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EXPERTISE

- Urban Hydrologic Modelling
- Water Sensitive Urban Design
- Nature-Based Solutions
- Water Quality
- Ecosystem Services
- Smart Cities

EDUCATION

1989 | Ph.D.

Geography, McMaster University, Canada

1985 | M.Sc.

Geography, McMaster University, Canada

1983 | B.Sc.

Geography, University of Toronto, Canada

PUBLICATIONS: JOURNAL ARTICLES

- Irvine, K.N., H.H. Loc, C. Sovann, A. Suwanarit, F. Likitswat, R. Jindal, T. Koottatep, J. Gaut, L.H.C. Chua, W.Q. Lai and K. De Wandeler. (2021). Bridging The Form and Function Gap in Urban Green Space Design Through Environmental Systems Modeling. *Journal of Water Management Modeling*, 29: C476.
- Irvine, K.N., H.H. Loc and L.H.C. Chua. (2021). Dynamics of Runoff Quality Associated with an Urban Park and WSUD Treatment Train in A Tropical Climate. *Environmental Technology*. <https://doi.org/10.1080/09593330.2021.1976844>



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- Murphy, T., K. Irvine, K., Phan, D. Lean, E. Yumvihoze and K. Wilson. (2020). Interactions of Dimethylarsinic Acid, Total Arsenic and Zinc Affecting Rice Crop Management and Human Health in Cambodia. *Journal of Health and Pollution*, 10(26), 200612.
- Ho, H.L., A. Le, T. Tran, Q.T. Luong and K.N. Irvine. (2020). The Waterscape of Groundwater Abstraction for Domestic Uses in District 12, Ho Chi Minh City, Vietnam. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-020-00938-0>.
- Ho, H.L., Q.H. Do, A.A. Cokro and K.N. Irvine. (2020). Deep Neural Network Analyses of Water Quality Time Series Associated with Water Sensitive Urban Design (WSUD) Features. *Journal of Applied Water Engineering and Research*, 8(4), 313–332.
- Andreas, V. K.N. Irvine, R. Jindal, R. Thongdara, N.N. Chatterji and B.S. Wu. (2019). Spatial Patterns of Heavy Metals in The Sediments of A Municipal Wastewater Treatment Pond System and Receiving Waterbody, Cha am, Thailand. *Journal of Water Management Modeling*, 27: C465, available online: <https://www.chijournal.org/Journals/PDF/C465>, doi: 10.14796/JWMM.C465.
- Murphy, T., K. Irvine, K. Phan, D. Lean and K. Wilson. (2019). Correlation Between Arsenic and Zinc Levels in Rice from an Arsenic-Rich Zone in Cambodia: Environmental and Health Implications. *Journal of Health & Pollution*, 9(22), 14pp.
- Li, Y. Y., H. Rahardjo and K.N. Irvine. (2019). Effect of Weather Conditions on Leans of One Eugenia Grandis Tree in Singapore. *Urban Forestry & Urban Greening*, 43: <https://doi.org/10.1016/j.ufug.2019.126375>.
- Gaut, J., L.H.C. Chua, K.N. Irvine and S.H. Le. (2019). Modelling The Washoff of Pollutants in Various Forms from an Urban Catchment. *Journal of Environmental Management*, 246, 374–383.
- Irvine, K.N., H.H. Loc, W.Q. Lai, C. Sovann, A. Suwanarit, F. Likitswat, R. Jindal, T. Koottatep, J. Gaut and L. H. C. Chua. (2019). Environmental Systems Modelling for Urban Planners: Considerations in Promoting Urban Green Design. *Vietnam Journal of Construction*, 58(4), 3–10.



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- Seow, T., K.N. Irvine, I. Beevi, and T. Premathillake. (2019). Navigating Field-Based Enquiry in Geography: The Influence of Singapore Teachers' Subject Identities on Their Practice. *International Research in Geographical and Environmental Education*.
<https://www.tandfonline.com/doi/full/10.1080/10382046.2019.1680001>.
- Seow, T., J. Chang and K.N. Irvine. (2019). Signature Pedagogy for School Geography in Singapore—Understanding Teachers' Knowledge and Practices of Field-Based Inquiry. *Journal of Geography*, 118(6), 227-237.
- Ho, H.L., Irvine, K.N., Nguyen, T.H.D., Nguyen, T.K.Q., Nguyen, N.T. & Shimizua, Y. (2018). The Legal Aspects of Ecosystem Services in Agricultural Land Pricing, Some Implications from A Case Study in Vietnam's Mekong Delta. *Ecosystem Services*, 29(B, February), 360-369.
- Huu, L.H., Ballatore, T.J., Irvine, K.N., Nguyen, T.H.D., Truong, T.C.T. & Yoshihisa, S. (2018). Socio-Geographic Indicators to Evaluate Landscape Cultural Ecosystem Services: A Case of Mekong Delta, Vietnam. *Ecosystem Services*. <https://doi.org/10.1016/j.ecoser.2017.11.003> available online 11 November 2017.
- Li, Y.Y., Rahardjo, H., Irvine, K. & Law, A.W-K. (2018). CFD Analyses of The Wind Drags on Khaya Senegalensis and Eugenia Grandis. *Urban Forestry & Urban Greening*, 34, 29-43.
- Klong-klaew, T., Ngoen-klan, R., Moophayak, K., Sukontason, K., Irvine, K.N., Tomberlin, J.K., Somboon, P., Chareonviriyaphap, T., Kurahashi, H. & Sukontason, K.L. (2018). Predicting Geographic Distribution of Forensically Significant Blow Flies of Subfamily Chrysomyinae (Diptera: Calliphoridae) in Northern Thailand. *Insects*, 9, 106. doi:10.3390/insects9030106.
- Murphy, T., Phan, K., Yumvihoze, E., Irvine, K., Wilson, K., Lean, D., Ty, B., Poulain, A., Laird, B. & Chan, H.M. (2018). Groundwater Irrigation and Arsenic Speciation in Rice in Cambodia. *Journal of Health & Pollution*, 8(19), 9.
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- Le, S.H., Chua, L.H.C., Irvine, K.N. & Eikass, H.S. (2017). Modeling Washoff of Total Suspended Solids in The Tropics. *Journal of Environmental Management*, 200, 263-274.
- Koko, S., Irvine, K. N., Jindal, R. & Thongdara, R. (2017). Spatial and Temporal Variations of Dissolved Oxygen in Cha-Am Municipality Wastewater Treatment Ponds Using GIS Kriging Interpolation. *Journal of Water Management Modeling*, 25, 1-9. (C427 (available online: <https://doi.org/10.14796/JWMM.C427>))
- Bhowmick, A., Irvine, K.N. & Jindal, R. (2017). Mathematical Modeling of Effluent Quality of Cha-Am Municipality Wastewater Treatment Pond System Using PCSWMM. *Journal of Water Management Modeling*, 25, 1-9. (C423 (available online: <https://doi.org/10.14796/JWMM.C423>))
- Goh, M.M., M. Ung and K.N. Irvine. (In press). To bus or not to bus: structural equation modelling of ridership perceptions as a planning tool to increase use of public transit in Phnom Penh, Cambodia. *Journal of Architectural/Planning Research and Studies*.
- Irvine, K.N., Chew-Hung Chang, Tricia Seow, Diganta Das, and Loc Huu Ho. (In press). Framing human-environment connections through waterscapes: a geographic lens for teaching and learning about water resources. *Research in Geographic Education*.
- Yang, PP., L.H.C. Chua, K.N. Irvine, and J. Imberger, (In press). Radiation and energy budget dynamics associated with a floating photovoltaic system. *Water Research*.
- Ashrafi, M. L.H.C. Chua, and K.N. Irvine. (Revisions submitted). Spatio-temporal modeling of the wind field over an urban lake subject to wind sheltering. *Journal of Applied Meteorology and Climatology*.
- Irvine, K. N. Fa Likitswat, Asan Suwanarit, and T. Koottatep. (Revisions submitted). A multidisciplinary approach to authentic learning experiences for Nature-based Solutions design: Broadening the Monkey Cheeks. *Australasian Journal of Engineering Education*.
- Irvine, K. N., Suwanarit, A., Likitswat, F., Srilertchaipanij, H., Ingegno, M., Boonkam, P., Sahavacharin, A., Wongwatcharapaiboon, J. & Janpathompong, S. (Revisions submitted). Integrating Water Sensitive Urban Design with Smart City Planning: Considerations of familiarity, connectivity, scaling, wellbeing, and resiliency in the TUNN Smart District Initiative, Thailand. *Journal of Landscape Architecture*.



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- Yang PP., AWK Law, S, Xu, STV Sim, H. Chan, D. Chitwatkulsiri, H.H. Loc, & K.N. Irvine. (Revisions submitted). Assessment of compound flooding through seamless linkage of coastal hydrodynamic and inland catchment models. *Journal of Hydro-environment Research*.
- Murphy, T., K. Phan, K.N. Irvine & D. Lean. (Revisions submitted). The role of micronutrients and toxic metals for the management of epidemics in Cambodia. *International Journal of Environmental Research and Public Health*.
- Ho, H.L., K.N. Irvine & L.H.C. Chua, (Under revision). Exploratory Assessment of rainfall-derived inflow and infiltration responses of multiple landuses under tropical climate: a case of Singapore. *Journal of Hydrology*.
- Yang, PP., L.H.C. Chua, K.N. Irvine, M.T. Nguyen, and E-W Low, (Submitted). Impacts of a floating photovoltaic system on temperature and water quality in a shallow tropical reservoir. *Limnology*.
- Irvine, K. N. , Suwanarit, A., Likitswat, F., Srilertchaipanij, H., Ingegno, M., Kaewlai, P., Boonkam, P., Tontisirin, N., Sahavacharin, A., Wongwatcharapaiboon, J., and Janpathompong, S. (Submitted). Smart City Thailand: Visioning and design to enhance sustainability, resiliency, and community wellbeing. *Journal of Asian Architecture and Building Engineering*.
- Irvine, K.N., M. Ashrafi, H.H. Loc, and L.H.C. Chua, (In preparation). Small scale spatio-temporal variability of rainfall in Singapore: Impact on runoff model results. *Journal of Water Management Modeling*.
- Irvine, K.N., Suwanarit, A., and Likitswat, F. (In preparation). A Smart City Index for Thailand: Balancing community wellbeing and ICT. *Development in Practice*.
- Irvine, K.N., T.P. Murphy, Pham, K., Teang, L., Kok, S., Chea, E., Sovann, S., Lok, L.M. (In preparation). Drinking water and drivers of change in peri-urban Phnom Penh. *Sustain. Water Resour. Manag.*
- Yang, P., Z.B. Zhang, H.L. Loc, H.Chan, A.W.K. Law, K.N. Irvine, V.S.T.Sim, X.Wu, F.Zhu, S.Xu, Y. Liang. (In preparation). Flood resilience for the city traffic network for emergency service. *Transportation Research Part D: Transport and Environment*.



PUBLICATIONS: CONFERENCE PROCEEDINGS

- Li, Y., H. Rahardjo, and K. Irvine. 2018. Seepage and deformation analyses in unsaturated soils using ANSYS. Proceedings of China-Europe Conference on Geotechnical Engineering (pp. 360-364). Springer, Cham.
- Ro, C., C. Sovann, D. Bun, C. Yim, T. Bun, S. Yim, and K.N. Irvine. 2020. The economic value of peri-urban wetland ecosystem services in Phnom Penh, Cambodia. IOP Conference Series: Earth and Environmental Science, International Conference of Science and Applied Geography, Depok, Indonesia: IOP.
- Teang, L., J. Wongwatcharapaiboon, K. Irvine, I. Jamieson, and D. Rinchumphu. 2021. Modelling the impact of water sensitive urban design on pluvial flood management in a tropical climate. 12th Built Environment Research Associates Conference, BERAC2021, (pp. 350-359). Bangkok: Thammasat University.
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