



Two-phase modelling for Sediment dynamics

THESIS-2013

June 10-12, 2013, Chatou - France

EDF R&D (Amphitheatre H)

Final Program - 28052013

Monday June 10th, 2013

08:30-09:30 Registration – Welcome coffee

09:30-10:00 Opening Ceremony

10:00-10h40: Keynote Lecture

Mixing dynamics of turbidity currents interacting with three-dimensional seafloor topography

by E. Meiburg, UC Santa Barbara, USA

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

Chairman: J.T. Jenkins (USA)

10:40-11:00 Collisional sheet flows

by D. Berzi, Politecnico di Milano

11:00-11:20

Turbulent sediment transport – a numerical study

by O. Duran, B. Andreotti and P. Claudin

11:20-11:50

Coffee-Break

Session C-1 : Experimental techniques in laboratories and in fields

Chairman: S. Fukuoka (Japan)

11:50-12:10

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,

12:10-12:30

Measurement of sensitivity of soils and sediments to erosion

by C. Chevalier, IFSTTAR

12:30-12:50

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

12:50-14:15

LUNCH

14:15-14:55

Keynote Lecture

On the multi-way interactions between turbulent flows and suspended sediment

by S. Elghobashi, University of California, Irvine

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

Chairman: E.A. Toorman (Belgium)

- 14:55-15:15 Modelling excess pore pressure dissipation during sedimentation-consolidation of mud using a two-phase approach
by J. Chauchat and S. Guillou
- 15:15-15:35 Extension of $k-\omega$ turbulence closure to two-phase sediment transport modelling: application to sheet flows
by L.O. Amoudry, National Oceanography Centre
- 15:35-15:55 Two-phase study of Erosion by a vertical jet
by D. Pham Van Bang, K.D. Nguyen and M. Uh Zapata
- 15:55-16:30 Coffee-Break**

Session D-1 : Environmental applications (sheet flows, highly concentrated flows...)

Chairman: M. Brocchini (Italy)

- 16:30-16:50 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,
- 16:50-17:10 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
- 17:10-17:30 Study of the key problems of tidal current sediment numerical model in Pearl River estuary
by H. Yong, W. Xianfang, D. Jiaquan and X. Fengjun,
- 17:30-17:50 Estimation of suspended sediment in the watershed of the Wadi Bellah, Algeria (1974-2007)
by O. Elahcene et al., University Ziane Achour of Djelfa, Algeria
- 18:00-19:30 Reception Cocktail offered by the Local Organising Committee**

Tuesday June 11th, 2013

- 9:30-10:10 Keynote Lecture**
Prediction of three-dimensional movement of gravel particles in a movable-bed numerical channel
by S. Fukuoka - Chuo University, Japan

Session C-2 : Experimental techniques in laboratories and in fields

Chairman: E. Meiburg (USA)

- 10:10-10:30 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,
- 10:30-10:50 Size-segregation in bedload transport: experiments and binary continuous modelling
by C. Bel, K. Rorsman and P. Frey
- 10:50-11:10 Local measurements of erodibility of artificial cohesive sediments in an annular flume
by K.S. Pouv, A. Besq and S. Guillou
- 11:10-11:40 Coffee-Break**

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

Chairman : S. Elghobashi (USA)

- 11:40-12:00 Numerical simulation of sediment processes and resulting bedforms: application to scouring at an obstacle
by M. Burkow and M. Griebel, University of Bonn
- 12:00-12:20 The influence of boundary conditions on the deposition from particles-laden turbulent jets
by S. Chiban, A. Terfous, A. Ghenaim and J.B. Poulet
- 12:20-12:40 Dispersion and sedimentation of particles in stratified flow
by S. Lovecchio, F. Zonta and A. Soldati
- 12:40-13:00 Constitutive modelling for liquefaction and scour
by D. Muir Wood and P. Dong, University of Dundee,
- 13:00-14:30 LUNCH**

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

Chairman: A. Soldati (Italy)

- 14:30-14:50 Hybrid two-phase / mixture modeling of sediment transport
by E.A. Toorman and Quilong Bi, KU Leuven, Belgium
- 14:50-15:10 Study of polydisperse particulate systems with a 'Direct-forcing/Fictitious Domain' method
by R. Verjus and S. Guillou
- 15:10-15:30 Discrete element modelling of bed load transport
by R. Maurin, B. Chareyre, J. Chauchat and P. Frey
- 15:30-15:50 A two-phase model based on frictional rheology for sheet flow regime
by T. Revil-Baudard and J. Chauchat
- 16:00-16:30 Coffee-Break**

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

Chairman: J.Q. Deng (China)

- 16:30-16:50 Predicting rates of erosion in small catchments and estimating the life expectancy of hill lakes in the semi-arid regions of Tunisia
by M. Boufaroua, M. Slimani, J.M. Lamachere and T. Oweis
- 16:50-17:10 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
- 17:10-17:30 Suspended sediment and metals fluxes for a small watershed
by C. Poletto
- 17:30-17:50 Numerical simulation of flow and large-scale bed variation using quasi-3D flow analysis methods in a river confluence during a large flood
by K. Tabata et al.,

Wednesday June 12th, 2013

9:30-10:10

Keynote Lecture

GPU computing: assessment of performance and impact on numerical solvers for multiphase flows
by F.De Vuyst – ENS-CMLA (France)

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

Chairman : P. Gondret (France)

- 10:10-10:30 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*
- 10:30-10:50 Re-suspension of particles under successively breaking solitary waves
by *Y.S. Park, Dundee University*
- 10:50-11:10 Phase-resolving simulations of bed-load transport
by *B. Vowinckel, T. Kempe and J. Fröhlich*
- 11:10-11:40 Coffee-Break**

Session C-3 : Experimental techniques in laboratories and in fields

Chairman: F. De Vuyst (France)

- 11:40-12:00 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*
- 12:00-12:20 Erosion dynamics of a granular bed in a quasi-bidimensional sluice-gate set-up
by *R. Martino, M. Piva, A. Paterson, M. Rabaud, P. Gondret*
- 12:20-12:40 Improvement of acoustical characterization of suspended particles in wastewater
by *P. Schmitt, A. Pallares and M.N. Pons*
- 13:00-14:20 LUNCH**

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

Chairman : P. Claudin (France)

- 14:20-14:40 Saturated, inclined, collisional flows of spheres between vertical sidewalls over an erodible bed
by *M. Larcher, University of Trento and J.T. Jenkins, Cornell University*
- 14:40-15:00 The erosion of granular beds under the action of fluid shearing flows
by *P. Aussilous et al., Aix-Marseille Univ., CNRS, IUSTI*
- 15:00-16:10 Round-Table & Closing Ceremony**
Session chairman: *Ping Dong (University of Dundee) and J.T. Jenkins (Cornell University)*

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) n.sheibani@shf-hydro.org

J.G. Philipps (SHF)

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