONODIRECTIONNELLE
MULTIDIRECTIONAL RANDOM WAVE	HOULE ALEATOIRE MULTIDIRECTIONNELLE
NESTING WITHIN TOMAWAC OUTER MODEL	CHAINAGE AVEC MODELE GLOBAL TOMAWAC
NUMBER OF DIRECTIONS	NOMBRE DE DIRECTIONS DE DISCRETISATION
NUMBER OF PERIODS	NOMBRE DE PERIODES DE DISCRETISATION
NUMBER OF PRIVATE VARIABLES	NOMBRE DE VARIABLES PRIVEES
NUMBER OF TIME STEPS	NOMBRE DE PAS DE TEMPS
ORIGIN COORDINATES	COORDONNEES DE L'ORIGINE
ORIGINAL DATE OF TIME	DATE DE L'ORIGINE DES TEMPS
ORIGINAL HOUR OF TIME	HEURE DE L'ORIGINE DES TEMPS
PARALLEL PROCESSORS	PROCESSEURS PARALLELES
PARTITIONING TOOL	PARTITIONNEUR
PEAK PERIOD	PERIODE DE PIC
PERIOD SCANNING	BALAYAGE EN PERIODE
PHASE REFERENCE COORDINATES	COORDONNEES DE REFERENCE POUR LA PHASE
PRECONDITIONING	PRECONDITIONNEMENT
RAPIDLY VARYING TOPOGRAPHY	VARIATION RAPIDE DE LA BATHYMETRIE
REFERENCE FILE	FICHIER DE REFERENCE
REFERENCE FILE FORMAT	FORMAT DU FICHIER DE REFERENCE
REFERENCE WATER DEPTH FOR AUTOMATIC PHASE	PROFONDEUR DE REFERENCE POUR LA PHASE AUTOMATIQUE
RELAXATION ON TETAP	RELAXATION SUR TETAP
RESULTS FILE	FICHIER DES RESULTATS
RESULTS FILE FORMAT	FORMAT DU FICHIER DE RESULTATS
RIPPLES COEFFICIENT	COEFFICIENT DE RIDES
S EXPONENT	EXPOSANT S
SEDIMENT SPECIFIC WEIGHT	MASSE VOLUMIQUE DU SEDIMENT
SKIN ROUGHNESS ONLY	RUGOSITE DE PEAU SEULE
SOLVER	SOLVEUR
SOLVER ACCURACY	PRECISION DU SOLVEUR
SOLVER OPTION	OPTION DU SOLVEUR
STEERING FILE	FICHIER DES PARAMETRES
STEP FOR PERIOD SCANNING	PAS POUR LE BALAYAGE EN PERIODE
SUB-ITERATIONS ACCURACY FOR CURRENT	PRECISION SUR LES SOUS-ITERATIONS POUR COURANT
SUB-ITERATIONS ACCURACY FOR DISSIPATION	PRECISION SUR LES SOUS-ITERATIONS POUR LA DISSIPATION
SUB-ITERATIONS ACCURACY FOR TETAP	PRECISION SUR LES SOUS-ITERATIONS POUR TETAP
TIME STEP	PAS DE TEMPS
TITLE	TITRE
TOMAWAC LIQUID BOUNDARY FILE	FICHIER DE FRONTIERES LIQUIDES TOMAWAC
TOMAWAC LIQUID BOUNDARY FILE FORMAT	FORMAT DU FICHIER DE FRONTIERES LIQUIDES TOMAWAC

TOMAWAC OUTER RESULT FILE	FICHIER DE RESULTATS GLOBAL TOMAWAC
TOMAWAC OUTER RESULT FILE FORMAT	FORMAT DU FICHIER DE RESULTATS GLOBAL TOMAWAC
TOMAWAC OUTER SPECTRAL FILE	FICHIER DE SPECTRE GLOBAL TOMAWAC
TOMAWAC OUTER SPECTRAL FILE FORMAT	FORMAT DU FICHIER DE SPECTRE GLOBAL TOMAWAC
VALIDATION	VALIDATION
VARIABLES FOR GRAPHIC PRINTOUTS	VARIABLES POUR LES SORTIES GRAPHIQUES
VARIABLES TO BE PRINTED	VARIABLES A IMPRIMER
VECTOR LENGTH	LONGUEUR DU VECTEUR
WAVE HEIGHTS SMOOTHING	LISSAGE DES HAUTEURS DE HOULE
WAVE PERIOD	PERIODE DE LA HOULE
ZERO	ZERO

3.2 French/English glossary

ACCELERATION DE LA PESANTEUR	GRAVITY ACCELERATION
ALPHA	ALPHA
ANGLE MAXIMUM DE PROPAGATION	MAXIMUM ANGLE OF PROPAGATION
ANGLE MINIMUM DE PROPAGATION	MINIMUM ANGLE OF PROPAGATION
ANIMATION DE LA SURFACE LIBRE	FREE SURFACE ANIMATION
BALAYAGE EN PERIODE	PERIOD SCANNING
CALCUL AUTOMATIQUE DE LA PHASE	AUTOMATIC CALCULATION OF PHASE
CALCUL AUTOMATIQUE DE TETAP	AUTOMATIC TETAP CALCULATION
CHAINAGE AVEC MODELE GLOBAL TOMAWAC	NESTING WITHIN TOMAWAC OUTER MODEL
COEFFICIENT DE FROTTEMENT	FRICTION COEFFICIENT
COEFFICIENT DE RIDES	RIPPLES COEFFICIENT
CONCATENATION SORTIE PARTEL	CONCATENATE PARTEL OUTPUT
CONDITIONS INITIALES	INITIAL CONDITIONS
COORDONNEES DE L'ORIGINE	ORIGIN COORDINATES
COORDONNEES DE REFERENCE POUR LA PHASE	PHASE REFERENCE COORDINATES
COORDONNEES POUR LE SPECTRE F DE REFERENCE	COORDINATES OF THE REFERENCE F SPECTRUM
COTE INITIALE	INITIAL WATER LEVEL
COURANT	CURRENT
DATE DE L'ORIGINE DES TEMPS	ORIGINAL DATE OF TIME
DEBUGGER	DEBUGGER
DEFERLEMENT	BREAKING
DIAMETRE50	DIAMETER50
DIAMETRE90	DIAMETER90
DICTIONNAIRE	DICTIONARY
DIRECTION DE PROPAGATION DE LA HOULE	DIRECTION OF WAVE PROPAGATION
EXPOSANT S	S EXPONENT
FACTEUR DE FROTTEMENT	FRICTION FACTOR
FACTEUR DE FROTTEMENT IMPOSE	FRICTION FACTOR IMPOSED

FICHIER DE DONNEES BINAIRE 1	BINARY DATA FILE 1
FICHIER DE DONNEES BINAIRE 2	BINARY DATA FILE 2
FICHIER DE DONNEES FORMATE 1	FORMATTED DATA FILE 1
FICHIER DE DONNEES FORMATE 2	FORMATTED DATA FILE 2
FICHIER DE FRONTIERES LIQUIDES TOMAWAC	TOMAWAC LIQUID BOUNDARY FILE
FICHIER DE GEOMETRIE	GEOMETRY FILE
FICHIER DE REFERENCE	REFERENCE FILE
FICHIER DE RESULTATS GLOBAL TOMAWAC	TOMAWAC OUTER RESULT FILE
FICHIER DE SPECTRE GLOBAL TOMAWAC	TOMAWAC OUTER SPECTRAL FILE
FICHIER DE SURFACE LIBRE	FREE SURFACE FILE
FICHIER DES CONDITIONS AUX LIMITES	BOUNDARY CONDITIONS FILE
FICHIER DES FONDS	BOTTOM TOPOGRAPHY FILE
FICHIER DES PARAMETRES	STEERING FILE
FICHIER DES PHASES ET AMPLITUDES	AMPLITUDE AND PHASE FILE
FICHIER DES RESULTATS	RESULTS FILE
FICHIER DES RESULTATS BINAIRE	BINARY RESULTS FILE
FICHIER DES RESULTATS FORMATE	FORMATTED RESULTS FILE
FICHIER FORTRAN	FORTRAN FILE
FORMAT DU FICHIER DE DONNEES BINAIRE 1	BINARY DATA FILE 1 FORMAT
FORMAT DU FICHIER DE DONNEES BINAIRE 2	BINARY DATA FILE 2 FORMAT
FORMAT DU FICHIER DE FRONTIERES LIQUIDES TOMAWAC	TOMAWAC LIQUID BOUNDARY FILE FORMAT
FORMAT DU FICHIER DE GEOMETRIE	GEOMETRY FILE FORMAT
FORMAT DU FICHIER DE REFERENCE	REFERENCE FILE FORMAT
FORMAT DU FICHIER DE RESULTATS	RESULTS FILE FORMAT
FORMAT DU FICHIER DE RESULTATS GLOBAL TOMAWAC	TOMAWAC OUTER RESULT FILE FORMAT
FORMAT DU FICHIER DE SPECTRE GLOBAL TOMAWAC	TOMAWAC OUTER SPECTRAL FILE FORMAT
FORMAT DU FICHIER DE SURFACE LIBRE	FREE SURFACE FILE FORMAT
FORMAT DU FICHIER DES PHASES ET AMPLITUDES	AMPLITUDE AND PHASE FILE FORMAT
FORMULATION DU DEFERLEMENT	BREAKING LAW
FORMULATION DU FROTTEMENT DE FOND	BOTTOM FRICTION LAW
FROTTEMENT	FRICTION
GAMMA	GAMMA
GAMMAS	GAMMAS
GDALLY	GDALLY
HAUTEUR INITIALE	INITIAL DEPTH
HEURE DE L'ORIGINE DES TEMPS	ORIGINAL HOUR OF TIME
HOULE ALEATOIRE MONODIRECTIONNELLE	MONODIRECTIONAL RANDOM WAVE
HOULE ALEATOIRE MULTIDIRECTIONNELLE	MULTIDIRECTIONAL RANDOM WAVE
INFORMATIONS SUR LE SOLVEUR	INFORMATIONS ABOUT SOLVER

INSTANT DE LECTURE DU SPECTRE TOMAWAC	INSTANT FOR READING TOMAWAC SPECTRUM
KDALLY	KDALLY
LISSAGE DES HAUTEURS DE HOULE	WAVE HEIGHTS SMOOTHING
LISSAGES DU FOND	BOTTOM TOPOGRAPHY SMOOTHING
LONGUEUR DU VECTEUR	VECTOR LENGTH
MASSE VOLUMIQUE DU FLUIDE	FLUID SPECIFIC MASS
MASSE VOLUMIQUE DU SEDIMENT	SEDIMENT SPECIFIC WEIGHT
MAXIMUM D'ITERATIONS POUR LE SOLVEUR	MAXIMUM NUMBER OF ITERATIONS FOR SOLVER
MAXIMUM DE SOUS-ITERATIONS	MAXIMUM OF SUB-ITERATIONS
MAXIMUM DE SOUS-ITERATIONS POUR TETAP	MAXIMUM OF SUB-ITERATIONS FOR TETAP
NOMBRE DE DIRECTIONS DE DISCRETISATION	NUMBER OF DIRECTIONS
NOMBRE DE PAS DE TEMPS	NUMBER OF TIME STEPS
NOMBRE DE PERIODES DE DISCRETISATION	NUMBER OF PERIODS
NOMBRE DE VARIABLES PRIVEES	NUMBER OF PRIVATE VARIABLES
OPTION DU SOLVEUR	SOLVER OPTION
PARTITIONNEUR	PARTITIONING TOOL
PAS DE TEMPS	TIME STEP
PAS POUR LE BALAYAGE EN PERIODE	STEP FOR PERIOD SCANNING
PERIODE DE DEBUT POUR LE BALAYAGE EN PERIODE	BEGINNING PERIOD FOR PERIOD SCANNING
PERIODE DE FIN POUR LE BALAYAGE EN PERIODE	ENDING PERIOD FOR PERIOD SCANNING
PERIODE DE LA HOULE	WAVE PERIOD
PERIODE DE PIC	PEAK PERIOD
PERIODE DE SORTIE GRAPHIQUE	GRAPHIC PRINTOUT PERIOD
PERIODE DE SORTIE LISTING	LISTING PRINTOUT PERIOD
PERIODE MAXIMUM DU SPECTRE	MAXIMUM SPECTRAL PERIOD
PERIODE MINIMUM DU SPECTRE	MINIMUM SPECTRAL PERIOD
PRECISION DU SOLVEUR	SOLVER ACCURACY
PRECISION SUR LES SOUS-ITERATIONS POUR COURANT	SUB-ITERATIONS ACCURACY FOR CURRENT
PRECISION SUR LES SOUS-ITERATIONS POUR LA DISSIPATION	SUB-ITERATIONS ACCURACY FOR DISSIPATION
PRECISION SUR LES SOUS-ITERATIONS POUR TETAP	SUB-ITERATIONS ACCURACY FOR TETAP
PRECONDITIONNEMENT	PRECONDITIONING
PREMIER TEMPS DANS LE FICHIER DE SURFACE LIBRE	FIRST TIME IN THE FREE SURFACE FILE
PROCESSEURS PARALLELES	PARALLEL PROCESSORS
PRODUIT MATRICE-VECTEUR	MATRIX-VECTOR PRODUCT
PROFONDEUR DE REFERENCE POUR LA PHASE AUTOMATIQUE	REFERENCE WATER DEPTH FOR AUTOMATIC PHASE
REGIME HYDRAULIQUE IMPOSE	HYDRAULIC REGIME IMPOSED

RELAXATION SUR LA DISSIPATION	DISSIPATION RELAXATION
RELAXATION SUR TETAP	RELAXATION ON TETAP
RUGOSITE DE PEAU SEULE	SKIN ROUGHNESS ONLY
SOLVEUR	SOLVER
SORTIE LISTING	LISTING PRINTOUT
STOCKAGE DES MATRICES	MATRIX STORAGE
TITRE	TITLE
TYPE DU REGIME HYDRAULIQUE	HYDRAULIC REGIME TYPE
VALIDATION	VALIDATION
VARIABLES A IMPRIMER	VARIABLES TO BE PRINTED
VARIABLES POUR LES SORTIES GRAPHIQUES	VARIABLES FOR GRAPHIC PRINTOUTS
VARIATION RAPIDE DE LA BATHYMETRIE	RAPIDLY VARYING TOPOGRAPHY
VERIFICATION DU MAILLAGE	CHECKING THE MESH
VISCOSITE CINEMATIQUE DU FLUIDE	FLUID KINEMATIC VISCOSITY
ZERO	ZERO

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[1] J-M. HERVOUET. *Hydrodynamics of free surface flows. Modelling with the finite element method.* John Wiley & Sons, Ltd, Paris, 2007.