

PANTANA TOR-NGERN

Associate Professor

Department of Environment Science, Faculty of Science, Chulalongkorn University

254 Payathai Road, Wang Mai, Pathumwan, Bangkok 10330 Thailand

pantana.t@chula.ac.th | <https://forestfluxgroup.wordpress.com>

Education

Duke University. Ph.D. in Environmental Science (2015)

Duke University. M.S. in Electrical and Computer Engineering (2010)

Duke University. B.S.E. in Electrical Engineering and B.S. Physics (secondary) (2009)

Professional Positions

Current	Associate Professor (2019 - present), Department of Environmental Science, Chulalongkorn University	Bangkok, Thailand
2017 - 2019	Assistant Professor, Department of Environmental Science, Chulalongkorn University	Bangkok, Thailand
2015 – 2017	Lecturer, Department of Environmental Science, Chulalongkorn University	Bangkok, Thailand
2016 – 2017	Visiting Researcher, Department of Forest Ecology and Management, Swedish University of Agricultural Sciences	Umeå, Sweden
2012 – 2015	Visiting Research Assistant, Department of Forest Ecology and Management, Swedish University of Agricultural Sciences	Umeå, Sweden
2011 – 2015	Research Assistant, Nicholas School of the Environment, Duke University	Durham, USA
2008 – 2010	Research Assistant, Department of Electrical and Computer Engineering, Duke University	Durham, USA

Areas of Research

Hydrological and carbon cycling in forest ecosystems; Ecophysiological responses of trees and forests to environmental changes; Sap flow measurement; Canopy photosynthesis and ecosystem modelling; Impacts of climate change and climate variability on hydrological and carbon cycles in forest ecosystems.

Honors and Awards

2021	Best Mid-career Researcher Award in Biological Science, Faculty of Science, Chulalongkorn University
2018	Best New Faculty Researcher Award in Biological Science, Faculty of Science, Chulalongkorn University
2004 – 2015	Royal Thai Scholarship, Royal Thai Government
2009 – 2010	John T Chambers Fellowship, Fitzpatrick Institute for Photonics, Duke University

Grant Support

2018 – 2021	National Natural Science Foundation of China (NSFC) and Thailand Research Fund (TRF) Joint Research on Climate Change & Climate Variability in Monsoon Asia
2018 – 2021	Southeast Asia – Europe Joint Funding Scheme for Research and Innovation
2019 – 2020	Special Task Force for Activating Research (STAR), Environment, Health and Social Data Analytics Research Group, Chulalongkorn University
2018 – 2019	Grant for Research, Ratchadapiseksomphot Endowment Fund, Chulalongkorn University
2017 – 2019	Thailand Research Fund (New Faculty Scholarship)
2017 – 2018	Grant for Research, Ratchadapiseksomphot Endowment Fund, Chulalongkorn University
2016 – 2018	Development of New Faculty Staff, Ratchadapiseksomphot Endowment Fund, Chulalongkorn University (Fast Track)
2015 – 2016	Development of New Faculty Staff, Ratchadapiseksomphot Endowment Fund, Chulalongkorn University

Publications

In Thai

Phromjuang, N., N. Leksungnoen, P. Tor-ngern. May 2019. Diurnal stomatal conductance of tree species responding to urban environments at the Chulalongkorn University Centenary Park. Thai Journal of Science and Technology 8(4): 386-397.

พันธนา ตอเงิน. 2560. ป่าไม้กับแบบจำลองสภาพภูมิอากาศ. วารสารธรรมชาติและสิ่งแวดล้อม 6 (ตุลาคม – ธันวาคม): 44 – 51.

พันธนา ตอเงิน. 2559. ป่าไม้ให้ชีวิต...เมื่อโลกถึงขั้นวิกฤต...เราควรต่อชีวิตให้ป่าไม้ (ตอน 2). วารสารวิทยาศาสตร์ 70 (พฤษภาคม – มิถุนายน): 88 - 89.

พันธนา ตอเงิน. 2559. ป่าไม้ให้ชีวิต...เมื่อโลกถึงขั้นวิกฤต...เราควรต่อชีวิตให้ป่าไม้ (ตอน 1). วารสารวิทยาศาสตร์ 70 (มีนาคม - เมษายน): 84 - 86.

พันธนา ตอเงิน. 2559. กลไกของปากใบและบทบาทในการศึกษาผลกระทบทางสิ่งแวดล้อมต่อระบบนิเวศ. วารสารสิ่งแวดล้อม 20 (มกราคม - มีนาคม): 45 - 53.

In English

Research Articles

2021

Yaemphum, S., Unawong, W., Tor-ngern, P.* (*under review*) Sapwood area of 14 common tree species in a successional tropical forest in Thailand. Forestry: An International Journal of Forest Research.

Rodtassana, C., Unawong, W., Yaemphum, S., Chanthorn, W., Chawchai, S., Nathalang, A., Brockelman, W., Tor-ngern, P.* (*under review*) Responses of soil respiration to various factors were mediated by forest stages and season in a Southeast Asian forest. Ecology and Evolution.

Ampornpitak, R., Khobpee, P., Unawong, W., Leksungnoen, N., Tor-ngern, P.* (*under review*) An urban tree (*Tabebuia argentea*) exhibits higher sensitivity to environmental conditions than an urban palm (*Ptychosperma macarthurii*) growing in the same roof garden: an implication for sustainable urban water use. Urban Forestry & Urban Greening.

Poyatos R., et al. June 2021. Global transpiration data from sap flow measurements: the SAPFLUXNET database. Earth System Science Data 13: 2607-2649.

Gutierrez Lopez, J., Tor-ngern, P., Oren, R., Kozii, N., Laudon, H., Hasselquist, N.J. March 2021. How tree species, tree size, and topographical location influenced tree transpiration in northern boreal forests during the historic 2018 drought. Global Change Biology doi: 10.1111/gcb.15601

Tor-ngern, P., Chart-asa, C., Chanthorn, W., Rodtassana, C., Yampum, S., Unawong, W., Nathalang, A., Brockelman, W., Srinoppawan, K., Chen, Y., Hasselquist, N.J. March 2021. Variation of leaf-level gas exchange rates and leaf functional traits of dominant trees across three successional stages in a Southeast Asian tropical forest. Forest Ecology and Management 489: 119101

Andriyas, T., Leksungnoen, N., Tor-ngern, P. January 2021. Comparison of water-use characteristics of tropical tree saplings with implications for forest restoration. Scientific Reports 11(1745) <https://doi.org/10.1038/s41598-021-81334-0>

Tarvainen, L., Wallin, G., Linder, S., Näsholm, T., Oren, R., Ottoson-Löfvenius, M., Rantfors, M., Tor-ngern, P., Marshall, J.D. January 2021. Limited vertical CO₂ transport in stems of mature boreal *Pinus sylvestris* trees. Tree Physiology 41(1): 63-75. <https://doi.org/10.1093/treephys/tpaa113>

2020

Vernay, A., Tian, X., Chi, J., Linder, S., Mäkelä, A., Oren, R., Peichl, M., Stangl, Z.R., Tor-ngern, P., Marshall, J.D.

June 2020. Estimating canopy gross primary production by combining phloem stable isotopes with canopy and mesophyll conductances. Plant, Cell & Environment 43(9): 2124-2142. <https://doi.org/10.1111/pce.13835>

Kozii, N., Haahti, K., Tor-ngern, P., Chi, J., Hasselquist E.M., Laudon, H., Launiainen, S., Oren, R., Peichl, M., Wallerman, J., Hasselquist, N.J. June 2020. Partitioning growing season water balance within a forested boreal catchment using sap flux, eddy covariance, and a process-based model. Hydrology and Earth System Sciences 24: 2999-3014.

Tor-ngern, P., N. Leksungnoen. April 2020. Investigating carbon dioxide absorption by urban trees in a new park of Bangkok, Thailand. BMC Ecology 20(20) <https://doi.org/10.1186/s12898-020-00289-4>

2019

Sae-Sue, T., P. Tor-ngern, P. Budsaratagoon. December 2019. Investigating the impacts of rainfall and temperature anomalies on Thailand's GDP growth. International Journal of Energy, Environment, and Economics 25(4): 299-315.

2018

Tor-ngern, P., L. Puangchit. December 2018. Effects of varying soil and atmospheric water deficit on water use characteristics of tropical street tree species. Urban Forestry & Urban Greening 36: 76-83.

Ward, E.J., R. Oren, H-S. Kim, D. Kim, P. Tor-ngern, B.E. Ewers, H.R. McCarthy, A.C. Oishi, D.E. Pataki, S. Palmroth, N.G. Phillips, K.V.R. Schäfer. October 2018. Evapotranspiration and water yield of a pine-broadleaf forest are not altered by long-term atmospheric [CO₂] enrichment under native or enhanced soil fertility. Global Change Biology doi: 10.1111/gcb.14363.

Tor-ngern, P., R. Oren, S. Palmroth, K. Novick, A. Oishi, S. Linder, M. Ottoson-Löfvenius, T. Näsholm. September 2018. Water balance of pine forests: synthesis of new and published results. Agricultural and Forest Meteorology 259: 107-117.

Tarvainen, L., G. Wallin, H. Lim, S. Linder, R. Oren, M. Ottoson-Löfvenius, M. Rantfors, P. Tor-ngern, J. Marshall. April 2018. Photosynthetic refixation varies along the stem and reduces CO₂ efflux in mature boreal *Pinus sylvestris* trees. Tree Physiology 25: 1- 12. doi:10.1093/treephys/tpx130.

Tor-ngern, P., W. Unawong, T. Tancharoenlarp, P. Aunroje, S. Panha. February 2018. Comparison of water-use characteristics of landscape tree (*Tabebuia argentea*) and palm (*Ptychosperma macarthurii*) species in a tropical roof garden with implications for urban water management. Urban Ecosystems 21: 479-487, <https://doi.org/10.1007/s11252-018-0735-0>.

Tor-ngern, P., V. Jan-uthai, N. Leksungnoen. January 2018. Quick recovery of leaf photosynthesis and fruit quality from soil water deficit of *Citrus aurantiifolia* growing in a city. EnvironmentAsia 11(1): 87 – 99.

2017

Tor-ngern, P. February 2017. Impacts of artificial soil drought on aboveground biomass of some Bangkok street tree species: Comparisons between irrigated and non-irrigated potted trees. Naresuan University Journal: Science and Technology 25(1): 67 - 74.

Tor-ngern, P., R. Oren, A.C. Oishi, J.M. Uebelherr, S. Palmroth, L. Tarvainen, M. Ottoson-Löfvenius, S. Linder, J-C. Domec, T. Näsholm. January 2017. Ecophysiological variation of transpiration of pine forests: synthesis of new and published results. Ecological Applications 27(1): 118-133.

2016

Tor-ngern, P., S. Panha. September 2016. Responses of water use to atmospheric demand in three common street tree species in Bangkok, Thailand. Environment and Natural Resources Journal 14(2): 24 - 29.

Tor-ngern, P., S. Panha. March 2016. Species-specific responses of water use by urban trees to artificial soil drought: Results from a small-scaled study. Applied Environmental Research 38(1): 53 - 60.

2015

Henriksson, N., L. Tarvainen, H. Lim, P. Tor-ngern, S. Palmroth, R. Oren, J. Marshall, T. Näsholm. October 2015. Stem compression reversibly reduces phloem transport in *Pinus sylvestris* trees. Tree Physiology 35: 1075 - 1085. doi:10.1093/treephys/tpv078.

Lim, H., R. Oren, S. Palmroth, P. Tor-ngern, T. Mörling, T. Näsholm, T. Lundmark, H-S. Helmisaari, J. Leppälammikujansuu, S. Linder. July 2015. Inter-annual variability of precipitation constrains the production response of boreal *Pinus sylvestris* to nitrogen fertilization. Forest Ecology and Management 348: 31 - 45.

Tor-ngern, P., R. Oren, E.J. Ward, S. Palmroth, H.R. McCarthy, J-C. Domec. January 2015. Increases in atmospheric CO₂ have little influence on transpiration of a temperate forest canopy. New Phytologist 205(2): 518 – 525.

2010

Senlik, O., L. Tang, P. Tor-ngern, T. Yoshie. November 2010. Optical microcavities clad by low-absorption electrode media. IEEE Photonics Journal 2(5): 794 - 801.

Conference Abstracts

Tor-ngern, P. and N. Leksungnoen. Investigating carbon dioxide absorption rates by urban trees in a new park of Bangkok, Thailand. 8th International Conference on Social Science: Paris 2019, Paris, France, 27 – 28 December 2019.

Tor-ngern, P. and L. Puangchit,. Variable effects of water deficit on water-use characteristics and below-crown temperature changes of street trees: A study of potted trees on a balcony in Bangkok, Thailand. The International Urban Forestry Congress, Vancouver, Canada, 30 September – 3 October 2018.

Yottiam, A., P. Tor-ngern, S. Srithongouthai. Spatial heterogeneity of heavy metals and risk assessments in the

Mae Klong river estuarine ecosystem. 4th EnvironmentAsia International Conference on Practical Global Policy and Environmental Dynamics, Bangkok, Thailand, 21-23 June 2017.

Tang, L., S.M. Drezdson, P. Tor-ngern, T. Yoshie. Single-mode waveguide optical isolation based on direction-dependent mode cut-off. 28th Progress in Electromagnetics Research Symposium, Cambridge, USA, 5-8 July 2010.

Presentations

Tor-ngern, P. and N. Leksungnoen. Investigating carbon dioxide absorption rates by urban trees in a new park of Bangkok, Thailand (Poster). 8th International Conference on Social Science: Paris 2019, Paris, France, 27 – 28 December 2019.

Tor-ngern, P. Linking sap flow to canopy fluxes. International Conference on Biodiversity 2019, Bangkok, Thailand. 22-24 May 2019 (invited talk).

Tor-ngern, P. Forest Fluxes and Climate Change. 1st Sino-Thailand joint workshop of “Historical Climate Change on the Maritime Silk Road”, Bangkok, Thailand, 27 November 2018 (invited talk).

Tor-ngern, P. and L Puangchit. Variable effects of water deficit on water-use characteristics and below-crown temperature changes of street trees: A study of potted trees on a balcony in Bangkok, Thailand (Poster). The International Urban Forestry Congress, Vancouver, Canada, 30 September – 3 October 2018.

Tor-ngern, P. Linking sap flow to canopy fluxes. The 5th ThaiFlux Meeting Series, University of Phayao, Thailand. May 4, 2018 (invited talk).

Tor-ngern, P. Carbon and Water Fluxes in Pine Forests: A Canopy-Scale Perspective. Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Yunnan, China. July 19, 2017 (invited talk).

Tor-ngern, P. et al. Stomatal closure imposed by slow physical acclimation of forest canopies to atmospheric CO₂ (Poster). American Geophysical Union Falls Meeting, San Francisco, CA USA. December 2013.

Academic Workshop

The 5th China-Thailand Joint Conference on Climate Change in Chiang Mai, Thailand. 27 – 29 November 2017 (*Invited*).

Experimental and Modeling Approaches to Understanding the Future of Tropical Rain Forests in Asia. Forest Ecosystem Science Workshop at the Asian School of the Environment, Nanyang Technological University, Singapore. 14-20 November 2016 (*Invited*).

Regional Workshop on Incorporating Mangroves into National Greenhouse Gas (GHG) Inventory in Siem Reap, Cambodia. 21-23 March 2016 (*Invited*).

Professional Activities

Peer Reviewer for Academic Journals

Agricultural and Forest Meteorology; Applied Environmental Research; Ecohydrology; Ecosphere; Forest Ecology and Management; Journal of Environmental Management; Journal of Horticultural Science and Research; Science of The Total Environment; Trees; Songklanakarin Journal of Social Sciences and Humanities; Thai Journal of Forestry; Walailak Journal of Science and Technology