

DR. KHAN MUHAMMAD ABID

Ph.D. Engineering Mechanics & Energy | Specially Appointed Researcher, Chiba University, Japan

RESEARCH PROFILE

Multidisciplinary engineer and postdoctoral researcher specialising in computational atmospheric modelling, climate–energy interactions, and data assimilation. Expertise spans multiscale atmospheric modelling, statistical and dynamical downscaling, high-resolution regional climate simulation, and wind energy resource assessment over South Asia. Proficient in Python, R, Linux/HPC environments, and geospatial tools. Active contributor to peer-reviewed journals, international conferences, and the academic community as reviewer and editorial board member.

EDUCATION

- Apr 2021- Mar 2024
Tsukuba, Japan

Doctor of Philosophy, Engineering Mechanics and Energy
University of Tsukuba, Japan
Funded by Japanese Government MEXT Scholarship
Thesis: Added Values on Wind Energy Potential for South Asia Using High-Resolution Climate Models
Director's Award for Best PhD Student: Degree Program in Engineering Mechanics and Energy (2023–24, Fall)
- Sep 2017 - Jan 2019
Nicosia, Cyprus

Master of Science, Mechanical Engineering
Near East University, Nicosia, Cyprus (TRNC)
Funded by NEU Postgraduate Scholarship (100%)
Thesis: Assessment of Wind/Solar Energy Potential as a Power Generation Source at Selected Locations in Pakistan
Graduated with Outstanding CGPA: 4.0/4.0
- Feb 2013 - Jun 2017
Nicosia, Cyprus

Bachelor of Science, Mechanical Engineering
Near East University, Nicosia, Cyprus (TRNC)
Thesis: Comparison of Transparent Insulated and Non-Insulated Solar Cells
Certificate of High Honors, Faculty of Engineering (2016–17, Spring)

PROFESSIONAL EXPERIENCE

- Nov 2024 - Present
Chiba, Japan

Specially Appointed Researcher
Center for Environmental Remote Sensing (CEReS), Chiba University

 - Reconstructed past climate over the last millennium using high-resolution model simulations (d4PDF) and climate proxies via offline Ensemble Kalman Filter (EnKF)
 - Comprehensive benchmarking of paleoclimate reanalysis products (1880–2000) against five major instrumental datasets; developed a unified evaluation framework
- Sep 2024 - Oct 2024
Tsukuba, Japan

Researcher
Institute for Agro-Environmental Sciences (NARO)
- Jan 2022 - Feb 2022
Tsukuba, Japan

Research Assistant
Dept. of Engineering Mechanics and Energy, University of Tsukuba
- 2018 - 2021
Nicosia, Cyprus

Lecturer & Undergraduate Advisor
Dept. of Mechanical Engineering, Near East University

 - Taught 20+ undergraduate courses in fluid mechanics, heat transfer, machine design, dynamics, engineering drawing, and wind engineering

2019-2020 / Spring Kyrenia, Cyprus	Lecturer (Visiting) Dept. of Aeronautical Engineering, University of Kyrenia
2018–2019 / Fall Kyrenia, Cyprus	Visiting Lecturer Dept. of Aeronautical Engineering, University of Kyrenia
Aug - Dec 2017 Nicosia, Cyprus	Teaching Assistant & Undergraduate Advisor Dept. of Mechanical Engineering, Near East University
Sep 2016 Nicosia, Cyprus	Research & Laboratory Assistant Dept. of Mechanical Engineering, Near East University

PUBLICATIONS

Peer-Reviewed Journal Articles (* Corresponding Author)

- [8] **Khan Muhammad Abid***, Koji Dairaku, Anjuman Ara Khatun (under review). A Validated Reanalysis-Based and Geospatial Framework for Climate-Relevant Wind Energy Assessment and Planning in Pakistan. Q1 Journal, Impact Factor 9.
- [7] **Khan Muhammad Abid***, Koji Dairaku (under review). Historical and Future Projections Evaluation with Topographical Adjustment over Subcontinent for Wind Power Potential and Resource Classification. Q1 Journal, Impact Factor 11.2.
- [6] **Khan, M.A. ***, Dairaku, K., & Kelkar, S. (2025). Assessing wind power generation potential over South Asia using wind speed observation and reanalysis datasets. Stochastic Environmental Research and Risk Assessment. <https://doi.org/10.1007/s00477-025-02918-0>
- [5] **Khan, M.A. ***, Dairaku, K., & Kelkar, S. (2024). Evaluation of wind speed accuracy enhancement in South Asia through terrain-modified wind speed adjustments of high-resolution regional climate modeling. Earth Systems and Environment, 8(4), 1777–1794. <https://doi.org/10.1007/s41748-024-00453-6>
- [4] **Khan, M.A. ***, Kayansayan, N., & Ragab, A.S. (2020). Power generation development based on solar potential at urban and rural regions selected locations in Pakistan. International Journal of Mechanical and Production Engineering Research and Development, 10(3), 2601–2618.
- [3] **Khan, M.A. ***, Camur, H., & Kassem, Y. (2018). Modeling predictive assessment of wind energy potential as a power generation source at selected locations in Pakistan. Modeling Earth Systems and Environment, 23, 15.
- [2] Al-Ghriybah, M., Huseyin, C., Mohd, F.Z., **Khan, M.A. ***, Youssef, K., & Engin, E. (2018). Study of Multiple Half Blades Effect on the Performance of Savonius Rotor: ANN Model. Indian Journal of Science and Technology, 11(38), 1–12.
- [1] Kassem, Y., **Abid Khan, M.**, & Camur, H. (2018). Application of adaptive neuro-fuzzy inference system and ANN for kinematic viscosity of biodiesel prediction. International Journal of Engineering Sciences & Research Technology, 7(1).

Book Chapters & Peer-Reviewed Conference Proceedings (* Corresponding Author)

- [5] **Khan, M.A. ***, Dairaku, K., Kelkar, S. (2025). Assessing Added Value of Dynamical Downscaling for Wind Speed Over South Asia: A Distribution Added Value Approach. MedGU 2023. Advances in Science, Technology & Innovation. Springer, Cham.
- [4] **Khan, M.A. ***, Dairaku, K., Kelkar, S. (2025). Assessment of Reanalysis Wind Speeds Datasets Against the HadISD Dataset Over South Asia. MedGU 2023. Advances in Science, Technology & Innovation. Springer, Cham.
- [3] Brhane, E.S., Dairaku, K., **Abid, K.M.** (2025). Quantify the Hydrological Impact of Climate Change Using the Regional Climate Model (Case Study on Ribb Watershed, Ethiopia). MedGU 2023. Springer, Cham.
- [2] **Khan, M.A. ***, Dairaku, K. (2024). Assessment of the Potential of Renewable Energy with Bias Correction Due to Climate Change Over South Asia Using Global Atlas Dataset. MedGU 2022. Springer, Cham.
- [1] Nadeem, M.U., Dairaku, K., **Khan, M.A.** (2023). GPM-IMERG, PERSIANN-PDIR, and CHIRPS 2.0 Rainfall Data Accuracy Assessment for Capturing Extreme Weather Events in the Karakoram Mountains of South Asia. Advances in Science, Technology & Innovation, Springer/Scopus.

CONFERENCE PRESENTATIONS

Oral Presentations

2023 - MedGU-23, Istanbul, Turkey	Khan, M.A., Dairaku, K., Kelkar, S. 'Assessing Added Value of Dynamical Downscaling for Wind Speed over South Asia: A Distribution Added Value Approach.'
2023 - MedGU-23, Istanbul, Turkey	Khan, M.A., Dairaku, K., Kelkar, S. 'Assessment of Reanalysis Wind Speeds Datasets Against the HadISD Dataset Over South Asia.'
2022 - MedGU-22, Morocco	Khan, M.A., Dairaku, K. 'Assessment of the Potential of Renewable Energy with Bias Correction Due to Climate Change Over South Asia.'

Poster Presentations

2025 - 30th CERES International Symposium, Chiba University	Khan, M.A., Okazaki, A. 'A Comprehensive Benchmarking of Paleoclimate Reanalysis Products Against Major Observational Datasets.'
2023 - IITM HUB ICRC-CORDEX 2023, Pune, India	Khan, M.A., Dairaku, K., Kelkar, S. 'Evaluating the Accuracy of Reanalysis Products for Wind Energy Development.'
2023 - IITM HUB ICRC-CORDEX 2023, Pune, India	Khan, M.A., Dairaku, K., Nadeem, M.U. 'Assessment of Wind Power Potential in Selected Locations of Pakistan.'
2023 - Japan Geoscience Union Meeting (JpGU), Chiba	Khan, M.A., Dairaku, K., Kelkar, S. 'Assessing the Reliability of Reanalysis Products for Wind Energy Development.'
2022 - AGU Annual Meeting, Chicago, USA	Khan, M.A., Dairaku, K. 'CORDEX-South Asia GCMs: A Statistical Evaluation.'
2022 - AGU Annual Meeting, Chicago, USA	Khan, M.A., Dairaku, K. 'In the CORDEX-South Asia Ensemble Simulations of Wind Energy Potential Yield.'
2021 - Japan Geoscience Union Meeting (JpGU), Chiba	Khan, M.A., Dairaku, K. 'Assessment of Wind/Solar Energy Potential as A Power Generation Source at Selected Locations in Pakistan.'

TECHNICAL SKILLS

Climate & Atmospheric Modelling	Multiscale atmospheric modelling, dynamical downscaling, statistical downscaling, regional climate models (RCMs), CORDEX framework, bias correction
Data Assimilation	Ensemble Kalman Filter (EnKF), offline DA, numerical weather prediction (NWP), paleoclimate reanalysis
Programming & Scripting	Python (NumPy, Pandas, Matplotlib, Xarray, Cartopy), R, Bash/Shell scripting
Geospatial & Climate Tools	CDO (Climate Data Operators), GrADS, QGIS, NCO
HPC & Computing Environments	Linux/Unix, SSH, HPC cluster job scheduling, MacOS, Windows
Data & Analysis	Large multi-source dataset handling, uncertainty analysis, added-value analysis, machine learning (ML)
Scientific Writing & Management	Peer-reviewed manuscript preparation, Mendeley, LaTeX, MS Office