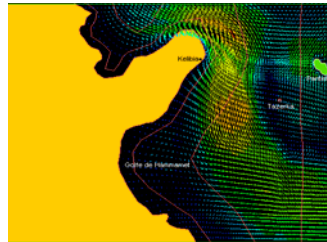
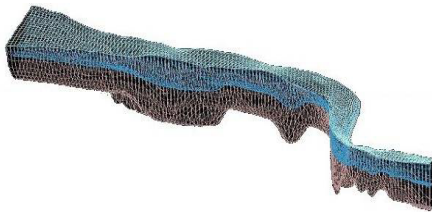


SURFACE, GROUND AND UNDERGROUND WATER POLLUTION



OBJECTIVE

fluidyn-FLOWSOL is a 3D fluid mechanics software specifically developed to simulate hydrodynamic flows, transport and dispersion of pollutants and sediments, oil slick drifts and underground water pollution.

fluidyn-FLOWSOL is used for rivers, estuaries, coastal zones, hydrographic networks flows as well as aquifers, ground and underground water. 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.

CONTEXT

Risk and Impact Studies

- Reservoir or ship pipeline leak
- Dam or dike rupture
- Floods.
- Predicting the future effects of groundwater contamination (radioactive wastes)

Engineering Studies

- Coastal and estuaries hydrodynamics
- Littoral evolution
- River hydraulics: structures, bridges, dams, sedimentation, etc.
- Ground water resource management: design of new water wells

Environmental Impact Studies

- Water quality
- Dispersion of thermal plume
- Effluent dilution and transport
- Erosion, deposition, sediment or particle
- Planning and design of safeguard and cleanup measures



MODULES

fluidyn-FLOWSOL is derived into several modules depending on the applications:

- *fluidyn-FLOWPOL* **Accidental / continuous pollution of surface water**
 - Transport and dispersion of all type of dissolved pollutants
 - Exact representation of the source geometry
 - Accidental or continuous pollution
 - 3D hydrodynamic solver to take into account the local perturbations in the flow as well as the mean granulometry of the river bed
 - Diffusion – advection equation to take into account different chemical processes

- *fluidyn-FLOWOIL* **Oil slick movements**
 - Oil slick studies in coastal areas or rivers
 - Oil slick spread, wind influence on water surface, evaporation, spillage mechanism and dissolution
 - Transient evolution of the pollution
 - Quantification elements for health impact studies (inhalation, contact, ingestion)
 - Effect of tides, wind, density variations (salinity or temperature effects), Coriolis forces

- *fluidyn-FLOWRIV* **Monitoring hydrographic networks, floods**
 - Hydrographic network and river basins
 - Complex canal systems (irrigation and navigation).
 - Flooding risks due to river floods and dam rupture
 - Rapid transient regimes

- *fluidyn-FLOWSED* **Sediment transport, erosion and deposits**
 - Erosion and deposition risks
 - Cohesive, non-cohesive, moving or suspended sediments
 - Morphological sub-module for the evolution of bed geometry with respect to the sediment map of each zone

- *fluidyn-POLLUSOL* **Ground and underground water**
 - 1-, 2- and 3-dimensional simulations, steady and unsteady
 - Regular or arbitrary domains
 - Lagoons, septic tanks, waste repositories, waste disposal sites, underground storage tanks
 - Single or multiple layers
 - Saturated (4 types of aquifers) and unsaturated zones
 - Homogeneous, isotropic, heterogeneous and anisotropic media
 - Dispersion, advection, decay, adsorption and filtration

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