NINA OMANI

Mobile: 979.402.9391 | Email: nina57@tamu.edu | Portfolio: Link

Last updated: April 2021

RESEARCH INTERESTS

Environmental Modeling | Surface Hydrology | Non-Point Source Pollution | Climate Change Impact Assessment | Geospatial Data Science

EDUCATION

2014 Doctor of Philosophy, Major in Biological and Agricultural Engineering
Texas A&M University, College Station, TX, USA| Regent Fellowship awarded

Dissertation Title: *Evaluation of SWAT Snowmelt Algorithm and Assessment of the Climate Change on Glaciers Melt.* Advisor: Raghavan Srinivasan

2009 Coursework toward Ph.D. (18 credit hours), Water Resources Systems Analysis
Department of Civil and Environmental Engineering, Sharif University of Technology, Tehran, Iran

2006 Master of Science in Civil Engineering, Major in Hydraulic Structures Engineering
Department of Civil and Environmental Engineering, Sharif University of Technology, Tehran, Iran

2002 Bachelor of Science in Civil Engineering
Shahid Chamran University, Ahvaz, Iran

RESEARCH and PROFESSIONAL EXPERIENCE

Texas A&M AgriLife Extension, Houston, TX
EXTENSION SPECIALIST (GEOSPATIAL ANALYST) FEB 2020 –CURRENT

- Developing interactive grid based (2.5-acre cells) models in CHARM (a GIS-based application) framework to demonstrate long-term urban planning and development effects on communities health and safety.
- Developing packages using Arcpy/python, geospatial data analysis, data QA/QC (social vulnerability index, demographic data, flood depth, surge, flood zone, habitat data, etc.)

Syngenta Crop Protection Inc., Greensboro, NC, USA
POSTDOCTORAL SCIENTIST JAN 2018–JAN 2020

- Developed a web-accessible tool via R, more specifically using the R Shiny framework, for exploring water quality characteristics data. The tool saves time and cost of water quality data processing by chemists at Syngenta.
- Reviewed and updated pesticide risk assessment reports and models (EPA Aquatic models) based on the regulatory guidelines for pesticide products registration.

Texas A&M AgriLife Research, Vernon, TX, USA
POSTDOCTORAL RESEARCH ASSOCIATE JAN 2017 – SEP2017

Studied effects of winter wheat cover crop and various irrigation strategies on soil health and yield of subsequent cotton crop using DSSAT (Decision Support System for Agrotechnology Transfer). [2, 3, 5, 16, 17, 18, 19]

Purdue University, Department of Earth, Planetary and Atmospheric Science, West Lafayette, IN, USA

POSTDOCTORAL RESEARCH ASSOCIATE JUN 2014–OCT 2016

- Gathered various types of data for watershed modeling from local agencies and national database (EPA, USDA, USGS, NCDC etc.); processed and cleaned data, performed model set up, calibration, validation, sensitivity and uncertainty analysis.
- Mentored a PhD student to develop a research study on evaluation of drought implications on ecosystem services in the Upper Mississippi River Basin [7, 24].
- Predicted and simulated hydrologic components (surface runoff, sub surface flow, groundwater, streamflow, and snow melt), nutrients and sediments transportation, water quality, and erosion in Upper Mississippi River Basin on Purdue Super Computer RCAC. [4, 26, 25]
- Assessed effect of climate change on water quality and quantity in the US Midwest watersheds. [20]
- Assessed spatiotemporal variation of present and future drought events characteristics using Copulas joint probability method. [21, 22]
- Performed statistical analysis of climate change data of South Asia. [9, 23]

Texas A&M University, Spatial Sciences Laboratory, College Station, TX, USA

GRADUATE RESEARCH ASSISTANT AUG 2009– May2014

- Project 100-483-1012, Texas Water Development Board, 2011 (Link)
  Role: Project Assistant [13]
- Project 2009-483-0890, Texas Water Development Board, 2012 (Link)
  Role: Project leader, Author [12]

SKILLS

ArcGIS and Remote Sensing:

ArcMap, ArcGIS Pro, ArcGIS Online, QGIS, ENVI, ERDAS

Programming Languages | Computing Tools:

R (advance level)
R Shiny (advance level) (for interactive web application development)
FORTRAN (beginner level)
Python (experienced), Excel-VB macro

Hydrologic and Hydraulic software:

Soil and Water Assessment Tool (SWAT) (10-year experience)
Watershed Modeling System (WMS), HEC-HMS, HEC-RAS, BASINS (self-training)
Decision Support System for Agrotechnology Transfer (DSSAT) (1-year experience, postdoc)
EPA Aquatic models for pesticide risk assessment (FIRST, SCIGROW, GENEEC, PFAM, PWC, PRZM) (1-year experience, Syngenta)

CERTIFICATE/Courses

Statistics courses from Texas A&M University:

Bayesian statistics

Spatial statistics

Mathematical statistics,

Methods in statistics

Regression analysis with R

PUBLICATIONS AND CONFERENCE PAPERS

1. **Omani N.** et al., (2021) Water quality vulnerability assessment of future droughts in US Midwest watersheds using Copula's bivariate frequency analysis. Submitted to Journal of Atmosphere.
2. Himanshu S.K., Ale S., Bordovsky J.P., Kima J., Samanta S., **Omani N.**, Barnes E.M. (2021) Assessing the Impacts of Irrigation Termination Periods on Cotton Productivity under Strategic Deficit Irrigation Regimes. Submitted to the Scientific Reports-Nature.
3. Ale S., **Omani N.,** Himanshu S.K., Bordovsky J.P., Thorp K.R., Barnes E.M. (2020) Determining optimum irrigation termination periods for cotton production in the Texas High Plains. Transactions of the ASABE 63 (1), 105-115
4. Feng Q., Chaubey I., Cibin R., Engel B., Sudheer K.P., Volenec J., **Omani N.** (2018) Perennial biomass production from marginal land in the Upper Mississippi River Basin. Land Degrad Dev.; 1–8
5. Adhikari P., **Omani N.,** Ale S., De Laune P., Thorp K., Hoogenboom G., Barnes E. (2017) Simulated effects of winter wheat cover crop on cotton production system of the Texas Rolling Plains. Transactions of the ASABE, Crop Modeling Special Collection. Transactions of the ASABE 60(6)
6. **Omani N.**, Srinivasan R., Karthikeyan R., and Smith P. K. (2017). Hydrological modeling of highly glacierized basins (Andes, Alps, and Central Asia). Water, 9(2)
7. Li P., **Omani N.,** Chaubey I., and Wei X. (2017). Evaluation of drought implications on ecosystem services: freshwater provisioning and food provisioning in the Upper Mississippi River Basin. Int. J. Environ. Res. Public Health, 14(5), 496
8. **Omani N.**, Srinivasan R., Smith P. K. and Karthikeyan R. (2017). Glacier mass balance simulation using SWAT distributed snow algorithm. Hydrological Sciences Journal, 62(4)
9. Anandhi A., **Omani N.**, Chaubey I., Horton R., Bader D. and Nanjundiah, R. (2016). Synthetics scenarios from CMIP5 model simulations for climate change impact assessment in managed ecosystems and water resources: case studies in south Asian countries. Transactions of the ASABE, 59(6), 1715- 1731.
10. **Omani N.**, Srinivasan R., Karthikeyan R., Venkatta K. and Smith P. K. (2016). Impacts of climate change on the glacier melt runoff from five river basins. Transactions of the ASABE, 59(4).
11. Kannan, N., **Omani, N.** and Miranda, R. (2014). Water quality modeling of an agricultural watershed with best practices. IJRET, (3)1, 553-564.
12. **Omani N.**, Srinivasan R., and Lee T. (2013). Estimation of sediment and nutrient loads to bays from gauged and un-gauged watersheds. Applied Engineering in Agriculture, 30(6), 869.
13. Lee T., Srinivasan R., Moon J. and **Omani N.** (2011). Estimation of fresh water inflow to bays from gaged and ungaged watersheds, ASABE, Applied Engineering in Agriculture, 27(6), 917–923.
14. **Omani N.,** Tajrishy M. and Abrishamchi A. Modeling a river basin using SWAT model and SUFI-2. Conference paper, 4th International SWAT Conference, The Netherlands. 2007.
15. **Omani N.,** Tajrishy M., and Abrishamchi A. Modeling a river basin using SWAT model and GIS. Conference Paper, 2nd International Conference on Managing Rivers in the 21st Century: Solutions Towards Sustainable River Basins, Kuching, Sarawak, Malaysia. 2007.

PRESENTATIONS

16. Himanshu S.K., Ale S., **Omani N.,** Bordovsky J.P., Thorp R.K., Barnes E.M. Evaluation of irrigation termination effects on cotton yield and water use efficiency under deficit irrigation strategies in the Texas High Plains. Paper#1900799. ASABE Annual International Meeting, Boston, July 7-10, 2019.
17. Ale S., Himanshu S.K., **Omani N.**, Bordovsky J.P., Thorp R.K., Barnes E.M. A Modeling approach to determine optimum irrigation termination periods for cotton. ASA-CSSA-SSSA International Annual Meeting, San Antonio, Texas, Nov. 10-13, 2019.
18. Ale S., **Omani N.,** Bordovsky J., Adhikari P. and Thorp K. Water use efficiency and cotton yield as affected by irrigation termination dates. Cotton Agronomy, Physiology & Soil Conference, Beltwide Cotton Conferences. January 2018.
19. Ale S., Adhikari P., **Omani N.,** De Laune P., Thorp K., and Barnes E. Simulated effects of winter wheat cover crop on soil water balances, soil quality and yield of subsequent cotton crop. Paper#1701253. ASABE Annual International Meeting, Spokane, Washington, Jul 16-19, 2017.
20. Chaubey, I. and **Omani, N.** Climate change and food production in US Midwestern watersheds. Engineering and Technology Innovation for Global Food Security. An ASABE Global Initiative Conference, Cape Town Stellenbosch, South Africa. 24-27 October 2016.
21. **Omani N.** and Chaubey, I. Assessing sensitivity of two Indian river basins water quality, quantity, and agriculture to drought, ASABE Annual International Meeting, Orlando, FL. Jul 17-20, 2016.
22. **Omani N.** and Chaubey, I. Effects of droughts on two Indiana river basins' water quality and quantity. 10th International Symposium on Agriculture and the Environment, West Lafayette, IN. May 23-27, 2016.
23. Anandhi A., **Omani N.,** Chaubey I., Horton R., Bader D. and Nanjundiah, R. What changes do the CMIP5 climate models predict for South Asia and what are some potential impacts on managed ecosystems and water resources. ASABE 1st Climate Change Symposium: Adaptation and Mitigation, Chicago, IL. May 3-5, 2015.
24. Li, P., **Omani, N.,** Chaubey I. and Wei X. Impact of drought on freshwater provisioning ecosystem services in the Upper Mississippi River Basin. International SWAT Conference, West Lafayette, IN. October 12-16, 2015.
25. Logsdon R., **Omani N.,** Cibin R., Chaubey I. and Srinivasan, R. The future of ecosystem services in the upper Mississippi River basin. ASABE 1st Climate Change Symposium: Adaptation and Mitigation. Chicago, IL. May 3-5, 2015.
26. **Omani, N.,** Chaubey, I., and Li, P. Assessing sensitivity of UMRB agriculture and water resources to past and current drought. SWAT Conference, West Lafayette, IN. October 12-16, 2015.
27. **Omani N.,** Srinivasan R., Karthikeyan R. and Smith, P. K. Impacts of climate change on the glacier melt runoff from five river basins. ASABE 1st Climate Change Symposium: Adaptation and Mitigation, Chicago, IL. May 3-5, 2015.
28. **Omani, N.,** Srinivasan R. and Lee T. Estimating sediment and nutrient loads of Texas coastal watersheds with SWAT. ASABE Annual International Meeting, Dallas, TX. July 17-20, 2012.

SERVICE

- Guest Reviewer of scientific journals. More information is available at: *Publons (Link)*
  Sustainability, Remote Sensing, Atmosphere, Water, Hydrological process, Hydrological Sciences Journal, IJERPH
- Professional Member of American Water Resources Association (AWRA).
- Scientific Committee Member (Hydrology, Large scale applications), Conference Moderator & Organization Committee Member, International SWAT Conference, Purdue University, 2015 (*Link*).
- Instructor, Soil and Water Assessment Tool (SWAT) Workshop for Beginners, Purdue University, 2015 (*Link*)

REFERENCES

Raghavan Srinivasan
Professor
Texas A&M University, College Station, TX 77843
rsrinivasan@tamu.edu

Patricia Smith
Professor
Texas A&M University, College Station, TX 77843
(979) 845-3630
patti-smith@tamu.edu

Srinivasulu Ale
Associate Professor
Texas AgriLife Research Center, Vernon, TX 76385
(765) 430-4925
sriniale@ag.tamu.edu

Indrajeet Chaubey
Professor
University of Connecticut, Storrs, CT 06269-4066
(860) 486-2917
cahnrdean@uconn.edu

Monty Dozier
Associate Professor
Texas A&M AgriLife Extension, College Station, TX 77843
(979) 845-6800
m-dozier@tamu.edu

Updated: 4/20/2021