




Faculty Details proforma for DU Web-site

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|---|------------|--|---------------|------------------|--------------|---|
| Title | Dr. | First Name | Manika | Last Name | Gupta | Photograph |
| Designation | | Assistant Professor | | | |  |
| Address | | Room No. 15, Department of Geology, University of Delhi, Delhi -110007 Flat 30C-IA Block, Ashok Vihar Phase -1 Delhi-110052 | | | | |
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| Educational Qualifications | | | | | | |
| Degree | | Institution | | | Year | |
| PhD | | Department of Civil Engineering, IIT Delhi | | | 2012 | |
| M.Sc. | | Jawaharlal Nehru University, New Delhi | | | 2006 | |
| B.Sc. | | University of Rajasthan | | | 2003 | |
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| Career Profile | | | | | | |
| <p>I am currently working as an Assistant Professor (UGC-FRP) in Department of Geology, University of Delhi. Prior to joining at Department of Geology, I worked as Research Scientist at Goddard Space Flight Center, NASA, Greenbelt, Maryland, US for three years (2013-2016) and worked in the field of hydrological sciences with focus on Land Information System (LIS)- Land surface models, microwave soil moisture retrieval algorithm development, Weather Research and Forecasting and Geospatial modeling. I have more than 8 years of academic training and interdisciplinary experience in the field of Hydrology and remote sensing, with nearly 35 publications in peer reviewed International journals, 2 books with reputed publishing house (Springer, 2014).</p> | | | | | | |
| Administrative Assignments | | | | | | |
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| Areas of Interest / Specialization | | | | | | |
| <p>Land Surface Modelling, Hyperspectral remote sensing, Weather Research and Forecasting (WRF), Microwave satellite soil moisture retrieval, Agricultural water management.</p> <ul style="list-style-type: none"> • Microwave and hyperspectral remote sensing for Environmental applications • Microwave Satellite based soil moisture retrieval algorithm development using radiative transfer modelling (Single Channel Algorithms, LPRM) • Model evaluation, development and forecasting (Runoff-Rainfall model evaluation, Satellite and mesoscale model based soil moisture deficit model development, Data assimilation) • Physical and Numerical modelling (HYDRUS 1D, SWAT, Probability Distribution Model, WRF-Noah-LSM) • Soil water retention, geophysical studies and irrigation scheduling <ul style="list-style-type: none"> • Geospatial and Land use/land cover modelling | | | | | | |

| Subjects Taught | | | | |
|---|-----------------------------------|--------------------------------------|--|---------------------------|
| M.Sc II semester –Environmental Geology M.Sc. IV semester- Remote sensing and GIS | | | | |
| Time table of the subjects taught during the current semester | | | | |
| S.No. | Subject | Days | Time | Classroom |
| 1 | Hydrogeology (B.Sc. IV) | Monday, Wednesday(P) Friday | 2:15-4:15 2:15-4:15 11:30-1:30 | Click here to enter text. |
| 2 | Remote Sensing and GIS (B.Sc. VI) | Monday, Wednesday, Friday(P) | 11.30-1:30 11.30-1:30 2:15-4:15 | |
| 3 | Remote Sensing and GIS (M.Sc. IV) | Tuesday, Thursday Thursday (P) | 11.30-1:30 9:30 – 11:30 11.30-1:30 | |
| Research Guidance | | | | |
| <ol style="list-style-type: none"> Supervision of Doctoral Thesis, under progress, Synergistic Utilization of EO by integrative use of LSM and Runoff routing for flood monitoring and forecasting (Vikrant Maurya) Supervision of Doctoral Thesis, under progress, Integrative utilization of EO-based observations with CLSM for drought forecasting in India (Pankaj Sharma) Supervision of Doctoral Thesis, under progress, Evaluating landslide vulnerability through Geo-modelling (Juby Thomas) | | | | |
| Publications Profile | | | | |
| <ol style="list-style-type: none"> Books: <ol style="list-style-type: none"> Computational Intelligence Techniques for Earth and Environmental Sciences (2014), edited by Tanvir Islam, Prashant K. Srivastava, Manika Gupta, Saumitra Mukherjee and Xuan Zhu, Springer Verlag, ISBN 978-94-017-8642-3 Remote Sensing Applications in Environmental Research (2014), edited by Prashant K. Srivastava, Saumitra Mukherjee, Manika Gupta, Tanvir Islam, Springer Verlag, ISBN: 978-3-319-05905-1 (Print) 978-3-319-05906-8 (Online) Journal Publications: <ol style="list-style-type: none"> PK. Srivastava, Aradhana Yaduvanshi, SK Singh, Tanvir Islam, and Manika Gupta (2016). "Support vector machines and generalized linear models for quantifying soil dehydrogenase activity in agro-forestry system of mid altitude central Himalaya." <i>Environmental Earth Sciences</i> 75, no. 4: 1-15 Garg, N.K. and *Gupta, M., 2015. Assessment of improved soil hydraulic parameters for soil water content simulation and irrigation scheduling. <i>Irrigation Science</i> PK Srivastava, T Islam, M Gupta, G Petropoulos, Q Dai, 2015. WRF Dynamical Downscaling and Bias Correction Schemes for NCEP Estimated Hydro-Meteorological Variables, <i>Water Resources Management</i> 29 (7), 2267-2284. PK. Srivastava, D Han, MA Ramirez, P O'Neill, T Islam, M Gupta, Q Dai, (2015). Performance evaluation of WRF-Noah Land surface model estimated soil | | | | |

moisture for hydrological application: Synergistic evaluation using SMOS retrieved soil moisture. *Journal of Hydrology*, 529, 200-212

- e. **Gupta, M.**, Srivastava, P. K., Tanvir Islam, Asnor M. Ishak., 2014. Evaluation of TRMM rainfall for soil moisture prediction in a sub tropical climate. *Environmental Earth Sciences*, DOI: 10.1007/s12665-013-2837-6)
- f. Srivastava, P.K., Han, D., Rico-Ramirez, M.A., O'Neill, P., Islam, T., and **Gupta, M.**, 2014. Assessment of SMOS soil moisture retrieval parameters using tau-omega algorithms for soil moisture deficit estimation, *Journal of Hydrology*, 519, 574-587.
- g. Islam, T., Rico-Ramirez, M.A., Srivastava, P.K., Qiang, D., Han, D., and **Gupta, M.**, CLOUDET: A cloud detection and estimation algorithm for passive microwave imagers and sounders aided by Naive Bayes classifier and multilayer perceptron, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. (10.1109/JSTARS.2014.2321559)
- h. T Islam, PK Srivastava, Q Dai, **M Gupta**, L Zhuo, 2014. An introduction to factor analysis for radio frequency interference detection on satellite observations, *Meteorological Applications* (doi: 10.1002/met.1473)
- i. T Islam, PK Srivastava, Q Dai, **M Gupta**, 2014. Ice cloud detection from AMSU-A, MHS, and HIRS satellite instruments inferred by cloud profiling radar, *Remote Sensing Letters*, 5(12), 1012-1021.
- j. T Islam, PK Srivastava, MA Rico-Ramirez, Q Dai, D Han, **M Gupta**, 2014. An exploratory investigation of an adaptive neuro fuzzy inference system (ANFIS) for estimating hydrometeors from TRMM/TMI in synergy with TRMM/PR. *Atmospheric Research* 145, 57-68
- k. Patel, D.P., Srivastava, P.K., **Gupta, M.** and Nandhakumar, N. Decision Support System integrated with Geographic Information System to target restoration actions for Hathmati watershed", *Journal of Earth System Science*
- l. **Gupta, M.**, Garg, N. K., Joshi, H., and Sharma, M.P., 2013. Assessing impact of irrigation treatments on Thiram residual trends: Correspondence with numerical modelling and field scale experiments. *Environmental Monitoring and Assessment*, 186(3), 1639-1654.
- m. Ishak, A.M., Srivastava, P.K., **Gupta, M.**, Tanvir Islam, 2014. The Development of Numerical Weather Models-A review, *Bulletin of Environmental and Scientific Research*, 3 (1), 15-20.
- n. Srivastava, P.K., Han, D., Miguel A Rico-Ramirez, Bray, M., Islam, T., **Gupta, M.**, Qiang, D., 2014. Estimation of land surface temperature from atmospherically corrected LANDSAT TM image using 6S and NCEP global reanalysis product, *Environmental Earth Sciences*
- o. **Gupta M.**, Garg N.K., Joshi H., Sharma M.P., 2012. Persistence and mobility of 2,4-D in unsaturated soil zone under winter wheat crop in sub-tropical region of

India. Agriculture, Ecosystems and Environment, 146, 60– 72.

- p. Srivastava, P.K., Mehta, A., **Gupta, M.**, Singh, S.K., and Islam, T., 2014. Assessing Impact of Climate Change on Mundra Mangroves Forest Ecosystem, Gulf of Kutch, Western Coast of India: A Synergistic Evaluation Using Remote Sensing, Theoretical and Applied Climatology
- q. Srivastava P.K., Singh, S.K., **Gupta M**, Thakur, J.K., and Mukherjee, S., 2013. Modeling Impact of Land Use Change Trajectories on Groundwater Quality Using Remote Sensing and GIS, Environmental Engineering and Management Journal
- r. Yadav S.K., Singh S.K.,**Gupta, M.**, Srivastava, P. K., 2013. Morphometric Analysis of Upper Tons Basin from Northern Foreland of Peninsular India using CARTOSAT satellite and GIS. Geocarto International (Accepted: DOI: 10.1080/10106049.2013.868043)
- s. Singh, S.K., Srivastava P.K., **Gupta M** et al., 2013. Appraisal of Land use/land cover of Mangrove Forest Ecosystem using Support Vector Machine. Environmental Earth Sciences. DOI: 10.1007/s12665-013-2628-0
- t. Srivastava P.K., Han D., **Gupta M.**, Mukherjee S., 2012 Integrated framework for monitoring groundwater pollution using Geographical Information System and multivariate analysis. Hydrological Sciences Journal, 57(7), 1453-1472.
- u. Srivastava, P. K., Mukherjee, S., **Gupta, M.**, 2012. Mapping spatial distribution of pollutants in groundwater of a tropical area of India using remote sensing and GIS. Applied Geomatics, 4(1), 1-12, DOI: 10.1007/s12518-011-0072-y
- v. Srivastava, P. K., Mukherjee, S., **Gupta, M.**, Singh S.K., 2011. Characterizing Monsoonal Variation on Water Quality Index of River Mahi in India using Geographical Information System. Water Qual. Expo. Health, DOI: 10.1007/s12403-011-0038-7
- w. Singh S.K., Srivastava, P. K., **Gupta, M.**, Mukherjee, S., 2012, Modeling mineral phase change chemistry of groundwater in a rural-urban fringe, [Water Science Technology](#), 66(7):1502-1510.
- x. Srivastava, P.K., Kiran, G.S., **Gupta, M.**, Sharma, N.K., & Prasad, K.S., 2012. A Study on Distribution of Heavy Metal Contamination in the Vegetables using GIS and Analytical Technique. International Journal of Ecology & Development, 20, 89-99.
- y. **Gupta, M.**, Srivastava, P. K., 2010. Integrating GIS and remote sensing for identification of groundwater potential zones in the hilly terrain of Pavagarh, Gujarat, India. Water International, 35, 233–245.
- z. Srivastava, P.K., Mukherjee, S., **Gupta, M.**, 2010. Impact of Urbanization on Land Use/Land Cover Change using Remote Sensing and GIS: A Case Study. International Journal of Ecological Economics and Statistics, 18, 106-117.

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| <p>aa. Mukherjee, S., Shashtri, S., Singh, C.K., Srivastava, P.K., Gupta, M.,2009. Effect of Canal on Land Use/Land Cover using Remote Sensing and GIS. <i>J. Indian Soc. Remote Sensing</i>, 37, 527–537.</p> <p>3. Book Chapters</p> <p>a. Gupta, M., Srivastava, P.K., Mukherjee, S., and G. Sandhya Kiran, 2014. Chlorophyll Retrieval using Ground based Hyperspectral Data from a tropical area of India using regression algorithms, <i>Remote Sensing Applications to Environmental Research</i>, Springer Verlag.</p> <p>b. Gupta, M., Srivastava, P.K., and Islam, T., Integrative use of near-surface satellite soil moisture and precipitation for estimation of improved irrigation scheduling parameters, Elsevier Publications</p> <p>c. Prashant K. Srivastava, Saumitra Mukherjee, Tanvir Islam, Manika Gupta, (2015), Performance evaluation of digital elevation model for generation of morphometric parameters towards soil and water conservation, to be appeared in <i>Geospatial Technology for Water Resource Development</i>, CRC Press, Taylor and Francis edited by Prashant K. Srivastava, Pawan Kumar, PC Pandey, Dawei Han and AS Raghubanshi.</p> |
| <p>Publications in the Last one year</p> <p>1. Khan, A.A., Pant, N.C., Ravindra, R., Alok, A., Gupta, M. and Gupta, S., 2017. A precipitation perspective of the Hydrosphere-cryosphere interaction in the Himalaya. <i>Geological Society, London, Special Publications</i>, 462, pp.SP462-2.</p> |
| <p>Conference Organization/ Presentations (in the last three years)</p> <p>1. Gupta, M., Bolten, J. and Lakshmi Improving soil moisture simulation to support Agricultural Water Resource Management using Satellite-based water cycle observations, European Geosciences Union (EGU) General Assembly, in Vienna, Austria, April 17th - April 22nd, 2016</p> <p>2. Gupta, M., Bolten, J. and Lakshmi, V Synergistic Utilization of Microwave Satellite Data and GRACE-Total Water Storage Anomaly for Improving Available Water Capacity Prediction in Lower Mekong Basin, American Geophysical Union (AGU) San Francisco, December 14th - 18th, 2015</p> <p>3. Bolten, J., Gupta, M., Gatebe, C.K., and Ichoku, C.M. Regional Land Surface Hydrology Impacts from Fire-Induced Surface Albedo Darkening in Northern Sub-Saharan Africa, American Geophysical Union (AGU) San Francisco, December 14th - 18th, 2015</p> <p>4. Gupta, M., Bolten, J. and Lakshmi, V Optimizing available water capacity using microwave satellite data for improving irrigation management, European Geosciences Union (EGU) General Assembly, in Vienna, Austria, April 12th - April 17th, 2015</p> <p>5. Roughness parameter optimization using Land Parameter Retrieval Model and Soil Moisture Deficit: Implementation using SMOS brightness temperatures, European Geosciences Union (EGU) General Assembly, in Vienna, Austria, April 12th - April 17th, 2015</p> <p>6. Performance of MODIS satellite and mesoscale model based land surface temperature for soil moisture deficit estimation using Neural Network, European Geosciences Union (EGU) General Assembly, in Vienna, Austria, April 12th - April 17th, 2015</p> <p>7. Srivastava, P.K., Han, D., Rico-Ramirez, M.A., O'Neil, P., Islam, T., and Gupta, M., Performance evaluation of SMOS soil moisture retrieval parameters for hydrological application, HIC 2014 – 11th</p> |

International Conference on Hydroinformatics, 17-21st August, New York

8. Gupta, M; Garg, N.K.; Srivastava, P K. Integration of TRMM rainfall in numerical model for pesticide prediction in subtropical climate, HIC 2014 – 11th International Conference on Hydroinformatics, 17-21st August, New York

9. Gupta, M, Garg, N.K., Srivastava, P K and Islam, T., Sensitivity & Uncertainty Analysis of HYDRUS 1D in soil water content simulation, European Geosciences Union (EGU) General Assembly, in Vienna, Austria, April 27th - May 2nd, 2014

10. Gupta, M., Garg, N.K., Srivastava, P.K., and Islam, T, 2013, Application of satellite based rainfall in predicting pesticide residue in agricultural domain, (Poster presentation) GPM Applications Workshop, NOAA Centre for climate and weather prediction, 12-13 November 2013, University of Maryland, College Park, Maryland.

Research Projects (Major Grants/Research Collaboration)

| Sr.No. | Title | Cost (in rupees) | Duration | Agency |
|--------|--|------------------|---|---|
| 1 | PI in Synergistic utilisation of EO-based soil moisture observations: Applications in the UK and India | Rs. 15 lakhs | 1 year (From Jan 2018 to December 2018) | India-UK Water Center, IITM, Dr. Homi Bhabha Road, Pune-411008 |
| 2. | Co-PI in Crop type and stage discrimination using field spectroradiometry and hyperspectral remote sensing | Rs. 28 lakhs | 3 year Jan 2018 to Dec 2020 | SAC, Department of Space, Ahmedabad |

Awards and Distinctions

- Awarded with NASA Postdoctoral Fellowship at NASA-GSFC, USA, 2015
- Awarded with Endeavour Post graduate Research Scholarship (EIPRS) at University of Sydney by Ministry of Australia, Australia, 2009
- National Eligibility Test (NET) for Lectureship, in Environmental Sciences, Awarded by University Grants Commission (UGC), Government of India, 2005
- National Eligibility Test (NET) for Lectureship and Junior Research Fellowship (JRF) in Environmental Sciences, Awarded by University Grants Commission (UGC), Government of India, 2006

Association With Professional Bodies

- Indian Society of Geomatics
- Indian Association of Hydrologists (IAH)

- International Society for Agrometeorology (INSAM)
- Indian Water Resources Society

Other Activities