

## BIO-DATA



### Personal Information

**Name:** Dr. Mrs. Bhavana Narendra Umrikar

**Date of Birth:** 18 April 1970

**Qualification:** M.Sc. (Geology), Ph.D. (Hydrogeology)

**Designation:** Associate Professor, Department of Geology,  
Savitribai Phule Pune University, Pune - 411 007

**Specialisations:** Hydrogeology, Watershed Management and RS – GIS.

**Teaching Experience:** 19 years at post graduate department.

**Residential Address:** E-19, Rajas Garden, Model Colony, Pune – 411 016

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### Research Activities

#### Doctoral research details:

**Title of the thesis:** Hydrogeology of the Guhagar area, District Ratnagiri, Maharashtra with Special Reference to Watershed Management. 132p. (2004).

**Highlights:** The thesis consists of two main sections based on hydrogeology. First section includes the natural boundary conditions like geomorphology, geology and climate added by geophysical, hydrogeological and hydrogeochemical investigations and second section covers the watershed management aspects.

**Conclusion:** The integrated approach of applied methods and the classification of the results, gained from these methods, could effectively provide solution to the existing issues of the study area as given below:

- Seawater intrusion
- Suggestive measures to CRZ Act
- Spring sanctuary development, and

- Development of agro forestry and aqua culture.

**Publications:** List attached (Enclosure I)

**Projects:**

1. Study of Coastal Aquifers along Konkan Coast, Maharashtra using RS - GIS techniques (2001-2004).
2. Geo-environmental Study of Urban / Rural Interface in the NW part of Pune Metropolis, Maharashtra. Project based on Remote Sensing and GIS Techniques funded by ISRO/DRDO (2005 - 2006).
3. Report on Geological Investigations in the landslide affected villages in Mahad Taluka of Raigad district, Maharashtra with Prof. S.S. Thigale on the request of OXFAM, YASHADA and Shramajivi Janata Sahayak Mandal, Satara (2006 - 2007).
4. Computerized Decision Support System for Urbanization Prediction of Pune city using RS-GIS techniques. Project sanctioned by Savitribai Phule Pune University, UPE grants (2009 - 2011).
5. Integrated AHP and RS-GIS Approach in Site Suitability Analysis for Water Harvesting Structures, Pune, Maharashtra. Project sanctioned by Savitribai Phule Pune University, UPE grants (2013 - 2015).
6. Study of Surface and Subsurface Water Interaction using Remote Sensing, Geo-hydrological and Geophysical Techniques and its modelling, sanctioned under NHP by world bank and CPC, Central Water and Power Research Station, Pune, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India (2019-ongoing)

**Recognition**

Recognized guide

- University of Pune (Ref. No. BUTR / 4628)
- Symbiosis International Deemed University, Pune.

Visiting scientist (2009)

- Department of Earth Sciences, Freie University, Berlin.

**Memberships**

- a) Life Member, The Association of Hydrogeologists of India, Waltair, India
- b) Life Member, The Indian Science Congress Association, Kolkata
- c) Life Member, The Indian Geological Congress, Roorkee
- d) Life Member, Gondwana Geological Society, Nagpur
- e) Fellow, the Society of Earth Scientists, Lucknow.
- f) Member, Joanium Research Institute, Technical University, Graz
- g) Member, Alumni Bureau, Freie University, Berlin.
- h) Initial Member, INDIA – OS Geo, Pune Chapter.
- i) Life Member, Association of Geoscientists for International Development
- j) Counsellor (India) for South Asian Association of Women Geoscientists (SAAWG)

## Achievements

**International:** Recipient of Excellent Grade in the Post Graduate Training Course on Application of Tracing Techniques in Groundwater at Joanium Institute, Graz, Austria (2005).

Department of Geosciences, Freie University, Berlin has admitted as a post-doc researcher in the framework of Erasmus Mundus External Cooperation Window: Lot – 7 (2009).

UGC-TEC scholarship has been awarded (VI consortium) under group IV to visit Mauritius University (2010).

Acted as coordinator during the 4<sup>th</sup> International Congress of Environmental Research (ICER - II) held at, Surat, India (2012).

Recipient of the ISSS scholarship to attend the 34<sup>th</sup> IGC held at Brisbane, Australia from 5<sup>th</sup> to 9<sup>th</sup> August, 2012.

Recipient of the fellowship under the Netherlands Fellowship Programme (NFP) for attending the short course at UNESCO-IHE, Institute for Water Education, Delft, The Netherlands, 2013.

Acted as co-coordinator during the Sixth International Ground Water Congress (IGWC) held at, Chennai, India (2016).

Recipient of the Special Geo-host award to attend the 35<sup>th</sup> IGC held at Cape Town, South Africa from 27<sup>th</sup> August to 3<sup>rd</sup> September, 2016.

**National:** Recipient of Prof. K. V. Kelkar and Prof. W. B. Metre award for securing 1<sup>st</sup> rank in M.Sc. (Geology), University of Pune (1993).

Recipient of the ‘Best Poster Presentation Award’ in Earth System Sciences section, during 91<sup>st</sup> Indian Science Congress held at Chandigarh (2004).

Recipient of the ‘DST sponsorship’ for the training of Fundamentals of GPS held at IIT, Powai (2005).

Recipient of the NNRMS sponsorship for the training on RS and GIS Applications in Geosciences, held at IIRS, Dehradun (2006).

Recipient of the Best Paper Presentation Award during XII convention of ISTE (Maharashtra – Goa Section) and National Seminar held on 12<sup>th</sup> and 13<sup>th</sup> January, 2008. The theme of the convention was “Challenges for Technical Education in view of Global Changes” (2008).

Recipient of the ISRO sponsorship for the training on Application of Geoinformatics for Disaster Management, held at GSITI, Hyderabad (2009).

Acted as a resource person in DST sponsored summer school on 'Geospatial techniques at Babasaheb Ambedkar Marathwada University, Aurangabad (June, 2019)

## **Trainings**

**International:** Completed Post Graduate Training Course on 'Application of Tracing Techniques in Groundwater' at Joanium Research Institute at Graz, Austria (2005).

Completed training course on 'Karst Hydrogeology and Karst Ecosystem' organized by China International Research Centre on Karst (IRCK) under the auspices of UNESCO, held in the premises of Institute of Karst Geology (IKG) at Guilin, China (2009).

Completed the short course on Applied Groundwater Modelling conducted at UNESCO-IHE, Institute for Water Education, Delft, The Netherlands (2013).

**National:** Certificate Course in Geographic Information System from MAP'S InfoTech, Pune (2003).

Completed Training on Application of Remote Sensing and Geographical Information System in Hydrogeology, at National Water Academy, Khadakwasla, Pune (2004).

Completed Training on Fundamentals of Geodesy, at IIT, Powai (2005).

Completed NNRMS sponsored training course on RS and GIS Applications in Geosciences, conducted by IIRS, Dehradun (2006).

Completed ISRO sponsored training course on 'Application of Geoinformatics for Disaster Management' conducted by GSITI, Hyderabad (2009).

Completed program on 'Watershed analysis using geo-spatial tools', training conducted by National Water Academy, Pune (2011).

Completed the training course on "Geophysical Investigations for Civil Engineering Projects" conducted by Geophysics division- CWPRS, Pune (2015)

Attended the GIAN course entitled ' Open Software, Data and Standards in Geoinformatics - Three Pillars for Building Innovative ICT Solutions in the Department of Geology, Savitribai Phule Pune University from 23rd November to 29 November, 2016.

Attended the GIAN course entitled ' Advances in Aquifer Characterisation and Parameter Estimation' conducted by Prof. Elango Lakshmanan and Prof. Michael Schneider (Germany) in the Department of Geology, Anna University, Chennai from 26<sup>th</sup> March to 6<sup>th</sup> April, 2018.

## **Conferences / Seminar / Workshops**

**International:**

Attended International Seminar on Integrated Approach for Strengthening and Protecting Drinking Water Sources, conducted by Groundwater Survey and Development Agency at IUCAA University of Pune, Pune (2001).

Attended International Groundwater Conference on 'Groundwater Dynamics and Global Change' and presented a paper entitled 'Impact Analysis of Urbanization on Surface and Ground Waters Using RS-GIS Techniques: A Case Study of NW Part of Pune Municipal Corporation, India' held at Jaipur, Rajasthan, India (2008).

Attended ITA-2009 International Conference on 'IT in Academics' at Pune (2009).

Attended International Congress of Environmental Research held during September 16-18, at University of Mauritius, Reduit, Mauritius and participated in Poster Presentation under Technical Section (2010).

Attended International Congress of Environmental Research held during December 15-17, at Sardar Vallabhbhai National Technical Institute, Surat and presented a paper entitled 'Application of MCDM Technique for Geo-environmental appraisal' (2011).

Attended 34<sup>th</sup> International Geological Congress held at Brisbane, Australia from 5<sup>th</sup> – 9<sup>th</sup> August, 2012 and presented a paper entitled 'Role of Rainwater Harvesting Structures in Sustainability of Groundwater Based Drinking Water Sources in Hard Rock Terrain'.

Attended 5<sup>th</sup> International Groundwater Conference held at Aurangabad, Maharashtra from 18<sup>th</sup> to 21<sup>st</sup> December, 2012.

Attended 6th International Congress of Environmental Research held during December 19-21, at Dr. Rafiq Zakaria Campus, Maulana Azad College of Arts, Science and Commerce, Aurangabad and presented a paper entitled 'Groundwater quality assessment for Village: Rise, Taluka: Purandhar, district Pune, Maharashtra, India' and 'Watershed modelling using rainfall-runoff empirical formulae and the GIS based software ILWIS in a super humid region, Mauritius' (2013).

Attended 4th International Conference on Hydrology and Watershed Management with a Focal Theme on Ecosystem Resilience - Rural and Urban Water Requirements held during November 29 - 1, at Jawaharlal Nehru Technological University Hyderabad and presented a paper entitled 'Land Use / Land Cover Change Detection Using RS-GIS: A Case Study of Pirangut Watershed, Taluka Mulshi, Pune' (2014).

Attended Eighth India International Geographical Union (IGU) conference on Landuse, Water, Climate and Urban Health in Changing Urban Environments held during November 4-6, at Department of Geography SNTD Women's University, Pune and presented a paper entitled 'Geoenvironmental Assessment of Peri-urban Watersheds of River Mula, Taluka Mulshi, Pune, India' (2015).

Attended Sixth International Groundwater Conference (IGWC-2015) on 'Exploration, Assessment and Management of Groundwater Resources in Arid and Semi-Arid Regions' at Chennai, India and presented the papers entitled 'Assessment of groundwater potential zones using GIS technique: A case study of Shivganga river basin, Pune, Maharashtra, India and 'Groundwater quality assessment in Manjra river sub basin, Dist, Osmanabad, Maharashtra, India (11-13 Feb, 2016).

Attended International conference titled '4th India Water Week 2016, (IWW) at Delhi and presented a paper entitled ' Subsurface 3-D modelling of Shivganga River Basin from Western Ghats, Maharashtra, India for the set up of hydrogeological framework' and 'Climate change based water availability for green growth using HEC-HMS from Semi-Arid watershed area, India (4-8, April, 2016).

Attended 35th International Geological Congress held at Cape Town, South Africa from 27th August – 3rd September, 2016 and presented a paper entitled ` Watershed Prioritization of Upper Mula- Mutha Catchment, Maharashtra, India Using RS-GIS Techniques. (2016)

Attended the 2nd international conference on Sustainable water management, organized by Water resource department, government of Maharashtra held on 6-8 November,2019 in Hyatt Regency, Pune and presented a paper entitled " Assessment of Groundwater Potential Zones using RS-GIS techniques: A case study from upper Bhima basin, Maharashtra, India."

Attended the International Conference on Resource Management for Inclusive Development, organized by Agaste Arts, Commerce and Dadasaheb Rupwate science college, Akole, Ahmednagar, Maharashtra held on 14-15th February 2020 and presented a paper entitled " Assessment of Soil erosion using Geospatial techniques and USLE in sub-watersheds of upper Bhima basin, Western India"

**National:**

Attended XIX Annual Convention and National Seminar on Watershed Development and presented a paper entitled 'Integrated Watershed Management: Its Objectives and Benefits', at Maulana Azad College, Aurangabad (2000).

Attended the seminar on 'Advances in the knowledge of Deccan Volcanic Province' arranged on the occasion of 103<sup>rd</sup> Birth Anniversary of Late Prof. K.V. Kelkar at Fergusson College, Pune (2003).

Attended 91<sup>st</sup> Indian Science Congress and participated in Poster Presentation in Earth System Sciences at Chandigarh (2004).

Attended a seminar on 'What is new in Arc GIS 9' conducted by ESRI India, at Pune (2004).

Attended the National Conference on Recent Trends in Geotechnology and presented a paper entitled 'Application of Geographical Information System in Watershed Management' at University of Pune, Pune (2005).

Attended the 30<sup>th</sup> Annual Convention National Seminar on Exploration Geophysics with the special theme 'What lies under the Deccan traps?' conducted by Association of Exploration Geoscientists at Pune (2005).

Attended ISRO sponsored awareness programme on Geoinformatics for Earth Science Faculty at Department of Geography, University of Pune (2006).

Attended the National Seminar on 'Groundwater Resource Management, its sustainability in Hard Rock and Quaternary Sediments of Maharashtra' held at the Department of Geology, Maulana Azad College, Aurangabad (2006).

Attended National Seminar on Origin and Evolution of the Deep Continental Crust, Pune (2006).

Attended the Free Map Workshop on FOSS-GIS held at Homi Bhabha Centre for Science Education (HBCSE) Anushakti Nagar, Mumbai (2007).

Attended National Seminar on "Challenges for Technical Education in View of Global Changes" and presented a paper entitled 'Role of Remote Sensing and Geographical Information System in Hydrogeology' organized by Indian Society of Technical Education, XII ISTE Convention at JSPM, Pune (2008).

Attended and participated in workshop entitled 'Community consultation and Awareness workshop on Disaster Management' at Mahad (2008).

Attended National seminar on Open Source Tools Apache / My SQL / PHP and Linux operating system, held at JSPM, Wagholi, Pune (2008).

Attended the workshop on 'Open Source GIS' held at Symbiosis Institute of Geoinformatics, organized jointly by OS-GEO India and Indian Society of Geomatics, Pune Chapter, Pune (2008).

Attended 'GIS ENVISION' seminar conducted by NIIT - GIS Ltd. at Pune (2009).

Attended National Conference on 'Groundwater Resource Development and Management in Hard Rocks' organized by Department of Geology, University of Pune; Groundwater Surveys and Development Agency, Government of Maharashtra and Geological Society of India, Bangalore, held at University of Pune, Maharashtra, India (February, 2010).

Attended a seminar on 'Role of Women in Science' organized by IWSA - Pune Chapter on International Women's Day, University of Pune, (2010).

Attended a workshop on 'what's new in Chemistry' organized by Department of Chemistry, (on the occasion of Women's day) held at University of Pune, Pune (2011).

Attended a national workshop on 'Water security and sustainability' organized by Groundwater Survey and Development Agency, held at YASHADA, Pune (2011).

Attended a national seminar on 'Environmental Pollution and Remedies' organized by Department of Environmental Science, held at Deogiri College, Aurangabad (2011).

Attended 45<sup>th</sup> annual convention of Indian Water Works Association, (IWWA). The theme for this convention was 'Water for Gen Next' held at Pune (January, 2013).

Attended State Level Conference held on the occasion of World Water Day at Yashada and presented a paper entitled ' Characterization of Phreatic Aquifer in Andhale Watershed, Taluka Mulshi, Pune (March, 2016).

Attended 1st National Teacher's Congress (NTC) held at MIT Campus, Kothrud, Pune (23rd - 25th September, 2016).

Attended workshop jointly organized by CGWB and GSDA on revision of GEC-97 norms at CWPRS, Khadakwasla, Pune (January 2017).

Attended national conference on Groundwater: Status, Challenges and Mitigation held at Moolji Jaitha college, Jalgaon in collaboration with GEOFORUM, Maharashtra (4 & 5 Feb, 2018)

Attended the National Seminar on Challenges in Groundwater and Surface Water Resources in India, organized by Gondwana Geological Society, Nagpur and Department of Geology, RTM Nagpur University, Nagpur held on 28 and 29th November, 2019 and presented a paper entitled 'Hydrogeochemical Characterization and Suitability in Association with Agro-ecological Impetus, A Case Study of Eastern Haveli, Pune, Maharashtra.'

Attended a three-day workshop entitled, "Design and Developing MOOCs" organizing by Teaching Learning Centre, Savitribai Phule Pune University, Pune, on 20th to 22nd August 2019.

## **Academic and related activities**

- Broadcasted several lectures on water resources: importance and awareness related topics in the Vigyan Vaarta program of Aakaashvani, Aurangabad (2002).
- Completed Orientation Programme organized by Academic Staff College at University of Pune, Pune and received 'A' grade (2004).



- Completed the Refresher Course in the subject of RS-GIS for University Teachers under the U.G.C. Scheme held at Department of Geography, UoP, with first rank (2007).
- **Provided expertise** in the course on Landslide Disaster Management organized by CDM, YASHADA (2010).
- Delivered lecture on ‘**GIS and its applications**’ for UG and PG students of University of Mauritius, Reduit, Mauritius (2010).
- Completed the Refresher Course in the subject of Environmental Science for University Teachers under the U.G.C. Scheme held at Department of Environmental Science, UoP, with ‘A’ grade (2011).
- Faculty Development Programme in the subject of Environmental Science (2013)

### **News in media**

- Urbanization, Sakal news paper, 2007
- Metamorphosis of Ramnadi, Times of India, Pune 2007
- Sakal Times, Review of research article, 2010
- Over-extraction is not the sole reason for falling water tables, Times of India, 2012

### **Research Guidance : M.Sc. (Geology) Dissertation**

1. Raskar Trupti (2020)
2. Datta Anirudh (2020)
3. Shaikh Huzefa (2019) Spatiotemporal Variation In Groundwater Quality of Upper Bhima Basin, Western India: Implication to Geochemical Mobility of Major Ions
4. Gaikwad Himanshu (2019) Suitability of Groundwater for Drinking and Irrigation Purposes and Potential Health Risk Assessment in Upper Bhima Basin, Western India.
5. Mundalik Vaishnavi Ramesh (2018) Groundwater Characteristics in a Basaltic Terrain: A Case Study of Kar River basin, Shirur, Pune, Maharashtra
6. Rajput Sushil (2018) Hydrogeological study of Meena river basin, District Pune, Maharashtra with special emphasis on delineation of groundwater potential zones.
7. Ahire Kiran (2017) Groundwater Quality of Pabal Village, Taluka Shirur, District Pune
8. Kuwar Apurva (2017) Aquifer delineation of Kendur village, Taluka Shirur, Pune for groundwater resource management.
9. Gulumbe Pooja (2016) Stable Isotope Investigation of Drip Water: A Case Study from Dariyabai Devi Cave, Ahmednagar, Maharashtra, India
10. JOSE GEORGE (2015) Hydrogeological Investigations and Unconfined Aquifer Mapping around Loni Kalbhor, Pune: A Geospatial Approach
11. Naikuji Suvarna (2015) Hydrogeology of Andhale Watershed, Taluka Mulshi, District Pune, India

12. Kapawar Mahesh (2014) Groundwater Quality Studies of Kalas Watershed from Indapur Tehsil of Pune district, Maharashtra
13. Lokre Chinmay (2014) Hydrogeology of Pirangut watershed with special reference to water table aquifer
14. Abdullah Khalid (2013) Groundwater Quality and its Suitability for Domestic and Agricultural Use in Khanaqin Town, Iraq.

**Research Guidance : M.Sc. (Geoinformatics) Dissertation**

**Kate Prema  
Dorge Sujata  
Mane Maruti  
Chaudhari Rahul  
Ahire Kiran  
Pawar Vishwajit  
Zagade Nayan  
Ayachit Rashmi**

## PUBLICATIONS

1. Umrikar, B. N. (2000) Artificial Recharge and Water Conservation Techniques: It's Importance in Deccan Trap Aquifers of Maharashtra. Jour. Appl. Hydrogeology, Vol. XIX, pp. 20 - 28
2. Jadhav, F. J., Umrikar, B. N. and Thigale, S. S. (2001) Impact of Coastal Processes on the Watersheds along Coast of Western Maharashtra. In: Seminar Vol. An Integrated Approach for Strengthening and Protecting Drinking Water Sources., G.S.D.A., Pune., pp. 17 – 24
3. Umrikar, B. N. (2004) Development of Spring Sanctuary: Case Study of Guhagar Area, District Ratnagiri, Maharashtra. Jour. Gondwana Geol. Soc. Vol. 19 (2), pp.183 – 189
4. Thigale, S.S., Duraiswami, R.A. and Umrikar, B.N. (2006) Some Hydrogeological aspects of the Shallow Beach rock (Calc-Arenite) Aquifers along Maharashtra Coast, India., In: Coastal Environment and Water Quality (Ed: Y. Jun Xu and Vijay P. Singh ), International conference Book, Baton Rouge, Louisiana, USA., Water Resources Publ., LLC., Section 2: Saltwater Intrusion, 9, ISBN-13: 978-1887201476
5. Thigale, S.S. and Umrikar, B.N. (2007) Disastrous Landslide episode of July 2005 in the Konkan plain of Maharashtra, India with special reference to tectonic control and hydrothermal anomaly. Curr. Sci., Vol. 92, No. 3, pp. 383 – 386. Journal impact factor 0.688
6. Umrikar B.N. and Thigale, S.S. (2007) Sea Water Ingress Study along the Guhagar Coast of Maharashtra with Reference to the Harmonious Water Resource Development. Jour. Geol. Soc. Ind., ISSN No. 0016-7622, Vol. 69 (5), pp. 933 – 942. Journal impact factor 0.368
7. Maggirwar, B.C and Umrikar, B.N. (2008) Scope for Artificial Recharge in Overdeveloped Watershed GV-41, District Aurangabad, Maharashtra, India using RS - GIS Techniques., Jour. GIS-Development, www.gisdevelopment.net › Geospatial Application Papers
8. Umrikar, B.N. and Iyer, U. (2009) Impact analysis of urbanization on surface and ground waters using RS-GIS technique: A case study of Pune Municipal Corporation., Jour. Urban India, Vol. XXVII (1), pp. 45 – 56
9. Maggirwar, B.C and Umrikar, B.N. (2009) Possibility of artificial recharge in overdeveloped miniwatersheds: RS-GIS approach., e-Journal, Earth Science India., ISSN No. 0974-8350, Vol.2 (II), pp. 101 – 110 (<http://www.earthscienceindia.info>)
10. Desai, C.G.; Patil, M.B. and Umrikar, B.N. (2009) Application of Remote Sensing and Geographic Information System to study land use / land cover changes: A case study of Pune Metropolis, Jour. Advances in Computational Research, ISSN: 0975 – 3273, Vol. 1 (II), pp. 10 – 13
11. Desai C.G., Patil M.B., Mahale, V. and Umrikar B. (2009) 'Role of Geographical Information as data source to the Decision Support System', Jour. Advances in Information Mining, ISSN: 0975–3265, Vol. 1 (II), pp.14-20
12. Patil M., Atole, C.G., Umrikar, B. and Mahale, V. (2010) 'Efficacy of Data Compression Technique on Vector Based Model' Int. Jour. of Mathematics, Computer Sciences and Information Technology Vol. 3, No. 2, ISSN:0975-5580, sspl115, (July-December) pp. 173 - 181

13. Bhankaurally, Mustapha Yahya.; Nowbuth, Manta Devi and Umrikar, B.N. (2010) Flood Hazard Mapping by Integrated GIS - SCS Model., *Int. Jour. Geomatics and Geosciences*, ISSN 0976 – 4380 Vol. 1 (No. 3) pp. 489- 500 (Code: EIJGGS2017)
14. Umrikar, B.N. (2011) Groundwater Quality Assessment for Guhagar Coastal Area, Maharashtra, India., *Jour. Environ. Research and Develop.*, ISSN 0973-6921, Vol. 5 (Issue No.: 4) pp. 880-891, Journal impact factor 0.157
15. Umrikar, B.N., Patil, M.B. and Desai, C.G. (2011) Application of cellular automata technique for prediction of growth pattern through Java programming. *Int. Jour. Geomatics and Geosciences*, ISSN 0976 – 4380, Vol. 2 (No. 1) pp. 11- 20 (Code: EIJGGS2017)
16. Maggirwar, B.C and Umrikar, B.N. (2011) Influence of various factors on the fluctuation of groundwater level in hard rock terrain and its importance in the assessment of groundwater. *Int. Jour. Geol. Mining Research*. ISSN: 2006-9766, Vol. 3 (11), pp. 305-317
17. Nowbuth, M. D. and Umrikar, B. N. (2012) Design of an Online Module: A Case Study in the Field of Geosciences. *Int. Jour. Learning*, ISSN: 1447-9494, Vol.18, (4), pp 365-372
18. Patil, M.B., Desai, C.G. and Umrikar, B.N. (2012) Comparative study of nearest neighbour and bilinear interpolation raster transformation techniques for predicting urbanization. *Proceedings, National Conference: INDIACOM-2012, BVICAM, Delhi*. ISSN 0973-7529; ISBN 978-93-80544-03-8, pp. 509-512
19. Nowbuth, M.D., Rambhojun, P. and Umrikar, B.N. (2012) Numerical Groundwater Flow and Contaminant Transport Modelling of the Southern Aquifer, Mauritius., *Open access e-Journal, Earth Science India*, e-ISSN: 0974 – 8350, Vol. 5 (III), pp. 79-91, <http://www.earthscienceindia.info/>
20. Patil, M.B., Desai, C.G. and Umrikar, B.N. (2012) Input database preparation for urban growth prediction model through RS-GIS techniques. In: *Proceedings of the International Conference on perspectives of Computer Confluence with Science, Track IV – Earth Sciences*, pp. 247 – 251. ISBN: 978-93-82062-76-9
21. Patil, M.B., Desai, C.G. and Umrikar, B.N. (2012) Image Classification Tool for Land Use / Land Cover Analysis: A Comparative Study of Maximum Likelihood and Minimum Distance Method., *Int. Jour. Geol., Earth and Environmental Sciences* ISSN: 2277-2081 (Online), <http://www.cibtech.org/jgee.htm>, Vol. 2 (3), pp.189-196
22. Umrikar, B. N., Dhanve, S. S., Dagde, G. R. and Gawai, R. O. (2013) Quantitative Geomorphological Analysis for Characterization of Selected Watersheds in Western Maharashtra, India, *Int. Jour. Remote Sensing & Geosciences (IJRSG)*, ISSN No: 2319-3484, Vol. 2 (2), pp. 8 – 15
23. Umrikar B.N. (2013) Multi Criteria approach for analysis of Land Suitability for Urban Expansion. *Jour. Geography and Geology*, Photon ISJN: 4396-3839, Impact Index: 3.67, Vol. 117, pp. 170-176
24. Umrikar, B.N. and Maggirwar, B.C (2013) Characterisation of the Aquifers for Resource Management and Protection. *Int. Jour. Multidisciplinary and Current Research (IJMCR)*, ISSN: 2321-3124, November-December- 2013, pp. 244-249
25. Khodke, S.P., Deotare, P.W., Maggirwar, R.C. and Umrikar, B.N. (2014) Groundwater Quality Assessment for Agricultural Suitability from Purna River Sub-Basin Area, Maharashtra. *Global Jour. Bio-science & Biotech.*, ISSN 2278 – 9103, Vol. 3 (1) pp. 70-73
26. Umrikar, B.N., Patil, M.B. and Desai, C.G. (2014) Generation of Hierarchy Ranking Model to Strengthen Decision Making Parameters. *IJRSET*, ISSN: 2319-8753, Vol. 3 (4), pp. 11645 – 11650.

27. Khalid, A. and Umrikar, B. N. (2014) Groundwater Quality and its Suitability for Domestic and Agricultural Use in Khanaqin Town, Iraq. *Jour. Applied Geology and Geophysics (IOSR – JAGG)*, e-ISSN: 2321–0990, Vol. 2 (2), pp 57 – 66, [www.iosrjournals.org](http://www.iosrjournals.org).
28. Umrikar B. N., Dorge, S. and Kate, P. (2014) Land Use / Land Cover Change Detection using RS-GIS: A Case Study of Pirangut Watershed, Taluka Mulshi, Pune., *Proceedings 4th Int. Conf. 'Hydrology and watershed management'*. ICHWAM, ISBN: 978-81-8424-952-1, Vol.1, pp. 23-27
29. Maggirwar, B.C. and Umrikar, B. N. (2015) Groundwater Quality Assessment for Village Rise of Taluka Purandhar, District Pune, Maharashtra, India. *J. Environ. Res. Develop.* V. 9 (3), pp. 541-546, <http://www.jerad.org/currentissue.php>, E-ISSN: 2319-5983.
30. Umrikar, B. N. (2015) GIS Technique in Management of Watershed Developed along the Konkan Coast, Maharashtra, India. *Journal of Geographic Information System*, 7, 280-293. doi: 10.4236/jgis.2015.73022
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