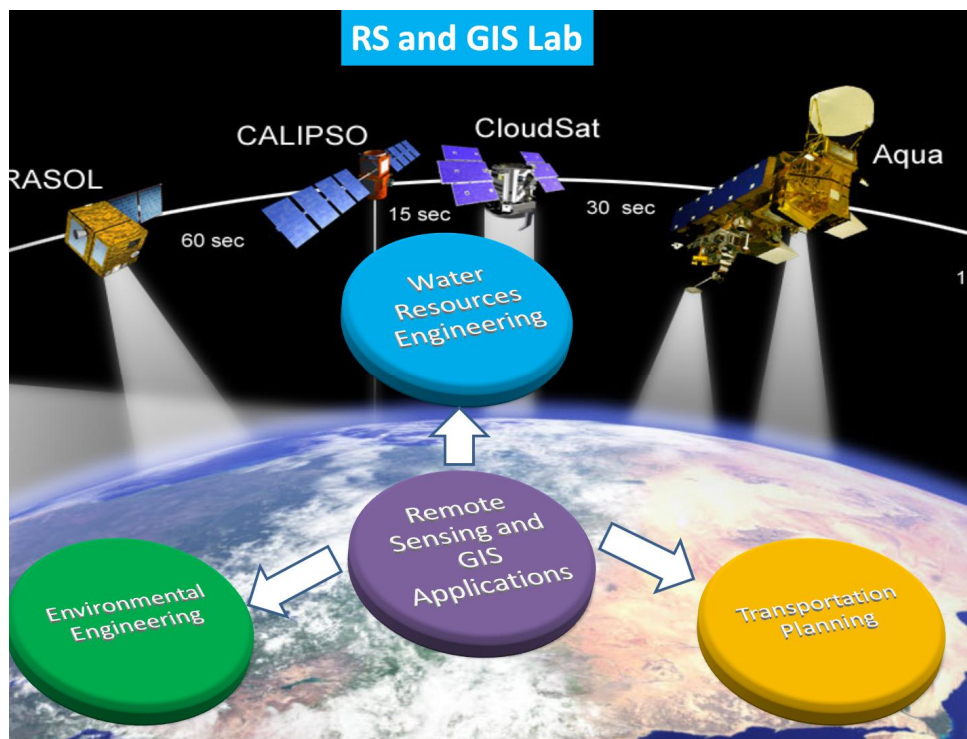


## REMOTE SENSING AND GIS LAB

The Remote Sensing and Geographical Information System Lab was established within department of Civil Engineering in 1998 by Dr. Yashwant B Katpatal. The objective of establishing lab within the department was to provide exposure of this important technology to students of Civil Engineering, Environmental Engineering, Water Resources Engineering, Transportation Engineering and Engineering Geology. The area of Geoinformatics finds its application in variety of projects for information extraction and management. Since its inception, the lab has been catering to the students research in different studies for their Graduate, Post Graduate and Doctoral thesis. The Lab is also equipped for providing Consultancy in the area of Remote Sensing and GIS applications and several consultancy projects have been completed.



The Lab is equipped with software in Remote Sensing, Digital Image Analysis and Geographical Information System. The various software available includes:

1. ARC GIS 10.1
2. ERDAS Imagine 13
3. Geomedia
4. Rock Works
5. AutoCAD
6. Photogrammetry Tool

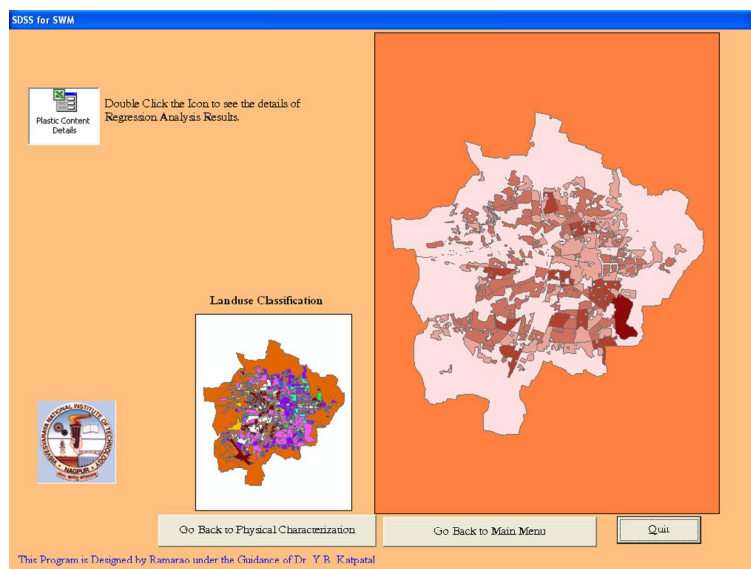
The lab also has Ground Penetration Radar System (SIR 3000 system) and Ground Truth radiometer for field studies.

Around 14 Students have completed Ph.D. Degree working in this lab and around 40 students have completed M. Tech Projects on various topics using Remote Sensing and Geographical Information System. Around 100 students have completed graduate projects in the area of RS and GIS. Certain topics wherein Ph.D thesis work has been carried out in the lab under the Guidance of **Dr. Y.B. Katpatal**, Professor are as below.

S. No.	Name of Student	Reg. Year	Ph. D Thesis Title	Completed/ Ongoing
1.	Y.A. Dube	2001	Development and Management of Water resources of Bhandara District Using Geohydrological Parameters, Remote Sensing and GIS	Completed and Awarded 2005
2.	Pinak Ranade	2001	Development of Decision Support system (D.S.S.) using Remote Sensing & GIS Techniques for sustainable Development of Micro-Watersheds	Completed and awarded 2009
3.	P.K. Jain	2000	Micro model for development & augmentation of Groundwater Resource in urban setup of Nagpur metropolitan city, Maharashtra.	Completed and awarded 2005
4.	D.K. Agrawal	2004	Groundwater Resource Appraisal of Wardha District with recourse to Remote Sensing & GIS.	Completed and Awarded 2007
5.	Rohit Mane	2004	Analysis of Projection System Environments in Remotely Sensed raster and vector data and its application feasibility	Completed 2007 and awarded
6.	D.R. Sathpathy	2004	Designing a Spatial Decision Support System for Environmental Sustainability Assessments of mining Areas	Completed and awarded 2009
7.	Sanjay Patil	2004	The impact assessment based studies of erai Watershed in Chandrapur District, Maharashtra, using Geoinformatics approach	Completed and awarded Oct. 2010
8.	H. C. Landge	2005	Designing a strategic model to implement PPP in Urban Water Sector	Completed and awarded 2009
9.	V.P. Mane	2005	Delineation of infiltration Characteristics within a watershed through integrated analysis of Spatial Parameters	Awarded June 2011
10	A.D. Vasudeo	2005	Estimating Hydraulic characteristics of Flow regime in heterogeneous systems using Ground Penetrating Radar (GPR).	Awarded October 2010.
11	Bhushan	2008	Designing of Geohydrological Model for over	Awarded Dec

	Lamsoge		exploited watersheds	2013
12	Sandeep Shirkhedkar	2008	Seismic zoning using structural characteristics in GIS Environment	Submitted June 2013
13	Mr. Bhandarkar	2008	Development of Decision Support System for Design of Rainwater Harvesting Ponds for Sustainable Agriculture and Ground Water Recharge in Vertisols of Central India.	Ongoing
14	P.P. Saklecha	2009	Spatial Correlation of Mechanical Properties of weathered Basaltic Terrain for foundation Characterization	Awarded Jan 2013
15	Sarang Muley	2010	Integrated Groundwater Management model for watersheds through spatial analysis of resources parameters	Submitted March 2014
16	Rajashri Bothale	2011	Impact of climatic variability on the response of hydrologic unit using Satellite Remote Sensing and Geospatial data	Ongoing
17	Tauseef A. Ansari	2012	Groundwater Modeling in urban areas for recharge characterization using geoinformatics approach	Ongoing
18	Sarang Paranjape	2012	Spatial Correlation of Surface and subsurface hydrological parameters for basin development	Ongoing
19	Vijay Bhusari	2014	Study Of Artificial Recharge To Phreatic As Well As Deeper Aquifer By Using Stream Resectioning In Reverse Gradient, Recharge Shafts And Subsurface Harvesting Structure	Ongoing
20	D K Pandey	2014	Disaster management studies in Gondia District using Rs and GIS	Ongoing
21	Chandan Kr. Singh	2014	Spatial Analysis for Watershed management using quantitative Parameters	Ongoing

### SDSS FOR SOLID WASTE MANAGEMENT



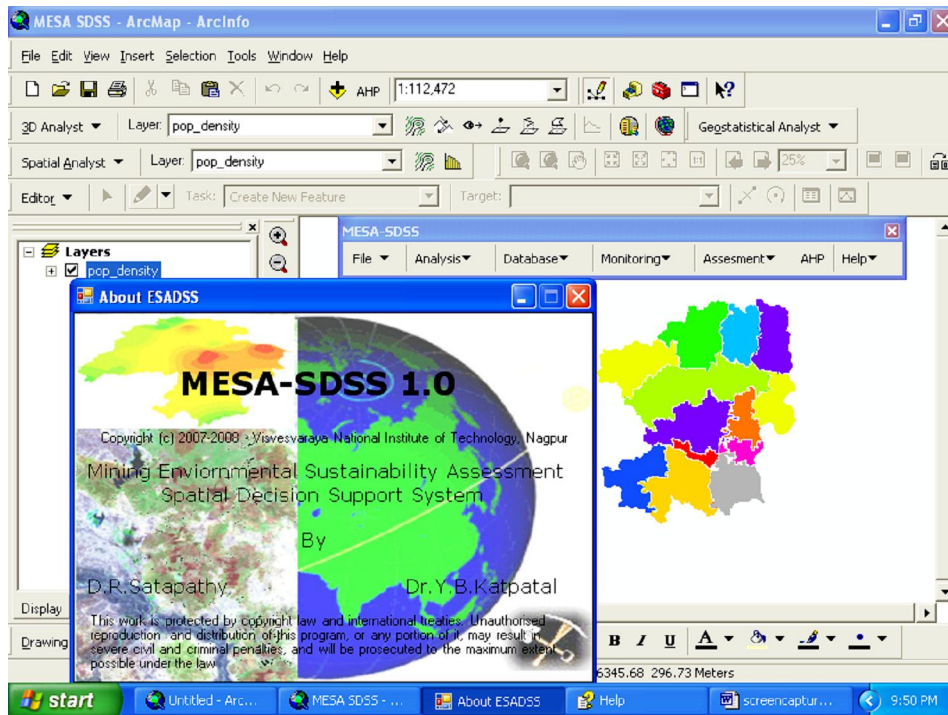
S.No.	Name of the Candidate	Topic of the M. Tech. Thesis	Year of Award	Branch
1.	Prabhakar S. Bagade	EIA Based study of Nagpur District using Remote sensing and GIS	1997-1998	Env. Engg.
2.	Dilip H. Lataye	Identification and delineation of natural Hazards and management of environmental parameters through GIS in Bhandara District	1998-1999	Env. Engg
3.	Manoj L. Meshram	Watershed prioritization based on Remote Sensing and GIS for planning water conservation measures of Jam catchment, Nagpur District	1999-2000	Env. Engg
4.	Nitin Ramkrishna Nandanwar	EIA based study of Koradi thermal Power station area using Remote Sensing and GIS	2000-2001	Env. Engg
5.	Shrikant B. Ahirkar	EIA Based Study of WCL Mine ( Umrer Area) through Remote Sensing and GIS	2000-2001	Env. Engg
6.	Deepak Kumar Pradhan	EIA study of natural influencing parameter for groundwater recharging, by applying Remote Sensing and GIS	2001-2002	Env. Engg
7.	Amardeep Raju	Customization of ARC/INFO using ARC Macro language (AML) for the site selection of birds sanctuary	2001-2002	Env. Engg
8.	Ajay Kalamdhad	Solid Waste Management – A case study with GIS perspective	2002-2003	Env. Engg
9.	Sangita V. Ghatge	Urban Heat Islands studies for Nagpur District using Remote Sensing Data	2002-2003	Env. Engg
10.	Jayashri S. Meshram	Characterization of Solid Waste management parameters using GIS	2002-2003	Env. Engg
11.	Dhiraj Jehra	Identification of parameters affecting Solid Waste management and its manifestation using GIS	2002-2003	Env. Engg
12.	Margam	Impact Assessment Studies of Kamthi	2003-2004	Env.

	Someshwar	Coal Mines : A GIS perspective		Engg
13.	M.R.S. Malik	Land Use Planning for Mining areas : A GIS oriented approach	2003-2004	Env. Engg
14.	Sanjay K. Raut	Environmental Impact Assessment based studies of Mining areas using Multisensor RS Data	2003-2004	Env. Engg
15.	Abhijeet Kute	Heat Island Effect Correlated to Land-Use/Land-Cover in Nagpur City: Remote Sensing & GIS Approach	2004-2005	Env. Engg
16.	Satya Narayan Shrinivasan	Impact Assessment Based Studies on Inter-Basin Water Transfer Using Remote Sensing & GIS	2004-2005	Env. Engg
17.	Anil G. Ingole	Artificial Recharge of Ground Water in Wardha District Using Remote Sensing & GIS	2004-2005	Env. Engg
18.	R.Venkata Satya Ramarao	Spatial Decision Support System for Municipal Solid Waste Management in an Urban area using Remote Sensing Data & GIS	2005-2006	Env. Engg
19.	Ashok Kumar Sahu	Spatial Analysis of Water resource Quality in Nag Urban Watershed in Juxtaposition to Landuse	2005-2006	Env. Engg
20.	Manisha Thaware	Standardization of spectral signatures of Land Use / Land cover classes for EIA studies from Remotely sensed Data	2006-2007	Env. Engg
21.	Atul Meshram	Waste Water Management in Urban area using Remote Sensing and GIS	2006-2007	Env. Engg
22.	Pushkar Meshram	Groundwater Profile estimation near flowing river and canal using Ground Penetrating Radar	2006-2007	WR. Engg
23.	Vijay Mandlik	Estimation of groundwater level using ground penetrating Radar	2006-2007	WR Engg
24.	Manoj Naik	Designing of Municipal Utility	2007-2008	Env.

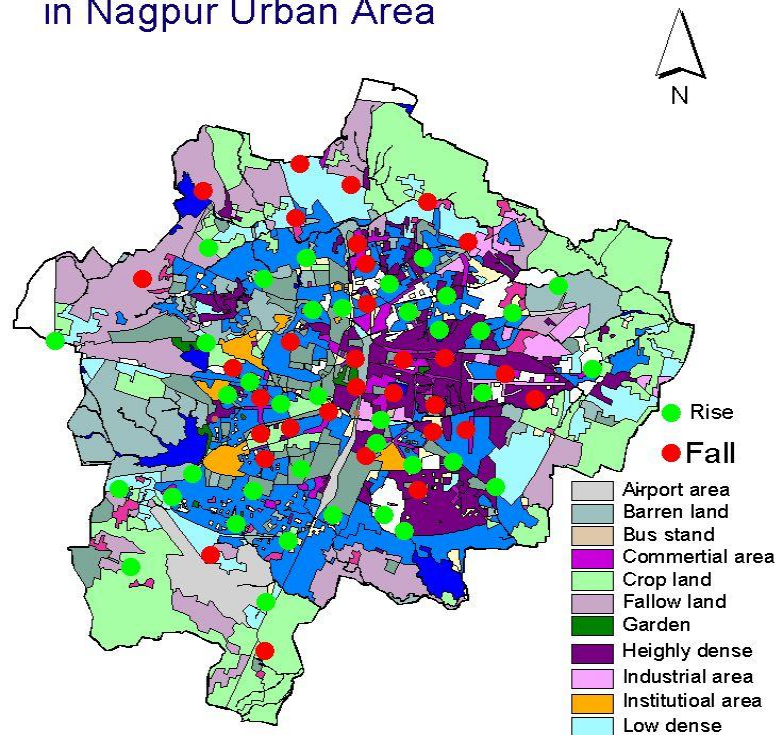
		Information System Using Remote Sensing & GIS Platform		Engg.
25.	Shweta Pradhan	A Spatial Approach to Water Audit in Urban Set Up	2007-2008	WR Engg.
26.	Sachin Maskey	Futuristic Supportive Capacity Resources Modeling of A Fast Growing Special Economic Zone By Using Geoinformatics Approach	2008-2009	Env. Engg.
27.	Swapnil Sangode	Maintenance Management Information System for Residential Complexes using GIS and Remote Sensing Application	2008-2009	Env. Engg
28.	Tejaswini Ghude	Verification of SCS-CN and $\Phi$ index method with groundwater recharge perspective in urban watersheds using Geomatics approach	2008-2009	WR Engg
29.	Tampasana Devi	Infiltration Coefficients based on water spreads of lakes in Bhandara District	2009-2010	WR Engg.
30.	P.K. das	Spatial analysis of 24 paragana District for Arsenic and its association with lithounits.	2009-2010	Env. Engg.
31.	Tauseef Ahmad	Impact of urbanization on stormwater drainage system in Wadgaon catchment.	2009-2010	WR Engg.
32.	Johnson Khundom	Groundwater potential estimation based studies of Venna basin with recourse to GIS	2010-11	WR Engg.
33.	Chetan Chavan	GIS based studies for runoff and aquifer potential for groundwater availability in an urban set up	2010-2011	WR Engg.
34.	Shrunkhal Dube	Air pollution modeling of $\text{Khaparkhedaq}$ power plant in Nagpur region using ISCSP3 software.	2010-2011	Env. Engg.
35.	Trupti Dalvi	Geospatial approach to analyze impact of urbanization on Land use / Land cover and water regime in Nagpur Urban Area ( 2002-2012)	2012-13	Env. Engg.
36.	Dinesh S. Deshkar	Spatial analysis for ensuring groundwater	2012-13	Env.

		sustainability for drinking water supply in WRWB2 watershed, Nagpur District.		Engg.
37.	Sanket A. Thorat	Impact of activity Clusters within different Land uses in Nagpur City on Transportation Network: A GIS perspective.	2013-14	Trans. Engg.
38.	V.S. Meganathan	Identification of optimum routes from accident spots to hospitals using GIS: A case study of Nagpur city.	2013-14	Trans. Engg.
39.	Mrinmayee Ganage	Groundwater recharge based studies using 3D subsurface model for aquifer system in Nagpur Urban area	2013-14	WR Engg.
40.	Nilesh Barde	Spatial location of water logged areas in relation to storm water network system within Nagpur urban area	2013-14	WR Engg.

Several International Papers have been published on topics related to application of remote sensing and GIS in the area of Environmental studies, water resources studies, Urban studies and Geological studies.



## Rise and Fall Trends in GW in Nagpur Urban Area



### 3D ANALYSIS OF NAGPUR URBAN AREA



Patents have been filed for the concepts /products developed in the lab and awards have been won by the faculty and students for their research work.



### Projects completed in the in the Lab:

Sr. No.	Title of the Project	Funds Received	Sponsoring Agency	Period	Status
1.	Development Lab for studies through Remote Sensing	12 lacs	MHRD	Three Years	Completed
2.	Micromodel for groundwater recharge through characterization of the parameters using Remote sensing data and GIS.	5 lacs	MHRD	Two Years	Completed
3.	Environmental Impact Assessment studies for the Mining Areas of Vidarbha region using Multidate Multisensor Remote Sensing data.	10 Lacs	MHRD	Three Years	Completed
5.	Studies on Hydraulic jump forming on the toe of Stepped Spillways	10 Lacs	MHRD	Three Years	Completed
6.	Study on flow characteristics on Labyrinth weirs	12 Lacs	MHRD	Three Years	Completed

### CONSULTANCY PROJECTS COMPLETED IN THE LAB

Organization	Title of the Consultancy project
PWD	Geological and geotechnical investigations of road section
Hon Sessions Court, Nagpur	Measurement of Gupta Dupare layout, Nagpur
PWD, Chandrapur	Strata Classification for Railway Overbridge at Chandrapur and Rajura.
Medalion	Drainage analysis in Jharkhand Coal blocks of NTPC

BP Chhattisgarh	Vegetation change in BALCO Plant
VIDC Nagpur	Investigations on canal lining
VIDC Nagpur	Investigations on canal lining
PWD Nagpur	Ramtek Temple
PWD Chattisgarh	Runoff Modeling
Arun Tarar	Runoff Modeling
Apex Pvt. Ltd	Groundwater Assessment
Imagis Nagpur	Groundwater Assessment of Venna basin
N P Associates	Runoff Estimation
Manager Birsi Airport Gondia	Strata Classification below Runway
PWD Arvi	Starta Classification bridges across canals around Pulgaon City
Karnatka Emta Coalmines Ltd.	Landuse/Land cover analysis od Proposed Bhadrawati Coal Mine project
NMC	Augmentation to Water supply in Nagpur MC Area
WCL	Investigation on the sliding of benches at Kawadi OCM
ADCC	Data integration on GIS
TISCO	EIA based study

**Contact Info:**

**Dr. Y.B. Katpatal**

**E Mail:** [ybkatpatal@rediffmail.com](mailto:ybkatpatal@rediffmail.com) ,  
[ybkatpatal@civ.vnit.ac.in](mailto:ybkatpatal@civ.vnit.ac.in)

**Mobile:** +91 9422303373,

**Phone :** 0712 2801083(O), 0712 2785248 (Res)

**FAX:** 0712 2802200

