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Manabendra Saharia

Updated: May 3, 2017

Education

2013–2017 **Ph.D. in Water Resources Engineering**, *University of Oklahoma*, Norman, OK.
- **Dissertation**: Characterization and Prediction of Flash Flood Severity. (April 2017)
- **Advisors**: Prof. Yang Hong and Dr. Jonathan J. Gourley, HyDROS Research Group

2011–2013 **M.S. in Water Resources Engineering**, *University of Texas at Arlington*, Arlington, TX.
- **Thesis**: Ensemble Streamflow Forecasting For The Upper Trinity River Basin In Texas
- **Advisor**: Prof. Dong-Jun Seo, Hydrology and Water Resources Laboratory (HWRL)

2007–2011 **B.Tech. in Civil Engineering**, *National Institute of Technology, Silchar*, Assam, India.
- **Major Project**: Flood Forecasting in Multiple River Sections using Artificial Neural Networks
- **Advisors**: Prof. Parthasarathi Choudhury and Dr. Parthajit Roy

Research Interests

- Hydrologic Modeling, Remote Sensing, Climate Change, Flash Flooding, Radar and Satellite Precipitation, Machine Learning

Research Experience

Doctoral

2013–present **Graduate Research Assistant**, *HyDROS research group*, University of Oklahoma.
Project: The Flooded Locations And Simulated Hydrographs (FLASH) Project - Sandy Supplemental
- Datasets handled: MRMS, TRMM, PRISM, HydroSHEDS, Unified FF Database, CMIP5 etc.
- Tools: R, Python, MATLAB, CREST/EF5, GAMLSS

Master's

2011–2013 **Graduate Research Assistant**, *HWRL*, University of Texas at Arlington.
- Established an end-to-end ensemble hindcasting setup for WGRFC using Hydrologic Ensemble Forecast Service (CHPS/HEFS)
- Produced skillful and reliable 1-3 day QPF ensembles.
- Post-processed using Ensemble Post-processor (EnsPost) and verified using EVS

Undergraduate

Summer 2010 **Summer Research Intern**, *Prof. Sharad K. Jain, Dept. of WRDM*, IIT Roorkee.
- Measures such as Mann-Kendall Test, Linear Regression, and Sen's Slope Estimator were used to detect temporal trends in rainfall and temperature.

Winter 2009 **Winter Trainee**, *Dept. of Civil Engineering*, IIT Guwahati.

Summer 2009 **Summer Trainee**, *Dept. of Civil Engineering*, IIT Guwahati.

Skills

Programming	R, Python, MATLAB, FORTRAN
Hydrology	CREST/EF5, ArcGIS/QGIS, SAC-SMA, CHPS/HEFS, Ensemble Verification System (EVS), WMS, Neuro Solutions, BASINS4, HEC-RAS, ENVI
Web	PHP, SQL, HTML/CSS
Miscellaneous	Git, Asana, Trello, LaTeX
Natural Languages	English (Native), Assamese (Native), Hindi (Professional), Bengali (Moderate), Persian (Basic and learning)

In-progress Journal Publications

1. Sunghee Kim, Sadeghi, H., Limon, R.A., **Saharia, M.**, Seo, D.J., Philpott, A., Bell, F., Brown, J., He, K., 2016 "Ensemble streamflow forecasting using short- and medium-range precipitation forecasts for the Upper Trinity River Basin in North Texas via the Hydrologic Ensemble Forecast Service (HEFS)", **[Under review, Weather and Forecasting]**
2. **Saharia, M.**, Kirstetter, P.E., Vergara, H., Gourley, J.J., Hong, Y., "Impact of Rainfall Spatial Variability on Flash Flood Severity". **[Submitted]**
3. **Saharia, M.**, Kirstetter, P.E., Vergara, H., Gourley, J.J., Hong, Y., "Flash Flood Severity under Climate Change in 2050 and 2070". **[Under preparation]**

Journal Publications

1. **Saharia, M.**, Kirstetter, P.E., Vergara, H., Gourley, J.J., Hong, Y., 2016. "Characterization of Floods in the United States", Journal of Hydrology 548, 524–535.
2. **Saharia, M.**, Kirstetter, P.E., Vergara, H., Gourley, J.J., Hong, Y., Giroud, M., 2016. "Mapping Flash Flood Severity in the United States", Journal of Hydrometeorology, 18, 397–411.
3. Li, W., Liu, C., Hong, Y., Zhang, X., Wan, Z., **Saharia, M.**, Sun, W., Yao, D., Chen, W., Chen, S., others, 2016. "A public Cloud-based China's Landslide Inventory Database (CsLID): development, zone, and spatiotemporal analysis for significant historical events, 1949-2011", Journal of Mountain Science 13, 1275–1285.
4. Li, W., Liu, C., Hong, Y., **Saharia, M.**, Sun, W., Yao, D., Chen, W., 2016. "Rainstorm-induced shallow landslides process and evaluation–a case study from three hot spots, China", Geomatics, Natural Hazards and Risk, 1–11.
5. Zhang, Y., Hong, Y., Wang, X., Gourley, J.J., Xue, X., **Saharia, M.**, Ni, G., Wang, G., Huang, Y., Chen, S., others, 2014. "Hydrometeorological Analysis and Remote Sensing of Extremes: Was the July 2012 Beijing Flood Event Detectable and Predictable by Global Satellite Observing and Global Weather Modeling Systems?", Journal of Hydrometeorology.
6. Shen, Y., Xiong, A., Hong, Y., Yu, J., Pan, Y., Chen, Z., **Saharia, M.**, 2014. "Uncertainty analysis of five satellite-based precipitation products and evaluation of three optimally merged multi-algorithm products over the Tibetan Plateau", International Journal of Remote Sensing 35, 6843–6858.
7. Roy, P., **Saharia, M.**, Choudhury, P., 2014. River Reaches Flood Flow Prediction using PRNN Models. International Journal of Civil, Structural, Environmental and Infrastructure Engineering Research and Development (IJCSEIERD) 1, 119–126.
8. **Saharia, M.**, Bhattacharjya, R.K., 2012. "Geomorphology-based time-lagged recurrent neural networks for runoff forecasting", KSCE Journal of Civil Engineering 16, 862–869.
9. Jain, S.K., Kumar, V., **Saharia, M.**, 2012. "Analysis of Rainfall and Temperature trends in North-East India", International Journal of Climatology.

━━━━ Book Chapters

1. **Saharia, M.**, Li, L., Hong, Y., Wang, J., Adler, R. F., Policelli, F. S., Shahid, H., Irwn, D., Korme, T., and Okello, L. (2016). "Real-time hydrologic prediction system in East Africa through SERVIR", Hydrologic Remote Sensing - Capacity Building for Sustainability and Resilience, CRC Press, Taylor and Francis Group.
2. Shen, Y., Anyuan, X., Hong, Y., Jingjing, Y., Yang, P., Zhuoqi, C., and **Saharia, M.** (2016). "Uncertainty Analysis of Five Satellite-Based Precipitation Products and Evaluation of Three Optimally Merged Multi-algorithm Products over the Tibetan Plateau", Hydrologic Remote Sensing - Capacity Building for Sustainability and Resilience, CRC Press, Taylor and Francis Group.

━━━━ Conference Presentations

1. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2017) "Impact of Rainfall Spatial Variability on Flash Flood Severity", Student Water Conference, Oklahoma Water Resources Center, Mar 23-24, Oklahoma. **[Oral presentation award]**
2. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2017) "Impact of Rainfall Spatial Variability on Flash Flood Severity", EGU General Assembly, Apr 23-28, Austria. **[Selected for Oral]**
3. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2017) "How can we measure the severity of flash floods?", Research and Creativity Day, Feb 24, University of Oklahoma. **[Best Oral Presentation award]**
4. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2016) "Accounting for Rainfall Spatial Variability in Prediction of Flash Floods", AGU Fall Meeting, Dec 12-16, San Francisco. **[Oral]**
5. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2016) "Accounting for Rainfall Spatial Variability in Prediction of Flash Floods", 9th European Conference on Radar in Meteorology, Oct 10, Turkey. **[Oral]**
6. Hong,Y., Gourley, JJ., **Saharia, M.**, Flamig, Z., Clark, R., Zhang, K., Muthike, Denus., Hasan, Emad., Cappelaere, P., Frye, S., Handy, M., Nyaga, J. (2016) "Forecasting and Communicating Water-Related Disasters in Africa", SAGE, Nepal. **[Poster]**
7. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2016) "Mapping the flashiest regions of the United States", Research and Creativity Day, Mar 4 University of Oklahoma. **[Best Oral Presentation award]**
8. Kirstetter, PE., **Saharia, M.** , Gourley, JJ., Vergara, H. and Hong, Y. (2016) "Toward estimating the probability of flood severity over the United States", AMS Annual Meeting, 2016, New Orleans.[Oral]
9. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2015) "Mapping Flash Flood Severity in the United States", AGU Fall Meeting, Dec 14-18, San Francisco, California. **[Oral]**
10. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2015) "Where are the flashiest basins of the United States?", Annual Meeting of the Society of Environmental Journalists (SEJ), Oct 7-11, Norman, Oklahoma. [Poster] **[Best Poster Award]**
11. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2015) "Characterization and Prediction of Flash Flood Severity in the United States", 2015 International Symposium on Earth-Science Challenges, Sep 20-23, Norman, Oklahoma. **[Oral]**
12. **Saharia, M.**, Kirstetter, PE, Gourley, JJ., Vergara, H. and Hong, Y. (2014) "Characterization of Floods in the United States", AGU Fall Meeting, Dec 15-19, San Francisco, California. [Poster]
13. **Saharia, M.**, Seo., Dong-Jun, Corby, R. and He, K. (2013) "Short-range ensemble streamflow forecasting of the Upper Trinity River – Evaluation via hindcasting experiments", AGU Meeting of the Americas, May 14-17, Cancun, Mexico. **[Oral]**
14. **Saharia, M.**, Seo., Dong-Jun, Corby, R. and Bell,F. (2013) "Increasing lead time in short-range streamflow forecasting via the Hydrologic Ensemble Forecast Service (HEFS)", NWS/OHD Seminar, Silver Spring, MD.
15. **Saharia, M.**, Bhattacharjya, R. K. and Satish, M. (2011) "Catchment Runoff Forecasting using Time-

Lagged Recurrent Neural Networks".4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011), January 4-6, National University of Singapore, Singapore.

16. Roy, P., Choudhury, P. and **Saharia, M.** (2011). "River Reaches Flood Flow Prediction using TLRN models". 4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011), January 4-6, National University of Singapore, Singapore.

17. **Saharia, M.** and Bhattacharjya. R. K. (2011). "Comparison of ANN-based Runoff-prediction Models Trained by Eight Different Learning Algorithms".4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011), January 4-6, National University of Singapore, Singapore.

18. Roy, P., Choudhury, P. and **Saharia, M.** (2010). "Dynamic ANN Modeling for Flood Forecasting in a River Network". International Conference on Modeling, Optimization and Computing (ICMOC 2010), American Institute of Physics Conf. Proc., NIT Durgapur, India.

Awards and Mentions

Mar 2017	Citation and cash award in the oral presentation category of the Student Water Conference, Oklahoma Water Resources Center, Mar 23, 2017.
Mar 2017	Advanced Radar Research Center Student Paper Cash Award *in recognition of research accomplishments and scholarly publication*
Feb 2017	First prize and cash award in the oral presentation category of the Student Research and Creativity Day, University of Oklahoma, Feb 24, 2017.
Jan 2017	Advanced Radar Research Center Student Paper Cash Award *in recognition of research accomplishments and scholarly publication*
Mar 2016	First prize and cash award in the oral presentation category of the Student Research and Creativity Day, University of Oklahoma, March 4, 2016.
Oct 2015	Student Recognition, President's Monthly Research and Development Highlights, Volume 10, Issue 7, University of Oklahoma
Oct 2015	Best Poster Award in the Graduate Student Poster Contest, Annual Meeting of the Society of Environmental Journalists (SEJ),Norman, October 7-11, 2015

Workshops

May-Jul 2015	National Flood Interoperability Experiment, Summer Institute, National Water Center, Tuscaloosa, Alabama (8 Weeks)
Jan 2011	HEPEX Workshop, National Weather Center, Silver Spring, Maryland (3 days)

Teaching Experience

Spring 2017	Teaching Assistant for CEES-5843 (Hydrology)
Spring 2016	Teaching Assistant for CEES-5903 (Remote Sensing Hydrology)

Interests

○ Educational outreach, Mentoring, Volunteering, Writing columns, Fitness