New general features for v5p7 links from New version features

v5p7 TELEMAC-3D

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The principal features of this version v5p7 are:

- Spatial coordinate of the origine
- Direct solvers
- Explicit solver for the advection of tracers

New options and new or modified keywords
ORIGIN COORDINATES (COORDONNEES DE L'ORIGINE)

Valid for modules TELEMAC-2D, TELEMAC-3D, SISYPHE and TOMAWAC

The keyword takes two integers, each with default value 0.

It is used as an offset of the x,y coordinates from those stored in the SELAFIN format. Pre- and Post-processors should add it to the mesh coordinates, to get actual geo-referenced coordinates. In the TELEMAC system, this will avoid having to deal with large x,y numbers that could trigger truncation errors, depending on the coordinate system. In the code, the values of the keyword are called **I_ORIG** and **J_ORIG**, from which distances are calculated in metres (Cartesian-based coordinate system).

Example: the left-down point in your domain has real coordinates 456321.23 m and 785021.75 m. It is then recommended to choose **I_ORIG=456321** and **J_ORIG=785021** and to have mesh with the left-down point at X=0.23 m and Y=0.75 m

Beware: **I_ORIG** and **J_ORIG** are not yet used everywhere in the TELEMAC system, in particular for spherical coordinates or when latitude in calculated from within the Mercator projection.

SOLVERS

A direct solver is now available for all programs, with number 8. Blocks of 4 matrices have been implemented (case of ARTEMIS), but blocks of 9 matrices have not been implemented yet.

Current limitations : symmetric matrices (checked only for simple systems, not for blocks)

Beware: Does not work in parallel yet.

SOLVER FOR ADVECTION

A new advection solver is available for testing, under number 8. It is an explicit finite volume solver (inspired from work on Delwaq and collaboration with Leo Postma at Delft). It is mass-conservative though the depth-averaged tracer is considered, provided that the continuity equation is properly solved. Monotonicity is ensured. It can be used for TELEMAC-2D (**TYPE OF ADVECTION**, third value for tracer), for SISYPHE and SUBIEF-2D. So far a few limitations:

- No SUPG upwinding (SUPG option for solver automatically set to 0)
- No parallelism (this requires heavy developments that will be done later)
- No wave equation option (Telemac-2D). Also requires developments that will be done in next version.

The Dirichlet values are not set, only the correct fluxes are considered at entrances (and monotonicity between initial and prescribed value ensured).

Sources are treated by this solver, explicit or implicit terms are so far (for lack of time) left to the diffusion step.

With this solver, **TRACER DIFFUSION : NO** or **TRACER DIFFUSIVITY = 0.** is highly recommended.