

## New telemac3d features for v5p5 [links from New version features](#)

### v5p4 TELEMAC-3D

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The principal features of this version v5p4 of TELEMAC-3D are:

- Turbulence models revisited: mixing length, damping functions, lateral friction. k-omega model added.

New options and new or modified keywords

VERTICAL TURBULENCE MODEL (MODELE DE TURBULENCE VERTICAL)

The k-omega model has been added:  
Integer. The default is 1

- 1 : constant viscosity
- 2 : mixing-length model
- 3 : k-epsilon
- 7 : k-omega

HORIZONTAL TURBULENCE MODEL (MODELE DE TURBULENCE HORIZONTAL)

Integer. The default is 1

- 1 : constant viscosity
- 2 : mixing-length model (not implemented)
- 3 : k-epsilon
- 4 : Smagorinski
- 7 : k-omega

MIXING LENGTH MODEL (MODELE DE LONGUEUR DE MELANGE)

The variants of the mixing-length turbulence models are now steered by a new key-word  
Integer. Default : 1

- 1 : Prandtl
- 2 :
- 3 : Nezu and Nakagawa :  $\nu_t = k u^* z (1 - \frac{z}{h})$
- 4 : jet
- 5 : Quetin
- 6 : Tsanis

DAMPING FUNCTION (FONCTION D'AMORTISSEMENT)

Damping functions are now triggered by a new key-word, and new functions have been added:  
Integer. The default is 0

- 0 : no damping function
- 1 : user defined (user **SUBROUTINE DRIUTI**)
- 2 : Viollet (former default value)
- 3 : Munk and Anderson :  $(1 + aRi)^b$  a=10 b=-0.5

#### REGIME DE TURBULENCE POUR LE FOND (TURBULENCE REGIME FOR THE BOTTOM)

The turbulence model is independent of the bottom friction, with their own key-words Integer. The default : 2

- 1 : smooth
- 2 : rough

#### LAW OF BOTTOM FRICTION (LOI DE FROTTEMENT SUR LE FOND)

Lateral and bottom friction velocities are now treated in exactly the same way, and independently of the turbulence model, with their own key-words Integer. The default is 2

- 0 : no friction
- 1 : Haaland
- 2 : Chézy
- 3 : Strickler
- 4 : Manning
- 5 : Nikuradse

If regime is rough the relevant coefficient is given by the key-word:

#### **FRICTION COEFFICIENT FOR THE BOTTOM (COEFFICIENT DE FROTTEMENT POUR LE FOND)**

#### TURBULENCE REGIME FOR THE LATERAL BOUNDARIES (REGIME DE TURBULENCE POUR LES PAROIS LATERALES)

Integer. Default : 2

- 1 : smooth
- 2 : rough

If regime is rough :

#### LAW OF FRICTION ON LATERAL BOUNDARIES (LOI DE FROTTEMENT SUR LES PAROIS LATERALES)

Integer. Default : 2

- 0 : no friction (but AUBORL is taken in the boundary conditions file and may be different from 0 if modified by the user)
- 5 : Nikuradse

The relevant coefficient is given by the key-word:

#### **FRICTION COEFFICIENT FOR THE LATERAL BOUNDARIES (COEFFICIENT**

## DE FROTTEMENT POUR LES PAROIS LATERALES)

### OPTION FOR THE HYDROSTATIC STEP (OPTION POUR L'ETAPE HYDROSTATIQUE)

Wave equation in 3D: new algorithm for the hydrostatic step, no call to TELEMAC-2D

- 1 : as before
- 2 : wave equation

A notable speed-up, nearly a factor 2 in hydrostatic mode, but sometimes unstable.  
When unstable, may be stabilized by setting : **IMPLICITATION FOR DIFFUSION = 2.**,  
but this is not yet fully investigated, at least safe when looking for a steady state.

New user subroutine and modifications in user subroutines  
Q3D

All comment in English

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