

PYARIMOHAN MAHARANA

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ACADEMIC QUALIFICATIONS AND EXPERIENCES

- **Dec 2022 – till date:** Assistant Professor, Department of Environmental Studies, Delhi College of Arts and Commerce, University of Delhi, Netaji Nagar, New Delhi - 110023
- **Jul 2021 – Dec 2022:** Teaching Fellow, School of Ecology and Environments, Nalanda University, Rajgir, Nalanda, Bihar - 803116
- **Oct 2020 – Jul 2021:** Assistant Professor (Environmental Sciences), Faculty of Sciences, Sri Sri University, Cuttack, Odisha, India
- **Apr 2019 – Oct 2020:** Research Associate (CSIR), School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India (Changes in the monsoon distribution and the climate extremes over India under 1.5, 2 and 3°C global warming)
- **Jan 2017 – Nov 2018:** Assistant Professor (Guest), Delhi College of Arts and Commerce, University of Delhi, , Netaji Nagar, New Delhi - 110023
- **Dec 2014 – Nov 2016:** Post-Doctoral Researcher at LMD/IPSL, UPMC, Paris, France. ANR SEEN (Scenario Extreme en Energie Nucleaire) 2 Years
- **2008 - 2014:** Doctorate in Environmental Sciences
- Jawaharlal Nehru University, New Delhi, 110067, India www.jnu.ac.in/ Thesis Title: “Interannual and intraseasonal climatic variability over the Indian region” CGPA: 7.2/9.0 (In mandatory Ph.D. course work)
- **2006 - 2008:** M.Sc. in Environmental Sciences Jawaharlal Nehru University, New Delhi, 110070, India Dissertation title: “Monitoring of SPM and estimation of cation concentration at various sites of Delhi during winter season 2007-2008” CGPA: 7.3/9.0
- **2003 - 2006:** B.Sc. in Chemistry (Hons.) G.M. (Auto.) College, Sambalpur University, Odisha, 768001, India. Score: 67.2%

AWARDS AND HONOURS

- CSIR (Centre for Scientific and Industrial Research) Research Associate in Environmental Sciences (2019)
- CSIR (Centre for Scientific and Industrial Research) - Senior Research Fellowship and National Eligibility Test for Lectureship (Earth, Atmospheric, Ocean and Planetary Sciences) and called for SPMF Interview (Shyama Prasad Mukherjee Fellowship) conducted by CSIR, India
- UGC (University Grants Commission) - National Eligibility Test for Lectureship (Environmental Sciences)
- Chandrasekhar Prasad Scholarship – Jawaharlal Nehru University (2007 -2008)

PUBLICATIONS

National/International journals

- Anripa, N., Kumar, A., **Maharana, P.**, & Dimri, A. P. (2023). Climate change over Indonesia and its impact on nutmeg production: An analysis under high-resolution CORDEX-CORE regional simulation framework. *International Journal of Climatology*. 1-19. DOI: 10.1002/joc.8098
- Shome, A., Phartyal, S. S., **Maharana, P.**, & Verma, A. (2023). Mapping Peer-Reviewed Scientific Studies on Plant Trait–Service Linkages Across Ecosystems: A Bibliometric Analysis. *Anthropocene Science*, 1-12.
- Ghosh, R., Saikia, K., Biswas, O., Agrawal, S., Mortheikai, P., Arif, M., ... & Bera, S. (2023). Last 10 millennial history of Indian summer monsoon in the Bengal region—a multi-proxy reconstruction from a lacustrine archive. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 609, 111308. <https://doi.org/10.1016/j.palaeo.2022.111308>
- Sharma, A., **Maharana, P.**, Sahoo, S and Sharma, P. (2022) Environmental change and groundwater variability in South Bihar, India. *Groundwater for Sustainable Development*. 19, 1 – 13. <https://doi.org/10.1016/j.gsd.2022.100846>
- Shikha, A., Dimri, A. P., Singh, K. K., **Maharana, P.**, & Mina, U. (2022). Risk assessment and adaptation strategies for irrigated and rainfed cotton crop production under climate change. *Journal of Earth System Science*, 131(4), 267. <https://doi.org/10.1007/s12040-022-01995-x>
- **Maharana, P.**, Kumar, D., Kumar, R., Singh, R. and Dimri, A.P. (2022) Diagnostic of the Massive Flood Event in Tons River Basin. *Theoretical and Applied Climatology*. 148(3-4), 1459-1476. <https://doi.org/10.1007/s00704-022-04008-5>
- **Maharana, P.**, Kumar, D., Kumar, P. and Tiwari, P. (2022) Simulation of Northeast Monsoon in a coupled regional model framework. *Atmospheric Research*. <http://dx.doi.org/10.1016/j.atmosres.2021.105960>.
- Seema Rani, Kumar, R., Acharya, P., **Maharana, P.** and Singh R (2021) Assessing the Spatial Distribution of Aerosols and Air Quality over the Ganga River Basin during COVID-19 Lockdown Phase-1. *Remote sensing applications: Society and Environment*. (IF = 0). <https://doi.org/10.1016/j.rsase.2021.100546>
- Shikha, A., Dimri, A.P., **Maharana, P.**, Meena, U. and Singh, K.K. (2021) Evaluating the performance of regional climate model on the irrigated and rainfed cotton crop. 130(4), 1-20. *Journal of Earth System Science*. (IF = 1.423). <https://doi.org/10.1007/s12040-021-01705-z>
- Dimri, A. P., Kumar, P., and **Maharana, P.** (2021). On the Global Contrasting Temperature-Precipitation Phase Mechanisms in the Last Century. *Journal of Climate Change*, 7(3), 9-21. (IF = 0). DOI: 10.3233/JCC210015
- **Maharana, P.**, Agnihotri, R. and Dimri, A. P. (2021) Changing Indian monsoon rainfall pattern under warming climate. *Climate Dynamics*. 57(9), 2581-2593 (IF = 4.486). <https://doi.org/10.1007/s00382-021-05823-8>.

- Sahu, B. and **Maharana, P. (2021)** Reducing local warming and energy conservation through alteration of surface reflectance properties. *Journal of Climate Change*, 7(2), 63-72. (IF = 0). DOI 10.3233/JCC210012
- Shahi, N., Das, Sushant., Ghosh, S., **Maharana, P. (2021)** Projected changes in the mean and intra-seasonal variability of Indian summer monsoon in the RegCM CORDEX-CORE simulations under higher warming conditions. *Climate Dynamics*, 57(5), 1489-1503 (IF = 4.486). <https://doi.org/10.1007/s00382-021-05771-3>
- Kumar, R., Seema Rani, **Maharana, P. (2021)** Assessing the Impacts of Amphan Cyclone over West Bengal, India: A Multi-Sensor Approach. *Environmental Monitoring and Assessment* 193(5), 1-21. (IF = 1.959). <https://doi.org/10.1007/s10661-021-09071-5>
- Dimri, A. P., Allen, S., Huggel, C., Mal, S., Ballesteros-Cánovas, J. A., Rohrer, M., **Maharana, M.,...** & Pandey, A. (2021). Climate change, cryosphere and impacts in the Indian Himalayan Region. *Current Science*, 120(5), 774-790. (IF = 0.756). DOI:10.18520/cs/v120/i5/774-790
- **Maharana, P.**, Kumar, D., Das, S., and Tiwari P.R. (2021) Present and future changes in precipitation characteristics during Indian summer monsoon in CORDEX-CORE simulations. *International Journal of Climatology*, 41(3), 2137-2153, (IF = 3.928). <https://doi.org/10.1002/joc.6951>
- Seema Rani, Suraj Mal, **Maharana, P. (2020)**. Estimation of Spatio-Temporal Variability in Land Surface Temperature over the Ganga River Basin using MODIS data. *Geocarto International*, 1-23. (IF = 2.365). <https://doi.org/10.1080/10106049.2020.1869331>
- **Maharana, P.**, Dimri, A.P. and Choudhary, A. (2019) Future changes in Indian summer monsoon characteristics under 1.5 and 2 °C specific warming levels. *Climate Dynamics*, 54 (1-2), 507 – 523, (IF = 4.486). <https://doi.org/10.1007/s00382-019-05012-8>
- **Maharana, P.**, Kumar, D. and Dimri, A.P. (2019) Assessment of coupled regional climate model (RegCM4.6–CLM4.5) for Indian summer monsoon. *Climate Dynamics*, 53(11), 6543-6558 (IF = 4.486). <https://doi.org/10.1007/s00382-019-04947-2>
- Shikha, A., Singh, K.K., Dimri, A.P., Niwas, R. and **Maharana, P. (2019)** Model-based approach to study the response of Bt-cotton towards elevated temperature and carbon dioxide in the semi-arid region of Hisar. *Journal of Climate Change*, 5(2), 35-50. (IF = 0) DOI: 10.3233/JCC190011
- Pattanayak, K.C., Abdel-Lathif, A. Y., Rathakrishnan, K. V., Singh, M., Dash, R. and **Maharana, P. (2019)** Changing Climate over Chad: Is the Rainfall over the Major Cities Recovering? *Earth and Space Science*, 6(7), 1149-1160. (IF = 2.15). DOI: 10.1029/2019EA000619.
- **Maharana, P.**, and Dimri, A.P. (2019). Monsoon: Past, present and future. *Proceedings Indian National Science Academy*, 2: 1-18. (IF = 0). DOI: 10.16943/ptinsa/2018/49514.
- **Maharana, P.**, Dimri, A.P. and Choudhary, A. (2019). Redistribution of Indian Summer Monsoon by dust aerosols forcing. *Meteorological Application*. 26(4), 584-596. (IF = 1.685). <https://doi.org/10.1002/met.1786>

- Shikha, A., Dimri, A. P., **Maharana, P.**, Singh, K. K., and Niwas, R. (2018). Cotton crop in changing climate. *Current Science* (00113891), 115(5). (IF = 0.756). DOI: 10.18520/cs/v115/i5/948-954
- Dimri, A. P., Kumar, D., Choudhary, A., and **Maharana, P.** (2018). Future changes over the Himalayas: Maximum and minimum temperature. *Global and Planetary Change*, 162, 212-234. (IF = 4.448). <https://doi.org/10.1016/j.gloplacha.2018.01.015>
- Dimri, A. P., Kumar, D., Choudhary, A., and **Maharana, P.** (2018). Future changes over the Himalayas: Mean temperature. *Global and Planetary Change*. 162: 235-251. (IF = 4.448). <https://doi.org/10.1016/j.gloplacha.2018.01.014>
- **Maharana, P.**, A.Y. Abdel-Lathif and Pattnayak, K.C. (2018) Observed climatic variability over chad using multiple observational and multiple datasets. *Global and Planetary Change* 162: 252-265. (IF = 4.448). <https://doi.org/10.1016/j.gloplacha.2018.01.013>
- Choudhary, A., Dimri, A. P., and **Maharana, P.** (2017). Assessment of CORDEX-SA experiments in representing precipitation climatology of summer monsoon over India. *Theoretical and Applied Climatology*, 134 (1-2), 283-307. (IF = 2.882), <https://doi.org/10.1007/s00704-017-2274-7>
- **Maharana, P.**, and Dimri, A. P. (2016). Study of intraseasonal variability of Indian summer monsoon using a regional climate model. *Climate Dynamics* 46(3-4), 1043-1064. (IF = 4.486). DOI <https://doi.org/10.1007/s00382-015-2631-0>
- **Maharana, P.**, and Dimri, A. P. (2014). Impact of initial and boundary conditions on regional winter climate over the Western Himalayas: A fixed domain size experiment. *Global and Planetary Change*, 114, 1-13. (IF = 4.448). <https://doi.org/10.1016/j.gloplacha.2013.12.011>
- **Maharana, P.**, and Dimri, A.P. (2014). Study of seasonal climatology and interannual variability over India and its sub-regions using a regional climate model (RegCM3). *Journal of Earth System Sciences*, 113(5), (1147-1169). (IF = 1.423). DOI: <https://doi.org/10.1007/s12040-014-0447-7>
- Dimri, A.P., and **Maharana, P.** (2012). Inter-annual variability of precipitation simulated by RegCM3 over India and Indian Himalayas. *Vayumandal*, 38 (104), 70-80. (IF = 0).

Book Chapters

- Rani S., Kumar R. and **Maharana P.** (2022) Climate Change, Its Impacts, and Sustainability Issues in the Indian Himalaya: An Introduction, In Book: Climate Change Impacts, Responses and Sustainability in the Indian Himalaya, (Eds. Rani and Kumar), pp.1-28, ISBN-978-3-030-92781-3, Springer Nature Switzerland, <https://doi.org/10.1007/978-3-030-92782-0>
- Kumar S, **Maharana P.** (2020). Air quality and its impact on urban environment. In book: Urban Ecology: emerging patterns and socio-ecological systems, (Eds. P. Verma et al.), pp. 185-199, ISBN-9 78-0-12-820730-7, Elsevier Amsterdam, Netherlands. <https://doi.org/10.1016/B978-0-12-820730-7-00011-2>
- Kumar, R., Pandey, P.C., **Maharana, P.**, Gautam, H. and Pandey, V.K. (2019). Assessing the impact of climate variability and land use on open water bodies of middle Ghagra river basin.

Book chapter In book: Water Conservation, Recycling and Reuse: Issues and Challenges, (Eds. R.P. Singh et al.), pp. 185-202, ISBN-978-981-13-3179-4, DOI:10.1007/978-981-13-3179-4_10, Springer Singapore.

- **Maharana, P.**, Dimri, A. P., and Choudhary A. (2016) Effect of dust in Indian Summer Monsoon. In book: Geostatistical and geospatial approaches for the characterization of natural resources in the environment: challenges, processes and strategies. (Eds. N.J. Raju et al.), pp. 855-859, ISBN-978-3319186627, DOI-10.1007/978—3-319-186634, Springer Cham
- Dimri, A.P., and **Maharana, P.** (2013). Regional Climate modelling over the Himalayas. In book: Management of water, energy and bio-resources in the era of climate change: emerging issues and challenges (Eds. N.J. Raju et al.), pp. 339-355, ISBN – 978938189106, Springer Cham

Paper under Review/submission/preparation

- Yadav, M., Dimri AP., Maharana, P. and Mal, S. (2022) Abating water storage and associated hydrological processes in Indian Himalayan River Basins (Submitted to Climate Dynamics).
- **Maharana, P.** and Dimri, A.P (2023) Projected energy and hydrological budgets over the Indus River Basin under a regional climate model framework. Global and Planetary Change (Submitted to Climate Dynamics).
- Ali, S., Singh, P., Shekhar, M., Morthekai, P., Ghosh, R. and Maharana, P. (2022) Assessment of late Quaternary hydroclimatic variability from the monsoon-dominated Central Himalaya, India. (Submitted to Earth-Science Reviews).
- **Maharana, P.**, and Dimri, A.P. (2022) Quantitative Analysis of Indian Summer Monsoon Precipitation Indices using RegCM4.0. Advances in Atmospheric Sciences (under preparation).
- Rani, S., Mal, S. and **Maharana, P.** (2022) Assessing the Monthly Trends in Precipitable Water Vapor Over the Indian Sub-Continent (Submitted to Atmospheric Research)
- **Maharana, P.** et al. (2022) Projected changes in heatwaves and its impact on human discomfort over India due to global warming under 21st century. (Submitted to International Journal of Climatology).

REVIEWER

Climate Dynamics, Quarterly International, Meteorology and Atmospheric Physics, Atmospheric Science Letters, Global and Planetary Change, Earth Interactions. Theoretical and applied climatology, Remote sensing applications: Society and Environment. PLOS one, SN Applied Sciences, Science of the Total Environment

Faculty development program/Induction courses/Training program

- Faculty development program on “Blended Learning & LMS” (20 Jun’ 2021) Sri Sri University.
- Faculty development program on “GIS & Remote Sensing and its applications” (7 Jun – 11 Jun’ 2021). AICTE Training And Learning (ATAL) Academy, Punjab Remote Sensing Centre
- Faculty development program on “Data Science for all” (12 Apr - 23 Apr’ 2021). Electronics and ICT academy, NIT Warangal, IIITDM Jabalpur, IIT Kanpur, NIT Patna, IIT Guwahati, MNIT Jaipur and IIT Roorkee.
- Faculty development program on “Machine Learning and data analytics using python” (27 Apr – 05 May’ 2020). Electronics and ICT academy, Indian Institute of Technology, Roorkee.
- Faculty development program on “ICT Tools for Teaching, Learning Process and Institutes” (15 Mar – 26 Mar’ 2021). E&ICT Academies of IIT Roorkee, IIT Guwahati, IIT Kanpur, MNIT Jaipur, PDPM IIITDM Jabalpur, NIT Patna
- Online Induction Training/Orientation Programme for “Faculty in Universities/Colleges/Institutions in higher education” under the Ministry of Education sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT). (15 Mar – 24 Apr’ 2021). Teaching Learning Centre (TLC), Ramanujan College, University of Delhi.

INVITED TALKS AND LECTURES

- Invited lecture **(02-05-23)** on ““Projected Energy and Hydrological Budgets over the Indus River Basin under a Regional Climate Model Framework" on two-days national workshop on “Impact of Climate change on water resources of Upper Indus River Basin- An UIBN initiative" 1st May – 12nd May 2023" organized by University of Kashmir, Srinagar, Jammu And Kashmir.
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- Invited lecture **(01-09-22)** on ““Indian monsoon under changing climate" on the theme Theme: Climate change prediction and modelling on "Online One Month Certificate Course on “Basics of Remote Sensing Application in Climate Change Modelling" 18th August – 19th September 2022" organized by Amity University and IMD, New Delhi.
- Invited lecture **(18-01-21)** on "Indian monsoon under changing climate" in the refresher course on “Geography and Earth Sciences”, 12 -25 January, 2022, organized by UGC- Human Resource Development Center, Doctor, Hari Singh Gaur Vishwavidyalaya, Sahar, MP, India.

SEMINAR AND CONFERENCES

- E-workshop on “Statistics with R Programming” (4 Sep - 5 Sep’ 2021), CommaCad.
- Oral presentation on “Heat stress over the Indian Himalayan region” on national virtual symposium on “Weather and Climate services over the mountainous region (TROPMET –

2020) ” (14 Dec – 17 Dec’ 2020, organised jointly by North Eastern Space application center and Indian meteorological society shilling Chapter)

- Poster presented on “Effect of changing domain, initial and boundary conditions over regional climate over the western Himalayas” in International Humboldt kolleg on “Management of water, energy and bio-resources in changing climate regime: emerging issues and environmental challenges” (Feb. 8-9. 2013, Jawaharlal Nehru University, New Delhi, India).
- Oral presentation on “Interannual variability of precipitation simulated by RegCM3 over Indian Himalayas.” At TROPMET-2012. (Nov.20-22., 2012, Indian Institute of Remote Sensing, Dehradun, India).
- Poster presented on “Comparison of RegCM3 simulated rainfall and temperature with station data over western Himalayas” in “Conference on the Role of e-infrastructures for Climate Change Research” (May 16-20, 2011, Miramare, Trieste, Italy).
- Attended pre-symposium tutorial on “Satellite observations for regional climate modelling” organized by Indian Meteorological Society, Dehradun chapter. (Nov. 18-19., 2012, Indian Institute of Remote Sensing, Dehradun, India).
- Attended Highnoon Spring School on “Adaptation to changing water resources availability in northern India with Himalayan glacier retreat and changing monsoon pattern.” (Apr. 2-6, 2012, Department of Civil Engineering, Indian Institute of Technology, New Delhi, India).
- Attended national seminar on “Environmental pollution and bioremediation” (Dec. 28-29, 2011, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India).
- Participated on the National seminar on “Morden and Paleo Sediments: Implication to Climate, Water Resources and Environmental Changes” (Nov. 24-26, 2011, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India).
- Attended SERC School on “Dynamics and forecasting of Indian Summer Monsoon.” (27th Jun. - 20th Jul., 2011, Center of Atmospheric Sciences, Indian Institute of Technology, New Delhi, India).
- Participated on short-term course under continuing education Programme on “Aerosol. Health, regional air quality and Climate.” (Apr. 01-04, 2011, Department of Civil Engineering, Indian Institute of Technology, New Delhi, India).
- Attended in RegCM4.0 training course during the “International EU-IndiaGrid2 with special focus on Material science, Climate change and Interoperability” (Dec. 13-16, 2010, Indian Institute of Technology, New Delhi, India).
- Participated in national seminar “Bio Epoch-2009.” (Apr. 03-04, 2009, School of Biotechnology, Jawaharlal Nehru University, New Delhi, India).
- Attended International conference on “Coastal zones environment and sustainable development, vulnerability, adaptation and beyond.” (Feb. 12-14, 2007, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India).
- Participated in National Symposium on “Searching missing links conservation and management for sustainable development of environment.” (Feb. 2, 2007, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India).

COMPUTER PROFICIENCY

- **Atmospheric models:** RegCM (V. 3 & 4), LMDZ (3D and 1D) and ARPEGE-1D
- **Operating Systems:** Windows, Linux and Unix
- **Programming languages:** FORTRAN, SHELL Script, CDO, NCO, Python
- **Graphics Packages:** Grads, Ferret, Matplotlib

MEMBERSHIPS

Member: International association for Water, Environment, Energy and Society (IIAWEEES) (2020)

Life member: Indian Science Congress Association (L37891), Indian Meteorological Society (LM-3495)

Courses Taught/Developed (UG and PG)

Courses Taught:

UG level:

1. Compulsory Environmental Studies course (**DCAC, University of Delhi**)
2. Introduction of Environment, Natural Resource Management and Sustainable Development, Introduction to Biological Environment, Introduction to Physical Environment, Biodiversity and Conservation, Fundamentals of Ecology, Remote Sensing and GIS, Water Resources (**Sri Sri University, Cuttack, Odisha**)

PG level:

1. Introduction to Ecology and Environment, Energy and Climate Sciences, Environmental Spheres, Climate Change, Environmental Hydrology, Disaster management, Earth and Environmental Sciences (**Nalanda University**)

Courses developed:

UG level:

1. B.Sc. Environmental Science programme (**Sri Sri University, Cuttack, Odisha**)
2. Proposed Course Structure for four-year B. Sc. -Hons. (Environmental Science) (**Sri Sri University, Cuttack, Odisha**)

PG level:

1. Atmospheric and Oceanic processes, Climate Change, Climate Dynamics, Earth system and Planetary Science, Fundamentals of Meteorology, Environmental Data Analytics (**Nalanda University**)

ADMINISTRATIVE RESPONSIBILITIES

1. Member, Green Committee, DCAC, University of Delhi
2. Convener, Prakriti – The Environmental Society, DCAC, University of Delhi
3. Lead (Thematic working group – II : Climate change, air pollution variability and black carbon), Upper Indus Basin Network (UIBN)-India Country (IC) Chapter
4. Former Semester Coordinator, School of Ecology and Environment Studies, Nalanda University
5. Former Member, Admission Committee, Nalanda University

M.Sc. Thesis (Guided)

1. Nuralfin Anripa, Title – “NUTMEG PRODUCTION IN INDONESIA UNDER CHANGING CLIMATE” at Nalanda University (June, 2022)
2. Thandra Karnakar, Title – “SOCIO-ENVIRONMENTAL IMPACT OF E-RICKSHAW : A CASE STUDY IN RAJGIR” at Nalanda University (June, 2022)

REFERENCES

1. Prof. A.P. Dimri

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2. Dr. Isabelle Beau

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