

**Reepal Shah**  
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## **CAREER SUMMARY**

Currently I am working as Research Scientist-I at the Bywater Institute of Tulane University. From 2018-2022, I worked as an Assistant Research Scientist at the Arizona State University (USA). Prior to joining ASU, I worked as postdoctoral research associate at IIT Gandhinagar (India) from 2017 through 2018, just after defending my PhD thesis. Before joining PhD, I was engaged in teaching at the M.S. University (India) for seven years.

I was awarded for ***outstanding research amongst all PhD recipients in 2017 by IIT Gandhinagar. Some of my articles have been amongst most downloaded papers in respective.***

## **EDUCATION**

*Indian Institute of Technology Gandhinagar, 2012-2017*

MHRD Fellow

Ph.D. in Civil Engineering, 2017

*Dissertation: "Drought monitoring and prediction in India."*

*Advisor: Vimal Mishra*

CPI: 8.8/10

*The M.S. University of Baroda, 2003-2005*

Masters in civil engineering (Hydraulics Structure), 2005

Civil Engineering, M.S. University of Baroda.

*Thesis: "Channel-routing using HEC-RAS: case-studies of rivers of Gujarat."*

*Advisor- Haresh Patel*

Score: 1249/1800, GPA: 4.0

*The M.S. University of Baroda, 1999-2003*

Bachelors in engineering (Civil), 2003

Score: 992/1550, GPA: 3.83

## **AWARDS**

***IIT Gandhinagar award for outstanding research amongst all PhD recipients, (2017)***

German Water Partner Award-India (2<sup>nd</sup> Prize); INR 20,000; travel and stay to attend meeting; for young water professional producing outstanding results of applied research work or practical applications in the field of 'Sustainable Water Resources Management in India'; (2014)

Department of Science and Technology- Travel Grant to attend the American Geophysical Union Fall Conference; INR 1,26,000; (2014)

Ministry of Human Resources Fellowship; IIT Gandhinagar Fellowship; 2012-2016

## **AWARDED GRANTS**

Co-PI, DOD-ARMY: Army Corps of Engineers (USACE), 2021, Designing nature to enhance resilience of built infrastructure in western US land.

## **TEACHING AND RESEARCH EXPERIENCE**

**Research Scientist-I** July 2022- Till date  
The ByWater Institute, Tulane University

**Assistant Research Scientist** Feb 2018-June 2022  
Arizona State University

**Research Associate** December 2016-January 2018  
IIT Gandhinagar

**PhD Research Scholar** December 2012- December 2016  
IIT Gandhinagar

**Assistant Professor** October 2012 – December 2012  
Civil Engineering, Institute of Technology and Management Universe,  
Vadodara, Gujarat

**Lecturer** August 2005 – September 2012  
Civil Engineering, M. S. University of Baroda,

## **PUBLICATIONS**

### **In preparation:**

Gao Hongkai, **Shah Reepal**, Yamzazki Dai, Finley Tim, Bohn Ted, Low Glen, and Sabo John, (2023), "Coordination of natural and built infrastructure to better manage extreme events in coastal water systems.", for Environmental Research Letters.

**Shah** et al., "Evaluation of precipitation and temperature simulated from ERA-Interim driven CORDEX RCMs over the Mekong basin."

John L. Sabo, **Reepal Shah**, Michelle Lapinski, Dragan Boscovic, Hamid Ghasemi, Li Huang, Glen Low, Tushar Sinha, Dimitrios Stampoulis, Yushiou Tsai, "Design principles for developing a data science-based nimble decision support platform to improve environmental flows in Texas."

### **Published:**

1. **Shah R**, Tsai Y, Stampoulis D, Damavandi H G and Sabo J 2023 Design principles for engineering wetlands to improve resilience of coupled built and natural water infrastructure Environ. Res. Lett. 18 114045

2. Sheth, Paras and Mosallanezhad, Ahmadreza and Ding, Kaize and **Shah, Reepal** and Sabo, John and Liu, Huan and Candan, K. Selcuk, 2023, STREAMS: Towards Spatio-Temporal Causal Discovery with Reinforcement Learning for Streamflow Rate Prediction, Association for Computing Machinery, New York, NY, USA, <https://doi.org/10.1145/3583780.3614719>, Proceedings of the 32nd ACM International Conference on Information and Knowledge Management, 4815–4821, Birmingham, United Kingdom, CIKM '23.
3. P. Sheth, **R. Shah**, J. Sabo, K. S. Candan and H. Liu, "STCD: A Spatio-Temporal Causal Discovery Framework for Hydrological Systems," *2022 IEEE International Conference on Big Data (Big Data)*, Osaka, Japan, 2022, pp. 5578-5583, Doi: 10.1109/BigData55660.2022.10020845.
4. Hamidreza Ghasemi Damavandi, Dimitrios Stampoulis, John Sabo, **Reepal Shah**, Li Huang, Yuhang Wei, Yushiou Tsai, Jaishri Srinivasan, Tushar Sinha, Dragan Boscovic, and Glen Low, (2020) A Bayesian Neural Network for an Accurate Representation and Transformation of Runoff Dynamics: A Case Study of the Brazos River Basin in Texas, *Journal of Environmental Science and Engineering Technology*, VOL. No.: 8, PG NO. 41-51
5. H. G. Damavandi, **R. Shah**, D. Stampoulis, Y. Wei, D. Boscovic, and J. Sabo, "Accurate prediction of streamflow using long short-term memory network: A case study in the Brazos River basin in Texas," *International Journal of Environmental Science and Development*, vol. 10, no. 10, page no.: 294-300, 2019 [IF: 2.037, 2017]
6. V. Mishra, A.D. Tiwari, S. Aadhar, **R. Shah**, M. Xiao, D.S. Pai, D. Lettenmaier, "Drought and famine in India, 1870–2016", *Geophysical Research Letters*, 46 (4) (2018), pp. 2075-2083, 10.1029/2018GL08147 [I.F.: 4.339, 2017] (**Amongst top downloaded/most read paper in GRL, 2018-2019**)
7. Hamidreza Ghasemi Damavandi, Dimitrios Stampoulis, **Reepal Shah**, Yuhang Wei, Dragan Boscovic, and John Sabo, "Machine Learning: An Efficient Alternative to the Variable Infiltration Capacity Model for an Accurate Simulation of Runoff Rates," *International Journal of Environmental Science and Development* vol. 10, no. 9, pp. 288-293, 2019. [IF: 2.037, 2017]
8. V. Mishra, **R. Shah**, S. Azhar, H. Shah, P. Modi and R. Kumar. Reconstruction of droughts in India using multiple land surface models (1951-2015). *Hydrology and Earth System Sciences*, vol-22, issue-4, page no: 2269–2284, Germany, 2018 <https://doi.org/10.5194/hess-22-2269-2018>

9. **Shah R.D.**, A.K. Sahai, and V. Mishra (2017). Short to sub-seasonal range hydrologic forecast to manage water and agricultural resources in India. *Hydrology and Earth System Sciences*, vol. no. 21, Issue no. 2, pages 707-720, doi:10.5194/hess-21-707-2017
10. Mishra Vimal, **Shah Reepal** and Amit Garg, 2016. Climate change in Madhya Pradesh: Indicators, Impacts and Adaptation. *IIM Ahmedabad working paper*, WP2016-05-05 (**wide media coverage in India**)
11. **Shah, R.D.**, and V., Mishra (2016). Utility of Global Ensemble Forecast System (GEFS) reforecast for short-term drought prediction in India. *Journal of Hydrometeorology*, vol. no. 17, Issue no. 6, pages no. 1781-1800, doi:10.1175/JHM-D-15-0050.1
12. **Shah Reepal** and Vimal Mishra (2015). Development of an Experimental Near-real Drought Monitor for India. *Journal of Hydrometeorology*, vol. no. 16, Issue no. 1, pages no. 327-345. doi: <http://dx.doi.org/10.1175/JHM-D-14-0041.1> (**Amongst top 10 most read JHM articles in previous 12 months for June-Oct 2015**).
13. Mishra., V., **R., Shah**, and B., Thrasher, (2014) Soil Moisture Droughts under the Retrospective and Projected Climate in India. *Journal of Hydrometeorology*, 15, Issue no. 6, 2267-2292. doi: <http://dx.doi.org/10.1175/JHM-D-13-0177.1>
14. Mishra, V., D. Kumar, A., Ganguly, Sanjay, J., M., Mujumdar, R., Krishnan, and **R. Shah** (2014). Reliability of Indian precipitation extremes from regional and global climate models. *Journal of Geophysical Research: Atmospheres* Volume 119, Issue 15, Pages 9301-9323, DOI: 10.1002/2014JD021636, <http://onlinelibrary.wiley.com/doi/10.1002/2014JD021636/abstract> (**Amongst top most accessed JGR: Atmosphere articles in August 2014**).
15. **Shah, Reepal**, and Vimal Mishra, 2014: Evaluation of the Reanalysis Products for the Monsoon Season Droughts in India. *Journal of Hydrometeorology*, 15, Issue no. 4, 1575-1591. doi: <http://dx.doi.org/10.1175/JHM-D-13-0103.1> (**Amongst top 10 most read JHM articles in previous 12 months, as in Feb-March, 2015**)
16. **Shah, R.** (2008). Using primarily treated effluent for irrigation. Proceedings of Water Conservation and Recharge, 2008, WATCON08, Patel, A,S, and G.S. Joshi, (editors), Civil Engineering Department, The M. S. University of Baroda, Vadodara, India,
17. **Shah, R.**, and H., Patel (2006). Decision Support System using HEC-RAS: case-study of Mahi River System of Gujarat. Proceedings of the 15th Congress of APD-IAHR and the International Symposium on Maritime Hydraulics (ISMH), V. Sundar, R. Sundaravadivelu, S.A. Sannasiraj, and

K. Murali (editors), August 7–10, 2006, Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai, India, Allied Publ. Pvt. Ltd., Chennai, ISBN: 81-8424-069-4, Vol. I., pp. 657-664.

### **RESEARCH INTERESTS**

Drought, Land surface process modeling, hydrologic modeling, impact of climate variability and climate change on hydrology, hydrodynamic modeling, River routing, Ground water assessment, Evaluation of meteorological products.

### **TECHNICAL SKILLS**

**Proficient in:** Land surface modeling (VIC), statistical downscaling, Hydrodynamic routing models (CaMa-Flood), Channel routing (HEC-RAS 1d), MATLAB, Shell, AWK, Climate Data Operator, NetCDF Operator, LINUX

**Knowledgeable in:** Land surface modeling (NOAH, CLM, SWAT), coupled LSM-crop model (VIC-Cropsyst), R, GIS, groundwater modeling (GMS), Image analysis (ENVI), python.