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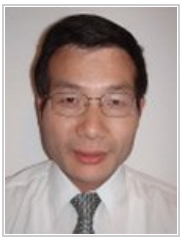
School of Civil Engineering (/schools/civil-engineering/index.aspx)

Contact details



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About

Dr Tang is a member of academic staff of School of Civil Engineering.

He has published many research papers in scientific journals as well as reviews in the fields of Environmental hydraulics, River flood hydraulics, Sediment transport, CFD Modelling, Turbulence measurement, and Flood risk management. He has worked on a number of projects from EPSRC, NERC and industries.

In 2009, Dr.Tang received two awards:

- Harold Jan Schoemaker Award, (biennially) by the **International Association of Hydro-Environment Engineering and Research (IAHR) (http://www.iahr.net/site/about/awards)**
- Telford Premium Award, the best paper for Journal of Engineering and Computational Mechanics, by the Institution of Civil Engineers, UK.

Qualifications

- PhD in Fluid mechanics and Flood hydraulics, 1999
- MSc in Fluid mechanics and river dynamics, 1989
- BSc (Eng) in Civil Engineering, 1986

Biography

Dr Tang qualified with a BSc (Eng) in Civil Engineering from the University of Wuhan, and a MSc in Fluid Mechanics/River Dynamics from Nanjing Hydraulic Research Institute. He went on to read for a PhD in Fluid Mechanics and River Flood Hydraulics in the University of Birmingham and was awarded a PhD in 1999.

Since then he carried on doing further research in Birmingham in the field of Flood Hydraulics, Overbank flow, Sediment transport, River modelling, CFD modelling, Flood risk management, and Hydro-environment.

Teaching

Civil Engineering BEng / MEng

- Science and engineering laboratories (Level 0)
- Fluid flow, thermodynamics and heat transfer (Level 1)
- Floods and River Systems (Level 2)
- Guided study (Level 3)
- Guided research (Levels 3 and M)
- River basin management (Level 3)
- Environmental fluid mechanics (Level M)
- Advanced water engineering (Level M)

Water Resources Technology and Management MSc

- Flooding and water resource management
- River flow fundamentals
- Pipeline network analysis
- Industrial research
- Management and research

Postgraduate supervision

Dr.Tang is interested in supervising doctoral research students in the following areas:

- Fluvial hydraulics
- Eco-hydraulics and channel flow
- Flood hydraulics and forecast of river flow
- Fluid mechanics and CFD modelling
- River modelling and flow measurement
- Sediment transport and river dynamics
- Hydrological process
- Flood risk management

If you are interesting in studying any of these subject areas please contact Dr Tang on the contact details above, or for any general doctoral research enquiries, please email: **dr@contacts.bham.ac.uk (mailto:dr@contacts.bham.ac.uk)** or call +44 (0)121 414 5005.

For a full list of available Doctoral Research opportunities, please visit our **Doctoral Research programme listings (http://www.bham.findaphd.com/?es=y&apl=y&aplt=&show)** .

Research

Research Themes

- Open channel flow
- Hydraulics and river dynamics
- Flood risk management
- Numerical and computational modelling
- Environmental fluid mechanics

Research Activity

Dr. Tang has research interests in a number of fields of Fluvial hydraulics, River flood hydraulics, CFD modelling, Sediment transport, Turbulence measurement and flood risk management. The main involved research projects are:

- Analytical solution of depth-average velocity lateral distribution for compound channel flows;
- Sediment transport in river models with overbank flow;
- CFD modelling of open channel flow to illustrate the effects of channel shape and heterogeneous roughness;
- The inclusion of vertical flow structures in analytic depth-averaged flow models of flooding;
- Derivation of routing parameters from cross-section survey: approximate flood routing method;
- CFD modelling and flow measurement in a double meandering small river;
- Lateral velocity and boundary shear predictions on vegetated channels and rivers;
- CFD analysis of air and heat distribution on a 7-store building by various designs of glazing windows;
- Study of current & sediment movement for coastal engineering;
- Flood risk analysis & unsteady flow study on natural rivers (River Huai);
- Physical modelling on flood routing and regulation measures in river engineering (River Huai);
- Experimental study on hydraulic characteristics of new type of floating breakwater.

Other activities

- Member of International Association for Hydro-Environment Engineering and Research (IAHR) (since 2001)
- Committee member of IAHR UK Section (2008 – date)

Other Interests

IT and Website design (**http://www.birmingham.ac.uk/flowdata/ (/research/activity/civil-engineering/short-term/floods/index.aspx)**)

Publications

Selected Journal Papers:

1. Tang, X. and Knight, D.W. (2012), "The lateral distribution of depth-averaged velocity in a channel flow bend", Journal of Hydraulic Engineering, ASCE, under review.

2. Zahiri, A., Tang, X., and Shiono, K. (2012), "Mathematical modeling of flow discharge over compound sharp-crested weirs", Journal of Hydro-Environment Research, under review.

3. Sterling, M. and Tang, X. (2012), “Depth-Averaged Shear Stress and Velocity in Open-Channel Flows: Discussion”, Journal of Hydraulic Engineering, ASCE, 138(10), 912-913.[dx.doi.org/10.1061/(ASCE)HY.1943-7900.0000426]

4. Gunawan, B., Sun, X.,Sterling, M., Shiono, K.,Tsubaki, R., Rameshwaran, P., Knight,D.W., Chandler, J.H., Tang,X., and Fujita, I. (2012) “The application of LS-PIV to a small irregular river for inbank and overbank flows”, Flow Measurement and Instrumentation, 24, 1-12. [dx.doi.org/10.1016/j.flowmeasinst.2012.02.001]

5. Tang, X, Knight, D.W. and Sterling, M. (2011), "Analytical Model of Lateral Velocity Distributions in Vegetated Channels ", Proceedings of the ICE: Engineering and Computational Mechanics, 164 (2), 91-102. [dx.doi.org/10.1680/eacm.2011.164.2.91]

6. Cheng, N., Nguyen, H., Zhao, K. and Tang, X. (2011), "Evaluation of Flow Resistance in Smooth Rectangular Open-channels with Modified Prandtl Friction Law", Journal of Hydraulic Engineering, ASCE, 137(4), 441-450. [dx.doi.org/10.1061/(ASCE)HY.1943-7900.0000322]

7. Tang, X. and Knight, D.W (2009), "Analytical Models for Velocity Distributions in Open Channel Flows", Journal of Hydraulic Research, 47(4), 418-428. [dx.doi.org/10.1080/00221686.2009.9522017]

8. Tang, X. and Knight, D.W (2009), "Lateral distributions of streamwise velocity in compound channels with partially vegetated floodplains", Journal of Science in China Series E: Technological Sciences, 52(11), 3357-3362. [dx.doi.org/10.1007/s11431-009-0342-7]

9. Tang,X. and Knight, D.W.(2008), "A General Model of Lateral Depth-Averaged Velocity Distributions for Open Channel Flows", Advances in Water Resources, 31(5), 846-857. [dx.doi.org/10.1016/j.advwatres.2008.02.002]

10. Tang, X. and Knight, D.W. (2008), "Lateral Depth-Averaged Velocity Distribution and Bed Shear in Rectangular Compound Channels", Journal of Hydraulic Engineering, ASCE, 134(9), 1337-1342. [dx.doi.org/10.1061/(ASCE)0733-9429(2008)134:9(1337)]

11. Knight, D.W and Tang, X. (2008), "Zonal discharges and boundary shear in prismatic channels", Journal of Engineering and Computational Mechanics, ICE, EM2, 59-68. [dx.doi.org/10.1680/eacm.2008.161.2.59]

12. Morvan. H., Knight, D.W., Wright, N., Tang, X. and Crossley, A.(2008), "The Concept of Roughness in Fluvial Hydraulics and its Formulation in 1-D, 2-D & 3-D Numerical Simulation Models", Journal of Hydraulic Research, IAHR, 26(2), 191-208. [dx.doi.org/10.1080/00221686.2008.9521855]

13. Knight, D.W, Omran, M. and Tang, X. (2007), "Modelling depth-averaged velocity and boundary shear in trapezoidal channels with secondary flows", Journal of Hydraulic Engineering, ASCE, 133(1), 39-47. [dx.doi.org/10.1061/(ASCE)0733-9429(2007)133:1(39)]

14. Tang, X. and Knight, D.W. (2006), "Sediment transport in river models with overbank flows", Journal of Hydraulic Engineering, ASCE, 132(1), 77-86. [dx.doi.org/10.1061/(ASCE)0733-429(2006)132:1(77)]

15. Tang, X., Knight, D.W., and Samuels, P. G. (2001), "Wave speed-discharge relationship from cross section survey", Journal of Water & Maritime Engineering, Proc. Institution Civil Engineers, joint ICE/IAHR, 148(2), 81-96. [dx.doi.org/10.1680/wame.2001.148.2.8]

16. Tang, X., Knight, D.W., and Samuels, P. G. (1999),'"Variable parameter Muskingum-Cunge method for flood routing in a compound channel", Journal of Hydraulic Research, IAHR, 37(5), 1-24. [dx.doi.org/10.1080/00221689909498519]

17. Tang, X., Knight, D.W., and Samuels, P. G. (1999),"Volume conservation in variable parameter Muskingum-Cunge method", Journal of Hydraulic Engineering, ASCE, 125(6), 610-620. [dx.doi.org/10.1061/(ASCE)0733-9429(1999)125:6(610)]

Selected Conference Papers:

18. Tang, X. and Knight D.W. (2013), "Velocity Distribution In Lateral Shear Layer For Open Channel Flows", 35th Congress of IAHR, Sept 8-13, 2013, Chengdu, China.

19. Tang, X. and Knight D.W. (2013), "Evaluation Of Predicting Velocity Profile In Open Channel Flows With Submerged Rigid Vegetation", 35th Congress of IAHR, Sept 8-13, 2013, Chengdu, China.

20. Ghani, U. and Tang, X. (2013), "Prediction of entrance development length in open channels by CFD modelling", 35th Congress of IAHR, Sept 8-13, 2013, Chengdu, China.

21. Ghani, U. and Tang, X. (2013), "Application of periodic boundary condition in open channel flows with heterogeneous bed configurations", 35th Congress of IAHR, Sept 8-13, 2013, Chengdu, China.

22. Tang, X., Sterling, M., and Knight, D.W. (2010), "A General Analytical Model for Lateral Velocity Distributions in Vegetated Channels", In River Flow 2010, Vol.1, 469-476, Dittrich A. Koll K. et al. (Editors), Brundesanstalt fur Wasserbau, Germany, ISBN: 978-3-939230-00-7.

23. Knight, D.W., Tang, X., Sterling, M., Shiono, K. and Mc Gahey, C. (2010), "Solving Open Channel Flow Problems With a Simple Lateral Distribution Model", In River Flow 2010, Vol.1, 41-48, Dittrich A. Koll K. et al. (Editors), Brundesanstalt fur Wasserbau, Germany, ISBN: 978-3-939230-00-7.

24. Gunawan, B., Sterling, M., Tang, X., Knight, D.W. (2010), "Measuring and Modelling Flow Structures In a Small River", In River Flow 2010, Vol.1, 1679-186, Dittrich A. Koll K. et al. (Editors), Brundesanstalt fur Wasserbau, Germany, ISBN: 978-3-939230-00-7.

25. Gunawan, B., Sun, X., Sterling, M., Knight, D.W., Shiono, K., Chandler, J.H, Rameshwaran, P., Wright, N.G., Sellin, R.H.J., Tang, X. and Fujita, I.(2008), An integrated and novel approach to estimating the conveyance capacity of the river Blackwater, Proceedings of the 8th International Conference on Hydro-Science and Engineering (ICHE-2008), Nagoya University, Nagoya, Japan, 9-12 September 2008.

26. Tang, X. and Knight D.W. (2007), "An Improved Discharge Prediction Method for Overbank Flows", 32nd Congress of IAHR, July 1-6, 2007, Venice, Italy.

27. Knight, D.W., Tang X., and McGahey, C. (2007), "A method for analysing stage-discharge, velocity and boundary shear stress data for rivers in flood", in Sustainable Water Management and River Development [Eds Lin Luo & Shaw Lei Yu], Proc. 5th Int. Conf. on Urban Watershed Management and Mountain River Protection and Development, Chengdu, China, April 3-5, Vol I, Sichuan University Press, 52-64.

28. Tang, X. and Knight, D.W. (2003), "Study on sediment transport of compound channel with non-uniform flows", 3rd IAHR Symposium on River, Coastal and Estuarine Morphodynamics, Barcelona, Spain, 1-5 Sept. 2003.

29. Tang, X. and Knight, D.W. (2001), "Experimental study of stage-discharge relationships and sediment transport rates in a compound channel", 29th IAHR Congress, Beijing, China, 69-76, 16-21 Sept. 2001.

30. Tang, X. and Knight, D.W. (2001), "Migration rate of bed forms in a compound channel with overbank flow", 2nd IAHR Symposium on River, Coastal and Estuarine Morphodynamics, Obihiro Japan, 545-553, 10-14 Sept.2001.

31. Tang, X. and Knight, D.W. (2001), "Analysis of bed form dimensions in a compound channel", 2nd IAHR Symposium on River, Coastal and Estuarine Morphodynamics, Obihiro Japan, pp 554-563, 10-14 Sept.2001.

32. Tang, X. and Dou, Guoren (1992), "Experimental study of open channel flows with dune beds", Proceeding of International Symposium of Hydraulic Research in Nature and Laboratory, Nov. 17-20, 1992, Wuhan, China.

33. Tang, X. and Dou, Guoren (1990), 'Some measurements on turbulent structure in open channel', The 4th International Symposium on Refined Flow Modelling and Turbulence Measurements, Sept. 20-23, 1990, Wuhan, China.

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