THANH-NOI PHAN, PhD

Ecosystem Dynamics | Biodiversity Change | Ecological Data Integration | Remote Sensing

Munich, Germany Phan.Noi@lmu.de Thanh-Noi Phan https://thanhnoiphan.github.io

RESEARCH INTERESTS

My research aims to understand how biodiversity and ecosystems respond to interacting global change drivers across spatial and temporal scales. I am particularly interested in the combined effects of land-use change, climate variability, and disturbance on ecological dynamics and biodiversity patterns across heterogeneous landscapes.

I combine ecological field observations, large-scale environmental datasets, Earth Observation data, and quantitative analyses to better understand biodiversity and ecosystem responses to global change.

RESEARCH PROJECTS

***MoreStep* – Mobility at risk: Sustaining the Mongolian Steppe Ecosystem (2019 – 2025)** | Website

An international and interdisciplinary research project funded by the German Federal Ministry of Education and Research, investigating ecosystem responses, vegetation dynamics, and ecological resilience under climate variability, disturbance, and land-use change in semi-arid grasslands.

The project integrated ecological field observations, spatial environmental information, Earth observation data, and socio-environmental knowledge to investigate cross-scale ecological processes and ecosystem dynamics across heterogeneous landscapes.

My contributions focused on analysing how grazing, disturbance, and climate variability influence vegetation dynamics and ecosystem condition across Mongolian grasslands using ecological field observations and Earth Observation data. I collaborated closely with botanists and ecologists during field campaigns and data interpretation, supporting the development of ecologically interpretable indicators related to ecosystem condition, disturbance, and environmental change. This work contributed to understanding biodiversity and vegetation responses to grazing, disturbance, and climate variability across heterogeneous grassland ecosystems.

EDUCATION

Nov 2013 – Nov 2018	**PhD in Geography** (magna cum laude), Faculty of Geoscience and Geography, **University of Göttingen, Germany** Research topic: Air surface temperature estimation using MODIS land surface temperature data in northwest Vietnam Supervisor: Prof. Dr. Martin Kappas
Aug 2010 – Jun 2012	**MSc in Natural Resources Management**, School of the Environment, Resources & Development, **Asian Institute of Technology, Thailand** Thesis title: Detecting Land Use and Land Cover Change using Remote Sensing and GIS: Case Study of Tam Nong District, Phu Tho Province, Vietnam
Sep 2002 – Jul 2007	**BSc in Geodesy** (Land Surveying Engineering), **Hanoi University of Mining and Geology, Vietnam**

TECHNICAL & RESEARCH EXPERTISE

Ecological & Environmental Analysis

- Ecological and environmental data integration
- Cross-scale ecological analysis
- Biodiversity and ecosystem monitoring
- Climate and land-use change analyses

Quantitative & Spatial Methods

- Machine learning for environmental applications
- Reproducible environmental workflows
- GIS and spatial analysis
- Earth Observation data processing
- Land-cover mapping and classification

Field & Collaborative Research

- Field campaign coordination and ecological sampling
- Interdisciplinary collaboration
- Ecological interpretation across environmental gradients

Programming & Tools

- R, Python, Google Earth Engine
- ArcGIS, QGIS, ENVI
- Git/GitHub

RESEARCH EXPERIENCE

Jun 2019 – Dec 2025 | Postdoctoral Researcher | Ludwig-Maximilians-Universität München

- Postdoctoral researcher in the interdisciplinary MoreStep project investigating ecosystem dynamics and environmental change in Mongolian grasslands.
- Developed and harmonized ecological, spatial, and Earth observation datasets for cross-scale environmental analyses.
- Collaborated with botanists and ecologists during repeated field campaigns in Mongolian grasslands, contributing to vegetation surveys, ecological interpretation, and the integration of field observations with spatial environmental analyses.

Nov 2018 – May 2019 | Associate Researcher | Georg-August-Universität Göttingen

- Processed and analyzed environmental and spatial datasets and contributed to peer-reviewed publications.
- Supported the development of research proposals and study designs, including data compilation and methodological input.

Mar 2008 – Oct 2013 | Lecturer and Researcher | Vietnam National University of Agriculture

- Primary responsibilities included teaching and student supervision within land management, soil science, and land use planning programmes.
- Participated in applied research projects related to land management, spatial analysis, and agricultural systems.
- Coordinated field campaigns involving environmental measurements, spatial data collection, and socio-economic surveys in collaboration with local authorities.

TEACHING EXPERIENCE

Full-time Lecturer – Vietnam National University of Agriculture (VNUA)
Hanoi, Vietnam | March 2008 – October 2013

I was fully responsible for both theoretical instruction and practical sessions of three undergraduate courses, delivered across the Land Management, Land Use Planning, and Soil Science programmes. My responsibilities also included organizing and supervising field excursions, providing hands-on training in data acquisition and spatial analysis, and supervising more than 15 Bachelor's theses.

Courses taught:

- Geodesy for Land Management (Basic & Advanced)
- Photogrammetry, Remote Sensing, and GIS Applications
- Global Positioning System (GPS)

Instructor – Ludwig-Maximilians-Universität München (LMU Munich)
Munich, Germany | October 2024

- Designed and delivered Introduction to Google Earth Engine for Big Data Analysis, a practice-oriented course for Bachelor's, Master's, and PhD students.
- Provided essential resources and guided exercises enabling students to apply GEE in environmental and geospatial research.

SCHOLARSHIPS & AWARDS

- **Travel Grant**, LMU Munich Mentoring Program (12/2024)
  I received this award to attend and present at the 2024 American Geophysical Union (AGU) Fall Meeting in Washington, D.C., the United States.
- **Family-Oriented Finishing Grant,** GAUSS – University of Göttingen, (11/2017 – 04/2018).
  This grant offers stipends for PhD students who have families and demonstrate strong research results.
- **Scholarship for PhD program at the University of Göttingen, Germany** (11/2013 – 10/2017).
  Scholarship from the Government of Vietnam.
- **Scholarship from Ford Foundation** (08/2010 – 06/2012)
  Scholarship for Master Degree at Asian Institute of Technology (AIT), Bangkok, Thailand.
- **Outstanding Student Scholarship** (05/2005)
  This scholarship, provided by The Aerial Photo - Topography Company and the Military Map Department of Vietnam, is awarded to the top 5 students at Hanoi University of Mining and Geology.
- **Academic Excellence Scholarships**, Hanoi University of Mining and Geology (2002 – 2007)
  The Hanoi University of Mining and Geology awards scholarships to excellent students during the academic year.
- **Postdoctoral Fellowship Offer**, Aalto University, Finland (05/2019)
  I was offered a two-year postdoctoral research position funded by Aalto University through a competitive grant application process. I declined the offer to accept a position at LMU Munich.

PUBLICATIONS

Google Scholar | ResearchGate | Scopus | Web of Science

I have published 17 papers in peer-reviewed journals, including eight as first author. In addition, one manuscript has been accepted in Applied Vegetation Science, two are currently under review, and several others are in preparation. My publications have received more than 3,200 citations, with an h-index of 13 (Google Scholar, May 2026). I am the first and corresponding author of two highly cited papers published in 2018 and 2020.

My recent research has focused on understanding biodiversity and ecosystem responses to environmental change across spatial scales through the integration of ecological observations, Earth Observation data, spatial analyses, and large environmental datasets.

Peer-Reviewed Journals (published)

[17]. Oyundelger, K., Jäschke, Y., Gonchigsumlaa, G., Batjav, B., Damdindorj, S., Munkhzul, O., **Phan, T.-N**., Drees, L., Kasymov, U., Lehnert, L., Ring, I., Müller, T., Ritz, C. M., Mehring, M., & Wesche, K. (2026). Pasture condition in the Mongolian steppe: Cross-validating traditional ecological knowledge and field-based ecological surveys. Biological Conservation, 313, 111587. https://doi.org/10.1016/j.biocon.2025.111587

[16]. Ji, S., Gonchigsumlaa, G., Damdindorj, S., Tseren, T., Sharavjamts, D., Otgondemberel, A., Gurjav, E., Puntsagsuren, M., Tsabatshir, B., Gungaa, T., Batbold, N., Drees, L., Ganbayar, B., Orosoo, D., Lkhamsuren, B., Ganbat, B., Damdinsuren, M., Gombosuren, G., Dashpurev, B., **Phan, T.-N**., Dejid, N., Müller, T., Lehnert, L. (2025). Can Vegetation Breakpoints in Eastern Mongolia rangeland be detected using Sentinel-1 coherence time series data? GIScience & Remote Sensing, 62(1), 2540222. https://doi.org/10.1080/15481603.2025.2540222

[15]. Nguyen, C. T., Diem, P. K., Nghia, D. H., Diem, N. K., Diep, N. T. H., **Phan, T.-N**., Vo, Q. M., & Quang, N. H. (2025). Leveraging convolutional neural networks and textural features for tropical fruit tree species classification. Remote Sensing Applications: Society and Environment, 39, 101633. https://doi.org/10.1016/j.rsase.2025.101633

[14]. Diem, P. K., Nguyen, C. T., Diem, N. K., Diep, N. T. H., Thao, P. T. B., Hong, T. G., & **Phan, T.-N**. (2024). Remote sensing for urban heat island research: Progress, current issues, and perspectives. Remote Sensing Applications: Society and Environment, 33. https://doi.org/10.1016/j.rsase.2023.101081

[13]. Ji, S., Dashpurev, B., **Phan, T.-N**., Dorj, M., Jäschke, Y., & Lehnert, L. (2024). Above-ground biomass retrieval with multi-source data: Prediction and applicability analysis in Eastern Mongolia. Land Degradation & Development. https://doi.org/10.1002/ldr.5109

[12]. Dashpurev, B., Dorj, M., **Phan, T.-N**., Bendix, J., & Lehnert, L. W. (2023). Estimating fractional vegetation cover and aboveground biomass for land degradation assessment in eastern Mongolia steppe: combining ground vegetation data and remote sensing. International Journal of Remote Sensing, 44(2), 452-468. https://doi.org/10.1080/01431161.2023.2165421

[11]. Nguyen, C. T., Kaewthongrach, R., Channumsin, S., Chongcheawchamnan, M., **Phan, T.-N**., & Niammuad, D. (2023). A regional assessment of ecological environment quality in Thailand special economic zone: Spatial heterogeneous influences and future prediction. Land Degradation & Development, 34(18), 5770-5787. https://doi.org/10.1002/ldr.4876

[10]. **Phan, T.-N**., Dashpurev, B., Wiemer, F., & Lehnert, L. W. (2022). A simple, fast, and accurate method for land cover mapping in Mongolia. Geocarto International, 37(26), 14432-14450. https://doi.org/10.1080/10106049.2022.2087759

[9]. Dashpurev, B., Wesche, K., Jäschke, Y., Oyundelger, K., **Phan, T.-N**., Bendix, J., & Lehnert, L. W. (2021). A cost-effective method to monitor vegetation changes in steppes ecosystems: A case study on remote sensing of fire and infrastructure effects in eastern Mongolia. Ecological Indicators, 132. https://doi.org/10.1016/j.ecolind.2021.108331

[8]. **Phan, T.-N**., Kuch, V., & Lehnert, L. W. (2020). Land Cover Classification using Google Earth Engine and Random Forest Classifier—The Role of Image Composition. Remote Sensing, 12(15). https://doi.org/10.3390/rs12152411 (Highly Cited Paper)

[7]. Bayat, M., **Phan, T.-N**., Zare, R., & Bui, D. (2019). A Semi-empirical Approach Based on Genetic Programming for the Study of Biophysical Controls on Diameter-Growth of Fagus orientalis in Northern Iran. Remote Sensing, 11(14). https://doi.org/10.3390/rs11141680

[6]. **Phan, T.-N**., Kappas, M., Nguyen, K. T., Tran, T. P., Tran, Q. V., & Emam, A. R. (2019). Evaluation of MODIS land surface temperature products for daily air surface temperature estimation in northwest Vietnam. International Journal of Remote Sensing, 40(14), 5544-5562. https://doi.org/10.1080/01431161.2019.1580789

[5]. **Phan, T.-N**., & Kappas, M. (2018). Application of MODIS land surface temperature data: a systematic literature review and analysis. Journal of Applied Remote Sensing, 12(04). https://doi.org/10.1117/1.Jrs.12.041501

[4]. **Phan, T.-N**., Kappas, M., & Tran, T. (2018). Land Surface Temperature Variation Due to Changes in Elevation in Northwest Vietnam. Climate, 6(2). https://doi.org/10.3390/cli6020028

[3]. **Phan, T.-N**., & Kappas, M. (2018). Comparison of Random Forest, k-Nearest Neighbor, and Support Vector Machine Classifiers for Land Cover Classification Using Sentinel-2 Imagery. Sensors (Basel), 18(1). https://doi.org/10.3390/s18010018 (Highly Cited Paper)

[2]. **Phan, T.-N**., Degener, J., & Kappas, M. (2017). Comparison of Multiple Linear Regression, Cubist Regression, and Random Forest Algorithms to Estimate Daily Air Surface Temperature from Dynamic Combinations of MODIS LST Data. Remote Sensing, 9(5). https://doi.org/10.3390/rs9050398

[1]. **Phan, T.-N**., Kappas, M., & Degener, J. (2016). Estimating Daily Maximum and Minimum Land Air Surface Temperature Using MODIS Land Surface Temperature Data and Ground Truth Data in Northern Vietnam. Remote Sensing, 8(12). https://doi.org/10.3390/rs8121002

Peer-Reviewed Journals (Under Review/ Accepted)

[3]. Oyundelger, K., **Phan, T.-N**., Munkhzul, O., Jäschke, Y., Batlai, O., Lehnert, L., Ritz, C. M., & Wesche, K. Green is not always good: NDVI may not capture rangeland degradation in Mongolia. (Under Review).

[2]. Wang, Y., Oyunbileg, M., Khaliun, U., Batlai, O., **Phan, T.-N**., Lehnert, L., Gonchigsumlaa, G., Damdindorj, S., Kasymov, U., Drees, L., Mehring, M., Dejid, N., Wesche, K. Herder mobility matters yet climate controls plant community composition in eastern Mongolian steppe. (Under Review).

[1]. Jäschke, Y., Munkhzul, O., Khaliun, U., Oyuntsetseg, B., **Phan, T.-N**., Ji, S., Lehnert, L., Wesche, K. (2025). Beyond climate and grazing: impact of herder mobility on steppe vegetation. (**Accepted in Applied Vegetation Science**).

Conference Publications

[5]. **Phan, T.-N.**, Zerres, V., Svanidze, D., Dashpurev, B., and L. W. Lehnert (2024). Grassland fire monitoring and their effects on ecosystems in Mongolian steppes. AGU24, 9-13 Dec, Washington D.C.

[4]. Dashpurev, B., **Phan, T.-N.**, J. Bendix, L. Lehnert (2022). Deriving vegetation cover and land degradation in the vast eastern Mongolian Steppe from Sentinel 2 using random forest. ESA Living Planet Symposium, Bonn.

[3]. Dashpurev, B., **Phan, T.-N.**, J. Bendix, and L. W. Lehnert (2021). Estimating the Effect of Infrastructure on Vegetation Degradation in Eastern Mongolia Steppe Using Machine Learning and Remote Sensing. IEEE International Geoscience and Remote Sensing Symposium IGARSS.

[2]. Lehnert, L. W. & **Phan, T.-N.** (2020). Comparison of fire products in Mongolia reveals contrasting results. 22nd EGU General Assembly, Vol. 22, p. 11064.

[1]. **Phan, T.-N.**, Y. Jäschke, O. Chuluunkhuyag, M. Oyunbileg, K. Wesche, and L. W. Lehnert (2020). Remote sensing of grassland communities in Mongolian Steppe combining multi-source data and machine learning classification algorithms. 22nd EGU General Assembly, Vol. 22, p. 13399.

MEMBERSHIPS IN SCIENTIFIC SOCIETIES

Remote Sensing & Photogrammetry Society (RSPSoc)

European Geosciences Union (EGU)

International Society for Photogrammetry and Remote Sensing (ISPRS)

American Geophysical Union (AGU)

International Association for Urban Climate (IAUC)

Global Land Programme (GLP)

Future Earth

Proposal Reviewer

Croatian Science Foundation

Academic Service

Session Chair, 42nd Asian Conference on Remote Sensing (ACRS 2021), Can Tho University, Vietnam, November 22-24, 2021

Reviewer Activities

Elsevier (Sustainable Cities and Society; ISPRS Journal of Photogrammetry and Remote Sensing; Flora; Advances in Space Research; International Journal of Applied Earth Observation and Geoinformation);

MDPI (Remote Sensing);

Nature (Scientific Reports);

IEEE (IEEE Geoscience and Remote Sensing Letters);

Taylor & Francis (Physical Geography; Geocarto International; International Journal of Digital Earth);

Wiley (Earth and Space Science; Ecology and Evolution; Land Degradation & Development);

Springer (Environmental Earth Sciences; Environmental Monitoring and Assessment; SN Applied Sciences; Natural Hazards)

REFERENCES

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