

# CV of Dr Manish Nema



## **Dr Manish Kumar Nema**

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## **Research Area**

The area of research includes surface water hydrology, hydrological modelling, impact assessment of climate change, industrial water audits and application of advanced tools such as artificial neural networks, remote sensing and GIS. An experimental catchment has developed in lesser Himalayas with state-of-art advanced instrumentation for a better predictive understanding of various hydro-climatic variables. 17+ years of experience of R&D in the field of water resources and various other technical and administrative responsibilities.

## **Professional and Education Qualifications**

2013-2020 **PhD** on 'Modeling Hydrologic response of Seonath basin under changing climate and land-use Scenarios' from Department of WRDM, IIT, Roorkee  
2003-2005 **M. Tech** (First Class with Distinction) Agril. Engg. (SWCE) GBPUAT, Pantnagar  
1998-2002 **B. Tech** (First Class) Agril. Engg. JNKVV, Jabalpur

## **Employment History**

2023 to date Scientist-E, NIH, Roorkee (PL-13)  
2018 to 2023 Scientist-D, NIH, Roorkee (PL-12)  
2014 to 2018 Scientist-C, NIH, Roorkee (PL-11)  
2010 to 2014 Scientist-B, WHRC, NIH, Jammu (PL-10)  
2008 to 2010 Engineer-Water Management, CII-Water Institute, Jaipur.  
2005 to 2008 Engineer-Projects, Harvel Irrigations Pvt Ltd, New Delhi.

## **Technical Output**

Technical Reports Completed : 12  
Paper Published in International Journals : 14  
Paper Published in National Journals : 08  
Paper Published in International Conferences : 32  
Paper Published in National Conferences : 10  
National Hindi Publications : 22

**Other S&T Product/ Document** : 06

## **Involvement in Projects**

Ongoing Research/ Sponsored Projects : 05 (02 as PI)  
Completed Research/ Sponsored Projects : 06 (04 as PI)  
Completed Consultancy Projects : 04 (01 as PI)

## **Training or Workshop**

Short-term trainings organized : 12  
Workshops / brainstorming sessions organized : 04  
International Training attended : 01  
National Training attended : 10

## **Student Guidance**

Ph D dissertation work (Ongoing) : 02  
M. Tech. dissertation work : 08  
PG Thesis Evaluation : 09

**Keynote /lectures / Invited Talks** : 62

**Project Proposal/ Paper/ Book review** : 25

**Major Developmental Works** : 02 (Observatory at Nagani & Kanatal under Project Herval)

## Major Work Highlights



- Development of a state-of-art hydro-meteorological field observatory in the Lesser Himalayas with three numbers of automatic weather stations (AWSs), five soil monitoring stations, COSMOS soil Sensors and solar sensors at the Henvai catchment at different elevations bands.
- For discharge monitoring at the catchment outlet, a compound rectangular weir was constructed on-site and equipped with an automatic water level recorder (AWLR-Radar Type) for precise and continuous monitoring.
- In collaboration with 08 research institutions, the formation of the Soil Moisture India Network (SMIN) and Critical Zone Observatory (CZO) Network is under pursuance.
- Development of an empirical model for soil moisture using met-parameters
- Modification and efficiency improvement in Surface Energy Balance Based METRIC Model from AET estimation using field observations in Henvai
- Application & evaluation of AI, ML and DL learning-based models for soil moisture modeling and prediction.
- Impact assessment of changing climate and landuse on the hydrological regime.
- Design and development of training course on “Hydrological Modeling using SWAT model” and accomplished 05 number of such training.
- Trained and guided seven students from IITs, NITs and other institutions for their M. Tech. Dissertation research work on a variety of hydrological problems
- More than 200 manpower trained under various in-house and sponsored training programmes

## Primary Administrative Responsibilities Handled:

1. Head, Maintenance Division & Coordinator-Construction NIH (Jan 2024 to till date)
2. Officer-in-Charge Remote Sensing and GIS Lab (Apr 2019 to Mar 2024)
3. Officer-in-Charge – Construction Division (Jul 2014 to May 2019)
4. Charge of Finance Officer (Apr 2018 to Oct 2018)
5. Member of various group purchase/ event organising/ technical/ financial evaluation committees
6. Reviewer for Jr. of Indian Soci. of Remote Sensing, Jr. of Hydrology, Hydrological process etc.
7. Coordinator for the MoU signing between NIH, Roorkee and UKCEH, Wallingford UK

## **Technical Reports: 12**

- Tyagi, JV, Lohani, AK, Arora, M, Rawat, SS, Singh, PK, **Nema, MK**, Bisht, DS., Uniyal, PK, Spra, TR, Kumar Ram, Kumar Pawan, Mishra, Charu, Kumar, Naresh, Guyal, Varun (2022). Hydrological Knowledge in Ancient India (प्राचीन भारत में जलविज्ञानीय ज्ञान). A bi-lingual (Hindi and English) third edition of special report published by NIH, Roorkee
- **Nema, MK**, Jain, Sanjay K, Surjeet Singh, Mishra PK, and Singh, PK (2021). Observation and Modelling of Various Hydrological Processes in a Small Watershed in Upper Ganga Basin. (NMSHE-SP5)
- Mishra, PK, **Nema, MK**, and Kumar, P (2021). Water Census and Hotspot analysis in selected villages in Upper Ganga basin. (NMSHE-SP11)
- **Nema, MK**, Jain, SK, Jain, Sanjay K, Thayyen, RJ and Mishra, PK (2020). Hydrological process and characterization of Lesser Himalayan catchments.
- **Nema, MK**, Jain, SK, Jain, Sanjay K, Thayyen, RJ, Mishra, PK and Thakur, HP (2020). Measurements and Modeling of Evapotranspiration and Other Hydrological Processes in Lesser Himalayas. (MoES)
- Jain, Sanjay K, Thomas, T, **Nema, MK** and Mishra, PK, Gaur, Shikha, Agarwal, PK, Singh, Yatveer and Jain, SK (2019). Hydrological modelling of Narmada Basin using the GWAHA Model” as part of the final report on ‘Development of Understanding in Hydro-climate Services in India to Inform Food and Water Security
- **Nema, MK**, Jain, SK, Jain, Sanjay K, Thayyen, RJ and Mishra, PK (2019). “Hydrological process and characterization of Lesser Himalayan catchments”.
- Kumar, Pradeep, **Nema MK** and Rawat SS (2018). Pilot Basin Study (PBS): Integrated Water Resources Management (IWRM) in Tawi River Basin, JK
- Chalisgaonkar, Deepa, Rathore, DS, Nema, MK, Jain, Sanjay K., Mishra, PK and Agarwal, PK (2017). Development of Ganga Information Portal (GIP)
- Nema, MK and Jain, SK (2016). Variability of the Hydro-Climatic Variables in Punjab Plains of Lower Sutlej
- Kumar, Pradeep, Nema MK and Rawat, SS (2016). Impact of Landuse Changes on the Flow Regime and Sustenance of Environmental Flows of Tawi River at Jammu.
- Nema MK, Kumar, Pradeep and Thayyen, RJ (2016). Climate Change Effects on Hydrology of the Tawi Basin in Western Himalaya.

## **Paper Published in International Journals: 14**

1. Sahu KK, Chandniha SK, **Nema, MK**, Das GK, Harithalekshmi V and Wadware P (2023). "Block Level Long-term Rainfall Variability Using Trend Analysis in a State of Central India" published in the Journal of Water and Climate Change. <https://doi.org/10.2166/wcc.2023.047>
2. Nagashree, G.E., **Nema, M.K.** (2023). Comparative Assessment of Different Machine Learning Models to Estimate Daily Soil Moisture. In: Timbadiya, P.V., Patel, P.L., Singh, V.P., Mirajkar, A.B. (eds) Geospatial and Soft Computing Techniques. HYDRO 2021. Lecture Notes in Civil Engineering, vol 339. Springer, Singapore. [https://doi.org/10.1007/978-981-99-1901-7\\_44](https://doi.org/10.1007/978-981-99-1901-7_44)
3. Yadav, V.K., **Nema, M.K.**, Khare, D. (2022). Evaluation of SWAT Model for Simulating the Water Balance Components for the Dudh Koshi River Basin in Nepal. In: Yadav, B., Mohanty, M.P., Pandey, A., Singh, V.P., Singh, R.D. (eds) Sustainability of Water Resources. Water Science and Technology Library, vol 116. Springer, Cham. [https://doi.org/10.1007/978-3-031-13467-8\\_5](https://doi.org/10.1007/978-3-031-13467-8_5)
4. Verma, S., **Nema, M.K.** (2021). Development of an empirical model for sub-surface soil moisture estimation and variability assessment in a lesser Himalayan watershed. Modeling Earth System Environment. (2021). <https://doi.org/10.1007/s40808-021-01316-z>
5. Mishra, PK, Thayyen, R.J, Singh, H, Das, S, **Nema, MK**, Kumar, P (2021). Assessment of cloudbursts, extreme rainfall and vulnerable regions in the Upper Ganga basin, Uttarakhand, India. International Journal of Disaster Risk Reduction, 102744. <https://doi.org/https://doi.org/10.1016/j.ijdr.2021.102744>
6. Patil, P. R., Thayyen, R. J., Jain, S. K., & **Nema, M. K.** (2021). Estimation of apparent thermal diffusivity of soil at lesser-Himalayan experimental catchment, Uttarakhand, India, for analytical subsoil temperature modelling. Arabian Journal of Geosciences, 14(13), 1-10. <https://doi.org/10.1007/s12517-021-07008-3>
7. Horan R, Rickards NJ, Kaelin A, Baron HE, Thomas T, Keller VDJ, Mishra PK, **Nema MK**, Muddu S, Garg KK, Pathak R, Houghton-Carr HA, Dixon H, Jain SK, Rees G. Extending a Large-Scale Model to Better Represent Water Resources without Increasing the Model's Complexity. Water.(2021) 13(21):3067. <https://doi.org/10.3390/w13213067>

8. **Nema, MK**, Thakur, HP, Upreti, Hitesh, Jain, Sanjay K, Mishra PK, Thayyen, RJ, Singh, PK and Jain, SK (2020): Estimation of evapotranspiration in lesser Himalayas using remote sensing-based surface energy balance algorithm, *Geocarto International*, <https://doi.org/10.1080/10106049.2020.1745300>
9. Pujari, P. R., Jain, V. S., V., Sreelash, K, Dhyani, S., **Nema, M. K.**, Verma, P., Kumar, P., Jain, Sharad K., and Sekhar, M. (2020). Critical zone: an emerging research area for sustainability. *Current Science*, Vol. 118, No. 10, 25 May 2020 1487. (<https://www.currentscience.ac.in/Volumes/118/10/1487.pdf>)
10. Rickards, N., Thomas, T., Kaelin, A., Houghton-Carr, H., Jain, S.K., Mishra, P.K., **Nema, M.K.**, Dixon, H., Rahman, M.M., Horan, R., Jenkins, A., Rees, G., (2020). Understanding Future Water Challenges in a Highly Regulated Indian River Basin—Modelling the Impact of Climate Change on the Hydrology of the Upper Narmada. *Water* 12, 1762. <https://doi.org/10.3390/w12061762>
11. Upadhyaya, DB, Evans, J, Muddu, S, Tomer, SK, Al Bitar, A, Yeggina, S, Thiyanku, S, Morrison, R, Fry, M, Tripathi, SN, Mujumdar, M, Goswami, M, Ganeshi, N, **Nema, MK**, Jain, SK, Angadi, SS, Yenagi, BS, (2021). “The Indian COSMOS Network (ICON): Validating L-Band Remote Sensing and Modelled Soil Moisture Data Products”. *Remote Sensing*. 13(3), 537. <https://doi.org/10.3390/rs13030537>
12. Chalisgaonkar D, Jain Sharad K, **Nema M.K.**, Mishra P.K. (2018) Quantification of Water Footprint of National Capital Territory (NCT) of Delhi, India. In: Singh V., Yadav S., Yadava R. (eds) *Water Resources Management*. Water Science and Technology Library, vol 78. Springer, Singapore <https://www.springerprofessional.de/en/quantification-of-water-footprint-of-national-capital-territory-/15259440>
13. **Nema M.K.**, Khare D., Adamowski J., Chandniha S.K. (2018). Spatio-temporal analysis of rainfall trends in Chhattisgarh State, Central India over the last 115 years. *Journal of Water and Land Development*. No. 36 p. 117–128. <https://doi.org/10.2478/jwld-2018-0012>
14. **Nema, MK**, Khare, D and Chandniha S. K. (2017). “Application of artificial intelligence to estimate the reference evapotranspiration in sub-humid Doon valley” *Applied Water Sciences*; ISSN 2190-5487; <https://doi.org/10.1007/s13201-017-0543-3>

#### **Paper Published in National Journals: 08**

1. Karna, KK, **Nema, MK** and Khare Deepak (2021). Application of HEC-HMS Model for Runoff Simulation: A Case Study of Kankai River Basin in Nepal. *Journal of Indian Water Resource Society*, Vol. 41, No. 2, Apr., 2021. <http://iwrs.org.in/journal/apr2021/3apr.pdf>
2. Nema, S, **Nema, MK**, Awasthi MK and Nema, RK (2020). Prediction of groundwater level fluctuations by artificial neural network models: A case study. 0975-BVAAP Vol.28(2) [December 2020]. 2412 (Online); 0771-7706 (Print) NISCAIR-CSIR, India (<http://nopr.niscair.res.in/handle/123456789/56369>)
3. Verma Ramesh, Nema, **MK**, **Nema AK**, and Sena, DR (2020). Hydrological modeling of a sub-basin of Mahanadi river basin using SWAT model. *Indian Journal of Soil Conservation*, Vol. 48, No. 01, pp: 1-10.
4. Chalisgaonkar, Deepa, Nema, MK, Mishra, PK (2018). “Virtual Water Imports in Delhi City, India with Reference to Agriculture Sector”. *IWRS Journal India* Vol. 38 (4) pp: 33-37. <http://iwrs.org.in/journal/oct2018/4oct.pdf>
5. Meena, PK, Khare, D and **Nema, MK** (2016). Constructing the downscale precipitation using the ANN model over the Kshipra river basin, Madhya Pradesh. *Journal of Agrometeorology* 18 (1) : 113-119 (June 2016) <http://agrimetassociation.org/journal/fullpage/fullpage-202002031793284526.pdf>
6. Chalisgaonkar, D, Jain SK, **Nema, MK** and Mishra, PK (2016). “Agricultural Water Footprint: A Way Forward for Water Conservation and Management” Annual Technical Volume –II 2016. Civil Engineering Division Board, Institution of Engineers pp: 53-58. <https://www.ieindia.org/webui/IEI-Publication.aspx#annual-technical-volume>
7. Singh, PK, **Nema MK**, Jain SK and Mishra SK (2016). “Water Conservation and Management: Towards a Societal and Technological Initiative for Sustainable Development”. Annual Technical Volume –II 2016. Civil Engineering Division Board, Institution of Engineers pp: 22-32. <https://www.ieindia.org/webui/IEI-Publication.aspx#annual-technical-volume>
8. **Nema, MK**, Kumar P., Goel, M.K. and Thayyen, R. J. (2012). Precipitation trends in the Chenab basin of western Himalaya. Special Issue Crop Improvement. ISSN 0256-0933; PP-659-660

#### **Paper Published in International Conferences : 32**

1. **Nema, M.K.**, Khare, Deepak, Jain, S.K., and Gupta, Abhishek (2024). Water Resources Vulnerability Assessment to Derive Adaptation Strategies. In the proceedings of Roorkee Water Conclave (RWC-2024), IIT Roorkee held during March 03-06, 2024 organized by IIT Roorkee and NIH Roorkee.

2. Ahirwar, H.R., **Nema, M.K.**, Nema, A.K. (2024). Analyzing Occurrences, Frequency and Patterns of Extreme Floods in the Wainganga River Basin. In the proceedings of Roorkee Water Conclave (RWC-2024), IIT Roorkee held during March 03-06, 2024 organized by IIT Roorkee and NIH Roorkee.
3. Chandniha S.K., **Nema, M.K.**, Kansal, M.L. (2024). Landuse Land Cover Change Detection and Prediction Using Markov Chain Modeling Approach. In the proceedings of Roorkee Water Conclave (RWC-2024), IIT Roorkee held during March 03-06, 2024 organized by IIT Roorkee and NIH Roorkee.
4. Nema, Sourabh, Choudhary S.S., **Nema, M.K.**, Awasthi M.K. (2024). Hydrogeological Analysis and Groundwater Modelling in the Tawa command: A Comprehensive Study of District-Hoshangabad, M.P. In the proceedings of Roorkee Water Conclave (RWC-2024), IIT Roorkee held during March 03-06, 2024 organized by IIT Roorkee and NIH Roorkee.
5. Nagashree G.E., **Nema M.K.**, Makhdumi, W., and Dwarakish G.S. (2022). "Evaluation and Determination of Reliability on Advanced Neural Network Models for Prediction of Soil Moisture" Presented and published in the 27th International Conference HYDRO 2022 at PEC, Chandigarh, India, during Dec 22-24, 2022
6. Mourya, G., **Nema, M.K.** and Nema, A.K. (2022). "Groundwater Potential Zone Mapping using Geospatial Techniques: A Case Study of Districts of Southern Madhya Pradesh" Presented and published in the 27th International Conference HYDRO 2022 at PEC, Chandigarh, India, during Dec 22-24, 2022
7. **Nema, MK**, Mishra, PK and Jain Sanjay K. (2022). Dam decommissioning: An option for India's ageing water storage infrastructures. Presented and published in International Dam Safety Conference organized by Indian National Committee on Large Dams, India (INCOLD), CWC and CBIP at Jaipur during October 10-12, 2022.
8. **Nema, MK** (2022). "Field hydrology and Experimental Catchment based research studies in the lesser Himalaya" in the online International workshop on Scaling Effects on Runoff Assessment / Monitoring organized by ICAR – Indian Institute of Soil and Water Conservation, RC, Udhagamandalam on May 31, 2022.
9. **Nema, MK** and Nagashree, GE (2022). "Evaluation of deep learning-based hybrid models for the soil moisture prediction in a Lesser Himalayan catchment" presented and abstract published in the Roorkee Water Conclave (RWC) 2022, an international conference organized jointly by the IIT Roorkee and NIH Roorkee from March 02-04, 2022.
10. Nagashree GE and **Nema, MK** (2021). Comparative Assessment of Different Machine Learning Models to Estimate Daily Soil Moisture". Presented and published in the 26<sup>th</sup> International Conference HYDRO 2021 at SVNIT Surat, Gujarat, India, during December 23-25, 2021
11. Yadav Vijay Kumar, **Nema, MK** and Khare, Deepak (2021). "Evaluation of the SWAT Model for Simulating the Water Balance Components for the Dudh-Koshi River Basin in Nepal" presented in the International e-Conference on Water Source Sustainability Organised by IWRS and Department of WRDM, IIT Roorkee from Jun 18-20, 2021.
12. Mishra, PK, Singh, H, Thayyen, R.J, Das, S, **Nema, MK**, Kumar, P (2021). Block level Livelihood Vulnerability Index of a Himalayan district in Upper Ganga Basin. Presented and published in the 25<sup>th</sup> International Conference HYDRO 2020 at NIT Rourkela, Odisha, India, during March 26-28, 2021.
13. Kumar Kisalaya Karna, **Nema, MK** and Khare, Deepak (2021). "Application of HEC-HMS model for runoff simulation: a case study of Kankai river basin in Nepal" publication in the proceedings of online International Conference on "Sustainable Water Resources Development and Management", SWARDAM-2021 during Mar 8-9, 2021
14. Thakur, HP, **Nema, MK**, Chatterjee, C (2019). "Inter-comparison of Predictive Machine-Learning Methods for Downscaling of Precipitation over Mahanadi Basin" in proceedings of sixth India Water week - 2019, organized during 24-28 September 2019 at New Delhi.
15. **Nema, MK**, Thakur, HP, Chatterjee, C, Sahoo, B, Mishra, PK (2019). "Performance evaluation of predictive machine learning methods for statistical downscaling of monthly precipitation: The case study of Mahanadi Basin" in the proceedings of 2<sup>nd</sup> international conference on Sustainable Water Management under NHP held from Nov 6-8, 2019 in Pune, India.
16. **Nema, MK**, Jain Sharad K and Khare Deepak (2018). "Assessment of ecological status of a river by using the eco-flow metrics." 23<sup>rd</sup> International Conference HYDRO-2018 organized by NIT, Patna during Dec 19-21, 2018
17. **Nema, MK**, Jain, Sharad K (2018). "Carrying capacity of a basin in context of river valley projects" at one day conference on "Carrying Capacity Approaches in Environmental Management Leading to Sustainable Development organized by CSIR-NEERI, New Delhi on October 29, 2018 at New Delhi
18. Kumar, Amit, Pal Lalit and **Nema, MK** (2018). Analyzing the translation from Metrological to Hydrological Drought for Wainganga River of Central India at International Conference on Sustainable Technologies for Intelligent Water Management (STIWM) 2018, Feb 16-19, 2018 at IIT Roorkee
19. Jain, Anshul, Khare, Deepak, **Nema, MK** and Singh, Lakhwinder (2018). "Assessment of trends for hydro-meteorological

variables for Banda District of Bundelkhand region, India” at International Conference on Sustainable Technologies for Intelligent Water Management (STIWM) 2018, February 16-19, 2018 at IIT Roorkee

20. Bharti, Love Shankar, Kumar, Amit, **Nema, MK** and Khare Deepak (2018). Estimation of Spatially Distributed Evapotranspiration (ET) Using Remotely Sensed Data at International Conference on Sustainable Technologies for Intelligent Water Management (STIWM) 2018, February 16-19, 2018 at IIT Roorkee
21. **Nema, MK**, Kumar, Pradeep, Jain Sharad K and Khare Deepak (2017). “Impacts of climate change on streamflow of the Tawi basin under different scenarios” in Proceedings of Fourth India Water week, Oct 10-14, 2017 at New Delhi
22. Kumar, Amit and **Nema, MK** (2017) “Analyzing the recent history of drought conditions in Madhya Pradesh using Standardized Precipitation Index (SPI)”. 7th International Groundwater Conference on Groundwater (IGWC) Vision 2030 “Water Security, Challenges & Climate Change Adaptation”, Dec 11-13, 2017 at New Delhi
23. **Nema, MK**, Kumar P, Jain Sharad K, and Khare, D (2017). Hydrological simulations for Tawi river basin up to Jammu using SWAT model. 22nd International Conference on Hydraulics, Water resources & Coastal Engineering (HYDRO-2017) organized by L.D. College of Engineering Ahmedabad during DEC 21 -23, 2017.
24. **Nema, MK**, Kumar, Pradeep, Jain Sharad K and Khare Deepak (2017). “Runoff Simulation For a Western Himalayan River Using Swat Model” in Proceedings of the first Asian Conference on Water and Land Management for Food and Livelihood Security WLMFLS-2017, Jan 20-22, 2017 at IGKV, Raipur (Chhattisgarh)
25. **Nema, MK**, Lohani AK and Kumar, Pradeep (2016). “Quantification of Morphometric Characterization for Watershed Management Planning in a Western Himalayan Basin, India” in Proceedings of International Conference India Water Week during Apr 4-8, 2016 at New Delhi.
26. Kumar, P, **Nema MK**, Kamal, Sinha S, Singh H and Kumar M (2016). “A study of physico-chemical parameters to assess the water quality status of Asan river in Doon valley” in Proceedings of International Conference India Water Week during Apr 4-8, 2016 at New Delhi.
27. Chalisgaonkar, Deepa, Jain, Sharad K, **Nema, MK** and Mishra, P K (2016). “Quantification of Water Footprint of the National Capital Territory (NCT) of Delhi” in souvenir of International Conference on Water Environment, Energy & Society-2016 (ICWEES-2016) during Mar 15-18, 2016 at AISECT University, Bhopal
28. **Nema, MK** and Lohani A. K. (2015). “Application of the Geomorphologic Instantaneous Unit Hydrograph Concept for Runoff Prediction in an Ungauged Catchment”. Proceedings of the international conference India Water Week – 2015 organized by the Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India at New Delhi from Jan 14-17, 2015.
29. Meena, PK, Khare, Deepak and **Nema, MK** (2015). “Artificial Neural Networks Modeling for Suspended Sediment Yield Estimation over Kshipra Catchment, Madhya Pradesh”. Proceedings of international conference India Water Week – 2015 organized by Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India at New Delhi from Jan 14-17, 2015
30. **Nema, M.K.**, Jain S. K. and Mishra P.K. (2014). “Spatial and temporal distribution of rainfall trends in Bist-doab region of Punjab (1901-2010)” in souvenir of 19th international conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO-2014 International) during Dec 18-20, 2014 at MANIT Bhopal (pp 146) <http://117.252.14.250:8080/jspui/handle/123456789/3837>
31. Mishra P.K., Jain S. K. and **Nema, M.K.** (2014). “Investigating Regional Trends for the KBK Region of Odisha, India” in 19th international conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO-2014 International) during Dec 18-20, 2014 at MANIT Bhopal. ISBN ISBN: 978-93 -84935-04-7: pp 1069-1079. <http://117.252.14.250:8080/jspui/handle/123456789/3965>
32. **Nema, M.K.** and Pradeep Kumar. (2013). “Analysis of the spatial pattern of streamflow trends in the Chenab basin over 40 years” in an international conference on Advances in Water Resources Development and Management (Awrwm-2013) held at Chandigarh on Oct 23-27, 2013.

#### **Paper Published in National Conferences : 10**

1. **Nema MK** and Sekhar M (2022). “Soil Moisture India Network (SMIN) : Exploring Research Possibilities and Expansion of the Network” was presented during an online session of UK-India Smart Farm Club (SFC) on Nov 04, 2022.
2. **Nema, MK**, Kumar, Amit, Thayyen, Renoj and Mishra, PK (2018). “Assessment of actual evapotranspiration in a small catchment of Tehri Garhwal region using remotely sensed data” at 12th Uttarakhand State Science and Technology Congress 2017-18, Mar 07-09, 2018 at Dehradun
3. Kumar, Pradeep, Rawat, SS and **Nema, MK** (2016). “Environmental Issues of Hydroelectric Projects during Construction

and Operation” in souvenir of UGC-SAP sponsored National Conference on Biodiversity Conservation and Pollution Control-Challenges and Strategies (BCPC-2016) during Mar 9-10, 2016 at Jammu.

4. **Nema, MK**, Kumar Paramanand and Chandniha, SK (2015). “Application of Artificial Intelligence to Estimate the Reference Evapotranspiration in Sub-Humid Doon Valley” in souvenir of IAH Symposium on Hydrology during Dec 22-23, 2015 at New Delhi (pp 72) <http://117.252.14.250:8080/jspui/handle/123456789/3302>
5. Meena, Pramod Kumar, Khare, Deepak and **Nema, MK** (2015). “Development of Neural Model for Precipitation Considering Climate Change Under Rapid Economic Growth” in souvenir of IAH Symposium on Hydrology during Dec 22-23, 2015 at New Delhi (pp 73)
6. **Nema, MK** (2015). “Lukewarmly Response of Micro-Irrigation Adaptation in India: Problems and Prospects”. Proceedings of abstract of national seminar on ‘Technology and Management of Micro Irrigation in Floriculture’ Organized by division of Agricultural Engineering and Directorate of Extension Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu from March 19-20, 2015.
7. **Nema, M.K.** (2013). “Introduction to Pilot Basin Study: IWRM in Tawi River Basin, Jammu”. Stakeholders’ during Brainstorming Session on “Integrated Water Resources Management (IWRM) Project on Tawi Catchment” organized by WHRC, National Institute of Hydrology, Jammu on Apr 16, 2013, at Jammu.
8. **Nema, MK** and Kumar, Pradeep. (2012). "Morphometric analysis of Tawi river basin of western Himalaya: A GIS approach" National Conference on Environmental Issues and Challenges - The Himalayan Perspectives on Oct 4-5, 2012 organized by the Institute of Mountain Environment & Department of Environmental Sciences, University of Jammu.
9. **Nema, MK** and Lohani, A.K. (2012). Runoff Estimation from a Small Watershed Using GIUH Approach in GIS Environment. National symposium on "Water Resources Management in Changing Environment (WARMICE-2012)", Feb 08-09, 2012 Organized by Indian Association of Hydrologists at NIH, Roorkee
10. Kumar, P., Nikam, B.R. and **Nema, MK** (2011). Comparative Evaluation of Different Potential Evapotranspiration Estimation Approaches. 46th Annual Convention of ISAE, Feb 27-29, 2012, Pantnagar

## **Hindi Publications : 22**

1. **Nema, MK** (2023). “विदर्भ क्षेत्र के अतीत, वर्तमान एवं भविष्य को सहेजती जीवनदायिनी वैनगंगा” a Hindi article published in Jal Chetna a Hindi technical magazine of NIH, Roorkee; Vol. 11(2), pp:16-20.
2. **Nema, MK** and Parihar SS (2023). “जलाशयों से होता वाष्पीकरण और उसे रोकने की कुछ अभिनव विधियाँ” a Hindi article published in Manthan a Hindi annual magazine of Indian Institute of Technology (IIT), Roorkee Vol. 1(2) 2023, pp: 15-23.
3. **Nema, MK** (2022). “भारतीय जल संसाधनों के प्रबंधन से संबंधित मुद्दे” a article published in Jal Chetna a Hindi technical magazine of NIH, Roorkee; Vol. 11(1), pp: 20-24. <http://117.252.14.250:8080/jspui/handle/123456789/6918>
4. **Nema, MK** (2021). “बाबड़ियाँ: प्राचीन भारत के भूले-विसरे एवं विश्वसनीय जल स्रोत” a cover page article published in Jal Chetna a Hindi technical magazine of NIH, Roorkee; Vol. 10(1), pp: 5-12 <http://117.252.14.250:8080/jspui/handle/123456789/6572> (Cover Page Article)
5. Nema, S., **Nema, MK.**, Awasthi, M. K., and Nema, R. K. (2020). “कृत्रिम तंत्रिका नेटवर्क मॉडल द्वारा भूजल स्तर के उतार-चढ़ाव का पूर्वानुमान : एक अध्ययन” a Hindi article published Bharatiya Vaigyanik evam Audyogik Anusandhan Patrika (BVAAP) BVAAP Vol.28(2). DOI: [10.56042/bvaap.v28i2.68015](https://doi.org/10.56042/bvaap.v28i2.68015)
6. **Nema, MK** (2020). “COVID-19 संकट के परिपेक्ष में भारतीय जल क्षेत्र की चुनौतियों एवं समाधान” a Hindi article published in Manthan a Hindi annual magazine of Indian Institute of Technology (IIT), Roorkee Vol. 18, pp: 53-57.
7. **Nema, MK** (2020). “सरस्वती - एक नदी जो लुप्त हो गयी” a Hindi article published in Jal Chetna a Hindi technical magazine of NIH, Roorkee; Vol. 8 (2), pp: 35-38 <http://117.252.14.250:8080/jspui/handle/123456789/4412>
8. **Nema, MK** (2019). “जल शक्ति अभियान - भारत सरकार द्वारा जल संरक्षण की अनूठी पहल” a Hindi article published in Pravahini Hindi magazine of NIH, Roorkee; Vol. 26, pp: 18-23 <http://117.252.14.250:8080/jspui/handle/123456789/4210>
9. **Nema, MK**, Kumar Pradeep, Mishra, PK and Nema, S (2019). “दैनिक वर्षा के आंकड़ों द्वारा तवी नदी बेसिन के लिए अलग-अलग प्रत्यागमन अवधियों के लिए तीव्रता-अवधि-आवृत्ति (आई डी एफ) वक्र का विकास” in the 6<sup>th</sup> Hindi National Seminar on ‘Jal Sanshadhan Evam Paryaavaran’, during Dec 16-17, 2019 at NIH, Roorkee. <http://117.252.14.250:8080/jspui/handle/123456789/4177>
10. **Nema, MK**, Kare, Deepak, Bharti, Luvshankar and Jain, SK (2019). “भूमि उपयोग परिवर्तन और शहरीकरण के शहरी - ऊष्मात - द्वितीय प्रभाव - लखनऊ शहर का एक अध्ययन” in the proceedings of 6<sup>th</sup> National Hindi Seminar on ‘Jal Sanshadhan Evam Paryaavaran’, during

Dec 16-17, 2019 at NIH, Roorkee. <http://117.252.14.250:8080/jspui/handle/123456789/4132>

11. Mishra, PK, Thayyen, RJ, **Nema, MK**, Singh, H, Das, S, Kumar P and Kumar Naresh (2019). "ऊपरी गंगा बेसिन में बादलों के फटने की संभावना एवं संवेदनशीलता का आंकलन" in 6th Hindi National Seminar on 'Jal Sanshadhan Evam Paryavaaran', during Dec 16-17, 2019 at NIH, Roorkee. <http://117.252.14.250:8080/jspui/handle/123456789/4140>
12. Chalisgaonkar, Deepa, Agarwal, PK, Mishra, PK and **Nema, MK** (2019) "गंगाकोश - आधुनिक तकनीक द्वारा गंगा नदी से संबन्धित सूचनाओं का प्रचार एवं प्रसार" in 6th Hindi National Seminar on 'Jal Sanshadhan Evam Paryavaaran', Jal Sangoshthi - 2019, during December 16-17, 2019 at NIH, Roorkee. <http://117.252.14.250:8080/jspui/handle/123456789/4159>
13. Chalisgaonkar, Deepa, Jain, SK, **Nema, MK** and Mishra, PK (2018). "राष्ट्रीय राजधानी क्षेत्र के जल पदचिह्न की मात्रा का आंकलन" Published in Bharteeya Vaigyanik evam Audhougik Anushandhan Patrika of CSIR-National Institute of Science Communication and Information Resources (NISCAIR) Vol. 26(2) Dec-2018, Page: 106-114, 0975-2412 (Online); 0771-7706 (Print), <https://nopr.niscpr.res.in/bitstream/123456789/45720>
14. Mishra, PK, Thayyen, RJ, **Nema, MK**, Singh, H, Das, S, Kumar P and Kumar Naresh (2019). "ऊपरी गंगा बेसिन में बादलों के फटने की संभावना एवं संवेदनशीलता का आंकलन" in the proceedings of 6th National Hindi Seminar on 'Jal Sanshadhan Evam Paryavaaran', Jal Sangoshthi -2019, during December 16-17, 2019 at NIH, Roorkee. <http://117.252.14.250:8080/jspui/handle/123456789/4140>
15. **Nema, MK** (2017). "भारतीय परिपेक्ष में एकीकृत शहरी जल प्रबंधन का महत्व" a Hindi article published in Jal Chetna a National Hindi magazine of NIH, Roorkee. Vol. 6(2), pp: 06-10. (Cover Story Article) <http://117.252.14.250:8080/xmlui/handle/123456789/2766>
16. **Nema, MK** and Chandniha S.K. (2017). "राष्ट्रीय नदी गंगा का पर्यावरण और पारिस्थितिकी तंत्र" a Hindi article published in Pravahini Hindi magazine of NIH, Roorkee; Vol. 24 (2017), pp: 01-08, <http://117.252.14.250:8080/xmlui/handle/123456789/2064>
17. **Nema, MK** (2016). "सूखे की स्थिति में जल संसाधन प्रबंधन" a Hindi article published in Bhartiya Vaigyanik Evam Audyogik Anushandhan Patrika National Hindi magazine of CSIR-National Institute of Science Communication And Information Resources New Delhi; ISSN: 0971-7706, e-ISSN: 0975-2412. Vol. 24(1), pp: 86-93. <http://117.252.14.250:8080/jspui/handle/123456789/3313>
18. **Nema, MK** (2016). "पर्वतीय क्षेत्रों पर जलवायु परिवर्तन के प्रभाव" a Hindi article published in Jal Chetna a National Hindi magazine of NIH, Roorkee. Vol. 5(2), pp: 21-24. <http://117.252.14.250:8080/xmlui/handle/123456789/2698>
19. **Nema, MK** (2015). "नर्मदा: मध्यभारत की जीवन रेखा" a cover page article in Jal Chetna, a Hindi Technical Magazine of National Institute of Hydrology, Roorkee, vol. 4(1), PP 6-10. <http://117.252.14.250:8080/jspui/handle/123456789/3308>
20. **Nema, MK** (2015). "वनों में बसते हैं जीवनदायिनी नदियों के प्राण" a Hindi article published in Gyan Prakash, a Hindi magazine of Nagar Rajbhasha Karyanvan Samiti, Haridwar, Vol. 4, 2014. <http://117.252.14.250:8080/jspui/handle/123456789/3306>
21. **Nema, MK** (2014). "भारतीय मानसून और जलवायु परिवर्तन" a Hindi article published in Pravahini Hindi magazine of NIH, Roorkee; Vol. 201, pp: 09-12. <http://117.252.14.250:8080/jspui/handle/123456789/3315>
22. **Nema, MK** (2013). "नदियों को जोड़ने की चुनौतियाँ" in Jal Chetna, a Hindi Technical Magazine of N National Institute of Hydrology, Roorkee, vol. 3 (1), PP 15-18. <http://117.252.14.250:8080/jspui/handle/123456789/3307>

#### **Other S&T Product/ Document: 06**

1. **Nema MK** and Kapoor NJ (2022). JAL SHAKTI ABHIYAN - 2022 (Catch the Rain – where it falls when it falls). A Report of Bageshwar District, Uttarakhand
2. **Nema MK** (2020). A comprehensive report on "Jal Shakti Abhiyan - 2019 for Settur, Kambadur, Nallamada, Gorantla and Madakasira Mandals of Anantapur District, Andhra Pradesh".
3. **Nema MK** (2018). A comprehensive report on the international training on "River discharge and sediment transport assessment with ADCP" held at Banjarmasin, Indonesia July 24 27, 2018
4. **Nema MK** and Spra TR (2015). A Report on NMCG 118 River Front Points Identification at Kirtinagar, Uttarakhand. May 2015
5. Thomas, T, **Nema, MK** and Mishra, PK (2015). A comprehensive report on the training workshop on "Introduction to Global Water Availability Assessment (GWAVA) hydrological model" held at Centre for Ecology and Hydrology (CEH), Wallingford, United Kingdom. July-2015
6. **Nema MK** and Spra TR (2014). A Report on NMCG 118 River Front Points Identification at Kirtinagar, Uttarakhand. December 2014



## **Involvement in Projects: 15**

### **Ongoing Research / Sponsored / Consultancy Projects: 02/03/00**

- 2022 - 2024 Monitoring of Hydrological Processes in Glaciated and Non-Glaciated Watersheds of NW Himalaya (NIH Watersheds: Gangotri & Herval) (PI) (ISRO-DoS)
- 2022 - 2024 Spatio-temporal Water Availability under Changing Climate and Land-use Scenarios in Wainganga River Basin (PI) (NIH)
- 2021 - 2023 Long term hydrological assessment for the development of water security plan for state of Mizoram. (NHP)
- 2020 - 2023 Monitoring and hydrological modeling of Herval watershed in Lesser Himalaya (PI) (NIH)
- 2018 - 2022 Integrated Assessment of the Impacts of Climate Change on the Hydrology of Narmada basin through Hydrological Modelling Approaches (NHP)

### **Completed Research / Sponsored / Consultancy / Projects: 02/04/04**

- 2016 - 2020 Measurements and Modeling of Evapotranspiration and other Hydrological Processes in Lesser Himalayas (PI) (MoES)
- 2015 - 2020 Water Census and Hotspot analysis in selected villages in Upper Ganga basin (DST)
- 2015 - 2020 Observation & modelling of various hydrological processes in a small watershed in Upper Ganga basin (DST)
- 2015 - 2020 Development of a project website and hydrological database in Upper Ganga basin (DST)
- 2014 - 2019 Hydrological Processes & Characterization of Lesser Himalayan Catchments (PI) (NIH)
- 2014 - 2018 Development of Ganga Information Portal (NIH)
- 2017 - 2020 Additional study of less than 10 MW hydropower projects under Cumulative Impact Assessment of hydroelectric projects in Sutlej river Basin in Himachal Pradesh (AHEC-ICFRE)
- 2017 - 2018 Hydrological aspects of Sarasvati River Rejuvenation and Heritage Development Project: Review & observations on study reports & hydrological analysis of balancing reservoir (HSHDB)
- 2015 - 2018 Carrying capacity study in respect of Hydro Power Projects and River Valley Projects on River Bhagirathi Basin and its tributaries in Uttarakhand (PI) (UJVNL)
- 2015 - 2018 Carrying capacity study in respect of Hydro Power Projects and River Valley Projects on River Alaknanda Basin and its tributaries in Uttarakhand (UJVNL)

## **Training or Workshop Organized : 16**

1. Organized the third edition of "Roorkee Water Conclave (RWC) – 2024", with the theme of "Responsible Water Management & Circular Economy" during March 04-06, 2024 at Roorkee. RWC is a premier international conference on water resources held every alternate year in Roorkee and jointly organized by the IIT, Roorkee, and NIH Roorkee. ([RWC Website](#))
2. Co-organized a two-day National Workshop on "Basics of Hydrology and Importance of Water Resources Management in the Context of Sivagangai District" from January 19-20, 2024, at and with the Dept. of Geology, Alagappa Government. Arts College, Alagappa University, Karaikudi, Tamil Nadu.
3. Organized a paid training on "Hydrological Modeling using SWAT+" during May 22-27, 2023, at NIH, Roorkee, for 35 participants from various academic & research institutions, including researchers, scientists, faculties, scholars and other PG students.
4. Organized a five-day internship training programme on "Exposure to Various Research Activities of NIH Roorkee" during May 08-12, 2023, at NIH, Roorkee for 08 numbers of B. Tech (Civil Engineering) students from NIT Raipur.
5. Organized the 4<sup>th</sup> Steering Committee Meeting of Soil Moisture Indian Network (SMIN) and a Stakeholders Workshop on December 01, 2022, at NPMU, NHP, New Delhi.
6. Organized a 05-days online training on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on" from August 22-26, 2022, at NIH, Roorkee, sponsored by NHP for 18 participants from 10 states government water resources departments and 04 central implementing agencies.
7. Co-organized a 12-days training programme on "Water Resources Planning and Management" sponsored by META Nashik, for the Water Resource Department (WRD) engineers of the Government of Maharashtra from April 15-25, 2022.
8. Organized 05-days online training on "Soil and Water Assessment Tool (SWAT)" from Feb 28 to March 04, 2022, at NIH, Roorkee, sponsored by the Indian Council of Forestry Research and Education (ICFRE), Dehradun for 17 senior in-service scientists from its 08 different institutions located in different parts of the country.
9. Co-organized a 05-days online training course on "Sediment Yield and Reservoir Sedimentation" at NIH Roorkee under National Hydrology Project (NHP) from February 21-25, 2022, at NIH Roorkee India.
10. Organized a 05-day online training on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and

Hands-on” from August 16-20, 2021, at NIH, Roorkee, sponsored by National Hydrology Project (NHP) for 23 participants from 10 states government water recourses departments and 03 central implementing agencies.

11. Organized a 05-days online training programme on “Hydrological Modeling using SWAT” from November 30 to December 04, 2020, at NIH, Roorkee, sponsored by National Hydrology Project (NHP) for 33 participants from various states government officers/ engineers and central implementing agencies.
12. Organized a 05-days online training programme on “Hydrological Modeling using SWAT” from September 21-25, 2020, at NIH, Roorkee for more than 65 participants.
13. Coordinated 05-days online training programme on “Remote Sensing Application in Agricultural Water Management” from August 03-07, 2020, conducted by the Indian Institute of Remote Sensing (IIRS), Dehradun.
14. Organized 02-day training course on “New features of ArcGIS and Introduction to ArcGIS Pro” with ESRI resource person on September 11-12, 2019, at Remote Sensing Application Lab, NIH, Roorkee
15. Organized a 05-days training course on “Sediment Yield and Reservoir Sedimentation” at NIH Roorkee under National Hydrology Project (NHP) from February 25 to March 01, 2019, at NIH Roorkee India.
16. Organized 02-days’ Workshop on COSMOS India Site Operators and Stakeholder Meeting for the different COSMOS site operators of India and CEH team from the United Kingdom (UK) at the conference room, Central Water Commission library, New Delhi. India New Delhi from October 03-04, 2018

### **Training Attended: 12**

1. Participated in and attended the Seventh National Hindi Seminar – 2023 organized by Seventh National Hindi Seminar – 2023 organized by NIH Roorkee from August 17-18, 2023.
2. Participated and attended the “Eddy-Covariance Flux Theory and Instrumentation Training Courses” training organized by the Campbell Scientific India Pvt. Ltd. at Dehradun from February 9-10, 2023.
3. Participated in and attended the training course on the “River Hydraulics with 1D and 2D HEC-RAS” jointly organized by the US Army Corps of Engineers, USA and National Institute of Hydrology (NIH), Roorkee, under the National Hydrology Project (NHP), from September 26-29, 2022, at NIH Roorkee.
4. Participated and attended the "Training of Trainers on the River Basin Planning and Management (RBM) Cycle" training implemented by the GIZ and NMCG organized at NWA, Pune from August 29 - September 02, 2022.
5. Participated in the hand-on training workshop on “Climate Risk Informed Decision Analysis (CRIDA)” organized by the National Institute of Urban Affairs and the US Army Corps of Engineers from December 8-10, 2021, in New Delhi.
6. Participated in a three-day online training workshop on “Hydrological Modelling for extreme weather events for Urban Cities” held on September 28-30, 2021, organized by DHI India And the University of Copenhagen.
7. Participated and completed a training course for “Internal Auditor (ISO 9001:2015) held from September 23-24, 2021, organized by SWISS CERT Pvt Ltd at NIH Roorkee.
8. Attended a 07-days online training program on 'Introduction to Google Earth Engine & Its Application in Water Resources Management' organized by National Water Academy, Central Water Pune conducted during Aug 16-23, 2021
9. Attended a 05-days online training-cum-workshop on “Global Water Availability Assessment (GWAVA) Model and Applications” jointly organized by UK Centre for Ecology and Hydrology (UKCEH), Wallingford & National Institute of Hydrology, Roorkee, from Feb 22-26, 2021
10. Attended a 03-days online training-cum-workshop on “Reassessment of Water Availability in India using Space Inputs” organized by the National Water Academy Pune and Central Water Commission New Delhi jointly from Dec 22-24, 2020
11. Participated in online training on “Python Proramming” organized by National Agricultural Higher Education Project – Centre of Advance Agricultural Science and Technology (NAHEP-CAAST) at College of Agricultural Engineering, JNKVV, Jabalpur from Dec 08-17, 2020.
12. Attended a Five days international training on “River discharge and sediment transport assessment with ADCP” organized by the UNESCO office Jakarta Held at Banjarmasin, Indonesia from July 24-27, 2018.
13. Attended a Three days training course on "Big Data Analytics in Government" during June 18-20, 2018 at ISTM, New Delhi

### **Student Guidance**

### **Ph D Student: 02**

1. Ph D Dissertation research on "Comprehensive Water Resources Vulnerability Assessment under the Changing Climate in a River Basin" for IIT Roorkee | Student: Abhishek Gupta | Period: 2023 - Ongoing .
2. Ph D Dissertation research work on " Assessment and Monitoring of Agricultural Drought Using Fine-scaled Satellite-Based Soil Moisture " for BHU Varanasi | Student: Harshita Rani Ahrwar | Period: 2022 - Ongoing

### **PG Student: 08**

1. M. Tech. (2022) Dissertation research work on "Groundwater Vulnerability and Potential Zone Mapping for Southern Districts of M.P. Using Geospatial Techniques" for BHU Varanasi | Student: Gaurav Maourya.
2. M. Tech. (2022) Dissertation research on "Assessment of Runoff and Sediment Yield for Identification and Prioritization of Critical Sub-Watersheds of Hasdeo River Catchment" for BHU Varanasi | Student: Anuradha Sahu.
3. M. Tech. (2022) Dissertation research on "Evaluation and Determination of Reliability on Advanced Neural Network Models for Prediction of Soil Moisture" for NITK Surathkal | Student: Nagashree, G E.
4. M. Tech. (2021) Dissertation work on "Rainfall-Runoff Modelling, Flood Frequency Analysis & Inundation Mapping of Kankai River Basin in Nepal" for IIT Roorkee | Student: Kumar Kisalay Karna.
5. M. Tech. (2021) Dissertation work on "Assessment of Water Resources in Dudh Koshi river basin and Impacts of Future Climate Scenarios " for IIT Roorkee | Student: Vijay Kumar Yadav.
6. M. Tech. (2018) Dissertation work on "Integrating Multi-Criteria Decision Making (MCDM) and GIS Techniques for Drought Risk Assessment in Banda District of Bundelkhand Region - A Case Study" for IIT Roorkee | Student: Anshul Jain.
7. M. Tech. (2018) Dissertation work on "Impact of land-use change and urbanization on urban heat island in Lucknow city" for IIT Roorkee | Student Luv Shankar Bharti.
8. M. Tech. (2017) Dissertation work on "Hydrological simulation of a sub-basin of Mahanadi river basin using SWAT model" for BHU, Varanasi | Student: Ramesh Verma.

### **PG Thesis Evaluation: 09**

1. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Impact Assessment of Wet and Dry Spell on Agricultural Productivity of Chhattisgarh" of NIT, Raipur in Jul 2023
2. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Assessing the robustness of Storm Water Drain Network in Samta Colony, Raipur, in Response to Climate Change" of NIT, Raipur in Jul 2023
3. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Assessment of Soil Moisture Index using Land Surface Temperature in GIS environment for Raipur District of Chhattisgarh State" of NIT, Raipur in Jul 2023
4. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Assessment of upstream backwater length on account of extreme inflow events using river analysis system" of NIT, Raipur in Jul 2023.
5. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Comparative Evaluation of AWBM and TANK Model in Parbati Watershed" of BHU, Varanasi in Jul 2022.
6. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Drought assessment based on standardised precipitation index and it's forecasting using neural networks" of GBPUAT, Pantnagar in Aug 2018.
7. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Temporal trend analysis of monthly reference evapotranspiration and climatic variables by non-parametric methods" of GBPUAT, Pantnagar in Aug 2018.
8. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Comparative study of Artificial Neural Network (ANN) and Adaptive Neuro-Fuzzy Inference System (ANFIS) based models for solar radiation forecasting" of GBPUAT, Pantnagar in Aug 2018.
9. Conducted external examination for evaluation and viva-voce examination of M. Tech. Thesis entitled "Daily monsoon rainfall prediction using Artificial Neural Network (ANN) and Wavelet-based Artificial Neural Network (WANN) models" of GBPUAT, Pantnagar in Aug 2018.

### **Keynote/ lectures / Invited talks delivered: 62**

1. Delivered a lecture on "Rainfall Runoff Modelling" in the training on "Hydrological Modelling on Impact Assessment Related to Mining Activity" Sponsored by Central Mine Planning and Design Institute (CMPDI), Ranchi, Jharkhand organized by the SWH Division, NIH, Roorkee on Mar 18-22, 2024.

2. Delivered three Tutorial/hands-on sessions on “Rainfall-Runoff Modelling using SWAT” in the training on “Hydrological Modelling on Impact Assessment Related to Mining Activity” Sponsored by Central Mine Planning and Design Institute (CMPDI) Ranchi, Jharkhand organized by the SWH Division, NIH, Roorkee on Mar 18-22, 2024.
3. Delivered an invited lecture on “Experimental Observations & Hydrological Studies in the Lesser Himalayan Catchments” as part of the training Course on "Tools & Techniques for Hydrological Investigations" organized by the Hydrological Investigations Division, NIH, Roorkee, on Mar 11, 2024.
4. Delivered an invited online lecture on “Understanding the Climate Change and Its Impact on Water Resources” as part of the Extension Lecture Series organized by the Institute of Vocational Studies (IVS), Awavdh Centre of Education, New Delhi, on Feb 09, 2024.
5. Delivered an invited lecture on the “Identification and evaluation of Hydrological Safety Parameters of Existing Dams” during a training course on “Capacity Building of Minor Irrigation Organization” for the officers of Dept. of Water Resources, Government of Odisha from Jan 29-Feb 03, 2024, at the Continuing Education Centre, IIT Roorkee.
6. Delivered a demonstration/lecture in the field about the “Field Discharge Measurement & AWS Sites Developed by NIH in the Henva Catchment” during a one-week training programme on “Tools and Techniques for Springshed Management” for the 20 No. of Central Ground Water Board (CGWB) officers on January 25, 2024.
7. Delivered a lecture on “Hydro-meteorological Data: Collection and Analysis Techniques” in a two-day National Workshop on “Basics of Hydrology and Importance of Water Resources Management in the Context of Sivagangai District” from January 19-20, 2024, at the Dept. of Geology, Alagappa University, Karaikudi, Tamil Nadu.
8. Delivered a lecture on “Introduction to RS & GIS and its applications in Water Resources Management” in a two-day National Workshop on “Basics of Hydrology and Importance of Water Resources Management in the Context of Sivagangai District” from January 19-20, 2024, at the Dept. of Geology, Alagappa University, Karaikudi, Tamil Nadu.
9. Delivered a hands-on “Practical Demonstration of Hydrological Modelling Software (SWAT)” in a two-day National Workshop on “Basics of Hydrology and Importance of Water Resources Management in the Context of Sivagangai District” from January 19-20, 2024, at the Dept. of Geology, Alagappa University, Karaikudi, Tamil Nadu.
10. Conducted the two-day technical sessions, including hands-on on the various aspects of Hydrology as a part of the one-year duration Induction Level Training Course (ILTC 2023-24) for the newly recruited Gr-A Gazetted officers of CGWB at the Rajiv Gandhi National Ground Water Training & Research Institute Training Session at Raipur on Nov 20-21, 2023
11. Delivered a lecture on “Recent Advancements in Hydrological Modeling” in the one-week training on “Hydro-Meteorological Data Analysis for Climate Change Studies” organized by the Climate Change Hydrology Division, NIH, during October 16-20, 2023, at NIH Roorkee.
12. Delivered technical sessions on “Introduction to Hydrologic Modeling” and “Introduction of SWAT Calibration, Model Parameterization and Uncertainty Analysis” in the training course “Application of Remote Sensing and GIS” organized for the officers of WRD, Arunachal Pradesh, from October 16-20, 2023, by the National Water Academy, Pune at Itanagar, Arunachal Pradesh
13. Delivered an invited lecture on “Monitoring and Instrumentations for Hilly Watersheds” in the one-week training workshop on “Watershed & Waterbodies Management” organized by the North-Eastern Hydraulic and Allied Research Institute (NEHARI), Guwahati, India from August 21-25, 2023.
14. Delivered an invited lecture on “Site Suitability Analysis for Water Harvesting Structure in a Watershed” in the one-week training workshop on “Watershed & Waterbodies Management” organized by the North-Eastern Hydraulic and Allied Research Institute (NEHARI), Guwahati, India from August 21-25, 2023.
15. Delivered an invited lecture on “Watershed: Prioritization & Treatment Measures and Livelihood Assessment” in the one-week training workshop on “Watershed & Waterbodies Management” organized by the North-Eastern Hydraulic and Allied Research Institute (NEHARI), Guwahati, India from August 21-25, 2023.
16. Delivered an invited lecture on “Web resources and Open data for Watershed Management” in the one-week training workshop on “Watershed & Waterbodies Management” organized by the North-Eastern Hydraulic and Allied Research Institute (NEHARI), Guwahati, India from August 21-25, 2023.
17. Delivered an invited lecture on “Introduction to RS & GIS and DEM Processing” in the one-week training workshop on “Watershed & Waterbodies Management” organized by the North-Eastern Hydraulic and Allied Research Institute (NEHARI), Guwahati, India from August 21-25, 2023.
18. Delivered an invited lecture on “Impacts of Water Resources Projects on the River Ecosystem” at the NIT Raipur on July 21, 2023, organised by the Students Chapter Indian Water Resources Society of NIT Raipur.

19. Delivered an invited lecture on “Basics of Climate Change and Its Impact on Water Resources” in the one-week training workshop on “Impact of Climate Change on Water Resources” organised by the Rajiv Gandhi National Ground Water Training & Research Institute (RGNGWTRI), CGWB, Raipur, India on May 29, 2023.
20. Delivered an invited lecture and hands-on session on “Statistical Analysis of Climate Data” in the one-week training workshop on “Impact of Climate Change on Water Resources” organised by the RGNGWTRI, CGWB, Raipur, India on May 30, 2023.
21. Delivered an invited lecture and hands-on session on “Climate Data Analysis for Variability & Trend and Change Point” in the one-week training workshop on “Impact of Climate Change on Water Resources” organized by the RGNGWTRI, CGWB, Raipur, India on May 30, 2023.
22. Delivered an invited lecture on “Climate Change Adaption and Mitigation Measures” in the one-week training workshop on “Impact of Climate Change on Water Resources” organised by the RGNGWTRI, CGWB, Raipur, India on May 30, 2023.
23. Delivered a lecture on “Introduction of SWAT Modeling: Concept and Theory” in a six-day training course on "Hydrological Modeling using SWAT+" organized by the WRS Division, NIH, on May 22, 2023, at NIH Roorkee.
24. Delivered a lecture on “Introduction of SWAT Calibration, Model Parameterization and Uncertainty Analysis” in a six-days training course on "Hydrological Modeling using SWAT+" organized by the WRS Division, NIH, during May 22-27, 2023, at NIH Roorkee.
25. Delivered a lecture on “Introduction of RS & GIS and their Applications and QGIS Brief” in a five-day training course on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP during August 22-26, 2022 at NIH Roorkee.
26. Delivered a lecture on “Introduction of SWAT CUP, Model Parameterization and Sensitivity Analysis using SUFI2” in a five-day training course on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP, during August 22-26, 2022.
27. Delivered ten online tutorial and hands-on session on SWAT Model setup, HRU Analysis, Weather Generator, Model Run, Data editing, SWAT-CUP, Parameterization, Cali & Vali, and Uncertainty in a five-day training on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP, August 22-26, 2022.
28. Delivered an invited lecture on “Principles of remote sensing and GIS” in a three-day online training program on GIS & Remote Sensing application in Hydro Power Projects from June 27-29, 2022, organized by the NPTI-Shivpuri.
29. Delivered an invited lecture on “Introduction to SWAT and its applications, Data requirement of SWAT, Introduction to QSWAT interface; model set up” in a national Workshop on “Hydrological Modeling using SWAT” organized by CAAST-CSAWM, MPKV, Rahuri, India on June 22, 2022.
30. Delivered an invited lecture on “Impact of Water Resources Projects on Environment” on April 28, 2022. in a one-day seminar on “Impacts of Civil Engineering Projects and Practices on the Sustainability of Environment” organized by the Department of Civil Engineering, Invertis University, Bareilly.
31. Delivered a lecture on “Artificial Neural Network Techniques for Streamflow Forecasting: Theory and Application” in a three-day training on “Advanced Soft Computing Techniques in Disaster Management and Risk Assessment” organized by the NIDM, New Delhi and Manipal Academy of Higher Education (MAHE), Karnataka, India from January 27-29, 2022.
32. Delivered a specialized lecture on “Open Data Resources for Agricultural Studies” on Dec 22, 2021, for a training course on “Basic Fundamental Applications of RS and GIS”, organized under the NAHEP project by CAE, JNKVV, Jabalpur (MP).
33. Delivered a lecture on “Design of Hydro-Met Setup in A Catchment: Special Reference to Henva Catchment” in a two-day training course on "Springshed Management and Rejuvenation through Scientific Data Collection and Processing Techniques” organized by the Divisional Forest Office (DFO), Narendranagar from August 24-25, 2021 at Rishikesh .
34. Delivered a lecture on “Introduction of GIS, Its Applications & QGIS Brief” in a 05-day training course on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP, August 16-20, 2021.
35. Delivered an online lecture on “Introduction of SWAT CUP, Model Parameterization and Sensitivity Analysis using SUFI2” in a five-day training course on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP during August 16-20, 2021.
36. Delivered ten online tutorials and hands-on sessions on SWAT Model setup, HRU Analysis, Weather Generator, Model Run, Data editing, SWAT-CUP, Parameterization, Cali & Vali, and Uncertainty in a five-day training on "Hydrological Modeling using Soil and Water Assessment Tool (SWAT): Theory and Hands-on” sponsored by NHP during August 16-20, 2021.
37. Delivered an online lecture on “RS and GIS Applications in Watershed Management” in a five-day training course on

"Remote Sensing and GIS Applications" sponsored by NHP and organized by the WRS Division, NIH, during August 09-13, 2021 at NIH Roorkee.

38. Delivered a specialized lecture on "Prioritization of Critical Watersheds using RS and GIS" on August 09, 2021 for the faculty /scientists of JNKVV Jabalpur under a skill-development training program organized under an ICAR & World bank-sponsored NAHEP-CAAST project by the College of Agril. Engg., JNKVV, Jabalpur (MP).
39. Delivered a lecture and hands-on session on "Downloading of Various Satellite Imageries/ Data for Hydrological Studies" on May 17, 2021 for an online course on "Watershed Hydrological Modeling" organized by CAAST-CSAWM, MPKV, Rahuri (Maharashtra) under ICAR-NAHEP.
40. Delivered lectures and hands-on sessions on "Hydrologic Analysis Using DEM" and "Delineation of Basin using DEM (Online Demonstration)" on May 27, 2021 for an online certification course on "Watershed Hydrological Modeling" organized by CAAST-CSAWM, Mahatma Phule Krishi Vidyapeeth, Rahuri (Maharashtra) under ICAR-NAHEP.
41. Delivered a lecture and hands-on sessions on "Development of Semi-distributed Hydrologic Model: SWAT" for an online certification course on "Watershed Hydrological Modeling" organized under the World bank-sponsored project, National Agricultural Higher Education Project (NAHEP) of ICAR at the CAAST-CSAWM, MPKV, Rahuri on May 31, 2021.
42. Delivered lectures and hands-on sessions on "Model Calibration, Model Validation, Sensitivity Analysis of Model Parameters, Model Parameterization and Application of SUFI2 technique in SWAT SUP" on June 02, 2021, for a 03-weeks online course organized under NAHEP by the CAAST-CSAWM, MPKV, Rahuri (Maharashtra).
43. Delivered a lecture on "Basics of Remote Sensing (RS), Satellites Data and GIS" for five days' online program on "Lectures on Spatial Data Use in Agriculture" organized under NAHEP-CAAST at CAE, JNKVV, Jabalpur on February 8, 2021.
44. Delivered a lecture on "Hydrological Application of Remote Sensing and GIS" for five days' online program on "Lectures on Spatial Data Use in Agriculture" organized under an ICAR & World bank-sponsored project, National Agricultural Higher Education Project - Centre of Advance Agricultural Science and Technology (NAHEP-CAAST) at College of Agricultural Engineering (CAE), JNKVV, Jabalpur on February 8, 2021.
45. Delivered an online lecture on "The Basic Concepts of Groundwater Hydrology – Storage and Movement of Groundwater" during a short-term certificate course for the 'Para-Hydrologists with Special Reference to Spring Rejuvenation' organized by the North East Regional Centre of G.B. Pant National Institute of Himalayan Environment (NERC-GBPNHE), Itanagar (Arunachal Pradesh) from December 8-10, 2020.
46. Delivered an online lecture on "Introduction of GIS, Its Applications and QGIS Brief" in a five-day training course on "Hydrological Modeling using SWAT" sponsored by NHP and organized by the WRS Division, NIH, during November 30 to December 04, 2020 at NIH Roorkee.
47. Delivered an online lecture on "Introduction of SWAT CUP, Model Parameterization and Sensitivity Analysis using SUFI2" in a five-day training course on "Hydrological Modeling using SWAT" sponsored by NHP and organized by the WRS Division, NIH, during November 30 to December 04, 2020 at NIH Roorkee.
48. Delivered a guest lecture on "Field hydrological experiments and research studies in the Lesser Himalayan catchments" at an international conference on "The Joy, Opportunity and Challenges in Field Hydrological Research" organized online by IIT Guwahati and NIE Mysuru from November 02 -06, 2020.
49. Delivered an online lecture on "QGIS Brief and GIS Applications" in a five-day training course on "Hydrological Modeling using SWAT" organized by the WRS Division, NIH, during September 21-25, 2020 at NIH Roorkee.
50. Delivered an online lecture on "Introduction of SWAT CUP, Model Parameterization and Sensitivity Analysis using SUFI2" in a five-day training course on "Hydrological Modeling using SWAT" organized by the WRS Division, NIH, during September 21-25, 2020 at NIH Roorkee.
51. Delivered ten online tutorial and hands-on practice session on SWAT Model setup, HRU Analysis, Weather Generator, Model Run, Data editing, SWAT-CUP, Parameterization, Calibration and Validation and Uncertainty in a five-day training course on "Hydrological Modeling using SWAT" during September 21-25, 2020 at NIH Roorkee.
52. Delivered an online talk on "Use of Mendeley for improved reference management for research writing" organized via Webex meeting on September 01, 2020, at NIH Roorkee.
53. Delivered a lecture/Talk on "Critical Zone Research and Observatories: A Himalayan Perspective" in a workshop meeting on Critical Zone Research at CSIR-NEERI, Nagpur on May 28, 2019.
54. Delivered a lecture on "Water awareness and Jal Shakti Abhiyan (JSA) of Govt. of India" and interacted with students of Collage of Agricultural Engineering at Madakasira Block of Anantpur district of Andhra Pradesh on July 12, 2019.
55. Delivered lecture on "Experimental Observations and Hydrological Studies in The Lesser Himalayan Catchments" in a 5-

days training course on "Tools & Techniques for Hydrological Investigations" organized by the Hydrological Investigation Division, NIH, during November 04-08, 2019 at NIH Roorkee.

56. Conducted one mini project for the participants during the five-day training course on "Sediment Yield and Reservoir Sedimentation" organized at NIH Roorkee under NHP on March 01, 2019, at NIH Roorkee.
57. Delivered a lecture on "Use of GIS and Remote Sensing for Watershed Management" during the five-day training course on "Sediment Yield and Reservoir Sedimentation" organized at NIH Roorkee under NHP on February 26, 2019 at NIH Roorkee.
58. Conducted two tutorials on "Use of GIS and Remote Sensing for Watershed Management" during the five-day training course on "Sediment Yield and Reservoir Sedimentation" organized under NHP on February 26, 2019 at NIH Roorkee.
59. Delivered lecture on "Water Audit: An effective tool for public water supply management" during a training Course on "Water Security: Best Practices for Conservation, Safety, and Sustainability" for Hydraulic Engineers of J&K sponsored by CCDU, WSSO Department of PHE & I&FC, J&K during January 23-25, 2019, at Jammu.
60. Delivered lecture on "Evaluation of apparent and real losses in public water supply systems" during a training course on "Water Security: Best Practices for Conservation, Safety, and Sustainability" for Hydraulic Engineers of J&K sponsored by CCDU, WSSO Department of PHE & I&FC, J&K during January 23-25, 2019, at Jammu.
61. Delivered a lecture on "Web-based databases relating to hydrological and water resources studies" at the College of Technology, GBPUAT, Pantnagar on August 24, 2018.
62. Delivered a lecture presentation on the "Water Resources of India and Research Activities of NIH" during the international training on "River discharge and sediment transport assessment with ADCP" held at Banjarmasin, Indonesia from July 24-27, 2018.

#### **Project Proposal/ Paper/ Book review : 08**

1. Reviewed the submission "Projection of Drought Using GCM& Statistical Downscaling Technique for Sirohi District." (ref: JWC-D-22-00412), for the Journal of Water and Climate Change. Dec-2022
2. Reviewed the submission "Performance and Suitability of an Economically Efficient Rapid Sand Filter For Filtration of Rainwater Harvested from Roof-Tops" for the Materials Today: Proceedings (Ms. No. MATPR-D-22-05172) Sep-2022
3. Reviewed a research article "Evaluation of GLDAS soil moisture seasonality in arid climates: for the Hydrological Sciences Journal (Ms. No. HSJ-2022-0273) Jul-2022
4. Evaluated a research article for possible publication in the Journal of the Indian Society of Remote Sensing, "Geographical Information System and Analytical Hierarchical Process-based Delineation of potential sites for sustainable water conservation of lower Kuls River Basin" (Ms. No. ISRS-D-21-00885R1) Apr-2022
5. Evaluated a research article for possible publication in the Journal of the Indian Society of Remote Sensing, "Evaluating Stormwater Harvesting Schemes using Geomatics Techniques: A case study on Haridwar, India" (Ms. No. ISRS-D-20-00469) May-2021
6. Evaluated a research article for possible publication in the Journal of the Indian Water Resources Society, "Quantitative Morphometric Analysis of Upper Bel River Basin, Deccan Basaltic Terrain, Central India" (Ms. No. 1563) Nov-2021
7. Evaluated a research article for the Journal of the Indian Society of Remote Sensing, "Watershed prioritization in Lower Shivaliks region of India using integrated Principal Component and Hierarchical Cluster Analysis techniques– A case of Upper Ghaggar watershed" (Ms. No. ISRS-D-21-00144R1) Nov-2021
8. Reviewed a manuscript, "Development of ANN Models for Estimation of Potential Evapotranspiration (PET) for Semi-Arid Region of Raichur, Karnataka" for the Journal of Agricultural Engineering published by the Indian Society of Agricultural Engineering (ISAE), New Delhi.

#### **Hindi Paper Review: 25**

Evaluated and reviewed 12 Hindi articles for possible publication in the technical magazine Jal Chetna entitled during the reported period.

#### **Professional Affiliations**

- Member, Indian Association of Hydrologists (LM - 1677)
- Member, Indian Society of Remote Sensing (L-2830)
- Editorial Board Member for the technical magazine *Jal Chetana* and *Pravahini* of NIH, Roorkee

#### **Other Important Activities:**

- Co-ordinator for the planned international conference "Roorkee Water Conclave - 2024" at NIH Roorkee part.
- Co-authored two conference papers which claimed the best paper award

- 1<sup>st</sup> prize in slogan writing competition during Vigilance Awareness Week for 2014, 2015, 2016, 2017 & 2021.
- 1<sup>st</sup> prize in *Rajbhash Prashnottari Pratiyogita* during Hindi Month for 2017, 2019 & 2021 and 2<sup>nd</sup> prize for 2018
- *Pravahini's* Article was adjudged an excellent article and got second prize for 2017

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(Last updated on Mar-2024)