Saurav Kumar, Ph.D., P.E.
ISTB7, Room 422, 777 E. University Dr. Tempe, AZ 85287-8704.
Phone: 602-496-5719; Email: sk2@asu.edu
Research site: https://waterdmd.info

Education

Ph.D.	Civil Engineering	Virginia Tech (USA)
M.S.	Environmental Science and Engineering	Singapore-Stanford Partnership Program, Nanyang Technological University (Singapore) and Stanford University (USA)
B.E.	Environmental Engineering	Delhi College of Engineering (India)

Research and Professional Experience

August 2022-
Assistant Professor, School of Sustainable Engineering and Built Environment, Arizona State University, AZ

May 2019 – July 2022
Assistant Professor, Texas A&M AgriLife Research Center at El Paso and Department of Biological and Agricultural Engineering, Texas A&M University

August 2016 – May 2019
Research Assistant Professor, Department of Civil Engineering, the University of Texas at El Paso

March 2012 – July 2016
Research Associate, Occoquan Watershed Monitoring Laboratory, Department of Civil and Environmental Engineering, Virginia Tech

August 2005 – July 2008
Project Officer, School of Civil and Environmental Engineering, Nanyang Technological University

Peer-Reviewed Publications

Journal Papers

1. Talchabhadel, Rocky, Maskey, S., Gouli, M.R., Dahal, K., Thapa, A., Sharma, S., Dixit, A.M., Saurav **Kumar**. 2023. Multimodal multiscale characterization of cascading hazard on mountain terrain. Geomatics, Nat. Hazards Risk. https://doi.org/10.1080/19475705.2022.2162443 [*in press*]
2. Quinn, Nigel W. T., Vamsi Sridharan, John Ramirez-Avila, Sanaz Imen, Huilin Gao, Rocky Talchabhadel, Saurav **Kumar**, and Walter McDonald. "Applications of GIS and Remote Sensing in Public Participation and Stakeholder Engagement for Watershed Management." Socio-Environmental Systems Modelling 4 (October 17, 2022): 18149–18149. https://doi.org/10.18174/sesmo.18149
3. Sridharan, Vamsi .K.; Saurav **Kumar**; Swetha Madhur Kumar, S. Can Remote Sensing Fill the United States' Monitoring Gap for Watershed Management? Water 2022, 14, 1985. https://doi.org/10.3390/w14131985
4. Sharma, Sanjib, Rocky Talchabhadel, Santosh Nepal, Ganesh R. Ghimire, Biplob Rakhal, Jeeban Panthi, Basanta R. Adhikari, Soni M. Pradhanang, Shreedhar Maskey and Saurav **Kumar** 2022. Increasing risk of cascading hazards in the central Himalayas. Nat. Haz. https://doi.org/10.1007/s11069-022-05462-0

5. Poulose, Thomas, Saurav **Kumar**, Greg Torell. 2022 "Power storage using sand and engineered materials as an alternative for existing energy storage technologies." *Journal of Energy Storage* Volume 51, 2022, 104381. https://doi.org/10.1016/j.est.2022.104381
6. Palmate, Santosh S., Saurav **Kumar**, Thomas Poulose, Girisha K. Ganjegunte, Vijayasatya N. Chaganti, and Zhuping Sheng. 2022 "Comparing the Effect of Different Irrigation Water Scenarios on Arid Region Pecan Orchard Using a System Dynamics Approach." *Agricultural Water Management* 265 (May 1, 2022): 107547. https://doi.org/10.1016/j.agwat.2022.107547.
7. Talchabhadel, Rocky, Helene McMillan, Santosh S. Palmate, Rosario Sanchez, Zhuping Sheng, and Saurav **Kumar**. 2021. "Current Status and Future Directions in Modeling a Transboundary Aquifer: A Case Study of Hueco Bolson" Water 13, no. 22: 3178. https://doi.org/10.3390/w13223178
8. Prajapati, Rajaram, Priya Silwal, Sudeep Duwal, Sandesh Shrestha, Aalok Sharma Kafle, Rocky Talchabhadel, and Saurav **Kumar**. 2021. "Detectability of Rainfall Characteristics over a Mountain River Basin in the Himalayan Region from 2000 to 2015 Using Ground- and Satellite-Based Products." *Theoretical and Applied Climatology*, October. https://doi.posorg/10.1007/s00704-021-03820-9.
9. Xu, Jie, Rachel Phillips, Hugo Alarcon, and Saurav **Kumar**. 2021. "Current and Emergent Analytical Methods for Monitoring the Behavior of Agricultural Functional Nanoparticles in Relevant Matrices: A Review." *Current Opinion in Chemical Engineering* 33: 100706. https://doi.org/10.1016/j.coche.2021.100706.
10. Sridharan, Vamsi Krishna, Nigel W. T. Quinn, Saurav **Kumar**, Steven C. McCutcheon, Ebrahim Ahmadisharaf, Xing Fang, Harry X. Zhang, and Andrew Parker. 2021. "Selecting Reliable Models for Total Maximum Daily Load Development: Holistic Protocol." *Journal of Hydrologic Engineering* 26(10): 04021031.https://doi.org/10.1061/(ASCE)HE.1943-5584.0002102.
11. Capt, Tallen, Ali Mirchi, Saurav **Kumar**, and W. Shane Walker. 2021. "Urban Water Demand: Statistical Optimization Approach to Modeling Daily Demand." *Journal of Water Resources Planning and Management* 147 (2): 04020105. https://doi.org/10.1061/(ASCE)WR.1943-5452.0001315.
12. Poulose, Thomas, Saurav **Kumar**, and Girisha K. Ganjegunte. 2021. "Robust Crop Water Simulation Using System Dynamic Approach for Participatory Modeling." *Environmental Modelling & Software* 135 (January): 104899. https://doi.org/10.1016/j.envsoft.2020.104899.
13. Talchabhadel, Rocky, Jeeban Panthi, Sanjib Sharma, Ganesh R. Ghimire, Rupesh Baniya, Piyush Dahal, Mahendra B. Baniya, Shivaram K.C., Biswo Jha, Surendra Kaini, Kshitij Dahal, Kaushal R. Gnyawali, Binod Parajuli, and Saurav **Kumar**. 2021. "Insights on the Impacts of Hydroclimatic Extremes and Anthropogenic Activities on Sediment Yield of a River Basin." *Earth* 2(1). https://doi.org/10.3390/earth2010003.
14. Maharjan, Manisha, Anil Aryal, Bijay Man Shakya, Rocky Talchabhadel, Bhesh R. Thapa, and Saurav **Kumar**. 2021. "Evaluation of Urban Heat Island (UHI) Using Satellite Images in Densely Populated Cities of South Asia." *Earth* 2 (1). https://doi.org/10.3390/earth2010006.
15. Alger, Jessica, Alex Mayer, Saurav **Kumar**, and Alfredo Granados-Olivas. 2020. "Urban Evaporative Consumptive Use for Water-scarce Cities in the United States and Mexico." *AWWA Water Science* 2 (5): 525. https://doi.org/10.1002/aws2.1185.
16. Nunoo, Robert, Paul Anderson, Saurav **Kumar**, and Jun-Jie Zhu. 2020. "Margin of Safety in TMDLs: Natural Language Processing-Aided Review of the State of Practice." *Journal of Hydrologic Engineering* 25 (4): 04020002. https://doi.org/10.1061/(ASCE)HE.1943-5584.0001889.
17. Asadi, Mojtaba, Abbasali TaghaviGhalesari, and Saurav **Kumar**. 2019. "Machine Learning Techniques for Estimation of Los Angeles Abrasion Value of Rock Aggregates." *European Journal of Environmental and Civil Engineering*, November, 1–14. https://doi.org/10.1080/19648189.2019.1690585.
18. Borah, Deva K., G. Padmanabhan, and Saurav **Kumar**. 2019. "Total Maximum Daily Load Analysis and Modeling: Assessment and Advancement." *Journal of Hydrologic Engineering* 24 (11): 02019001. https://doi.org/10.1061/(ASCE)HE.1943-5584.0001853.
19. Quinn, Nigel W. T., Saurav **Kumar**, Rosanna La Plante, and Francisco Cubas. 2019. "Tool for Searching USEPA's TMDL Reports Repository to Analyze TMDL Modeling State of the Practice." *Journal of Hydrologic Engineering* 24 (9): 04019026. https://doi.org/10.1061/(ASCE)HE.1943-5584.0001805.

20. **Kumar**, Saurav, Adil Godrej, Harold Post, and Karl Berger. 2019. "The Value of Intensive Sampling—A Comparison of Fluvial Loads." *Water Resour. Manage.* 33 (12): 4303–18. https://doi.org/10.1007/s11269-019-02369-7.
21. Fathi, Aria, S Mohsen Haeri, Mehran Mazari, Arash Hosseini, Saurav **Kumar**, and Cheng Zhu. 2019. "Estimation of Rocking Capacity of Soil-Structure Systems Using a Hybrid Inverse Solver." *SN Applied Sciences* 1 (7): 703. https://doi.org/10.1007/s42452-019-0724-9.
22. Quinn, Nigel W. T., Saurav **Kumar**, and Sanaz Imen. 2019. "Overview of Remote Sensing and GIS Uses in Watershed and TMDL Analyses." *Journal of Hydrologic Engineering* 24 (4): 02519002. https://doi.org/10.1061/(ASCE)HE.1943-5584.0001742.
23. **Kumar**, Saurav, Glenn E. Moglen, Adil N. Godrej, Thomas J. Grizzard, and Harold E. Post. 2018. "Trends in Water Yield under Climate Change and Urbanization in the US Mid-Atlantic Region." *Journal of Water Resources Planning and Management* 144 (8): 05018009. https://doi.org/10.1061/(ASCE)WR.1943-5452.0000937.
24. Ganjegunte, Girisha K, John A Clark, Megha N Parajulee, Juan Enciso, and Saurav **Kumar**. 2018. "Salinity Management in Pima Cotton Fields Using Sulfur Burner." *Agrosystems, Geosciences & the Environment* 1. https://doi.org/10.2134/age2018.04.0006.
25. **Kumar**, Saurav, Adil N Godrej, and Thomas J Grizzard. 2016. "Pre-Development Conditions to Assess the Impact of Growth in an Urbanizing Watershed in Northern Virginia." *J. Hydrol.* 540 (September): 1066–77. https://doi.org/10.1016/j.jhydrol.2016.07.011.
26. **Kumar**, Saurav, Adil N Godrej, and Thomas J Grizzard. 2015. "A Web-Based Environmental Decision Support System for Legacy Models." *Journal of Hydroinformatics* 17 (6): 874–90. https://doi.org/10.2166/hydro.2015.007.
27. **Kumar**, Saurav, Adil N Godrej, and Thomas J Grizzard. 2013. "Watershed Size Effects on Applicability of Regression-Based Methods for Fluvial Loads Estimation." *Water Resour. Res.* 49 (11): 7698–7710. https://doi.org/10.1002/2013WR013704.

Conference Papers and Proceedings

- Moqsadur Rahman, Saurav Kumar, Santosh Palmate, and M. Shahriar Hossain. Self-supervised Learning for Hyperspectral Images of Trees. ACM SIGKDD Workshop on Deep Learning Practice and Theory for High-Dimensional Sparse and Imbalanced Data (DLP-KDD 2022). August 2022. Hyperspectral_Images_Embedding_2022.pdf .
- Fathi, A., M. Mazari, M. Saghafi, A. Hosseini, and S. **Kumar**, (2019). Parametric Study of Pavement Deterioration Using Machine Learning Algorithms. In Airfield and Highway Pavements 2019: Innovation and Sustainability in Highway and Airfield Pavement Technology (pp. 31-41). Reston, VA: American Society of Civil Engineers.doi: 10.1061/9780784482476.004
- Majsztrik, JC, DR Hitchcock, S **Kumar**, D Sample, SA White. 2018. Clean WateR3: Developing Tools to Help Specialty Crop Growers Understand the Costs and Benefits of Recycling Water. Acta Horticulturae. Proceedings of the 3rd International Symposium on Woody Ornamentals of the Temperate Zone, Number 1191, 187-192 doi: 10.17660/ActaHortic.2018.1191.26
- **Kumar, S.**, A. Godrej, and T. Grizzard (2014). An extendable experiment with GIS and ICT to make environmental data and modeling user-friendly and accessible. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2
- **Kumar, S.**, A. Godrej, and T. Grizzard (2014). Using locally distributed computing to aid water quality modeling. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2
- **Kumar, S.**, Godrej, A., Grizzard, T., Post, H., and Bartlett, J. (2014). A web-based water resources analysis portal for the Occoquan watershed. International Conference on Hydroinformatics. http://academicworks.cuny.edu/cc_conf_hic/400

- **Kumar, S.**, Godrej, A., and Grizzard, T. (2014). Extending the Occoquan reservoir water quality model for stakeholder involvement. International Conference on Hydroinformatics. http://academicworks.cuny.edu/cc_conf_hic/398

Books edited/contributed

- *ASCE MOP 150: Total Maximum Daily Load Development and Implementation: Models, Methods, and Resources* https://ascelibrary.org/doi/abs/10.1061/9780784415948
- *Total Maximum Daily Load Analysis and Modeling: Assessment of the Practice* https://doi.org/10.1061/9780784414712.

Invited seminars, Conference Presentations, and Posters

- Talchabhadel, R., S. Sharma, S. **Kumar**., and R. Prajapati. INV44B-03Nexus perspective on multiscale drivers of natural hazards, cascading failures, and risk management strategies within a multisector system. AGU Fall meeting, Chicago 15 December 2022 (*Poster presentation*)
- S. **Kumar** and R. Talchabhadel, IN42A-01Using PlanetScope Data for BMP Identification and Assessment. AGU Fall meeting, Chicago 15 December 2022 (*Oral presentation*)
- Johnson A., S. **Kumar**, P. Aron, I. Uribe, S. Palmate, and W Weiss, H35G-04 An Exploration of Nutrient Management Case Studies to Assess the Impacts of BMPs 2022. AGU Fall meeting, Chicago 14 December 2022 (*Oral presentation*)
- Talchabhadel, R., S. **Kumar**., E. Rhodes, S. Playmate, and E Racine, GC36B-02- A Bayesian belief Network (BN) approach to explore the nexus between land cover changes, socioeconomic factors, and hydroclimate. 2022 AGU Fall meeting, Chicago 14 December 2022 (*Oral presentation*)
- K. Herrera, M. Mauritz, L. Jin, S. **Kumar,** and G. Ganjegunte, B14A-02Establishing Satellite-Derived Vegetation Index Baselines to Understand Pecan Orchard Water-Stress and Productivity in an Arid Environment. Monday, 2022 AGU Fall meeting, Chicago 14 December 2022 (*Poster presentation*)
- Palmate, S., S. Kumar, R. Talchabhadel, and E. Mokari. A system dynamic approach for managing transboundary water systems. 2022 iEMSs Biennial Meeting, Brussels, 4th – 8th of July. (*Oral presentation*)
- Palmate, S., and S. **Kumar**. Wetland likelihood mapping of transboundary Himalaya using maximum entropy. ASCE-EWRI Water Congress, Atlanta June 5-8, 2022. (*Oral presentation*)
- Talchabhadel, R., P. Pradhan, K. Dahal, E. Rhodes, and S. **Kumar**. The effects of warming temperatures, groundwater decline, and altered precipitation on crop productivity across the Ogallala Aquifer in Texas. ASCE-EWRI Water Congress, Atlanta June 5-8, 2022. (*Oral presentation*)
- Talchabhadel, R., S. Sharma, and S. **Kumar**. Understanding multiscale drivers of natural hazards, cascading failures, and risk management strategies within a multisector system, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-3029, https://doi.org/10.5194/egusphere-egu22-3029, 2022. (*Oral presentation*)
- **Kumar,** S**.** The promise of aerial imaging for water resources management and the Roorkee Water Conclave, IIT Roorkee, India March 2, 2022. (*Keynote address*)
- **Kumar,** S. Panelist for the Webinar for Association of Clean Water Associates (ACWA) Modeling Workgroup, February 22, 2022. (*Invited panelist*)
- **Kumar**, S., R. Talchabhadel, and D. Cheu. BMP-Net: Deep-learning models to identify BMPs. AGU Fall Meeting 2021, New Orleans, LA, USA. 13–17 December 2021. (*Oral presentation*)
- Talchabhadel, R., H. McMillan, S. Palmate, R. Sanchez, Z. Sheng, and S. **Kumar**. Current Status and Future Directions in Modeling a transboundary aquifer: a case study of Hueco Bolson. AGU Fall Meeting 2021, New Orleans, LA, USA. 13–17 December 2021. *(Poster presentation)*
- Talchabhadel, R., S. **Kumar,** and C. Sanchez. Urban heating, thermal exposure, and heat waves. AGU Fall Meeting 2021, New Orleans, LA, USA. 13–17 December 2021. *(Poster presentation)*

- Talchabhadel, R., K. Dahal, and S. **Kumar**. Spatial downscaling of coarse resolution satellite-based precipitation estimates (SPEs) to 1 km using Machine Learning In The 3rd NOAA Workshop on Leveraging AI in Environmental Sciences, 13–17 September 2021. (*Oral presentation)*
- Talchabhadel, R., K. Dahal, and S. **Kumar**. Machine Learning to Estimate Precipitation with Satellite-based and Gauged Observations In The 3rd NOAA Workshop on Leveraging AI in Environmental Sciences, 13–17 September 2021. (*Poster presentation)*
- S. **Kumar**.Panelist on the Panel Session titled "TMDL Analysis and Modeling: State-of-the-Art and State-of-the-Practice" in 2021 EWRI World Environment and Water Resources Congress. June 7, 2021.(*Invited panelist*)
- S. **Kumar**. Ongoing Experiments with Water System Modeling for Encouraging Participation and Integrating Remotely Sensed Data. Online Seminar to Dryland Critical Zone Group members. Feb 26, 2021. *(Invited seminar)*
- S. **Kumar.** Using TMDL reports to better understand water quality modeling. Online webinar to the Association of Clean Water Administrators. Feb 17, 2021. (*Invited seminar*)
- Alger, J., A. Mayer, S. **Kumar**, A. Granados Olivas. Evapotranspiration in the Middle Rio Grande Region; Estimates for Urban Environments. Water Symposium and USDA Middle Rio Grande Basin Water Management Meeting, El Paso, TX. Jan 8, 2020 (*Poster presentation*)
- Majsztrik, J., **S. Kumar**, B. Pitton, L. Oki, D. Hitchcock, D. Sample, and S. White. Tools for growers to efficiently manage water for specialty crop production. American Society for Horticultural Sciences Annual Conference. Las Vegas, NV, USA. July 21-25 2019 (*Oral presentation*)
- Atwah, W., Jahan N, and **S. Kumar.** A comparison between four different regression based fluvial load estimation methods with an extensive sampling based direct load estimation method. World Environment and Water Resources Congress, Pittsburgh, PA. May 19-23 2019 (*Oral presentation*)
- Kobayashi, Y., Kumar, S., Atwah, W., Ellerson, A., Poulose, T., and Ganjegunte, G. Improving the output of a farm field model through data assimilation. Water Symposium, El Paso, TX. January 8, 2019 (*Poster Presentation*)
- Kobayashi Y., and **S. Kumar.** Using an Aerial Multispectral Sensor in Urban Areas for Assessing Changes over Time. World Environment and Water Resources Congress, Pittsburgh, PA. May 19-23 2019 (*Oral presentation*)
- Poulose, T., **Kumar, S.**, Kobayashi, Y., Ortiz, K., Atwah, W.,Howlider, H., and Ganjegunte, G. Using Landsat 7 Data to Understand Changes in Cropping Patterns Over the Middle Rio Grande Basin. Water Symposium, El Paso, TX. January 8 2019 (*Poster Presentation*).
- Howlider, H., **Kumar, S**., Poulose, T., and Pennington, D . Using Multi-Temporal Satellite Imagery and Machine Learning to Predict Crop Types in Middle Rio Grande. US-Mexico Border Summit., Las Cruces, NM. April 24 2019 (*Poster Presentation*).
- **Kumar, S**. TRS Tool – Using Data Mining and Natural Language Processing to Assess the State of TMDL Development. 9th International Congress on Environmental Modelling and Software, June 25-28, 2018, Fort Collins, CO (*Oral presentation*).
- Kobayashi, Y., **S. Kumar,** W. Atwah, A. Ellerson, G. Ganjegunte. Model to Improve Decision Making for Farms Dealing with Salinity in the South-West Region. 9th International Congress on Environmental Modelling and Software, June 25-28, 2018, Fort Collins, CO. (*Oral presentation*).
- Atwah, W., S. **Kumar,** A. Ellerson, Y. Kobayashi. Using an Aerial Multispectral Sensor in Urban Areas for Assessing Changes over Time. World Environmental and Water Resources Congress 2018, June 3-7, 2018: Minneapolis, MN (*Oral presentation*).
- **Kumar, S.,** Atwah, W. State-of-Practice of Remote Sensing for Total Maximum Daily Load Modeling. World Environmental and Water Resources Congress 2018, June 3-7, 2018: Minneapolis, MN (*Oral presentation*).
- Kobayashi, Y., **S. Kumar,** W. Atwah, A. Ellerson, G. Ganjegunte. A Bayesian Network Based Model for Decision Making on a Farm Scale Impacted by Salinity. World Environmental and Water Resources Congress 2018, June 3-7, 2018: Minneapolis, MN (*Oral presentation*).
- Kobayashi, Y., **Kumar, S.**, Atwah, W., Ellerson, A., and Ganjegunte, G. Using a bayesian network based model to improve decision-making for farms dealing with salinity. Water Symposium, El Paso, TX. January 8, 2018 (*Poster Presentation*)

- **Kumar, S.** Water Resources Management Embracing the Data Deluge. Indian Water Resources Society (IWRS), February 16-19, 2018: Roorkee, India (***Keynote address***)
- **Kumar, S**., N. Quinn, and S. Mubako. Innovations in the use of GIS and remote sensing for TMDL analysis and modeling. World Environmental and Water Resources Congress 2017, May 21-25, 2017: Sacramento, CA (*Oral presentation*).
- **Kumar, S.,** Water Resources Management in the Internet Age: Embracing the Data Deluge. SDSMT, February 2016: Rapid City, SD (*Invited Seminar*)
- **Kumar, S**., G. Moglen, A. Godrej, T. Grizzard, H. Post, and M. Barandouzi. The Occoquan Watershed: trends from 40 years of observation during a time of changing land use and climate. The EWRI Watershed Management Symposium 2015, August 5-7, 2015: Reston, VA (*Oral presentation*).
- **Kumar,** S., A. Godrej, J. Little, and H. Post. Next steps in reservoir monitoring and modeling: Connectivity and actionable visualizations. IWA Symposium on Lake and Reservoir Management (IWA L&RM 2015) August 4-7, 2015: Pembroke, VA (*Oral presentation*).
- **Kumar, S.** OccViz v2.0: A modern, interactive water quality and quantity data management and visualization platform. The 3rd CUAHSI Conference on Hydroinformatics, July 15-17, 2015: Tuscaloosa, AL (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. Extending the Occoquan reservoir water quality model for stakeholder involvement. The 11th International Conference on Hydroinformatics, August 17 to 21, 2014: New York (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. A web-based water resources analysis portal for the Occoquan watershed. The 11th International Conference on Hydroinformatics, August 17 to 21, 2014: New York (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. An extendable experiment with GIS and ICT to make environmental data and modeling user-friendly and accessible. The 7th International Congress on Environmental Modelling and Software (iEMSs), June 15-19, 2014: San Diego, California (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. Using locally distributed computing to aid water quality modeling. The 7th International Congress on Environmental Modelling and Software (iEMSs), June 15-19, 2014: San Diego, California (*Oral presentation*)
- **Kumar, S.** Water resources data analysis and web-based visualization. U.S. Geological Service Virginia Water Science Center, May 2014: Richmond, VA (*Invited Seminar*)
- **Kumar, S.** Water resources data management and modeling for the internet age. Utah State University, November 2013: Logan, UT (*Invited Seminar*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. Making water resources data and modeling tools accessible to local stakeholders: An ongoing experiment in the Occoquan watershed. The 2013 CUAHSI Conference on Hydroinformatics and Modeling, July, 2013: Logan, UT (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. Going from environmental-data to knowledge using GIS and modern web techniques. The National Capital Region Water Resources Symposium, April, 2013: Washington D.C. (*Oral presentation*)
- **Kumar, S.**, A. Godrej, and T. Grizzard. Extending a watershed and reservoir water quality model for stakeholder involvement with EDSS. Singapore International Water Week 2011: Singapore (*Poster*)
- **Kumar, S.** Web-GIS, water resources modeling, and stakeholders. Nanyang Technological University, July 2011: Singapore (*Invited seminar*)
- **Kumar, S.**, Z. Xing, and E.Y.M. Lo. Application of 3D hydrodynamic model coupled to an ecological model to the Kranji reservoir. Nanyang Technological University-Stanford University Symposium on the Environment 2005: Singapore (*Oral presentation*)
- **Kumar, S.**, V. Rajola, and S. Nath. Ecological sanitation - sustainable solutions for urban India. The National Conference on Innovative Approaches in Management of Environment (IAME) 2003: Delhi (*Oral presentation*)

- Kumar, N., and S. **Kumar**. Network among environmental NGO's in India. The National Conference on Innovative Approaches in Management of Environment (IAME) 2003: Delhi (*Oral presentation*)

Selected Software Developed

- *Grower tools (2019):* A set of tools for ornamental nursery growers.
  - Irrigation Volume Calculator: https://occviz.com/CW3/IV/IV.html.The irrigation volume tool can be used to determine how much water grower is applying at each irrigation cycle.
  - Leaching Fraction based on salinity: https://occviz.com/CW3/LF/lf.html. The leaching fraction tool can determine how long the irrigation system needs to run for leaching salts.
  - Pond Refill/ Runoff https://occviz.com/CW3/PR/PR.html. The pond refill/runoff volume tool will help determine how much irrigation or rainfall is returning to the reservoir.
  - Slow Sand Filter sizing tool: https://occviz.com/CW3/SSF/ssf.html. The slow sand filter sizing tool will help determine how large of a system is required to treat water.
  - Pathogen Disease Risk Model: https://occviz.com/CW3/pathogen/pathogen.html. This tool can help to determine likely sources of disease and methods of spread in nursery operations.
  - Pond Volume Calculator tool: https://occviz.com/CW3/pondCalculator/pond.html. The reservoir calculator tool can help determine the volume of water in a reservoir.
  - Chlorine contact time tool: https://occviz.com/CW3/CT/CT.html. The chlorine contact time tool will help determine the adequate contact time for your chlorine-based disinfectants.
  - Dilution Dosage: https://occviz.com/CW3/Cl/cl.html. This tool will help compute the correct dilution of chlorine for a stock tank and other applications.
  - Coefficient of Uniformity calculator: https://occviz.com/CW3/CU/CU.html The coefficient of uniformity tool can help determine if irrigation is being applied uniformly.
  - Interception Efficiency: https://occviz.com/CW3/IE/IE.html. The interception efficiency tool can help to determine how much of the water applied makes it into the top of your container vs falling between containers when using overhead irrigation.
- *Exam Randomizer* https://github.com/skp703/radomizeExam/blob/master/Test.ipynb (2016). A python script to generate unique, sensible multiple-choice questions for tests in large classrooms.
- *TMDL model selection tool* https://occviz.com/tmdl/ (2016). A tool for the selection of TMDL development reports based on impairment and model used for development.
- *OccViz: Occoquan system real-time data analysis and visualization portal* https://wqdata.owml.vt.edu and https://mwcog.owml.vt.edu (2013-2015). OccViz is an online real-time water resource data acquisition, curation, visualization, and analysis platform.
- *Rain Interpolator* (2015). Finds daily representative rainfall for a watershed based on daily data available from several rain stations in and around the watershed.
- *Potomac River fluvial load computation and analysis portal* (2014). The portal allows users to analyze and visualize fluvial loads for several parameters of interest at various aggregations (e.g. daily, monthly, calendar year, water year, and seasonal) for the Potomac River.
- *Occoquan system web-based Environmental Decision Support System and server grid* (2012). The web-based EDSS allows users to simulate and analyze water resources impact of land use changes using scientifically rigorous and previously calibrated Occoquan system models based on seven HSPF and two CE-QUAL-W2 implementations. All models are executed on a local network server grid, which was developed for this project.
- *Lake Morphometry Toolbox* (2008). An ArcGIS toolbox created with python scripts and models to analyze lake or reservoir morphometry.
- *Dam Break Flood Management system* (2007), GIS-based software that simulates flood flow in case of catastrophic dam break for some reservoirs in Singapore.

TEACHING/MENTORING EXPERIENCE

Courses Taught

Course Instructors

- CEE 384 Numerical Methods for Engineers, ASU, Fall 2022
- CE 5332/6332 Modern Methods of Engineering Computation, UTEP, Spring 2018
- CE 2385 Environmental Engineering Fundamentals, UTEP, Fall 2016, 2017, 2018, and 2019.
- CE 5390/4376 Advanced Topics in Civil Engineering - Applied Statistics in Civil Engineering, UTEP, Spring 2017
- CE 5291/5391 Special Topics: Big Data in Civil Engineering, UTEP, Fall 2017

Guest Lecturer

- CEE 5224 Advanced GIS –"Python and ArcGIS", Virginia Tech, Spring 2015
- "Introduction to MATLAB" for the Singapore-Stanford Partnership (SSP) Masters program, Fall 2006

Research Mentorship

Postdoctoral Researchers

- Santosh Subhash Palmate, Post-doctoral researcher 2020-onwards
- Rocky Talchabhadel, Post-doctoral researcher 2020-2022
- Esmaiil Mokari, Post-doctoral researcher Jan 2022- July 2022

Graduate Student Advisor

- Thomas Poulose, MS, Department of Civil Engineering UTEP, *Graduated Fall 2019*
- Wissam Atwah, Ph.D., Environmental Science and Engineering UTEP (2016-2021)
- Yohtaro Kobayashi, MS, Department of Civil Engineering UTEP (2018-2020)

Committee Member

- Danadhi Pamuditha Gunawardana Gunawardana Liyanage (M.S. Biological and Agricultural Enggineering at TAMU), Ongoing
- Abbasali Taghavighalesari (Ph.D. Department of Civil Engineering at UTEP), *Graduated Spring 2020*
- Aria Fathi (Ph.D. Department of Civil Engineering at UTEP), *Graduated Spring 2020*
- Mojtaba Asadi (Ph.D. Department of Civil Engineering at UTEP), *Graduated Fall 2019*
- Roberto Camacho Barranco (Ph.D. Department of Computer Science at UTEP), *Graduated Fall 2019*
- Joe Castro (MS Geological Sciences at UTEP), *Graduated 2019*
- Joe Naughton (MS Department of Civil, Construction and Environmental Engineering at Marquette University), *Graduated 2019*
- Tallen Capt (Ph.D. Department of Civil Engineering at UTEP), *Graduated 2019*
- Tahneen Jahan Neelam (MS Department of Civil Engineering at UTEP), *Graduated 2018*

Undergraduate Research Advising

- Josue Guerrero (Engineering at UTEP) 2021-
- Daven Cheu (Earth Science at UCSD) 2020-2021
- Andreas Estrada (Engineering at UTEP) 2020-2022
- Cynthia Sachez (Science at UTEP) 2020-2022
- Jorge Garcia (Engineering at UTEP) 2019-2022
- Damien Cruz (Engineering at UTEP) 2019-2020
- Leticia Caro (Science at UTEP) 2019-2020
- Karla Ortiz (Engineering at UTEP) 2018-2020
- Carolina Cisneros (Science at UTEP) Summer 2019

Visiting Scholars

- Bibek Aryal (CS at UTEP) 2022-
- Habibur Howlidar (ESE at UTEP) 2019-2021

Professional Associations

Committees

- Chair, ASCE-EWRI Remote Sensing Applications in TMDL Modeling Task Committee (2019-present), URL.
- Vice-Chair, ASCE-EWRI Watershed Management Technical Committee (2014-present), URL
- Vice-Chair, ASCE-EWRI TMDL Analysis and Modeling Task Committee (2014-present), URL.
- Member, Paso del Norte Watershed Council, Paso del Norte Watershed Council.
- Texas A&M delegate to the University Council on Water Resources, URL.
- Representative to the Commission on Graduate Studies and Policies at Virginia Tech (2010-2011).
- Chair, the Graduate Students Association, Virginia Tech-NCR Campus (2009-2010).

Memberships

- American Society of Civil Engineers
- The International Environmental Modelling and Software Society
- American Society of Agricultural and Biological Engineers
- American Geophysical Union

Journal Editor and Reviewer

- Editor for Land Special Issue on "Advances in Hydrologic and Water Quality Modeling of Water Systems" (2020-2021) Advances in Hydrologic and Water Quality Modeling of Water Systems
- Guest Editor for the special collection of the Journal of Hydrologic Engineering (2019) on Total Maximum Daily Load Analysis and Modeling: Assessment and Advancement Special Collection on Total Maximum Daily Load Analysis and Modeling: Assessment and Advancement: Journal of Hydrologic Engineering
- Reviewer for:
  - Environmental Engineering Science
  - Environmental Modelling and Software
  - International Journal of Transportation Science and Technology
  - Journal - American Water Works Association
  - Journal of Environmental Engineering
  - Journal of Hydrologic Engineering
  - Journal of Hydrology
  - Water Environment Research
  - Transactions of the ASABE
  - Water Resources Research

Institutional Committees

- Lab & Facilities Committee (Texas A&M AgriLife El Paso Fall 2019-2022)
- IT & Communication Committee (Texas A&M AgriLife El Paso Fall 2019-2022)
- Seminar & Graduate Students Committee (Texas A&M El Paso AgriLife Fall 2019-2022)
- Events & Awards Committee (Texas A&M AgriLife El Paso Fall 2019-2022)
- Risk & Safety Committee (Texas A&M AgriLife El Paso Fall 2019-Summer 2021)