

Principal Laboratory Advisor – Prof. C.W. Li

Professor C.W. LI
Department of Civil & Structural Engineering
The Hong Kong Polytechnic University

EDUCATION

1982 BSc (Civil Engineering) University of Hong Kong

1987 PhD University of Hong Kong

PROFESSIONAL ACTIVITIES

1986-present Assistant Lecturer then Lecturer then Senior Lecturer then Associate Professor then Professor

Department of Civil & Structural Engineering
The Hong Kong Polytechnic University

PROFESSIONAL MEMBERSHIP

Member American Society for Civil Engineers

Member International Association of Hydraulic Engineering and Research

Vice Chairman International Association of Hydraulic Engineering and Research (Hong Kong Chapter)

Member Hong Kong Society of Theoretical and Applied Mechanics

AWARDS

i) Natural Science Award (third class) of GuangDong Province, PRC, for the research projects on Wind Waves Measurement and Modelling in South China Sea under Disastrous Weather Conditions (1993).

ii) The President's Award for Outstanding Performance/ Achievement in Research and Scholarly Activities (2000).

SCHOLARLY ACTIVITIES

i) Research Interest - Numerical wave prediction; wave-current-structure interaction; 3D numerical modeling of flow, water qualities and near field dispersion in coastal and estuarine waters; numerical and physical modeling of wind flow around structures.

ii) Around 120 publications in Journals, Conference Proceedings, Book Chapters.

iii) Associate editor of the International Journal of Engineering Application of Computational Fluid Mechanics, Journal of Hydro-environment Research, and Editorial board member of Journal of Hydroinformatics,

- iv) Reviewer of the following Journals: Journal of Hydraulic Engineering, American Society of Civil Engineers; Journal of Hydraulic Research; International Journal for Numerical Methods in Fluids; International Journal for Numerical Methods in Heat and Fluid Flow; Transaction of Hong Kong Institute of Engineers, International Journal of Numerical Methods in Engineering, Journal of fluids and structures.
- v) Specialist consultant to government and consultancy firms in hydraulics and wind engineering.
- vi) External technical advisory committee member, vice-chairman/organising committee members of numerous international conferences.

SELECTED RESEARCH PROJECTS

Hydrodynamics/Fluid Dynamics

- i) Physical and Numerical Modelling of Sludge Dumping in Ocean, UPGC grant, HK\$508,000, 1991-1994 (Principal Investigator - PI).
- ii) Three-dimensional modelling of flow and solute transport in typhoon shelters, HK\$383,000, RGC grant, 1994-1996. (PI).
- iii) Large Eddy Simulation of non-Fickian diffusion in coastal waters, HK\$439,000, RGC grant, 1997-2000. (PI).
- iv) Dispersion of unsorted sediment cloud in crossflow, HK\$622,000, RGC grant, 1998-2001. (PI).
- v) Three-dimensional modeling of free surface flow with flexible vegetation, HK\$622,000, RGC grant, 1999-2002. (PI).
- vi) Correlation of extreme waves and surges using a dynamically coupled third-generation wave model and 3D flow model, HK\$457,817, CERG grant, 2000-2002. (PI).
- vii) 3D modelling of coastal outfall discharge in random wave environment, HK\$610,210, CERG grant, 2001-2004. (PI)
- viii) Hydrodynamics and Mixing in Flexible Vegetation Field Under Random Waves, CERG grant, HK\$200,000, 2004-2006. (PI).
- ix) 3D Numerical Modelling of Flows in Vegetated Open Channel Junctions, HK\$170,000, PolyU Grant, 2003-2006. (PI).
- x) Hybrid LES/RANS Modeling of 3D Flow in Vegetated Open Channel Network, CERG grant HK\$436,000, 2006-2009.

Wind Engineering

- i) Numerical simulation of wind loading on buildings, HK\$200,000, PolyU funding, 1999. (PI)
- ii) Wind effects on structures HK\$220,000. PolyU ASD supported projects, 2002. (Co-I)

SELECTED CONSULTANCY

Hydrodynamics/Fluid Dynamics

- i) Wave analysis for Western Harbour Area – for Technical Services Division, Civil Engineering Office, Civil Engineering Department, Hong Kong Government, 1997-1998.
- ii) Joint probability analysis of extreme sea level and wave height, for Technical Services Division, Civil Engineering Office, Civil Engineering Department, Hong Kong Government, 1999-2000.
- iii) Physical modelling of Tuen Mun Nullah widening, for KCRC via Binnie Black & Veatch, 2001.
- iv) Modelling Tests for Wang Chau Pumping Station, for Drainage Services Department, HKSAR Government, 2002.
- v) Kwai Chung Container Port Terminal 9 Development - Chemical Waste Treatment Facilities - Sump Model Test, Modern Terminals Ltd. Hongkong International Terminals Ltd. Asia-Container Terminals Ltd, 2003.
- vi) Physical Hydraulic Model Tests for Hong Kong West Drainage Tunnel in Northern Hong Kong Island - Eastern Portal Structure and Main Drainage Tunnel, Drainage Services Department, HKSAR Government, via Black & Veatch HK Ltd., 2004.
- vii) Modelling Test for Sheung Wan Stormwater Pumping Station, Drainage Services Department, HKSAR Government, 2005.
- viii) Pump Sump Modelling Tests for Sewage Pumping Stations at Ma On Shan, Sai Kung Area 4 and Ting Kok Road, Drainage Services Department, HKSAR Government, 2005.

Wind Engineering

- i) Wind Tunnel Tests for Cyberport Residential Development – Areas Riii, Riv & Rv, Siu Yin Wai & Associates, 2003.
- ii) Wind Tunnel Tests for Residential Development of Robinson Road 31&31a, Siu Yin Wai & Associates, 2004.
- iii) Wind Tunnel Tests for Residential Development At 35 Clear Water Bay Road, Ngau Chi Wan, Jumbo Power Enterprises Limited, 2004.
- iv) Wind Tunnel Tests for MGM Grand Hotel Development, Macau, Siu Yin Wai and Associates, 2005.
- v) Wind Tunnel Tests for Mixed Use Development At Lot B, Zone B, Nape, Macau, Siu Yin Wai and Associates, 2005.
- vi) Wind Tunnel Tests for Ko Shing Street Residential Development, Ho & Lam Consulting Engineering Ltd., 2005.

vii) Wind Tunnel Tests for Po On Road Residential Development, Ho & Lam Consulting Engineering Ltd., 2006.

SELECTED PUBLICATIONS

1. Li, C.W. and Song, Y., 'Correlation of extreme waves and water levels using a third-generation wave model and a 3D flow model', *Ocean Engineering*, 33, 635-653, 2006.
2. Lin P.Z., Li, C.W. and Liu, H.W., 'A wave height spectral model for simulation of wave diffraction and refraction', *Journal of Coastal Research*, Sp. Iss. 42, 448-459, 2005.
3. Li C.W. and Wang, L.L. "An Immersed Boundary Finite Difference Method for LES of Flow Around Bluff Shapes", accepted for publication in *International Journal of Numerical Methods in Fluids*, 2004.
4. Li, C.W. and Ma, F.X., "Large Eddy Simulation of diffusion of a buoyancy source in ambient water", *Applied Mathematical Modelling*, 27, 649-663, 2003.
5. Su, X.F. and Li, C.W., "Large Eddy Simulation of free surface turbulent flow in partly vegetated open channels", *International Journal of Numerical Methods in Fluids*, 39, 10, 919-937, 2002.
6. Li, C.W. and Ma, F.X., "3d numerical simulation of deposition patterns due to sand disposal in flowing water", *Journal of Hydraulic Engineering*, American Society for Civil Engineers, vol. 127, 3, 2001, 209-218.
7. Li, C.W. and Wang, J.H., "Large eddy simulation of free surface shallow water flow", *International Journal for Numerical Methods in Fluid*, vol. 25, 5, 2000, 375-384.
8. Yu, T.S. & Li, C.W., "Instantaneous discharge of buoyant fluid in cross flow", *Journal of Hydraulic Engineering*, American Society for Civil Engineers, 124, 11, 1998, 1161-11776.
9. Li, C.W., "Convection of particle thermals", *Journal of Hydraulic Research*, vol. 35, no.3, 1997, pp. 363-376.
10. Li, C.W. & Yu, T.S., "Numerical investigation of shallow recirculating flows by a quasi-three-dimensional k- ϵ model", *International Journal for Numerical Methods in Fluids*, vol. 23, 1996, pp. 485-501.