

Professor Mark Sterling BEng, PhD, CEng, CEnv, FRMetS, MIAgrE, FICE

Head of School - Beale Professor of Civil Engineering

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

Contact details

Telephone +44 (0) 121 414 5065 (tel:+44 121 414 5065)

Fax +44 (0) 121 414 3675

Email m.sterling@bham.ac.uk (mailto:m.sterling@bham.ac.uk)

School of Civil Engineering
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK



About

Professor Sterling has research interests in Fluid Dynamics, Wind Engineering and Water Engineering. His research in Water Engineering is mainly directed towards understanding and evaluating the conveyance capacity of rivers, while within the field of Wind Engineering he has carved out two distinct areas of research, namely the effect of wind on plants and the effects of extreme wind events. He has have been involved in a variety of research council and industrial funded projects, has a research portfolio in excess of £3m and has published over 100 journal/conference publications.

He teaches at both undergraduate and postgraduate level on a variety of subjects including Structural Engineering, Water Engineering and Environmental Fluid Mechanics.



Qualifications

- Chartered Environmentalist, 2005
- Member of the Institution of Civil Engineers, 2005
- Postgraduate Certificate in Learning and Teaching in Higher Education, University of Birmingham, 2004
- Fellow of the Royal Meteorological Society, 2004
- Chartered Engineer, Engineering Council, 2002
- Member of the Institution of Agricultural Engineers, 2002
- PhD in Hydraulic Engineering, University of Birmingham, UK, 1998
- BEng in Civil Engineering, University of Nottingham, Nottingham, UK, 1994

Biography

Professor Sterling graduated from the University of Nottingham in 1994 with a First class BEng degree in Civil Engineering. He then moved to the University of Birmingham to read for a PhD in Fluid Mechanics/Hydraulic Engineering. Following completion of his doctorate he spent a short period in industry before returning to the University of Birmingham as a Research Fellow in the field of Wind Engineering.

Teaching

Teaching Programmes

- Environmental fluid mechanics
- Statics and mechanics
- Fluid flow, thermodynamics and heat transfer
- River basin management
- Civil Engineering research projects
- Management and research projects
- Guided research
- Industrial research

Postgraduate supervision

Current research students

- Adam Hitchman, Fluvial flow, Water Engineering
- Mike Jesson, Fluvial flow, Water Engineering
- Jose Ramirez-Leon, Fluvial flow, Water Engineering

- Francesco Dorigatti, Extreme events, Wind Engineering
- Roger Swan, Optimisation, Water Engineering
- Eleanor Cheng, Wind on plants, Wind Engineering
- [Matthew Haines, Extreme events, Wind Engineering \(/research/activity/civil-engineering/short-term/wind/research/matthew-haines.aspx\)](#)
- David Soper, Extreme events, Wind Engineering
- Peter Folorunsho, Fluvial flow, Water Engineering

Research

RESEARCH THEMES

Professor Sterling's research in Water Engineering is mainly directed towards understanding and evaluating the conveyance capacity of rivers, i.e., fluvial flow. He has developed this understanding via a three pronged approach: physical modelling (publications 1 -3, 5, 74 (see publication section of CV for numbering)), numerical modelling (publications 4, 22, 28 – 30, 34 – 36, 66, 69 and 73) and field work (publications 33, 67 and 75). As a result of his work in this area, five PhD students have graduated (all with minor modifications). Sterling has undertaken collaborative research with a number of well respected Higher Educational Institutions (HEIs), e.g., Loughborough University, University of Nottingham, Leeds University, UNESCO-IHE and Delft University of Technology and is currently in discussions with a variety of other HEIs regarding collaborative research.

Within the field of Wind Engineering he has established an international reputation in two distinct areas, namely the effect of wind on plants and the effects of extreme wind events. The foundations of his expertise with respect to wind on plants were laid during his time as a Research Fellow on a BBSRC funded project ("The development and validation of a model for predicting the risk of lodging in cereals" [D11611]). This was a particularly challenging area of research due to its multidisciplinary nature requiring successful collaborations with biologists, agronomists and engineers.

His work in this area has generated significant impact: publications 6, 7, 9, 10, 12, 37 - 42; the development of a model used by industry yielding an annual turnover of ~£25,000; research funding (£14,100 via ADAS); PhD supervision (Cheng); invited presentations (La Plata University, 2002; University of Buenos Aires, 2002 & 2006).

His work examining the effects of extreme wind events has also generated significant impact thus creating an international profile: publications 8, 11, 13 – 19, 23, 31, 32, 43, 46, 47, 49, 52-55, 58, 60, 61, 67, 69, 70 and 71; funding from the Royal Society to construct the world's largest downburst generator; invited presentations (La Plata University, 2002, 2006; TORRO conference, 2009; Keynote lecture - EEBP VI conference, 2010; external examiner, University of Sydney, 2009); guest editor for a special edition on Wind Engineering, Proceedings of ICE - Structures and Buildings Journal; editorial board member, Proceedings of ICE - Structures and Buildings Journal. Sterling's international reputation in Wind Engineering was recognised when he was elected to the board the international association of Wind Engineering and tasked with organising the next European and African Conference on Wind Engineering (2013).

Professor Mark Sterling discusses how it is only by understanding the fundamental nature of [wind flow that novel approaches to structural challenges can be developed \(pdf\) \(/Documents/college-eps/civil/research/sterling/mark-sterling-winds-of-change.pdf\)](#).

Other activities

- Executive Board member of the International Association of Wind Engineering, (2009-2013)
- Chairman of the 2013 European and African Conference on Wind Engineering, (2009-2013)
- Member of the International Scientific Advisory board, 13th International Conference on Wind Engineering, Amsterdam (2011)
- Member of the governing committee of the Wind Engineering Society, (2004-2008)
- Member of the general assembly of the International Association of Wind Engineers, (2006-2008) (2011-??)
- Visiting lecturer at UNESCO-IHE Institute for Water Education, Delft, The Netherlands, (2008 to date)
- Member of the editorial panel of the Proceedings of ICE - Structures and Buildings Journal (2008 to date)
- Guest editor Proceedings of ICE - Structures and Buildings Journal, themed edition on Wind Engineering (2010)

Publications

Journal Publications

1. Knight, D. W., and **Sterling, M.** (2000) Boundary shear in circular pipes running partially full. *Journal of Hydraulic Engineering*, ASCE, 126, No.4, Apr., 263-275.
2. **Sterling, M.**, and Knight, D. W. (2000) Resistance and boundary shear in circular conduits with flat beds running part full. *Proceedings of the Institution of Civil Engineers. Water and Maritime Engineering*. 142, Dec., 229-240.
3. **Sterling, M.**, and Knight, D. W. (2001) The free overfall as a flow measuring device in a circular channel. *Proceedings of the Institution of Civil Engineers. Water and Maritime Engineering*, Dec., Issue 4, 235-243.
4. **Sterling, M.**, and Knight, D. W. (2002) An attempt at using the entropy approach to predict the transverse distribution of boundary shear stress in open channel flow. *Stochastic Environmental Research and Risk Assessment* Vol. 16, Issue 2, 127-142.
5. **Sterling, M.**, and Knight, D.W. (2003) Resistance and boundary shear in circular conduits with flat beds running part full. *Proceedings of the Institution of Civil Engineers. Water and Maritime Engineering*. 156 issue WM2, 211-213.
6. **Sterling, M.**, Baker, C. J., Berry, P. M., and Wade, A. (2003). An experimental investigation of the lodging of wheat. *Journal of Agricultural and Forest Meteorology*. Vol. 119, Issues 3 -4, 149 – 165.
7. Berry, P. M., **Sterling, M.**, Baker, C. J., Spink, J. H., and Sparkes, D. L. (2003). A calibrated model of wheat lodging compared with field measurements. *Journal of Agricultural and Forest Meteorology*. Vol. 119, Issues 3 -4, 167 – 180.
8. **Sterling, M.**, Baker, C. J., and Hoxey, R. P., (2003) Short term unsteady wind loading on a low-rise building. *Wind and Structures*, Vol. 6, No. 5, 403 - 418.
9. Berry, P. M., Spink, J. H., **Sterling, M.**, and Pickett, A. A. (2003) Methods for rapidly measuring the lodging resistance of wheat cultivars. *Journal of Agronomy and Crop Science*. 189, 390 – 401.
10. Berry, P. M., **Sterling, M.**, Spink, J. H., Baker, C. J., Sylvester-Bradley, R., Mooney, S. J., Tams, A. R., and Ennos, A. R. (2004) Understanding and reducing lodging in cereals. *Advances in Agronomy*. Vol. 84. 215-269.
11. **Sterling, M.**, Baker, C. J., Quinn, A. D., and Hoxey, R. P. (2005) Pressure and velocity fluctuations in the atmospheric boundary layer. Vol. 8, No. 1, 13-34.
12. Berry, P.M, **Sterling, M.**, and Mooney, S. J. (2006) Development of a model of lodging for barley. *The Journal of Agronomy and Crop Science*, 192, 151-158.
13. **Sterling, M.**, Baker, C. J., Richards, P. J., Hoxey, R. P and Quinn, A. D. (2006) An investigation of the wind statistics and extreme gust events at a rural site. *Wind And Structures*. Vol. 9, No.3, 193-216.

14. Scarabino, A., **Sterling, M.**, Richards, P. J., Baker, C. J., and Hoxey, R. P. (2007). An investigation of the structure of ensemble averaged extreme wind events. *Wind and Structures*. Vol. 10, No. 2, 135-151.
15. Durañona, V., **Sterling, M.**, and Baker, C. J. (2007) An analysis of extreme non-synoptic winds. *Journal of Wind Engineering and Industrial Aerodynamics*. *Journal of Wind Engineering and Industrial Aerodynamics*. 95, 1007-1027.
16. Quinn, A. D., **Sterling, M.**, Robertson, A. P., and Baker, C. J. (2008) An Investigation of the wind induced rolling moment on a commercial vehicle in the atmospheric boundary layer. *Proceedings of the Institution of Mechanical Engineers, Part D, Journal of Automobile Engineering*. Vol. 221, Issue 11, 1367-1379.
17. Metje, N., **Sterling, M.** and Baker, C. J. (2008) Pedestrian comfort using clothing values and body temperatures. *Journal of Wind Engineering and Industrial Aerodynamics*. 96, 412-435.
18. Ding, Y., **Sterling, M.** and Baker, C. J. (2008). An alternative approach to modelling train stability in high cross winds. *Proceedings of the Institute of mechanical Engineers Part F: Journal of Rail and Rapid Transport*. Volume 222, Number 1, 85-97.
19. Jordan, S. C., Johnson, T., **Sterling, M.**, and Baker, C. J. (2008) Evaluating and modelling the response of an individual to a sudden change in wind speed. *Building and Environment*. Volume 43. Issue 9, 1521-1534.
20. **Sterling, M.**, Baker, C. J., Jordan, S. C., and Johnson, T. (2008) A study of the slipstreams of high speed passenger trains and freight trains. *Proceedings of the Institute of mechanical Engineers Part F: Journal of Rail and Rapid Transit*. Vol 222, Number 2, 177-193.
21. **Sterling, M.**, Beaman, F., Morvan, H and Wright., N., G. (2008) Bed shear stress characteristics of a simple, prismatic, rectangular channel. *Journal of Engineering Mechanics*. American Society of Civil Engineers. Vol. 134, Issue 12, 1085 -1094.
22. Sharifi, S., **Sterling, M.**, and Knight, D. W. (2009) A Novel Application of a Multi-Objective Evolutionary Algorithm Applied to Open Channel Flow Modelling. *Journal of Hydroinformatics*. Vol. 11, No. 1, 31-50.
23. McConville, A. C., **Sterling, M.** and Baker, C. J (2009) The physical simulation of thunderstorm downdrafts. *Wind and Structures*. Vol. 12, No. 2, 133-149.
24. Jordan, S. C., **Sterling, M.**, and Baker, C. J. (2009). Modelling the response of a standing person to the slipstream generated by passenger train. Submitted to the *Journal of Rail and Rapid Transit*. *Proceedings of the Institute of mechanical Engineers Part F: Journal of Rail and Rapid Transit*. Vol 223, No. 6, 567-579.
25. Baker, C. J. and **Sterling, M.** (2009) Aerodynamic forces on multiple unit trains in cross winds. American Society of Mechanical Engineers. *Journal of Fluids Engineering*. October, Vol. 131, 101103-1 - 101103-14.
26. **Sterling, M.**, Baker, C. J., Bouferrouk, A., O'Neil, H., Wood, S., and Crosbie, E. (2009). An investigation of the aerodynamic admittances and aerodynamic weighting functions of trains. *Journal of Wind Engineering and Industrial Aerodynamics*. Vol. 97, 512–522. doi:10.1016/j.jweia.2009.07.009
27. **Sterling, M.**, Quinn, A. D., Hargreaves, D.M., Cheli, F., Sabbioni, E., Tomasini, G., Delaunay., D., Baker, C. J., and Morvan, H. (2010) A comparison of different methods to evaluate the wind induced forces on a high sided lorry. *Journal of Wind Engineering and Industrial Aerodynamics*. Vol. 98, 10-20.
28. Sharifi, S., **Sterling, M.**, and Knight, D. W (2010) The end depth ratio and principal component analysis. *Proceedings of the Institution of Civil Engineers*. *Water Management*. Vol. 163, September 2010, Issue WM8, 425-430. DOI/ 10.1680/wama.900068
29. Martinez-Vazquez, P., Baker, C. J., **Sterling, M.**, Quinn, A. D and Richards, P. J. (2010) Aerodynamic Forces on Fixed and Rotating Plates. *Journal of Wind and Structures*. Vol. 13, No. 2, 127-144.
30. Kakimpa, B., Hargreaves, D.M., Owen, J.S., Martinez-Vazquez, P., Baker, C.J., Sterling, M and Quinn, A. D. (2010) CFD modelling of free-flight and auto-rotation of plate type debris. *Journal of Wind and Structures*. Vol. 13, No. 2, 169-189.
31. Gunawan, B., **Sterling, M.** and Knight, D. W. (2010). Using an Acoustic Doppler Current Profiler in a small river. *Water and Environmental Journal, CIWEM*. Vol. 24, Issue 2, June 2010, 147- 158. DOI: 10.1111/j.1747-6593.2009.00170.x
32. Sharifi, S., **Sterling, M.**, and Knight, D. W. (2011). Can the application of a multi objective evolutionary algorithm improve conveyance estimation? *Water and Environmental Journal, CIWEM*. Vol. 25, Issue 2, 230-240. DOI: 10.1111/j.1747-6593.2010.00223.x
33. Sposaro, M.M., Berry, P.M., **Sterling, M.**, Hall, A.J. and Chimenti, C.A. (2011) Modelling root and stem lodging in sunflower. *Field Crops Research*. Vol. 119, Issue 1, 125-134. doi:10.1016/j.fcr.2010.06.021
34. Martinez-Vazquez, P., **Sterling, M.**, Baker, C. J., Quinn, A. D., Richards, P. J. (2011) Autorotation of Square Plates with Application to Windborne Debris. *Wind and Structures*. Vol. 14, No. 2, 167-186.
35. Nabavi, S. V., Beirami, M. K., Chamani, M. R and **Sterling, M.** (2011) Free Overfall in flat based circular channels and U-shaped channels. *Flow Measurement and Instrumentation*. Vol. 22, Issue 1. 17-24. doi: 10.1016/j.flowmeasinst.2010.11.001.
36. Sharifi, S., **Sterling, M.**, and Knight, D. W. (2011) Prediction of End-Depth Ratio in Open Channels Using Genetic Programming. *Journal of Hydroinformatics*. Vol. 13, No. 1, 36-48. doi:10.2166/hydro.2010.087.
37. Tang, X., Knight, D. W., and **Sterling, M.** (2011). Analytical model for streamwise velocity in vegetated channels. *Engineering and Computational Mechanics*, *Proceedings of the Institution of Civil Engineers*. Vol. 164, Issue EM1. doi: 10.1680/eacm.2011.164.1.1
38. Barrett, L., Wright, N. G and **Sterling, M.** (2011) A comparison of 2D and 3D simulations of the River Blackwater. Submitted to *Engineering and Computational Mechanics*. *Proceedings of the Institution of Civil Engineers*. *In Press*.
39. Cumberland, S., Baker, A., Bridgeman, J., **Sterling, M.**, and Ward, D (2011) Fluorescence spectroscopy as a tool for determining microbial quality in potable water applications. Submitted to *Environmental Technology*. *In Press*.
40. Martinez-Vazquez, P., and **Sterling, M.** (2011) Predicting wheat lodging at large scales. *Biosystems Engineering*. *In Press*. doi: 10.1016/j.biosystemseng.2011.04.012
41. Jesson, M., **Sterling, M.**, and Bridgeman, J. (2011) An experimental study of turbulence in a heterogeneous channel. *Proceedings of the Institution of Civil Engineers*. *Water Management*. *In Press*.

Refereed conference publications

42. **Sterling, M.**, Baker, C. J., Berry, P. M., Sparkes, D. L., Spink, J., Wade, A. and Sylvester-Bradley, R. (2001) Lodging: wind induced forces on wheat crops. 3rd European & African Conference of Wind Engineering, 2-6 July Eindhoven, The Netherlands.
43. **Sterling, M.**, Baker, C. J. and Berry, P. M. (2001) Modelling lodging in cereal crops. In: *Proceedings of the 33rd Meeting of the Agricultural Research Modeller's Group* (Eds J. France and L.A. Crompton). *Journal of Agricultural Science, Cambridge* 137, 113-122.
44. Berry, P. M., Spink, J. H., Sylvester-Bradley, R., Pickett, A., **Sterling, M.**, Baker, C. J. and Cameron, N. (2002). Lodging control through variety choice and management. HGCA conference 2002: Agronomic intelligence – the basis of profitable production, 14-15 Jan, Coventry, UK.
45. **Sterling, M.**, Baker, C. J., Berry, P. M., Spink, J. H., Wade, A., Sylvester-Bradley R., and Sparkes, D. L. (2002). Dynamic Loading of cereal crops. 5th UK Conference on Wind Engineering, The University of Nottingham, 4-6 September 2002.
46. **Sterling, M.**, Baker, C. J., and Berry, P. M. (2003) An Experimental analysis of the wind induced failure of wheat crops. International Conference 'Wind Effects on Trees' September 16-18, 2003, 47 – 56, University of Karlsruhe, Germany.
47. **Sterling, M.**, Baker, C. J., and Hoxey, R. P. (2003). Unsteady wind loading on a low-rise building. 11th International Conference on Wind Engineering, June 2 –5, 2003, 1183 – 1190, Lubbock, Texas, USA.
48. Baker, C. J., **Sterling, M.**, Huggins, T., and Quinn, A. D. (2004) The slipstreams and wakes of ground vehicles. 5th International colloquium on bluff body

49. **Sterling, M.**, and Baker, C. J. (2004) The effects of the slipstreams of passing high speed trains on waiting passengers. Wind Engineering Society Conference, Cranfield.
50. **Sterling, M.**, Baker, C.J., Quinn, A. D., and Hoxey, R. P. (2004) Pressure and velocity fluctuations over a rural environment. Wind Engineering Society Conference, Cranfield.
51. Durañona, V, Baker, C. J., and **Sterling, M.** (2005) Analysis of extreme non synoptic winds. EACWE 4. The fourth European and African Conference on Wind Engineering, 11- 15 July 2005 Institute of Theoretical and Applied Mechanics, Prague, Czech Republic).
52. Ding, Y., **Sterling, M.**, and Baker, C. J. (2005). Unsteady cross wind forces on trains and corresponding aerodynamic parameters. EACWE 4. The fourth European and African Conference on Wind Engineering, 11- 15 July 2005 Institute of Theoretical and Applied Mechanics, Prague, Czech Republic).
53. Jordan, S.C., **Sterling, M.**, and Baker, C. J. (2005). Evaluating the response of an individual to a sudden change in wind velocity. EACWE 4. The fourth European and African Conference on Wind Engineering, 11- 15 July 2005 Institute of Theoretical and Applied Mechanics, Prague, Czech Republic).
54. Baker, C. J, **Sterling, M.**, Figura-Hardy, G., Johnson, T., Free, P., Munley, G. Bowman, I., Pope, C., Gawthorpe, R. (2006) The Effect of Train Slipstreams on Passengers and Trackside Workers. 7th World Congress on Railway Research. 5th – 7th June 2006 Montreal.
55. Ding, Y., **Sterling, M.**, and Baker, C. J (2006) Train stability in cross winds, a new approach. 7th UK Conference on Wind Engineering, 4-6 September, Glasgow.
56. **Sterling, M.**, Baker, C. J, Quinn, A. D., and Hoxey, R. P. (2006) An investigation of the velocity profile and extreme wind statistics at a rural site. 7th UK Conference on Wind Engineering, 4-6 September, Glasgow.
57. Quinn, A.D., Baker, C.J., Robertson, A.P., Bradley, A and **Sterling, M.** (2006). Full scale investigation of the wind induced side force on a commercial vehicle. 7th UK Conference on Wind Engineering, 4-6 September, Glasgow.
58. **Sterling, M.** (2006). A study of the slipstreams of high speed passenger trains and freight trains. The University of Nottingham. 11th October 2006.
59. Quinn, A. D., Baker, C. J., Robertson, A. P., Bradley, A., and **Sterling, M.** (2006). A Full-scale Investigation of the Wind Induced Side Forces on a Commercial Vehicle. 6th MIRA International Vehicle Aerodynamics Conference, 25-26 October, Warwick.
60. Ding, Y., **Sterling, M.**, and Baker, C. J. (2006) Setting the foundations for a revised model on train stability in high cross winds. 6th MIRA International Vehicle Aerodynamics Conference, 25-26 October, Warwick.
61. Baker, C. J., **Sterling, M.**, Johnson, T., Figura-Hardy, G and Pope, C (2007) The effect of cross winds on train slipstreams. 12th International Conference on Wind Engineering, 2-6 July, Cairns, Australia.
62. Scarabino, A., **Sterling, M.**, Baker, C. J, Richards, P. J., and Hoxey, R. P. (2007). An analysis of the spatial structure of extreme wind events. 12th International Conference on Wind Engineering, 2-6 July, Cairns, Australia.
63. McConville, A., **Sterling, M** and Baker, C. J (2007) An introduction of the scaling issues associated with the physical simulation of thunderstorm downbursts. 12th International Conference on Wind Engineering, 2-6 July, Cairns, Australia.
64. Durañona, V, Baker, C. J, Cataldo, J., **Sterling, M.**, and Gravina, A. (2007) Development of a theoretical model for the wind movement of citric trees. 12th International Conference on Wind Engineering, 2-6 July, Cairns, Australia.
65. Metje, N., **Sterling, M** and Baker, C. J. (2007). Outdoor Comfort Study. International Conference on Wind Engineering, 2-6 July, Cairns, Australia.
66. Quinn, A. D., Baker, C. J., **Sterling, M.**, Robertson, A.P. and Bradley, A. (2007) Full-scale Investigation of the Wind Induced Side Force on a Commercial Vehicle. 2-6 July, Cairns, Australia.
67. **Sterling, M.**, Bouferrouk, A., and Baker, C. J. (2008). An Investigation of the wind induced forces on an electrical multiple unit train. 8th UK Conference on Wind Engineering. University of Surrey, 14th – 16th July.
68. **Sterling, M.**, Baker, C. J., Bouferrouk, A., O'Neil, H., Wood, S., and Crosbie, E. (2008). An investigation of the aerodynamic admittances and aerodynamic weighting functions of trains. BBAA VI International Colloquium on Bluff Bodies Aerodynamics & Applications. Milan, 20-24 July.
69. Bouferrouk, A., Baker, C. J., **Sterling, M.**, O'Neil, H., and Wood, S. (2008) Calculation of the cross wind displacement of pantographs. BBAA VI International Colloquium on Bluff Bodies Aerodynamics & Applications. Milan, 20-24 July.
70. Sharifi, S., Knight D.W. and **Sterling, M.**, (2008) A novel approach to providing guidance on modelling flow in simple channels using the SKM method in conjunction with a multi objective evolutionary algorithm. RiverFlow 2008, Izmir, Turkey. 2149-2158.
71. Gunawan, B., Tang, X., Sun, X., **Sterling, M.**, Knight, D.W., Shiono, K., Chandler, J., Rameshwaran, P., Wright, N.G and Sellin, R.H.J (2008) An integrated and novel approach to estimating the conveyance capacity of the river Blackwater. 8th International Conference on Hydroscience and Engineering. Nagoya, Japan.
72. Martinez-Vazquez, P., Kakimpa, B., Hargreaves, D. M., Baker, C. J., **Sterling, M.**, Quinn, A. D and Owen, J. S (2009) Predicting the flight of wind borne sheet type debris – an analytical and computational approach. 17th UK National Conference on computational mechanics in engineering. 6-8th April 2009, The University of Nottingham, Nottingham, UK.
73. Sharifi, S., **Sterling, M.**, and Knight, D. W (2009) End-Depth Ratio Prediction in Rectangular and Trapezoidal Channels Using Genetic Programming. 17th UK National Conference on computational mechanics in engineering. 6-8th April 2009, The University of Nottingham, Nottingham, UK.
74. Martinez-Vazquez, P., Baker, C. J., **Sterling, M.** and Quinn, A. D. (2009) The Flight of Wind Borne Debris: An Experimental, Analytical, and Numerical Investigation. Part I (Numerical Investigation). 5th European & African Conference on Wind Engineering. Florence, Italy. 19-23rd July.
75. Barreatt, L., Wright, N. G. And **Sterling, M** (2009). Modelling a Meandering Two-stage River: Comparison of 2D and 3D Approaches with Different Turbulence Representations. 33rd IAHR 2009 Congress - Water Engineering for a Sustainable Environment. Vancouver, 9-14 August.
76. Martinez-Vazquez, P., Baker, C. J., **Sterling, M.**, Quinn, A. D. and Richards, P. J. (2009) The Flight of Wind Borne Debris: An Experimental, Analytical, and Numerical Investigation. Part II (Experimental Work). 7th Asia-Pacific Conference on Wind Engineering. Taipei, Taiwan, 8-12th November.
77. Sharifi, S and **Sterling, M.**, (2010) Using the Shiono and Knight method to predict sediment transport. 1st European IAHR Congress. 4-6 May, 2010, Edinburgh, Heriot-Watt University.
78. Jesson, M., **Sterling, M** and Bridgeman, J (2010) Turbulent flow structures in a heterogeneous channel and their effects on conveyance characteristics. 1st European IAHR Congress. 4-6 May, 2010, Edinburgh, Heriot-Watt University.
79. Gunawan, G., **Sterling, M.**, Tang, X., and Knight, D. W. (2010) Measuring and modelling flow structures in a small river. River Flow 2010. September 8-10, Braunschweig, Germany.
80. Tang, X., **Sterling, M.**, and Knight, D. W. (2010) A General Analytical Model for Lateral Velocity Distributions in Vegetated Channels. River Flow 2010. September 8-10, Braunschweig, Germany.
81. Knight, D. W., Tang, X., **Sterling, M.**, Shiono, K., Mc Gahey, C. (2010) Solving open channel flow problems with a simple lateral distribution Model. River Flow 2010. September 8-10, Braunschweig, Germany.
82. Chlebek, J., Bousmar, D., Knight, D. W., and Sterling M., (2010) A comparison of overbank flow conditions in skewed and converging/diverging channels. River Flow 2010. September 8-10, Braunschweig, Germany.

83. Martinez-Vazquez, P., Baker, C. J., **Sterling, M.**, Quinn, A. D. (2010) Estimation of free flight trajectories of wind-borne debris using eigenfaces for recognition. 6th International Symposium on Environmental Effects on Building and People: Actions, Influences, Interactions, Discomfort – EEBP VI. Cracow, Poland, October 11-13.
84. Martinez-Vazquez, P., **Sterling, M.**, and Rodriguez-Cuevas, N (2010) Design Spectra for wind loading. 6th International Symposium on Environmental Effects on Building and People: Actions, Influences, Interactions, Discomfort – EEBP VI. Cracow, Poland, October 11-13.
85. **Sterling, M.**, and Baker, C. J. (2010) A re-consideration of some basic assumptions of Wind Engineering. 6th International Symposium on Environmental Effects on Building and People: Actions, Influences, Interactions, Discomfort – EEBP VI. Cracow, Poland, October 11-13.
86. Jesson, M., Bridgeman and **Sterling, M** (2011) Open-channel discharge characteristics and secondary flow development over a biotope-scale heterogeneous channel bed. 6th IASME/WSEAS International conference on water resources, hydraulics and hydrology (WHH'11). 20-25 February, Cambridge, UK.
87. Martinez-Vazquez, P., and **Sterling, M** (2011) Dynamic response of wheat plants submitted to wind loading. 13th International Conference on Wind Engineering. 11th – 15th July, Amsterdam, the Netherlands.
88. Martinez-Vazquez, P., **Sterling, M**, Baker, C. J., Quinn, A. D. and Richards, P (2011) Non-averaged wind forces acting on a rotating square plate. 13th International Conference on Wind Engineering. 11th – 15th July, Amsterdam, the Netherlands.
89. Quinn, A.D., Baker, C. J., **Sterling, M.**, Sima, M., Weise, M, and Hoefener, L (2011) The effect of cross winds on the slipstreams of high speed trains. 13th International Conference on Wind Engineering. 11th – 15th July, Amsterdam, the Netherlands.
90. **Sterling, M.**, and Baker, C. J. (2011) Scaling a thunderstorm downburst simulator. 13th International Conference on Wind Engineering. 11th – 15th July, Amsterdam, the Netherlands.
91. Baker, C. J., and **Sterling, M** (2011) Design processes for wind effects around simple buildings. 13th International Conference on Wind Engineering. 11th – 15th July, Amsterdam, the Netherlands.

