

REFERENCES

- Adamowski, J. and Chan, H.F. 2011. A wavelet neural network conjunction model for groundwater level forecasting. *J. Hydrol.* 407(1–4):28-40. <https://doi.org/10.1016/j.jhydrol.2011.06.013>
- Agrawal, A., Srivastava, P.K., Tripathi, V.K., Maurya, S., Sharma, R., and DJ, S. 2023. Future projections of crop water and irrigation water requirements using a bias-corrected regional climate model coupled with CROPWAT. *J. Water Clim. Change.* 14(4):1147-1161. <https://doi.org/10.2166/wcc.2023.349>.
- Agricultural statistics 2021-22. Department of Economics and Statistics. *Government of Kerala.* Kerala.
- Ahmadi, M., Moeini, A., Ahmadi, H., Motamedvaziri, B., and Zehtabiyan, G.R. 2019. Comparison of the performance of SWAT, IHACRES and artificial neural networks models in rainfall-runoff simulation (case study: Kan watershed, Iran). *Phys. Chem. Earth, Parts A/B/C,* 111:65-77. <https://doi.org/10.1016/j.pce.2019.05.002>.
- Allen, R., Pereira, L., Raes, D., and Smith, M. 1998. Crop evapotranspiration guidelines for computing crop requirements. *FAO Irrig. Drain.* 285(19):40.
- Amgoth, A., Rani, H.P., and Jayakumar, K.V. 2023. Exploring LULC changes in Pakhal Lake area, Telangana, India using QGIS MOLUSCE plugin. *Spatial Inf. Res.* 31(4): 429-438. <https://doi.org/10.1007/s41324-023-00509-1>.
- Ande, R., Pandugula, C., Mehta, D., Vankayalapati, R., Birbal, P., Verma, S., Azamathulla, H.M., and Nanavati, N. 2025. Understanding Climate Change Impacts on Streamflow by Using Machine Learning: Case Study of Godavari Basin. *Water.* 17(8):1171. <https://doi.org/10.3390/w17081171>.
- Arnold, J.G., Moriasi, D.N., Gassman, P.W., Abbaspour, K.C., White, M.J., Srinivasan, R., and Jha, M.K. 2012. SWAT: Model use, calibration, and validation. *Trans. ASABE.* 55(4):1491-1508. <http://dx.doi.org/10.13031/2013.42256>.

- Ashofteh, P.-S., Rajaei, T., Golfam, P., Chu, X. 2019. Applying Climate Adaptation Strategies for Improvement of Management Indexes of a River–Reservoir Irrigation System. *J. Irrig. Drain.* 68. <https://doi.org/10.1002/ird.2336>.
- Aslam, M.F., Masia, S., Spano, D., Mereu, V., Debolini, M., Snyder, R.L., Borgo, A., and Trabucco, A. 2025. Modelling crop water demand under climate change: the case of Sardinia region. *Irrig. Sci.* 1-18. <https://doi.org/10.1007/s00271-025-01027-8>.
- Bajirao, T.S., Kumar, P., Kumar, M., Elbeltagi, A., and Kuriqi, A. 2021. Superiority of hybrid soft computing models in daily suspended sediment estimation in highly dynamic rivers. *Sustainability.* 13: 542. <https://doi.org/10.3390/su13020542>
- Balu, A., Ramasamy, S., and Sankar, G. 2023. Assessment of climate change impact on hydrological components of Ponnaiyar river basin, Tamil Nadu using CMIP6 models. *J. Water Clim. Change*, 14(3): 730-747. <https://doi.org/10.2166/wcc.2023.354>.
- Bashir, A., Shehzad, M.A., and Hussain, I. 2019. Reservoir inflow prediction by ensemble wavelet and bootstrap techniques to multiple linear regression model. *Water Resour. Manage.* 33: 5121-5136. <https://doi.org/10.1007/s11269-019-02418-1>.
- Beça, P., Rodrigues, A.C., Nunes, J.P., Diogo, P., and Mujtaba, B. 2023. Optimizing reservoir water management in a changing climate. *Water Resour. Manag.* 37(9): 3423-3437. <https://doi.org/10.1007/s11269-023-03508-x>.
- Belina, Y., Kebede, A., and Masinde, M. 2024. Comparative analysis of HEC-HMS and machine learning models for rainfall-runoff prediction in the upper Baro watershed, Ethiopia. *Hydrol. Res.* 55(9): 873-889. <https://doi.org/10.2166/nh.2024.032>
- Chadwick, C., Gironas, J., Barría, P., Vicuña, S., and Meza, F. 2020. Assessing reservoir performance under climate change. When is it going to be too late if current water management is not changed? *Water.* 13(1): 64. <https://doi.org/10.3390/w13010064>.

- Chanapathi, T. and Thatikonda, S. 2020. Investigating the impact of climate and land-use land cover changes on hydrological predictions over the Krishna river basin under present and future scenarios. *Sci. Total Environ.* 721:137736. <https://doi.org/10.1016/j.scitotenv.2020.137736>.
- Chang, F.J. and Tsai, M-J. 2016. A nonlinear spatio-temporal lumping of radar rainfall for modelling multi-step-ahead inflow forecasts by data-driven techniques. *J. Hydrol.* 535. doi: [10.1016/j.jhydrol.2016.01.056](https://doi.org/10.1016/j.jhydrol.2016.01.056).
- Chen, J., Brissette, F.P., Poulin, A., and Leconte, R. 2011b. Overall uncertainty study of the hydrological impacts of climate change for a Canadian watershed. *Water Resour. Res.* 47 (12): W12509. <http://dx.doi.org/10.1029/2011WR010602>.
- Chen, J., Brissette, F.P., Poulin, A., and Leconte, R., 2011a. Uncertainty of downscaling method in quantifying the impact of climate change on hydrology. *J. Hydrol.* 401 (3–4): 190–202. <http://dx.doi.org/10.1016/j.jhydrol.2011.02.020>.
- Chen, J., Brissette, F.P., and Picher, P.L. 2015. Assessing the limits of bias-correcting climate model outputs for climate change impact studies. *J. Geophys. Res. Atmos.* 120: 1123–1136 [doi:10.1002/2014JD022635](https://doi.org/10.1002/2014JD022635).
- Christensen, J.H., Boberg, F., Christensen, O.B., and Picher, P.L. 2008. On the need for bias correction of regional climate change projections of temperature and precipitation. *Geophys. Res. Letters.* 35:L20709. doi:[10.1029/2008GL035694](https://doi.org/10.1029/2008GL035694).
- Croke, B.F. and Jakeman, A.J. 2004. A catchment moisture deficit module for the IHACRES rainfall-runoff model. *Environ. Modelling & Software*, 19(1), 1-5. <https://doi.org/10.1016/j.envsoft.2003.09.001>
- Croke, B.F.W., Merritt, W.S., and Jakeman, A.J. 2004. A dynamic model for predicting hydrologic response to land cover changes in gauged and ungauged catchments. *J. hydrol.* 291(1-2), 115-131. <https://doi.org/10.1016/j.jhydrol.2003.12.012>
- Dananto, M., Aga, A.O., Yohannes, P., and Shura, L. 2022. Assessing the Water-Resources Potential and Soil Erosion Hotspot Areas for Sustainable Land Management in the Gidabo Watershed, Rift Valley Lake Basin of Ethiopia. *Sustainability*. 14(9): 5262. <https://doi.org/10.3390/su14095262>.

- Das, J. and Nanduri, U.V. 2018. Assessment and evaluation of potential climate change impact on monsoon flows using machine learning technique over Wainganga River basin, India. *Hydrol. Sci. J.* 63(7), 1020-1046. <https://doi.org/10.1080/02626667.2018.1469757>.
- De Oliveira, S., Silva, M.T., Ferreira, T.R., De Ataide, L.C., Dos Santos, C.L., and De Lima, P.R. 2022. Impacts of land use and land cover changes on hydrological processes and sediment yield determined using the SWAT model. *Int. J. Sediment Res.* 37(1):54-69. <https://doi.org/10.1016/j.ijsrc.2021.04.002>.
- Deepthi, B. and Sivakumar, B. 2022. Performance assessment of general circulation models: application of compromise programming method and global performance indicator technique. *Stochastic Environ. Res. Risk Assess.* 36(6), 1761-1778. <https://doi.org/10.1007/s00477-021-02124-8>
- Dehghani, R., Torabi Poudeh, H., Younesi, H., and Shahinejad, B. 2020. Forecasting Daily River Flow Using an Artificial Neural Network–Support Vector Machine Hybrid Modeling Approach (Case Study: Karkheh Catchment, Iran). *Air, Soil and Water Res.* 13. <https://doi.org/10.1177/1178622120969659>
- DoECC (2022) Kerala State Action Plan on Climate Change (2023–2030), Directorate of Environment and Climate Change, Department of Environment, Government of Kerala. 333.
- Droogers, P., Seckler, P., and Makin, I. 2001. Estimating the potential of rain-fed agriculture. *International Water Management Institute*. Working paper 20.
- Durack, P.J. 2020. Ocean salinity and the global water cycle. *Nat. Rev. Earth & Env.* 1(10):559–573. <https://doi.org/10.1038/s43017-020-00064-1>
- Emadi, A., Sarvin, Z-G., Boroomondnia, A., Fazeli, S., and Sobhani, R. 2023. Modelling the total outflow of reservoirs using wavelet developed approaches: a case study of Mahabad dam, Iran. *Water Supply.* 23(11): 4645. <https://doi.org/10.2166/ws.2023.291>
- Eyring, V., Bony, S., Meehl, G.A., Senior, C.A., Stevens, B., Stouffer, R.J., and Taylor, K.E. 2016. Overview of the Coupled Model Intercomparison Project Phase 6 (CMIP6)

- experimental design and organization. *Geoscientific Model Dev.* 9(5):1937–1958. <https://doi.org/10.5194/gmd-9-1937-2016>
- Feizi, H., Sattari, M.T., and Apaydin, H. 2024. A comparative study of different optimization algorithms for the optimum operation of the Mahabad dam reservoir. *Results Eng.* 21, 101664. <https://doi.org/10.1016/j.rineng.2023.101664>.
- George, J. and Atira, P. 2020. Long-term changes in climatic variables over the Bharathapuzha river basin, Kerala, India. *Theor. Appl. Climatol.* 142(1), 269–286. <https://doi.org/10.1007/s00704-020-03255-8>.
- Ghorbani, M.A., Khatibi, R., Hosseini, B., and Bilgili, M. 2013. Relative importance of parameters affecting wind speed prediction using artificial neural networks. *Theor. Appl. Climatol.* 114: 107–114. <https://doi.org/10.1007/s00704-012-0821-9>
- Golmohammadi, M.H., Safavi, H.R., Sandoval-Solis, S., and Fooladi, M. 2021. Improving performance criteria in the water resource systems based on fuzzy approach. *Water Resour. Manag.* 35:593–611. <https://doi.org/10.1007/s11269-020-02739-6>.
- Gorelick, N., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., Moore, R. 2017. Google Earth Engine: Planetary-scale geospatial analysis for everyone. *Remote Sensing of Environ.* 202:8–27. <https://doi.org/10.1016/j.rse.2017.06.031>.
- Guo, J., Zhou, J., Qin, H., Zou, Q., and Li, Q. 2011. Monthly streamflow forecasting based on improved support vector machine model. *Expert Sys. Appl.* 38(10): 13073–13081. <https://doi.org/10.1016/j.eswa.2011.04.114>
- Hakami-Kermani, A., Babazadeh, H., Porhemmat, J., and Sarai-Tabrizi, M. 2020. An uncertainty assessment of reservoir system performance indices under the climate change effect. *Ain Shams Eng. J.* 11(4), 889–904. <https://doi.org/10.1016/j.asej.2020.03.015>.

- Hashimoto, T., Stedinger, J.R., and Loucks, D.P. 1982. Reliability, resiliency, and vulnerability criteria for water resource system performance evaluation, *Water Resour. Res.* 18(1):14–20. doi:[10.1029/WR018i001p00014](https://doi.org/10.1029/WR018i001p00014).
- Hassaan, H.A., Rauf, A.U., and Ghumman, A.R. 2024. Assessment of climate change impact on inflows to Amandara headwork using HEC-HMS and ANNs. *J. Umm Al-Qura Univ. Eng.Archit.* 15: 403–420. <https://doi.org/10.1007/s43995-024-00064-2>
- Hausfather, Z., Drake, H.F., Abbott, T., and Schmidt, G.A. 2020. Evaluating the performance of past climate model projections. *Geophysical Res. Lett.* 47(1):e2019GL085378. <https://doi.org/10.1029/2019GL085378>
- Hemanandini S and Vignesh RL. 2023. Performance evaluation of CMIP6 climate models for selecting a suitable GCM for future precipitation at different places of Tamil Nadu. *Environ. Monitoring Assess.* 195:928. <https://doi.org/10.1007/s10661-023-11454-9>.
- IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp. doi:[10.1017/9781009325844](https://doi.org/10.1017/9781009325844)
- IPCC, 2023: Summary for Policymakers. In: *Climate Change 2023: Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change
- Islam, A. Talukdar, S. Akhter, S. Eibek, K., Rahman, U., Mostafizur, P., Swades, W.N., Mohd, R., and Atiqur, M. 2022. Assessing the Impact of the Farakka Barrage on Hydrological Alteration in the Padma River with Future Insight. *Sustainability*. 14:5233.

- Jain, S.K. and Singh, V.P. 2003. *Water Resources Systems Planning and Management*. Elsevier Science.
- Jakeman, A.J. and Hornberger, G.M. 1993. How much complexity is warranted in a rainfall-runoff model?. *Water Resour. Res.* 29(8), 2637-2649.
- Jakeman, A.J., Littlewood, I.G., and Whitehead, P.G. 1990. Computation of the instantaneous unit hydrograph and identifiable component flows with application to two small upland catchments. *J. hydrol.* 117(1-4), 275-300. [https://doi.org/10.1016/0022-1694\(90\)90097-H](https://doi.org/10.1016/0022-1694(90)90097-H)
- Jimeno-Sáez, P., Senent-Aparicio, J., Pérez-Sánchez, J., and Pulido-Velazquez, D. 2018. A comparison of SWAT and ANN models for daily runoff simulation in different climatic zones of peninsular Spain. *Water*, 10(2), 192. <https://doi.org/10.3390/w10020192>.
- Johnson, F. and Sharma, A. 2012. A nesting model for bias correction of variability at multiple time scales in general circulation model precipitation simulations, *Water Resour. Res.* 48: W01504. doi:[10.1029/2011WR010464](https://doi.org/10.1029/2011WR010464).
- Kahaduwa, A. and Rajapakse, L. 2022. Review of climate change impacts on reservoir hydrology and long-term basin-wide water resources management. *Building Res. Inf.* 50(5): 515-526. <https://doi.org/10.1080/09613218.2021.1977908>.
- Kan, Y. 2024. A comparison of application of fourier transform and wavelet transform on image compression. *Appl. Compu. Engg.* 37: 149-154. <https://doi.org/10.54254/2755-2721/37/20230494>
- Kim, T., Yang, T., Gao, Sh., Zhang, L., Ding, Z, Wen, X, and Hong, Y. 2021. Can artificial intelligence and data-driven machine learning models match or even replace process-driven hydrologic models for streamflow simulation? A case study of four watersheds with different hydro-climatic regions across the CONUS. *J. Hydrol.* 598(C). <https://doi.org/10.1016/j.jhydrol.2021.126423>
- Kişİ, Ö, Parmar, K.S., Soni, K., and Demir, V. 2017. Modelling of air pollutants using least square support vector regression, multivariate adaptive regression spline and M5 model tree models. *Air Qual. Atmosphere & Health.* 10: 873-883. <https://doi.org/10.1007/s11869-017-0477-9>

- Kişİ, Ö. 2011. Wavelet regression model as an alternative to neural networks for river stage forecasting. *Water Resour. Manage.* 25(2): 579-600. <https://doi.org/10.1007/s11269-010-9715-8>
- Kratzert, F., Klotz, D., Brenner, C., Schulz, K., and Herrnegger, M. Rainfall–runoff modelling using Long Short-Term Memory (LSTM) networks. *Hydrol. Earth Syst. Sci.* 22: 6005–6022. <https://doi.org/10.5194/hess-22-6005-2018>
- Krishna, B.H., Mani, A, and Ramulu, V. 2014. Simulation of Impact of Change in Landuse on Water Yield of Upper Manair Catchment. *Int. J. Innovative Res. Dev.* 3(1):592-600.
- Krishnankutty, J., Blakeney, M., Raju, R. K., and Siddique, K. H. M. 2021. Sustainability of Traditional Rice Cultivation in Kerala, India-A Socio-Economic Analysis. *Sustainability.* 13:980. <https://doi.org/10.3390/su13020980>
- Krztoń, W., Walusiak, E., and Wilk-Woźniak, E. 2022. Possible consequences of climate change on global water resources stored in dam reservoirs. *Sci. Total Environ.* 830, 154646. <https://doi.org/10.1016/j.scitotenv.2022.154646>.
- Kumar, D., Pandey, A., Sharma, N., and Flügel, W-A. 2016. Daily suspended sediment simulation using machine learning approach. *CATENA.* 138: 77–90. <https://doi.org/10.1016/j.catena.2015.11.013>
- Lambin, E.F., Turner, B.L., Geist, H.J., Agbola, S.B., Angelsen, A., Bruce, J.W., Coomes, O.T., Dirzo, R., Fischer, G., Folke, C., George, P.S., Homewood, K., Imbernon, J., Leemans, R., Li, X., Moran, E.F., Mortimore, M., Ramakrishnan, P.S., Richards, J.F., Skånes, H., Steffen, W., Stone, G.D., Svedin, U., Veldkamp, U.A., Vogel, C., and Jianchu, Xu. 2001. The causes of land-use and land-cover change: moving beyond the myths. *Glob. Environ. Change.* 11(4):261-269. [https://doi.org/10.1016/S0959-3780\(01\)00007-3](https://doi.org/10.1016/S0959-3780(01)00007-3).
- Legates, D.R. and McCabe, Jr G.J. 1999. Evaluating the use of “goodness-of-fit” measures in hydrologic and hydroclimatic model validation. *Water Resour. Res.* 35(1): 233-241. <https://doi.org/10.1029/1998WR900018>

- Lenderink, G., van Ulden, A., van den Hurk, B. 2007. A study on combining global and regional climate model results for generating climate scenarios of temperature and precipitation for the Netherlands. *Clim. Dyn.* 29:157–176. <https://doi.org/10.1007/s00382-007-0227-z>.
- Li, S., Gao, Y., Lyu, S., Liu, Y., and Pan, Y. 2019. Response of surface air temperature to the change of leaf area index in the source region of the Yellow River by the WRF model. *Theor. Appl. Climatol.* 138(3):1755-1765. [10.1007/s00704-019-02931-8](https://doi.org/10.1007/s00704-019-02931-8)
- Liu, Z., Zhou, P., Chen, G., and Guo, L. 2014. Evaluating a coupled discrete wavelet transform and support vector regression for daily and monthly streamflow forecasting. *J. Hydrol.* 519: 2822-2831. <https://doi.org/10.1016/j.jhydrol.2014.06.050>
- Lotfirad, M., Adib, A., Salehpour, J., Ashrafzadeh, A., and Kisi, O. 2021. Simulation of the impact of climate change on runoff and drought in an arid and semiarid basin (the Hablehroud, Iran). *Appl. Water Sci.* 11(10), 168. <https://doi.org/10.1007/s13201-021-01494-2>
- Lothon, M., Barnéoud, P., Gabella, O., Lohou, F., Derrien, S., Rondi, S., Chiriaco, M., Bastin, S., Dupont, J.C., Haeffelin, M., and Badosa, J. 2019. ELIFAN, an algorithm for the estimation of cloud cover from sky imagers. *Atmos. Measurement Tech.* 12(10):5519-5534. <https://doi.org/10.5194/amt-12-5519-2019>
- Lu, H.M., Sun, J.H., Zou, Y., and Di, L. 2013. Characteristics of Phosphorus loss with surface runoff at plot and field scales in the plain river network region. *J. Ecol. Rural Environ.* 29(2): 176-183.
- Luo, M., Liu, T., Meng, F., Duan, Y., Frankl, A., Bao, A., and De Maeyer, P. 2018. Comparing bias correction methods used in downscaling precipitation and temperature from regional climate models: a case study from the Kaidu River Basin in Western China. *Water*, 10(8), 1046. <https://doi.org/10.3390/w10081046>.

- Mahsa, M., Ali, N., Amir, S., and Malekian, A. 2021. Sustainable Water Supply and Demand Management in Semi-arid Regions: Optimizing Water Resources Allocation Based on RCPs Scenarios. *Water Resour. Manag.* 35: 5307–5324. <https://doi.org/10.1007/s11269-021-03004-0>
- Mal, S. and Sen, S., 2025. Optimizing agricultural water Use: Crop water requirement and irrigation scheduling of tomato & soybean using FAO CROPWAT 8.0 model in Chandrapur district, Maharashtra, India. *Next Res.* 100529. <https://doi.org/10.1016/j.nexres.2025.100529>.
- McCuen, R.H., Knight, Z., and Cutter, A.G. 2006. Evaluation of the Nash–Sutcliffe efficiency index. *J. Hydrologic Engg* 11: 597–602. [https://doi.org/10.1061/\(ASCE\)1084-0699\(2006\)11:6\(597\)](https://doi.org/10.1061/(ASCE)1084-0699(2006)11:6(597))
- McMahon, T.A., Peel, M.C., Lowe, L., Srikanthan, R., and McVicar, T.R. 2013. Estimating actual, potential, reference crop and pan evaporation using standard meteorological data: a pragmatic synthesis. *Hydrol. Earth Syst. Sci.* 17(4):1331-1363. <https://doi.org/10.5194/hess-17-1331-2013>
- Milly, P.C.D., Dunne, K.A., and Vecchia, A.V. 2005. Global pattern of trends in streamflow and water availability in a changing climate. *Nature.* 438(7066):347–350. <https://doi.org/10.1038/nature04312>
- Mirdashtvan, M., Najafinejad, A., Malekian, A., and Sa’doddin, A. 2021. Sustainable water supply and demand management in semi-arid regions: optimizing water resources allocation based on RCPs scenarios. *Water Resour. Manag.* 35(15), 5307-5324. <https://doi.org/10.1007/s11269-021-03004-0>.
- Modaresi, F., Araghinejad, S., and Ebrahimi, K. 2018. A comparative assessment of artificial neural network, generalized regression neural network, least-square support vector regression, and K-nearest neighbor regression for monthly streamflow forecasting in linear and nonlinear conditions. *Water Resour. Manag.* 32(1), 243-258. <https://doi.org/10.1007/s11269-017-1807-2>.

- Mohamed, M.A. 2017. Monitoring of temporal and spatial changes of land use and land cover in metropolitan regions through remote sensing and GIS. *Natural Resour.* 8:353-369. <https://doi.org/10.4236/nr.2017.85022>
- Mougou, R., Mansour, M., Iglesias, A., Chebbi, R.Z., and Battaglini, A. 2011. Climate change and agricultural vulnerability: a case study of rain-fed wheat in Kairouan, Central Tunisia. *Regional Environ. Change.* 11(Suppl 1): 137-142. <https://doi.org/10.1007/s10113-010-0179-4>.
- Mudbhari, D., Kansal, M.L., and Kalura, P. 2022. Impact of climate change on water availability in Marsyangdi river basin, Nepal. *Quarterly J. R. Meteorol. Soc.* 148(744), 1407-1423. <https://doi.org/10.1002/qj.4267>
- Noorbeh, P., Roozbahani, A., and Moghaddam, H. 2020. Annual and Monthly Dam Inflow Prediction Using Bayesian Networks. *Water Resour Manage.* 34: 2933–2951. <https://doi.org/10.1007/s11269-020-02591-8>.
- O'Neill, B.C., Kriegler, E., Riahi, K. 2014. A new scenario framework for climate change research: the concept of shared socioeconomic pathways. *Climatic Change.* 122:387–400. <https://doi.org/10.1007/s10584-013-0905-2>.
- Obeysekera, J., Barnes, J., and Nungesser, M. 2011. Climate sensitivity runs and regional hydrologic modelling for predicting the future hydrology of the Florida Everglades. *Environ. Manag.* 48(3):495–508. <https://doi.org/10.1007/s00267-014-0315-x>
- Papanastasiou, D.K., Keppas, S., Melas, D., and Katsoulas, N. 2023. Estimation of crops future Irrigation Water needs in a Mediterranean Plain. *Sustain.* 15(21), 15548. <https://doi.org/10.3390/su152115548>.
- Peng, F., Wen, J., Zhang, Y., and Jin, J. 2020. Monthly streamflow prediction based on random forest algorithm and phase space reconstruction theory. *J. Phy. Conference series* 1637(1): 012091. <http://dx.doi.org/10.1088/1742-6596/1637/1/012091>
- Pfannerstill, M., Guse, B., and Fohrer, N. 2014. Smart low flow signature metrics for an improved overall performance evaluation of hydrological models. *J. Hydrol.* 510:447-458. <https://doi.org/10.1016/j.jhydrol.2013.12.044>.

- Pires, A., Morato, J., Peixoto, H., Bradley, S., and Muller, A. 2020. Synthesizing and standardizing criteria for the evaluation of sustainability indicators in the water sector. *Environ. Dev. and Sustainability*. 22(7): 6671-6689. <https://doi.org/10.1007/s10668-019-00508-z>
- Raju, K.S. and Kumar, D.N. 2020. Review of approaches for selection and ensembling of GCMs. *J. Water Clim. Change*. 11(3), 577-599. <https://doi.org/10.2166/wcc.2020.128>
- Reshma, C. and Arunkumar, R. 2023. Assessment of impact of climate change on the streamflow of Idamalayar River Basin, Kerala. *J. Water and Clim. Change*. 14(7): 2133-2149. <https://doi.org/10.2166/wcc.2023.456>
- Riahi, K., van Vuuren, D.P., Kriegler, E., Edmonds, J., O'Neill, B.C., Fujimori, S., Bauer, N., Calvin, K., Dellink, R., Fricko, O., and Lutz, W. 2017. The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. *Global Env. Change*, 42:153–168. <https://doi.org/10.1016/j.gloenvcha.2016.05.009>.
- Ringuest, J.L. and Ringuest, J.L. 1992. Compromise programming. Multiobjective optimization: behavioral and computational considerations. *Springer*. 51-59. https://doi.org/10.1007/978-1-4615-3612-3_4
- Rudraswamy, G.K. and Umamahesh, N.V. 2024. Investigating the impact of climate change on irrigation and crop water requirements of Bhadra and Tungabhadra command area: A CMIP-6 GCMs and CROPWAT 8.0 approach. *Water Supply*. 24(2), 625-642. <https://doi.org/10.2166/ws.2024.022>.
- Saedi, F., Ahmadi, A., and Abbaspour, K.C. 2021. Optimal water allocation of the Zayandeh-Roud Reservoir in Iran based on inflow projection under climate change scenarios. *J. Water Clim. Change*. 12(5), 2068-2081. <https://doi.org/10.2166/wcc.2021.219>.
- Schmidli, J., Frei, C. and Vidale, P.L. 2006. Downscaling from GCM precipitation: a benchmark for dynamical and statistical downscaling methods. *Int. J. Climatol*. 26: 679-689. <https://doi.org/10.1002/joc.1287>

- Şen, Z. 2021. Reservoirs for water supply under climate change impact—a review. *Water Resour. Manag.* 35(11): 3827-3843. <https://doi.org/10.1007/s11269-021-02925-0>.
- Sharannya, T.M., Mudbhatkal, A., and Mahesha, A. 2018. Assessing climate change impacts on river hydrology—A case study in the Western Ghats of India. *Journal of Earth Syst. Sci.* 127(6),78. <https://doi.org/10.1007/s12040-018-0979-3>
- Sharannya, T.M., Venkatesh, K., Mudbhatkal, A., Dineshkumar, M., and Mahesha, A. 2021. Effects of land use and climate change on water scarcity in rivers of the Western Ghats of India. *Environ. Monitoring Assess.* 193(12), 820. <https://doi.org/10.1007/s10661-021-09598-7>.
- Sharma, S.K., Sinha, R.K., Eldho, T.I., and Patel, H.M. 2024. Individual and combined impacts of land use/cover and climate change on water balance components of a tropical river basin. *Environ. Modeling Assess.* 29(1), 67-90. <https://doi.org/10.1007/s10666-023-09916-y>.
- Shen, H., Li, H., Qian, Y., Zhang, L., and Yuan, Q. 2014. An effective thin cloud removal procedure for visible remote sensing images. *ISPRS J. Photogrammetry and Remote Sensing.* 96:224-235. <https://doi.org/10.1016/j.isprsjprs.2014.06.011>.
- Shrestha, D.L., Kayastha, N., and Solomatine, D. 2009. A novel approach to parameter uncertainty of hydrological models using neural networks. *Hydrol. Earth System Sciences.* 18(9): 3411-3428.
- Shrestha, S., Maskey, G. and Kayastha, R.B. 2023. Assessment of climate change effects on the hydrological regime of Bagmati river basin using SWAT model. *J. Hydrol. Meteorol.* 11(1), 28-41. <https://doi.org/10.3126/jhm.v11i1.59663>.
- Singh, D., Vardhan, M., Sahu, R., Chatterjee, D., Chauhan, P., and Liu, S. 2023. Machine learning and deep learning-based streamflow prediction in a hilly catchment for future scenarios using CMIP6 GCM data. *Hydrol. Earth Sys. Sci.* 27(5): 1047-1075. <https://doi.org/10.5194/hess-27-1047-2023>

- Sinha, R.K., Eldho, T.I., and Subimal, G. 2020. Assessing the impacts of land cover and climate on runoff and sediment yield of a river basin. *Hydrol. Sci. J.* 65(12), 2097-2115. <https://doi.org/10.1080/02626667.2020.1791336>.
- Soundharajan, B.S., Adeloye, A.J., and Remesan, R. 2016. Evaluating the variability in surface water reservoir planning characteristics during climate change impacts assessment. *J. Hydrol.* 538:625-639. <https://doi.org/10.1016/j.jhydrol.2016.04.051>.
- Sourajit, M. and Soumita, S. 2025. Optimizing agricultural water use: Crop water requirement and irrigation scheduling of tomato & soybean using FAO CropWat 8.0 model in Chandrapur district, Maharashtra, India. *Next Res.* 2(3):100529. <https://doi.org/10.1016/j.nexres.2025.100529>.
- Sreelatha, K. and Anand Raj, P. 2021. Ranking of CMIP5-based global climate models using standard performance metrics for Telangana region in the southern part of India. *J. Hydraulic. Eng.* 27(S1):556-565. <https://doi.org/10.1080/09715010.2019.1634648>
- Teutschbein, C. and Seibert, J. 2013. Is bias correction of Regional Climate Model (RCM) simulations possible for non-stationary conditions? *Hydrol. Earth Sys. Sci.* 17:5061-5077. <https://doi.org/10.5194/hess-17-5061-2013>.
- Thom, H.C.S. 1958. A note on the gamma distribution. *Mon. Weather Rev.* 86 (4):117–122. [http://dx.doi.org/10.1175/1520-0493\(1958\)0862.0.CO](http://dx.doi.org/10.1175/1520-0493(1958)0862.0.CO)
- Tong, L., Kang, S., and Zhang, L. 2007. Temporal and spatial variations of evapotranspiration for spring wheat in the Shiyang river basin in northwest China. *Agric. water manag.* 87(3): 241-250. <https://doi.org/10.1016/j.agwat.2006.07.013>.
- USDA Natural Resources Conservation Service. 2009. Hydrologic Soil Groups. In National Engineering Handbook: part 630. <https://www.hydrocad.net/neh/630ch9.pdf>.

- Vapnik, V.N. 1995. Introduction: four periods in the research of the learning problem. In: Vapnik VN (ed) The nature of statistical learning theory. *Springer*. 1-14. https://doi.org/10.1007/978-1-4757-2440-0_1
- Varikoden, H., George, C., Ancy, P., and Babu, C.A. 2025. A comprehensive review on the recent changes in Indian summer monsoon rainfall and its relations with global climate drivers based on the CMIP6 simulations. *Atmos. Res.* 326:108302. <https://doi.org/10.1016/j.atmosres.2025.108302>.
- Varis, O., Kajander, T., and Lemmelä, R. 2004. Climate and Water: From Climate Models to Water Resources Management and Vice Versa. *Climatic Change* 66:321–344. <https://doi.org/10.1023/B:CLIM.0000044622.42657.d4>
- Verburg, P., Soepboer, W., Veldkamp, A. 2002. Modelling the Spatial Dynamics of Regional Land Use: The CLUE-S Model. *Environ. Manag.* 30: 391–405. <https://doi.org/10.1007/s00267-002-2630-x>.
- Vieira, E. and Samuel, S.S. 2018. Water resources sustainability index for a water-stressed basin in Brazil. *J. Hydrol. Regional Stud.* 19: 97-109. <https://doi.org/10.1016/j.ejrh.2018.08.003>.
- Vogeti, R.K., Raju, K.S., Kumar, D.K., Rajesh, A.M., Kumar, S.V., and Jha, Y.K. 2023. Application of hydrological models in climate change framework for a river basin in India. *J. Water Clim. Change.* 14 (9): 3150–3165. doi: <https://doi.org/10.2166/wcc.2023.188>.
- Wahyuni, S., Sisinggih, D., Elhuda, I., Souma, K., and Dasyilva, I.Z. 2024. Optimization of reservoir release operation using genetic algorithm method. *Results in Engi.* 23, 102610. <https://doi.org/10.1016/j.rineng.2024.102610>.
- Warin, X. 2023. Reservoir optimization and machine learning methods. *EURO J. Computational Optimization.* 11:100068. <https://doi.org/10.1016/j.ejco.2023.100068>.
- Wilby, R.L., Hay, L.E., and Leavesley, G.H. 2000. A comparison of downscaled and raw GCM output: implications for climate change scenarios in the San Juan

- River basin, Colorado. *J. Hydrol.* 225(1–2):67–91. [https://doi.org/10.1016/S0022-1694\(99\)00136-5](https://doi.org/10.1016/S0022-1694(99)00136-5)
- Willmott, C.J., Robeson, S.M., and Matsuura, K. 2012. A refined index of model performance. *Int. J. Clim.* 32(13):2088–2094. <https://doi.org/10.1002/joc.2419>
- Xue, Li., Sha, J., and Zhong-Liang, W. 2019. Comparison of daily streamflow forecasts using extreme learning machines and the random forest method. *Hydrol. Sci. J.* 64(15):1857-1866. <https://doi.org/10.1080/02626667.2019.1680846>
- Yazdandoost, F., Moradian, S., Zakipour, M., Izadi, A., and Bavandpour, M. 2020. Improving the precipitation forecasts of the North-American multi model ensemble (NMME) over Sistan basin. *J. Hydrol.* 590:125263. <https://doi.org/10.1016/j.jhydrol.2020.125263>.
- YoosefDoost, A., Asghari, H., Abunuri, R., and Sadeghian, M.S. 2018. Comparison of CGCM3, CSIRO MK3 and HADCM3 Models in Estimating the Effects of Climate Change on Temperature and Precipitation in Taleghan Basin. *American J. Environ. Prot.* 6(1):28-34.