P. Suresh Rao
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Lyles School of Civil Engineering &
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Biographical Sketch

Dr. Rao's professional interests over the past four decades have had a strong emphasis on inter- disciplinary research and graduate education at the intersection of engineering and science with diverse environmental and ecological applications. Dr. Rao's work has spanned from lab-scale process-level studies on environmental fate and transport of various contaminant classes, to aquifer-scale and river basin-scale studies on coupled dynamics of hydrologic, biogeochemical, and ecological water-quality impacts of agricultural, urban, and industrial land uses. Dr. Rao has been involved in development and use of sophisticated models for research purposes and parsimonious models for decision making, with applications in soil quality assessments, groundwater vulnerability, contaminated site remediation, and watershed management.

Dr. Rao has taught disciplinary and inter-disciplinary courses, including "Vadose Hydrology" & "Contaminant Subsurface Hydrology", as a part of the inter-disciplinary graduate program in Hydrologic Sciences at the University of Florida. At Purdue. he has taught "Contaminant Hydrology", "Remediation Science & Engineering", "Global Water Resources Sustainability", "Ecological Resilience & Sustainability", "Transport Processes in Nature", "Complex Coupled Systems", and "Resilience Engineering". At Purdue, has teaches graduate course focusing on critical thinking and complex systems. with a focus on sustainability and resilience, as a part of the campus-wide interdisciplinary graduate program in Ecological Science and Engineering, and engineering-wide undergraduate program in Environmental & Ecological Engineering.

Academic Background
Univ. Hawaii, 1974, PhD; Colorado State University, 1970, MS; APA University (India), 1967, B.Sc

Professional Positions
Purdue University:

- Lee A. Reith Chair & Distinguished Professor, School of Civil Engineering & Department of Agronomy (July 1999 – present
- Associate Dean of Engineering, Graduate Education & Professional Education (March 2002-December 2005)
- Emeritus Graduate Research Professor, University of Florida, Gainesville, FL (July 1999 present) University of Florida:
- Director, Center for Natural Resources (June 96- May 99)
- Graduate Research Professor, Soil & Water Sci. (June 93-May 99)
- University of Florida Research Foundation Professor (1998-May 1999)
- Professor, Soil & Water Sci., (1985-93); Affiliate Prof., Env. Eng. Sci., (1985-99)
- Affiliate Professor, Food Sci./Human Nutrition, (1985-99); Assoc. Professor, Soil Sci., (1982-85)
- Asst. Professor, Soil Sci., (1979-82); Asst. Res. Sci., Soil Sci., (1977-79); Post-Doc Res. Assoc., Soil Sci., (1975-77)

Selected Research Projects

- NSF: Resilience of Inter-dependent Urban Infrastructure Networks (Water, Transportation, Electricity Systems)
- NSF: Linking hydro-climatic forcing, bathymetry, hydrologic variability of wetlands and vegetation ecological adaptation
- SERDP-DoD: Innovative flux-based characterization and enhanced remediation of contaminated aquifer sites at industrial sites
- USDA: Fate and transport of pharmaceuticals and estrogens in croplands

Honors and Awards

- Appointed University of Florida Research Foundation Professor (1998), and Graduate Research Professor, University of Florida (1993)
- Environmental Quality Research Award, American Society of Agronomy (1991)
- Fellow, Soil Science Society of America (1989) & American Society of Agronomy (1989)
- Appointed Lee A. Reith Distinguished Professor, Purdue University (1991)
- Fellow, American Geophysical Union (2007)
- Distinguished Alumni Research Award, College of Tropical Agriculture & Human Resources, University of Hawaii (May 2009)

Recent Publications

Yang, Soohyun, Enrico Bertuzzo, Olaf Büttner, Dietrich Borchardt, and P. Suresh C. Rao. 2021. Emergent spatial patterns of competing benthic and pelagic algae in Germany's largest national river network: Data-model synthesis, ***WATER RESEARCH*** , 193, 116887. https://doi.org/10.1016/j.watres.2021.116887 0

Bertassello LE, Bertuzzo E, Botter G, Jawitz JW, Aubeneau AF, Hoverman JT, Rinaldo A, Rao PSC. 2021 Dynamic spatiotemporal patterns of metapopulation occupancy in patchy habitats***. ROYAL SOCIETY OPEN SCIENCE,*** 8: 201309. https://doi.org/10.1098/rsos.201309

Kumar, R., F. Hesse, P.S.C. Rao, A. Musloff, J.W. Jawitz, F. Sarrazin, L. Samaniego, J.H. Flekenstein, O. Rakovec, S. Thober, and S. Attinger, 2020. Strong hydroclimatic controls on vulnerability to subsurface nitrate contamination across Europe. ***NATURE COMMUNICATIONS,*** 11:6302 | doi: 10.1038/s41467-020-19955-8 |

Bertassello, Leonardo E., Aubeneau, Antoine F., Botter, Gianluca, Jawitz, James W., Rao, P. S. C., 2020. Emergent dispersal networks in dynamic wetlandscapes. ***NATURE SCIENTIFIC REPORTS***, 10, *doi: 10.1038/s41598-020-71739-8*.

Krueger, Elisabeth H., Borchardt, Dietrich, Jawitz, James W., Rao, P. Suresh C. 2020. Balancing security, resilience, and sustainability of urban water supply systems in a desirable operating space. ***ENVIRONMENTAL RESEARCH LETTERS***, 15(3), doi: 10.1088/1748-9326/ab6c2d

Jacobs, E., Bertassello,L.E, Rao, P.S.C. 2020. Drivers of regional soil water storage memory and persistence, ***VADOSE ZONE JOURNAL***, doi: 10.1002/vzj2.20050.

Bertassello, Leonardo E., Rao, P. Suresh C., Jawitz, James W., Aubeneau, Antoine F., Botter, Gianluca, 2020. Wetlandscape hydrologic dynamics driven by shallow groundwater and landscape topography. ***HYDROLOGICAL PROCESSES***, 34(6): 1460-1474.

Yu, David J., Schoon, Michael L., Hawes, Jason K., Lee, Seungyoon, Park, Jeryang, Rao, P. Suresh C., Siebeneck, Laura K., and Ukkusuri, Satish, V. 2020. Toward General Principles for Resilience Engineering, ***RISK ANALYSIS***, 40(8): 1509-1537.

Yang, S., Büttner, O., Jawitz, J. W., Kumar, R., Rao, P. S. C., & Borchardt, D. 2019. Spatial organization of human population and wastewater treatment plants in urbanized river basins. ***WATER RESOURCES RESEARCH***, 55, 6138–6152. *https://doi.org/10.1029/ 2018WR024614*.

Fang, Y., Ceola, S., Paik, K., McGrath, G., Rao, P. S. C., Montanari, A., & Jawitz, J. W. 2018. Globally universal fractal pattern of human settlements in river networks. ***EARTH'S FUTURE***, 6, 1134–1145. *https://doi. org/10.1029/2017EF000746*