

POLLUTANT DISPERSION IN RIVERS AND OPEN WATERS

The 3D modelling tool **fluidyn-FLOWPOL** is one of the models in the **fluidyn- FLOWCOAST** software series. This software series has been specially developed to numerically simulate surface water flows in three dimensions.

fluidyn-FLOWPOL has been designed to combat problems due to water currents and pollutant dispersion in river waters: rivers, estuaries...

FEATURES

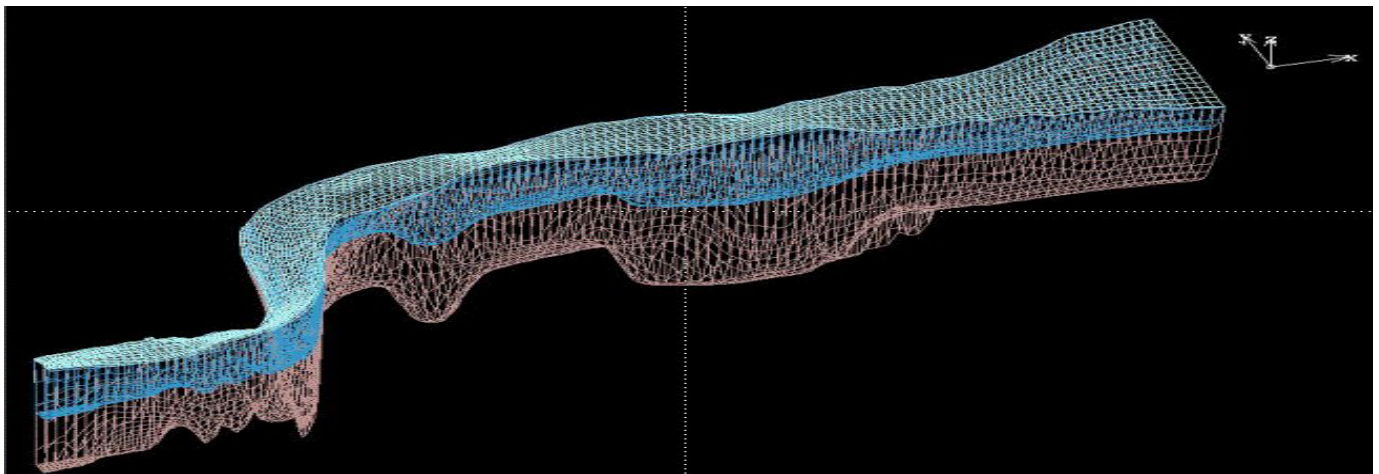
- **Hydrodynamics:** Navier-Stokes equations with hydrostatic pressure hypothesis
- **Effect of tides,** wind, density variations (salinity and temperature effects), Coriolis forces
- **Different turbulence models**
- **Water quality:** Advection - Diffusion effects with different chemical processes
- **User-friendly graphical interface**
- **3D curvilinear mesh generator**

APPLICATIONS

- River Hydraulics: bridges, piers, dikes, etc....
- Continuous and accidental propagation of pollutant species in rivers.
- Dispersion of heat plume.
- Water Quality.
- Effluent Dilution.
- Planification of tracking measures.
- Flood Studies with the software **FLOWRIV**



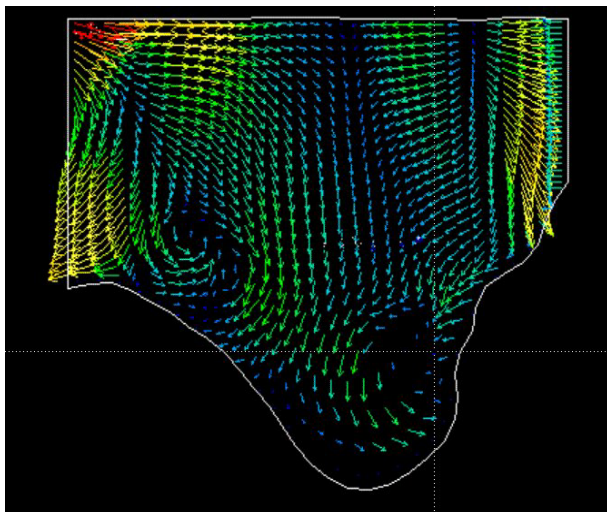
Rhodamine monitoring



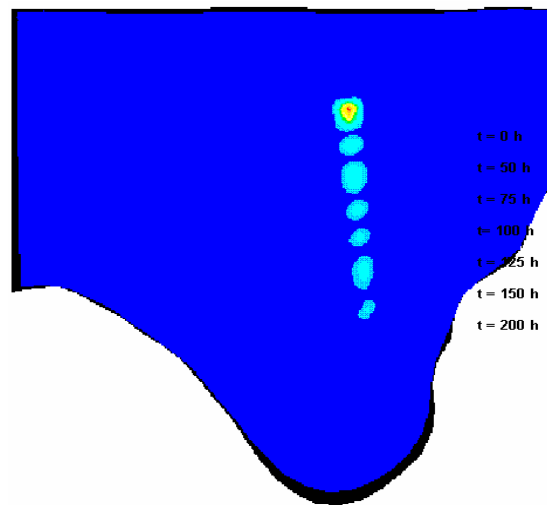
3D Mesh of a river arm

fluidyn- FLOWPOL monitors the transport and dispersion of any dissolved pollutant whose source geometry is specified accurately. The pollution can be accidental or can represent a permanent discharge. The 3D hydrodynamic solver takes into account the local perturbations of the flow as well as the average granulometry of the riverbed. It considers the bridges, islands, and the roughness difference with respect to different types of riverbeds.

fluidyn- FLOWPOL offers the option to monitor all flow parameters (velocities, turbulence, pressure....) as well as the parameters linked to pollutants (concentration....). The results can be visualised either in graphical or in curve forms. The contours, iso-contours and iso-surfaces can be displayed in all three spatial planes and in three dimensions on the bitmap background.

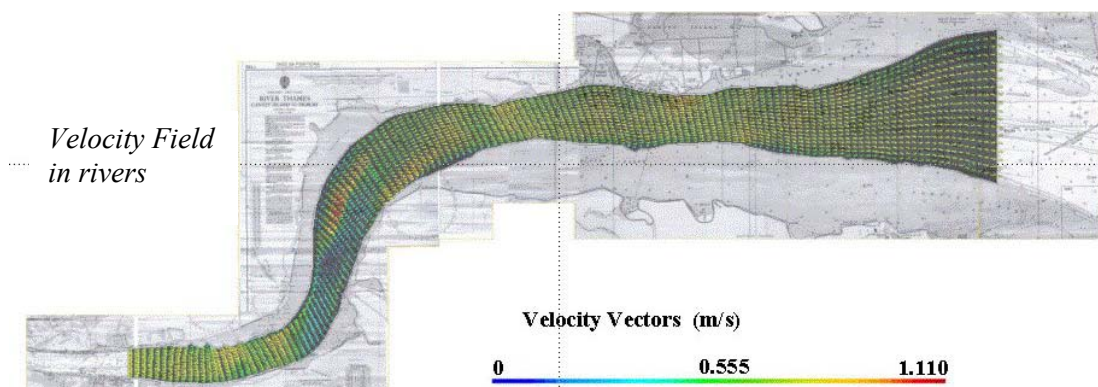


Velocity field during a flood



Transverse section of concentration contours

The user friendly interface of **fluidyn- FLOWPOL** and the pre and post processor functions can be coupled with other modules of the **fluidyn- FLOWCOAST** series.



Velocity Field in rivers

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