

Hydraulic Information Management

Edited by

W. R. Blain

Wessex Institute of Technology, UK

C. A. Brebbia

Wessex Institute of Technology, UK



WITPRESS Southampton, Boston



Contents

Section 1: Coastal and estuarial engineering

Hydrodynamics around coastal structures <i>J. S. Antunes do Carmo & J. L. Carreiras</i>	3
The interior and exterior wave fields of a harbor with varying depth and partially reflecting boundaries <i>M. Takezawa & H. S. Lee</i>	13
Beach erosion control in front of sea cliff <i>Y. Yamada, S. Kubota & M. Takezawa</i>	23
Impact of upstream changes and coastal hydrodynamics on river basin characteristics in the Niger delta of Nigeria <i>I. Balogun</i>	33
Hydrodynamic modelling of the Southern Arabian Gulf <i>W. Elshorbagy, M. Azzam & M. A. Karim</i>	43

Section 2: Hydrology

Storm water protection and river-basin wide water management by realising decentralised measures of rainwater management in the catchment area of a watercourse <i>M. Burde & S. Panebianco</i>	55
Reservoir inflow forecasts using snowmelt modelling <i>A. B. Dariane & A. Barati</i>	65
Hydrological analysis for a distributed and a semi-distributed model <i>A. A. El-Nasr, J. Berlamont & J. Feyen</i>	75

Section 3: Groundwater and aquifer modelling

Optimization of water resources management under aquifer overexploitation conditions: the Adra-Campo de Daliás system, Spain <i>M. Pulido, J. Andreu, A. Sahuquillo, V. Pinilla, A. Sánchez, J. Capilla & J. Paredes</i>	87
Three-dimensional steady state seepage, a finite volume approach <i>E. Jabbari & R. Ghiasi</i>	101
Stochastic simulation of groundwater flow. Estimation of hydrogeological parameters of regional porous aquifers by inverse modelling <i>M. M. Pacheco Figueiredo, L. Ribeiro & J. M. P. Ferreira Lemos</i>	109
Modelling and sensitivity analysis of aquifer parameters for subsidence due to pumping-injecting water <i>J. Li</i>	119

Section 4: Open channel flow

Simplified modelling of storm water flows for optimisation <i>J. N. Fullerton, G. A. Walters & D. A. Savic</i>	133
Flood hazard analysis in river recreation site due to heavy rainfall <i>K. Toda, K. Inoue, T. Tokunaga & K. Kawaike</i>	143
Resistance coefficients for compound channels <i>Y. Chen & B. C. Yen</i>	153
A depth-averaged mathematical model of a river flow around bridge piers <i>M. Četina & M. Krzyk</i>	163
Bank erosion and protection on the Brahmaputra (Jamuna) River <i>A. B. M. Faruuzzaman Bhuiyan, M. M. Hossain & R. Hey</i>	173
Transverse velocity distribution in relation to bed load movement in natural channels <i>J. Ariffin, A. Ab Ghani, N. A. Zakaria, A. S. Yahya & S. Abdul-Talib</i>	183
The role of local roughness in the hydraulic capacity of sewer pipes <i>M. F. Magharebi</i>	191
The Hydrodynamic-numerical model of the river Rhine <i>P. T. Minh Thu, N. Goebel & F. Nestmann</i>	203

Section 5: Dams and flooding

- Dam-break wave routing using virtual extended domain approach
F. C. B. Mascarenhas 211

- Inundation analysis by heavy rainfall in low-lying river basin
K. Kawaike, K. Inoue, K. Toda & R. Sagara 223

- Air entrainment by an impinging jet on a solid wall
A. Ahmadi & J. D. Hardwick 233

Section 6: Water quality and treatment

- Numerical analysis of nitrogen balance of an agricultural field: A case study
A. El-Sadek, J. Feyen & J. Berlamont 245

- Privatisation of water supply for efficient service delivery in Nigeria
J. A. Adelegan 255

- Determination of nitrogen removal and presence of heavy metals in liquid effluent system
I. G. Bantcheva 267

- Development of mobile computing applications for hydraulics and water quality field measurements
E. R. Vivoni, R. Camilli, M. A. Rodriguez, D. D. Sheehan & D. Entekhabi 275

- Higher order explicit schemes for BOD-DO modelling in open channels
R. I. Patel & R. Misra 285

Section 7: Numerical modelling

- Modelling fracture heterogeneity in flow and mass transport problems
J. E. Capilla, J. Rodrigo & J. J. Gómez-Hernández 297

- Acoustic insulation of a solid panel submerged in fluid media
A. Tadeu, J. António & N. Simões 307

- Stress analysis in pipelines submerged in a fluid medium subjected to a point pressure load
L. Godinho, A. Tadeu & F. Branco 317

- A two-fluid solver for hydraulic applications
L. Qian, D. M. Causon, D. M. Ingram & C. G. Mingham 327

Section 8: Hydraulic networks and water supply

Optimal integrated operation of pipeline systems and water treatment plants <i>J. Sousa, M. da Conceição Cunha & A. Sá Marques</i>	339
Rehabilitation aspects of oversized water distribution networks <i>L. Ainola, T. Koppel & N. Kändler</i>	351
Efficient allocations of water resources in Southern Taiwan <i>S. Peng & Y. Chen</i>	361
Bolla aqueduct; a two-thousand-year lasting service <i>M. Rasulo</i>	369
Dynamic simulation of water distribution systems with instantaneous demand <i>W. F. Silva-Araya, N. Artiles-León & M. Romero-Ramírez</i>	379
CAD application for calculation of flow-pressure conditions of hot water pipe transmission systems <i>D. Goricanec, J. Kropo, A. Kropo & A. Jakl</i>	389
Optimum layout and design of a water supply line <i>E. Jabbari & A. Afshar</i>	397

Section 9: Decision support systems

Towards a program of measures in the context of the European Water Framework Directive <i>H.G. Wind, J. L. de Kok, H. van Delden & M. Verbeek</i>	409
Ontario Flow Assessment Techniques (OFAT) <i>C. Chang, F. Ashenhurst, S. Damaia & W. Mann</i>	421
CERBERE: A control system to prevent risk to dams <i>E. Giguère & C. Marche</i>	433
Combination of optimisation and simulation methods for management of coastal sea <i>J. Margeta & S. Knezić</i>	443
Optimization of a multiple reservoir operations system using dynamic programming <i>S. J. Mousavi</i>	453

WISKI – a software package for acquisition, analysis and administration of time series data	
<i>S. Malinky, G. Ruszovan, R. Funke & J. Stein</i>	463
Index of authors	473