Assoc. Prof. Dr. Kasemsan Manomaiphiboon
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EDUCATION

2004 Ph.D. (Environmental Engineering), Georgia Institute of Technology, US
2003 M.Sc. (Industrial Engineering), Georgia Institute of Technology, US
1999 M.Eng. (Environmental Engineering), University of Cincinnati, US
1993 B.Eng. (Environmental Engineering), Chulalongkorn University, Thailand

RESEARCH INTEREST

- Air quality and climate in Thailand and Mekong subregion at urban and regional scales
- Extreme events and natural hazards related to climate and air pollution
- Data science application to environmental and energy problems
- Ambient energy potentials and associated factors

PUBLICATIONS

International Journals

1. Wang J., Huang J, Zhao B, Du Y, Huang L, Lai D, Su Q, Manomaiphiboon K, Li L (2024) Full–volatility reactive organic carbon emissions from volatile chemical products in mainland China. ACS ES&T Air, doi:10.1021/acsestair.4c00116.
2. Aman N, Panyametheekul S, Sudhibrabha S, Pawarmart I, Xian D, Gao L, Tian L, Manomaiphiboon K, Wang Y (2024) Estimating visibility and understanding factors influencing its variations at Bangkok airport using machine learning and a game theory–based approach. Environmental Science and Pollution Research, xx, xx, doi:10.1007/s11356–024–34548–4.
3. Phoo WW, Manomaiphiboon K, Jaroonrattanapak N, Yodcum J, Sarinnapakorn K, Bonnet S, Aman N, Junpen A, Devkota B, Wang Y, Wilasang C (2024) Fire activity and fire weather in a Lower Mekong subregion: Association, regional calibration, weather–adjusted trends, and policy implications. Natural Hazards, xx, xx, doi:10.1007/s11069–024–06743–6.
4. Wang Y, Ning M, Su Q, Wang L, Jiang S, Feng Y, Wu W, Tang Q, Hou S, Bian J, Huang L, Lu G, Manomaiphiboon K, Kaynak B, Zhang K, Chen H, Li L (2024) Designing regional joint prevention and control schemes of PM2.5 based on source apportionment of chemical transport model: A case study of a heavy pollution episode. Journal of Cleaner Production, 455, 142313; doi:10.1016/j.jclepro.2024.142313.
5. Aman N, Manomaiphiboon K, Xian D, Gao L, Tian L, Pala–En N, Wang Y, Wangyao K (2024) Spatiotemporal estimation of hourly PM2.5 using AOD derived from geostationary Fengyun–4A and machine learning models for Greater Bangkok. Air Quality, Atmosphere & Health, 17, 1519–1534; doi:10.1007/s11869–024–01524–3.
6. Yaluk EA, Wang Y, Jiang S, Huang L, Lu G, Zhu A, Bian J, Xue J, Du Y, Chen N, Manomaiphiboon K, Chen H, Zhang K, Li L (2023) Changes in first– and second–order sensitivities of ozone concentration to its precursors over the Yangtze River Delta region of China due to COVID–19 lockdown: Insights from CMAQ–HDDM modeling study. Atmospheric Environment, 309, 119931; doi:10.1016/j.atmosenv.2023.119931.

7. Aman N, Manomaiphiboon K, Pala–En N, Devkota B, Inerb M, Kokkaew E (2023) A study of urban haze and its association with cold surge and sea breeze for Greater Bangkok. International Journal of Environmental Research and Public Health, 20, 3482; doi:10.3390/ijerph20043482.
8. Wang Y, Jiang S, Huang L, Yaluk EA, Liu H, Liao J, Bian J, Lu G, Manomaiphiboon K, Zhang K, Chen H, Ooi CG, Chan A, Li L (2023) Differences between VOCs and NOx transport contributions, their impacts on O3, and implications for O3 pollution mitigation based on CMAQ simulation over the Yangtze River Delta, China. Science of the Total Environment, 872, 162118; doi:10.1016/j.scitotenv.2023.162118.
9. Li Q, Zhang K, Li R, Yang L, Yi Y, Liu Z, Zhang X, Feng J, Wang Q, Wang W, Huang L, Wang Y, Wang S, Chen H, Chan A, Latif M, Manomaiphiboon K, Yu JZ, Li L (2023) Underestimation of biomass burning contribution to PM2.5 due to its chemical degradation based on hourly measurements of organic tracers: A case study in the Yangtze River Delta (YRD) Region, China. Science of the Total Environment, 872, 162071; doi:10.1016/j.scitotenv.2023.162071.
10. Tong H, Wang Y, Tao S, Huang L, Jiang S, Bian J, Chen N, Manomaiphiboon K, Yin H, Huang C, Chen H, Zhang K, Li L (2023) Developed compositional source profile and estimated emissions of condensable particulate matter from coal–fired power plants: A case study of Yantai, China. Science of The Total Environment, 869, 161817; doi:10.1016/j.scitotenv.2023.161817.
11. Huang L, Zhu Y, Liu H, Wang Y, Allen DT, Ooi MCG, Manomaiphiboon K, Latif MT, Chan A, Li L (2023) Assessing the contribution of open crop straw burning to ground–level ozone and associated health impacts in China and the effectiveness of straw burning bans. Environment International, 171, 107710; doi:10.1016/j.envint.2022.107710.
12. Wang Y, Yaluk EA, Chen H, Jiang S, Huang L, Zhu A, Xiao S, Xue J, Lu G, Bian J, Manomaiphiboon K, Zhang K, Liu H, Tong H, Ooi MCG, Chan A, Li L (2022) The importance of NOx control for peak ozone mitigation based on a sensitivity study using CMAQ–HDDM–3D model during a typical episode over the Yangtze River Delta Region, China. Journal of Geophysical Research: Atmospheres, 127, e2022JD036555; doi:10.1029/2022JD036555.
13. Aman N, Manomaiphiboon K, Suwattiga P, Assareh N, Limpaseni W, Suwanathada P, Soonsin V, Wang Y (2022) Visibility, aerosol optical depth, low–visibility events in Bangkok during the dry season and associated local weather and synoptic patterns. Environmental Monitoring and Assessment, 194, 322; doi:10.1007/s10661–022–09880–2.
14. Devkota B, Manomaiphiboon K, Trinuruk P, Trang HT, Paton C (2021) Offshore Winds in the Gulf of Thailand: Climatology, wind energy potential, stochastic persistence, tropical cyclone influence, and teleconnection. Asia–Pacific Journal of Atmospheric Sciences, 58, 315–331.
15. Chea K, Manomaiphiboon K, Aman N, Thepa S, Junpen A, Devkota B (2021) Ambient thermal comfort analysis for four major cities in Thailand, Cambodia, and Laos: Variability, trend, factor attribution, and large–scale climatic influence. ScienceAsia, 47, 618–628.
16. Lu G, Yu E, Wang Y, Li H, Cheng D, Huang L, Liu Z, Manomaiphiboon K, Li L (2021) A novel hybrid machine learning method (OR–ELM–AR) Used in Forecast of PM2.5

concentrations and its forecast performance evaluation. Atmosphere, 12, 78; doi:10.3390/atmos12010078.
17. Wang Y, Li H, Feng J, Wang W, Liu Z, Huang L, Yaluk E, Lu G, Manomaiphiboon K, Gong Y, Traore D, Li L (2021) Spatial characteristics of PM2.5 Pollution among cities and policy implication in the northern part of the North China Plain. Atmosphere, 12, 77; doi:10.3390/atmos12010077.
18. Aman N, Manomaiphiboon K, Pala–En N, Kokkaew E, Boonyoo T, Pattaramunikul S, Devkota B, Chotamonsak C (2020) Evolution of urban haze in greater bangkok and association with local meteorological and synoptic characteristics during two recent haze episodes. International Journal of Environmental Research and Public Health, 17, 9499; doi:10.3390/ijerph17249499.
19. Kamma J, Manomaiphiboon K, Aman N, Thongkamdee T, Chuangchote S, Bonnet S (2020) Urban heat island analysis for Bangkok: multi–scale temporal variation, associated factors, directional dependence, and cool island condition. ScienceAsia, 46, 213–223.
20. Aman N, Manomaiphiboon K, Pengchai P, Suwanathada P, Srichawanae J, Assareh N (2019) Long–term observed visibility in Eastern Thailand: temporal variation, association with air pollutants and meteorological factors, and trends. Atmosphere 2019, 10, 122; doi:10.3390/atmos10030122.
21. Christidis N, Manomaiphiboon K, Ciavarella A, Stott PA (2018) The hot and dry April of 2016 in Thailand. [in "Explaining Extreme Events of 2016 from a Climate Perspective"]. Bulletin of the American Meteorological Society, 99 (1), S128–S132.
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technology. International Journal of Green Energy, 14, 528–539.
23. Assareh N, Prabamroong T, Manomaphiboon K, Theramongkol P, Leungsakul S, Mitrjit N, Rachiwong J (2016) Analysis of observed surface ozone in the dry season over Eastern Thailand during 1997–2012. Atmospheric Research, 178–179, 17–30.
24. Field RD, Spessa AC, Aziz NA, Camia A, Cantin A, Carr R, de Groot WJ, Dowdy AJ, Flannigan MD, Manomaiphiboon K, Pappenberger F, Tanpipat V, Wang X (2015) 1. Development of a global fire weather database. Natural Hazards and Earth System Sciences, 15, 1407–1423.
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27. Prabamroong T, Manomaiphiboon K, Limpaseni W, Sukhapan J, Bonnet S (2012) Ozone and its potential control strategy for Chon Buri city, Thailand. Journal of the Air and Waste Management Association, 62, 1411–1422.
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30. Octaviani M, Manomaiphiboon K (2011) Performance of regional climate model RegCM3 over Thailand. Climate Research, 47, 171–186.
31. Liao K–J, Tagaris E, Russell AG, Amar P, He S, Manomaiphiboon K, Woo J–H (2010) Cost analysis of impacts of climate change on regional air quality. Journal of the Air and Waste Management Association, 60, 193–203.
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33. Liao K–J, Tagaris E, Manomaiphiboon K, Wang C, Woo J–H, Amar P, He S, Russell AG (2009) Quantification of the impact of climate uncertainty on regional air quality. Atmospheric Chemistry and Physics, 9, 865–878.
34. Tagaris E, Liao K–J, Manomaiphiboon K, He S, Woo J–H, Amar P, Russell AG (2008) The role of climate and emission changes in future air quality over southern Canada and northern Mexico. Atmospheric Chemistry and Physics, 8, 3973–3983.
35. Woo J–H, He S, Amar P, Tagaris E, Manomaiphiboon K, Liao KJ, Russell AG (2008) Development of North American emission inventories for air quality modeling under climate change. Journal of the Air and Waste Management Association, 58, 1483–1494.
36. Pham TBT, Manomaiphiboon K, Vongmahadlek C (2008) Development of an inventory and temporal allocation profiles of emissions from power plants and industrial facilities of Thailand. Science of the Total Environment, 397, 103–118.
37. Liao K–J, Tagaris E, Napelenok SL, Manomaiphiboon K, Woo J–H, Amar P, He S, Russell AG (2008) Current and future linked responses of ozone and PM2.5 to emissions controls. Environmental Science and Technology, 42, 4670–4675.
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40. Liao K–J, Tagaris E, Manomaiphiboon K, Napelenok SL, Woo J–H, He S, Amar P, Russell AG (2007) Sensitivities of ozone and fine particulate matter formation to emissions under the impact of potential future climate change. Environmental Science and Technology, 41, 8355–8361.
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particulate matter concentrations over the United States. Journal of Geophysical Research: Atmosphere, 112, D14312, doi:10.1029/2006JD008262.
42. Manomaiphiboon K, Russell AG (2004) Effects of uncertainties in parameters of a Lagrangian particle model on mean ground–level concentrations under stable conditions. Atmospheric Environment, 38, 5529–5543.
43. Manomaiphiboon K, Russell AG (2003) Formulation of joint probability density functions of velocity for turbulent flows: an alternative approach. Atmospheric Environment, 37, 4917–4925.
44. Manomaiphiboon K, Russell AG (2003) Evaluation of some proposed forms of Lagrangian velocity correlation coefficient. International Journal of Heat and Fluid Flow, 24, 709–712.

National Journals

1. Chankasem P, Manomaiphiboon K, Devkota B, Trang HT, Nantawong N, Chotamonsak C, Junpen A (2021) Satellite precipitation characteristics and effects of land cover change in Greater Bangkok. Journal of Sustainable Energy and Environment, 12, 77–85.
2. Nantawong N, Aman N, Manomaiphiboon K, Chankasem P, Surapipith V, Phongphiphat A (2021) Assessment of satellite aerosol optical depth over Greater Bangkok during 2003–2018. Journal of Sustainable Energy and Environment, 12, 65–76.
3. Trang H–T, Manomaiphiboon K, Singhrattna N, Assareh N (2019) Evaluation of multiple sub–daily satellite precipitation products for Thailand. Journal of Sustainable Energy and Environment, 11, 81–91.
4. Shokoohinia P, Assareh N, Manomaiphiboon K, Chusai C, Kerkkaiwan S, Unapumnuk K, Aman N (2020) Impacts of Transboundary Smoke Haze from Biomass Burning in Lower Southeast Asia on Air Quality in Southern Thailand. Journal of Sustainable Energy and Environment, 10, 1–10.
5. Octaviani M, Manomaiphiboon K, Prabamroong T (2015) Wind shear coefficient at 23 wind monitoring towers in Thailand. Journal of Sustainable Energy & Environment, 6, 61–66.
6. Paton C, Manomaiphiboon K (2013) A metropolitan wind resource assessment for Bangkok, Thailand part 1: wind resource mapping. Journal of Sustainable Energy & Environment, 4, 69–76.
7. Paton C, Manomaiphiboon K (2013) A metropolitan wind resource assessment for Bangkok, Thailand part 2: GIS analysis and technical wind resource potential. Journal of Sustainable Energy & Environment, 4, 89–93.
8. Pham TBT, Manomaiphiboon K, Vongmahadlek C (2007) Updated emission estimates of ozone precursors from energy consumption by power plants and industrial facilities in the central and eastern regions of Thailand. Asian Journal on Energy and Environment, 8, 483–489.

Book Chapters

1. Tanpipat V, Manomaiphiboon K, Field RD, deGroot WJ, Nhuchaiya P, Jaroonrattanapak N, Buaniam C, Yodcum J (2023) An operational fire danger rating system for Thailand and Lower Mekong Region: Development, utilization, and experiences. Chapter 34 (pages 575–588), In Vegetation Fires and Pollution in Asia (Editors: Vadrevu, KP, Ohara T, Justice, C), Springer, 640 pages, ISBN 978–3–031–29915–5.

Books

1. Kasemsan Manomaiphiboon, Titaporn Supasri (2022) Air Quality and Climate Change. [in "A Knowledge Series of Air Pollution Prevention and Solutions", Wongpun Limpaseni, Sirima Panyametheekul, Trakarn Prapaspongsa, Panwadee Suwattiga (Eds.)], Center of Clean Air Solutions (CCAS), Environmental Engineering Association of Thailand (EEAT), supported by Thai Health Promotion Foundation, 36 pages, ISBN 978–616–94130–1–1. (in Thai)
2. Weerasak Krueathep, Trakoon Meechai, Veerachai Tanpipat, Chamawong Suriyachan, Rattana Somrongthong, Kasemsan Manomaiphiboon, Darin Kamphaengphet, Chonnupong Panpuangsri, Unchalee Chavang (2017) Public–Service Standards of Local Administrative Organization: Indicator Development, Empirical Data, and Policy Implication. Chulalongkorn University Press, 244 pages, ISBN 978–616–407–269–5. (in Thai)

Technical Reports

1. Manomaiphiboon K, Aman N, Inerb M, Devkota B, Kokkaew E (2023) Air Pollution Assessment Using Satellite Data: A Case Study of Greater Bangkok. Final report, conducted by the Joint Graduate School of Energy and Environment, funded by Asia Pacific Space Cooperation Organization (China), locally administered by Office of the National Digital Economy and Society Commission.
2. Manomaiphiboon K, Pala–En N, Boonyoo T, Pattaramunikul S, Chotamonsak C, Aman N, Inerb M, Devkota B, Assareh N, Kokkaew E (2022) A Study of the Potential of Short–Term Measures on Energy Use in Transportation Sector to Mitigate Severe Fine Particulate Matter Situation for Bangkok Metropolitan. Final report, conducted by the Joint Graduate School of Energy and Environment, funded by Energy Conservation and Promotion Fund (ENCONFUND), Ministry of Energy. (in Thai)
3. Manomaiphiboon K, Boonya–Aroonnet S, Sarinnapakorn K, Aman N, Assareh N, Torsri K, Devkota B, Inerb M, Sawangwattanaphaibun R, Jinvong A (2021) Precipitation Modeling in Greater Bangkok with Impact of Urbanized Land Cover and Air Pollution Using WRF–Chem–UCM–GBK. Final report, jointly conducted by Hydro–Informatics Institute (Public Organization) and the Joint Graduate School of Energy and Environment, funded by Hydro–Informatics Institute (Public Organization). (with Thai Abstract)
4. Manomaiphiboon K, Boonya–Aroonnet S, Sarinnapakorn K, Aman N, Trang HT, Kokkaew E, Sawangwattanaphaibun R, Jinvong A, Torsri K, Assareh N (2020) Integration of Advanced Input Data for Enhanced Urban & Regional Modeling. Final report, jointly conducted by Hydro–Informatics Institute (Public Organization) and the Joint Graduate School of Energy and Environment, funded by Hydro–Informatics Institute (Public Organization). (with Thai abstract)
5. Manomaiphiboon K, Srivichai M, Saphaokham S, Ketphetch S, Yamyuan P, Assareh N (2018) A Study of Drought and Influences of Interaction between Land Surface and Atmosphere and Land Cover Change on Water Cycle: A Case Study of Upper Thailand. Final report, conducted by The Joint Graduate School of Energy and Environment, funded by Agricultural Research Development Agency (Public Organization) and National Research Council of Thailand. (in Thai with English abstract)

6. Faculty of Political Science, Chulalongkorn University (2017) Development of Standard Indicators and Minimum Targets for Public Services by Local Administrative Organizations. Final Report, submitted to Office of the Decentralization to the Local Government Organization Committee (ODLOC), Office of the Permanent Secretary, Prime Minister Office, (including 8 sub–reports which are Data and Analysis of Standard Indicators for Public Services by Local Administrative Organizations for the following areas: Infrastructures; Urban Planning; Public Health, Social Services, and Quality of Life; Community Organization and Peace and Safety Maintenance; Promotion of Economy, Community, Career, Tourism, and Investment; Natural Resources and Environmental Management, and Promotion of Arts, Culture, Folk Wisdom, and Archaeological Sites), Research Team: Krueathep W, Meechai T, Tanpipat V, Suriyachan C, Somrongthong R, Manomaiphiboon K, Kamphaengphet D, Panpuangsri C, Chavang U (in Thai)
7. Manomaiphiboon K, Boonya–Aroonnet S, Sarinnapakorn K, Chaowiwat W, Assareh N, Aman N, Kamma J, Trang HT, Sawangwattanaphaibun R, Jinvong A (2018) Development of a Numerical Atmospheric Moisture Tracking System to Identify Potential Sources and Its Application to Enhance Rainfall Analysis for Thailand. Final report, jointly conducted by Hydro and Agro Informatics Institute (P:ublic Organization) and the Joint Graduate School of Energy and Environment, funded by Hydro and Agro Informatics Institute (Public Organization). (with Thai abstract)
8. Manomaiphiboon K, Boonya–Aroonnet S, Sarinnapakorn K, Assareh N, Aman N, Tantianuparp P, Thodsan T, Pratumthong A (2017) Improvement of Input Spatial Information to Support Meteorological Modeling. Final report, jointly conducted by Hydro and Agro Informatics Institute (Public Organization) and the Joint Graduate School of Energy and Environment, funded by Hydro and Agro Informatics Institute (Public Organization). (with Thai abstract)
9. Manomaiphiboon K, Tanpipat V, Nhuchaiya P, Jaroonrattanapak N, Buaniam C (2017) Development of a Regional Fire Danger Forecast System for Upper Thailand and Lower Mekong River Basin Areas in Support of Forest Fire Management and Control. Final report, conducted by The Joint Graduate School of Energy and Environment, funded by Biodiversity–Based Economy Development Office (Public Organization) and National Research Council of Thailand. (in Thai with English abstract)
10. Manomaiphiboon K, Assareh N, Prabamroong T, Aman N (2016) Development of a Short–Term Wind Speed Forecasting System: A Case Study of Lamtakong Reservoir Area. Final report, The Joint Graduate School of Energy and Environment, funded by the Electricity Generating Authority of Thailand. (in Thai with English abstract)
11. Manomaiphiboon K, Paton C, and Assareh N (2014) Analysis and Comparison of Overall Wind Resource Potentials from Important Wind Maps of Thailand. Final report, the Joint Graduate School of Energy and Environment, funded by National Science and Technology Development Agency and Electricity Generating Authority of Thailand. (with Thai abstract)
12. Manomaiphiboon K, Assareh N (2014) A Climatological Investigation of Heavy Rainfall over Thailand. Final report, The Joint Graduate School of Energy and Environment, funded by Asahi Glass Foundation (Japan).
13. Manomaiphiboon K, Octaviani M, Prabamroon T (2012) Study of Potential Climate Change for Thailand Using Regional Climate Model RegCM3 under Multiple Future

Scenarios. Final report, The Joint Graduate School of Energy and Environment, funded by Postgraduate Education and Research Development Office. (with Thai abstract)
14. Towprayoon S, Manomaiphiboon K, Octaviani M, Torsri K (2011) Study of Potential Regional Climate Change for Thailand Using RegCM3 Model. Final report, The Joint Graduate School of Energy and Environment, funded by Thailand Research Fund. (in Thai with English abstract)
15. Manomaiphiboon K, Prabamroong A, Chanaprasert W, Rajpreeja N, Phan TT (2010) Dual Database System of Wind Resource for Thailand. Final report of Project: Wind Resource Assessment Using Advanced Atmospheric Modeling and GIS Analysis. Final report, The Joint Graduate School of Energy and Environment, funded by Thailand Research Fund. (in Thai with English abstract)
16. Manomaiphiboon K, Surapipith V, Wiwatwattana N, Pengchai P, Thepanondh S, Onchang R, Chusai C, Octaviani M (2009) Development of a Prototype of Smoke–Haze Forecast Modeling System for Upper Northern Thailand and Its Application to Drought Fire Seasons. Final report, The Joint Graduate School of Energy and Environment, funded by National Research Council of Thailand. (in Thai with English abstract)
17. Pollution Control Department (1994) Emission Database of Vehicles and Industry in Bangkok Metropolitan Region (for the Year 1992). Final report, prepared by Department of Environmental Engineering, Chulalongkorn University. [Researchers: Limpaseni W (PI), Panich S, Reudecha W, Phieu–Nual K, Suwattiga P, Mahatnirunkul V, Poreeyanond T, Phusawang J, Manomaiphiboon K, Yachusri C.]