# *fluidyn* – FLOWCOAST

www.fluidyn.com

*Transoft*-INTERNATIONAL

## SURFACE WATER POLLUTION



*fluidyn*-**FLOWCOAST** is a software specifically developed to simulate hydrodynamic flows as well as the transport and dispersion of pollutants and sediments and drift of oil slicks.

*fluidyn*-**FLOWCOAST** is used for rivers, estuaries, coastal zones as well as hydrographic networks flows. With the help of this model, the user can present an analysis of different cases to the administrative organizations and the public. The advantages of the solutions obtained are thus clearly brought into focus.

## FEATURES

- **Hydrodynamics**: Navier-Stokes equation with hypothesis of hydrostatic pressure.
- **Effects of tides**, wind, density variations (salinity or temperature effects), Coriolis forces.
- Different **Turbulence Models**
- **Water Quality**: Advection - Diffusion equation with different chemical processes.
- **Sediment Transportation** : Suspended and stream transport
- **Morphology Model** : Calculation of bathymetric changes linked to sediment transportation
- **Oil-slick Movement** : Flow mechanisms (inertia, viscosity, surface tension) ,evaporation, dissolution.
- **User-friendly Graphic Interface**
- **3D curvilinear mesh generator**

## APPLICATIONS

- Coastal and Estuaries hydrodynamics
- River or sea coastal erosion
- River Hydraulics: Structures-bridges, dams, sediments etc.

## RISK AND IMPACT STUDIES

- Reservoir or ship pipeline leak :  oil spills
- Dam / dike rupture
- Floods
- Water quality
- Dispersion of  thermal plume
- Effluent dilution and transport
- Erosion, deposition, dispersion of sediments or particles

*fluidyn*-**FLOWCOAST** is derived in several modules depending on the applications :

*fluidyn*-**FLOWRIV**   **Monitoring Hydrographic network, Study of floods and flooding risks**
This module is used to study canal networks and river basins. With the help of the simplified graphic interface the user can rapidly model and analyze the performance of a complex canal system (irrigation and navigation). This model also simulates risks due to floods and dam ruptures. In fact, contrary to the models of drainage and irrigation, the 3D solver can analyze the rapid transient regimens.



Calage du modèle
Cote NGF de l'eau

160.30 m        160.53 m        160.75 m
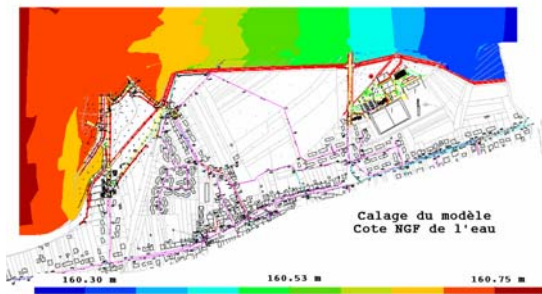
*fluidyn*-**FLOWPOL**   **Accidental and Continuous Pollution**
This model simulates the transport and dispersion of any type of pollutant emissions with accurate source and geometry characterization.
Pollution may either be a result of an accidental release or due to a continuous discharge. The 3D hydrodynamic solver takes into account the local perturbations in the flow as well as the mean granulometry of the river bed.

*fluidyn*-**FLOWOIL**   **Oil-slick movements**
The study of oil-slicks requires the inclusion of many phenomena: oil slick spread, influence of wind on water surface, evaporation and dissolution. During the computation, the model monitors the evolution of pollution or compares different situations easily with the help of the multi window facility.
This model can be used for coastal zones studies as well as for oil slick in rivers.

*fluidyn*-**FLOWSED** **Sediment transport, erosion and deposits**
This model provides solutions to the rapidly increasing problem of sediment transport. In fact, coastal or river water management requires an accurate study of the erosion and deposits. The software monitors cohesive or non-cohesive sediments and moving or suspended sediments. During the computation, a morphological sub-module evolves the geometry of the bed with respect to a sediment map of each zone.
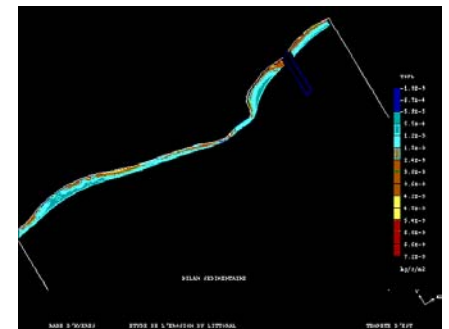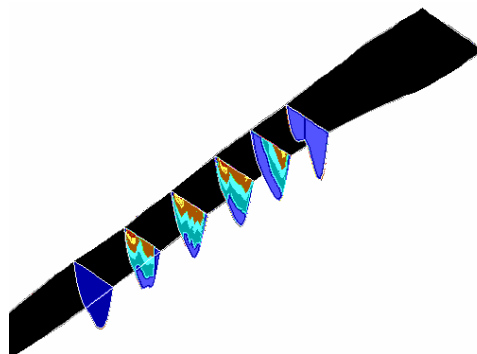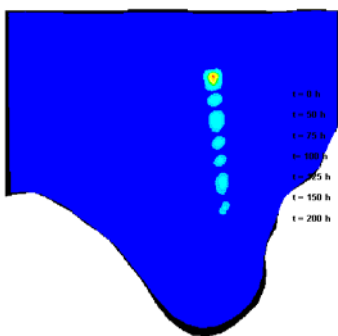


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