

Two-phase modelling for Sediment dynamics

THESIS-2013

June 10-12, 2013, Chatou - France
EDF R&D (Amphitheatre H)

Provisional Program - 24042013

Monday June 10th, 2013

08:30-09:30 Registration – Welcome coffee
09:30-10:00 Opening Ceremony

10:00-10h40: **Keynote Lecture**
Two-Phase model for saltation
by *E. Meiburg, UC Santa Barbara, USA.*

Session A-1 : Fundamentals (physical processes, mathematical formulations and parameterisation)

Chairman : **J. Jenkins**

10:40-11:00 Effects of asymmetric strained stratification on currents turbulence and sediment transport in a complex Region of Freshwater Influence (ROFI)
by *A.J. Souza and A. Lane,*

11:00-11:20 An approximate analysis of a nearly saturated, inclined, particle-fluid flow
by *M. Larcher, University. of Trento and J.T. Jenkins, Cornell University*

11:20-11:50 Coffee-Break

Session B-1 : Two-phase Flow modelling (numerical techniques, turbulence modelling)

Chairman: **T.J. Hsu**

11:50-12:10 An Eulerian/Euler-Lagrangian numerical investigation of sediment transport
by *Z. Cheng, S. D'Albignac, T.J Hsu, X. Yu, I.M. Sou, J. Calantoni*

12:10-12:30 A 3D numerical investigation of fine sediment transport in an oscillatory channel and its implications to the state of muddy seabed
by *T.J. Hsu, C.E. Ozdemir, X. Yu, S. Balachandar*

12:30-12:50 Extension of $k-\omega$ turbulence closure to two-phase sediment transport modelling: application to sheet flows
by *L.O. Amoudry, National Oceanography Centre*

12:50-14:15 LUNCH

14:15-14:55 Keynote Lecture
The erosion of granular beds under the action of fluid shearing flows
by *E. Guazzeli, Aix-Marseille Univ., CNRS, IUSTI*

Session A-2 : Fundamentals (physical processes, mathematical formulations and parameterisation)

Chairman : **D. Muir Wood**

- 14:55-15:15 Numerical simulation of sediment processes and resulting bedforms: application to scouring at an obstacle
by M. Burkow and M. Griebel, University of Bonn
- 15:15-15:35 Collisional sheet flows
by D. Berzi, Politecnico di Milano

15:35-16:00 Poster Session

- Modelling of Breach in Cohesive Embankments due to Overtopping *by Zhao et al.*
- Estimation of suspended sediment in the watershed of the Wadi Bellah, Algeria (1974-2007), *by Elahcene et al.*
- Comparison of sediment transport models *by Guillermo Cardoso-Landa*
- Numerical simulation of flow and large-scale bed variation using quasi-3D flow analysis methods, *by Kosuke Tabata et al.*
- Uncertainties in the evaluation of sediment transport in rivers, *by Medhi Yasi and Alireza Yasi*

16:00-16:30 Coffee-Break

Session C-1 : Experimental techniques in laboratories and in the field

Chairman: **M. Brocchini**

- 16:30-16:50 Erosion dynamics of a granular bed in a quasi-bidimensional sluice-gate set-up
by M. Rabaud, P. Gondret, R. Martino, M. Piva and A. Paterson,
- 16:50-17:10 Improvement of acoustical characterization of suspended particles in wastewater
by P. Schmitt, A. Pallares and M.N. Pons, ICUBE Mechanic Dept.
- 17:10-17:30 Experiment analysis of the stability of cobbles and boulders in high-gradient rivers
by D. Duma, S. Erpicum, P. Archambeau, M. Piroton and B. Dewals
- 17:30-17:50 Local measurements of erodibility of artificial cohesive sediments in an annular flume
by K.S. Pouv, A. Besq and S. Guillou

18:00-19:30 Reception Cocktail offered by the Local Organising Committee

Tuesday June 11th, 2013

9:30-10:10 Keynote Lecture

by S. Elghobashi – UC, Irvine, USA

Session B-2 : Two-phase Flow modelling (numerical techniques, turbulence modelling)

Chairman: **E. Meiburg**

- 10:10-10:30 Hybrid two-phase / mixture modeling of sediment transport
by E.A. Toorman and Quilong Bi, KU Leuven, Belgium

- 10:30-10:50 A two-phase model based on frictional rheology for sheet flow regime
by *T. Revil-Baudard and J. Chauchat*,
- 10:50-11:10 Study of polydisperse particulate systems with a ‘Direct-forcing/Fictitious Domain’ method
by *R. Verjus and S. Guillou*,
- 11:10-11:40 Coffee-Break**

Session D-1 : Environmental applications (sheet flows, highly concentrated flows...)
Chairman: **A. Soldati**

- 11:40-12:00 Numerical calculation for bed variation in compound-meandering channel using depth integrated model without assumption of shallow water flow
by *T. Uchida and S. Fukuoka*,
- 12:00-12:20 An application of 3D turbulent model for water flows and sediment transport
by *L. Cheng and D. Jiaquan and C. Rong Li, Ministry of Water resources, China*
- 12:20-12:40 Numerical investigation of angular submerged jet and tailwater depth variations on dimensions of scour hole
by *R.K. Kojoori, M.R. Pirestani and A.A. Dehghani*
- 12:40-13:00 Investigation of key problems in tidal current sediment numerical model in Pearl River estuary
by *H. Yong, W. Xianfang, D. Jiaquan and X. Fengjun*,
- 13:00-14:20 LUNCH**

Session A-3 : Fundamentals (physical processes, mathematical formulations and parameterisation)

Chairman : **P. Gondret**

- 14:20-14:40 Two-phase modelling of wave-induced sheet-flow: Erosion depths and sediment fluxes and their dependency on grain size and streaming
by *W.M. Kranenburg, T.J. Hsu and I.S. Ribberink*,
- 14:40-15:00 The influence of boundary conditions on the deposition from particles-laden turbulent jets
by *S. Chiban, A. Terfous, A. Ghenaim and J.B. Poulet, Fr*
- 15:00-15:20 Polydisperse sedimentation: a multilayer approach discretized by PVM finite volume methods
by *E.D. Fernandez-Nieto, E.H. Kone, T. Morales de Luna and R. Bürger*
- 15:20-15:40 Lattice Boltzmann simulation of particle-fluid interaction in grid-generated turbulence
by *J.F. Zhang, Q.H. Zhang, G.Q. Qiao and J.L. Xiao, Chian*
- 15:40-16:10 Coffee-Break**

Session C-2 : Experimental techniques in laboratories and in the field

Chairman: S. Elghobashi

- 16:10-16:30 Fluid-particle interaction and generation of coherent structures over permeable beds: an experimental analysis
by M. Postacchini, S. Corvaro, M. Miozzi, A. Mancinelli and M. Brocchini,
- 16:30-16:50 Experimental and numerical investigation of meandering jets in shallow reservoir: potential impacts on deposit pattern
by Y. Peltier, S. Erpicum, P. Archambeau, M. Pirotton and B. Dewals, Université Catholique de Louvain, Belgium
- 16:50-17:10 Size-segregation in bedload transport: experiments and binary continuous modelling
by C. Bel, K. Rorsman and P. Frey, IRSTEA
- 17:10-17:30 Erosion of a water immersed granular bed by a normal water jet
by S. Badr, G. Gauthier and P. Gondret, Lab. FAST, Univ. Paris-Sud

Wednesday June 12th, 2013

9:30-10:10

Keynote Lecture

by S. Fukuoka – Chuo University, Japan

Session B-3 : Two-phase Flow modelling (numerical techniques, turbulence modelling)

Chairman: E.D. Fernandez-Nieto

- 10:10-10:30 Modeling excess pore pressure dissipation during sedimentation-consolidation of mud using a two-phase approach
by J. Chauchat and S. Guillou, Fr
- 10:30-10:50 Discrete element modelling of bed load transport
by R. Maurin, B. Chareyre, J. Chauchat and P. Frey, IRSTEA, Fr
- 10:50-11:10 Two-phase study of Erosion by a vertical jet
by D. Pham Van Bang, K.D. Nguyen and M. Uh Zapata, Fr
- 11:10-11:40 **Coffee-Break**

Session D-2 : Environmental applications (sheet flows, highly concentrated flows...)

Chairman: E. Guazzeli

- 11:40-12:00 Erosion predetermination in small watersheds and estimation of the life expectancy of hill lakes in the semi arid regions in Tunisia
by M. Boufaroua, M. Slimani, J.M. Lamachere and T. Oweis, Fr
- 12:00-12:20 Turbulent sediment transport – a numerical study

- 12:20-12:40 *by O. Duran, B. Andreotti and P. Claudin, PMMH ESPCI CNRS, Fr*
Two-dimensional riverbed variation analysis method focused on bed surface unevenness and the mechanism of sediment transport in stony-bed rivers
by K. Osada and S. Fukuoka, Chuo University - Japan
- 12:40-13:00
Suspended sediment and metals fluxes for a small watershed
by C. Poletto, Federal University of Technology - Brazil
- 13:00-14:15 LUNCH**

Session A-4 : Fundamentals (physical processes, mathematical formulations and parameterisation)

Chairman: **S. Fukuoka**

- 14:15-14:35 Resuspension of particles under successively breaking solitary waves
by Y.S. Park, Dundee University, UK
- 14:35-14:55 Phase-resolved simulations of bed-load transport
by B. Vowinckel, T. Kempe and J. Fröhlich, Germany
- 14:55-15:15 Onset of flow and erosion in granular sediments
by D. Muir Wood and P. Dong, University of Dundee, UK
- 15:15-15:35 Dispersion and sedimentation of particles in stratified flow
by S. Lovecchio, F. Zonta and A. Soldati, University of Udine-Italy
- 15:35-16:45 Round-Table & Closing Ceremony**
Session chairman: **Ping Dong - University of Dundee**

Local Organising Committee

K.D. Nguyen (Lab. St. Venant) - Chair of the Conference and

M. Benoit (EDF R&D - Lab. St Venant)

S. Guillou (University of Caen)

N. Sheibani (SHF - Conference secretary) at n.sheibani@shf-hydro.org

J.G. Philipps (SHF)

D. Pham Van Bang (Lab. St Venant)

