1. Record Nr. UNINA9910830543303321

Autore	Hervouet Jean-Michel
Titolo	Hydrodynamics of free surface flows [[electronic resource]] : modelling with the finite element method / / Jean-Michel Hervouet
Pubbl/distr/stampa	Chichester ; ; Hoboken, N.J., : Wiley, c2007
ISBN	1-280-90083-0 9786610900831 0-470-31962-3 0-470-31963-1
Descrizione fisica	1 online resource (377 p.)
Disciplina	532.50151
Soggetti	Finite element method Hydrodynamics - Data processing Hydrodynamics - Mathematical models Hydrodynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Hydrodynamics of Free Surface Flows; Contents; List of figures; List of tables; List of plates; Acknowledgements; 1 Introduction; 1.1 Twenty years of development at EDF; 1.2 Some smoother pebbles...; 1.2.1 Saint-Venant equations; 1.2.2 Navier-Stokes equations; 1.2.3 Finite elements techniques and optimization; 2 Equations of free surface hydrodynamics; 2.1 Notations and concepts in geometry; 2.2 Free surface Navier-Stokes equations; 2.2.1 Non-hydrostatic Navier-Stokes equations; 2.2.2 Boundary conditions; 2.2.3 Hydrostatic pressure and the Boussinesq approximation 2.2.4 Source terms and body forces2.2.5 Navier-Stokes equations with sigma transform; 2.2.6 Tracer equations in 3 dimensions; 2.3 Saint-Venant equations; 2.3.1 Presentation and brief review; 2.3.2 Hypotheses, approximations and calculation rules; 2.3.3 Depth-averaging Navier-Stokes equations; 2.3.4 Different forms of equations; 2.3.5 The characteristics curves; 2.3.6 Notions on hydraulic jumps; 2.3.7 Saint-Venant equations in Mercator projection; 2.3.8 Saint-Venant equations with porosity; 2.3.9 Boussinesq equations; 2.3.10

Serre equations
2.3.11 Source terms and body forces in two dimensions2.3.12 Boundary conditions in 2D; 2.3.13 Tracer equation in two dimensions; 2.4 Modelling of turbulence and dispersion; 2.4.1 Reynolds stress; 2.4.2 Zero-equation models; 2.4.3 Turbulence stress on the walls; 2.4.4 Equations of the k-e model; 2.4.5 Other models; 3 Principles of the finite element method; 3.1 Introduction; 3.2 Interpolation in finite elements; 3.3 Variational principle; 4 Resolution of the Saint-Venant equations; 4.1 A glance at the existing methods; 4.1.1 Main properties of a (good) numerical scheme
4.1.2 Finite difference schemes4.1.3 Finite volume schemes for hyperbolic equations; 4.1.4 Kinetic schemes; 4.1.5 Finite element schemes; 4.2 Overall view of the Telemac-2D algorithm; 4.3 Fractional steps method; 4.4 Advection stage using the method of characteristics; 4.5 Propagation, diffusion, source terms; 4.5.1 Time discretization; 4.5.2 Space discretization; 4.5.3 Variational formulation; 4.5.4 Natural boundary conditions; 4.5.5 Sources and sinks; 4.5.6 Matrix form of the system; 4.6 Radiation conditions; 4.7 Resolution of the Boussinesq equations
4.8 Resolution of k-e model equations in 2D4.8.1 Advection step; 4.8.2 Production, diffusion, source terms; 4.9 Solving the tracer equation in 2D; 4.10 Laws of conservation in 2D; 4.10.1 Mass conservation of the fluid; 4.10.2 Conservation of the tracer; 4.10.3 Head and momentum conservation; 4.10.4 Conservation of energy; 4.11 The treatment of uncovered beds; 4.11.1 Option 1: correction of the free surface gradient; 4.11.2 Option 2: masking of exposed elements; 4.12 Pseudo wave equation; 4.13 Some validation test cases; 4.13.1 Test of a lake at rest
4.13.2 Rapid flow over a weir with a hydraulic jump downstream

Sommario/riassunto

A definitive guide for accurate state-of-the-art modelling of free surface flows Understanding the dynamics of free surface flows is the starting point of many environmental studies, impact studies, and waterworks design. Typical applications, once the flows are known, are water quality, dam impact and safety, pollutant control, and sediment transport. These studies used to be done in the past with scale models, but these are now being replaced by numerical simulation performed by software suites called "hydro-informatic systems". The Telemac system is the leading software package wor

2. Record Nr. UNICAMPANIAVAN00300418

Titolo	Qualità ed ecoefficienza delle trasformazioni urbane : sperimentazione progettuale di unità insediative a conformità ecologica nell'ambito dello SDO di Roma / a cura di Alessandra Battisti e Fabrizio Tucci ; presentazione di Salvatore Dierna e Fabrizio Orlandi ; testi di Alessandra Battisti ... [et al.]
Pubbl/distr/stampa	Firenze, : Alinea, 2002
ISBN	978-88-8125-437-9
Descrizione fisica	234 p. : ill. ; 27 cm
Lingua di pubblicazione	Italiano
Formato	Materiale a stampa
Livello bibliografico	Monografia