

## **BRIEF PROFILE**

Name: Dr. Neeraj Kumar Sharma  
Date of Birth: 12.04.1978  
Present Position: Junior Scientist  
Scale of Pay: 15600-39100 (Grade Pay: 5400)

### **EDUCATIONAL QUALIFICATIONS:**

<b>Qualification</b>	<b>Name of the Board/University</b>	<b>Passing Year</b>	<b>Main Subjects</b>
Ph.D.	F.R.I. University Dehradun	2007	Forest Ecology and Environment
M.Sc.	F.R.I. University Dehradun	2000	Forestry and allied subjects
B.Sc.	C.C.S. University, Meerut	1997	Botany, Chemistry Zoology
Intermediate	U.P. Board Allahabad	1994	Biology, Chemistry, Physics, Hindi English
High School	U.P. Board, Allahabad	1992	Biology, Science, Mathematics, Hindi, English,

**Title of the thesis:** “Analysis of landscape features in part of Kumaun Himalaya with special reference to woody vegetation”

### **PROFESSIONAL EXPERIENCE:**

<b>Name of Employer</b>	<b>Period</b>	<b>Designation</b>
Regional Remote Sensing Service Centre-North (RRSSC-N), ISRO/DOS IIRS Campus, 4-Kalidas road, Dehradun	22 <sup>nd</sup> Sep 2000 -30 <sup>th</sup> Oct. 2002	Junior Research Fellow
Forest Survey of India, (MOEF) Kaulagarh Road, Dehradun	7 <sup>th</sup> Nov 2002 -19 <sup>th</sup> June 2003	Technical Associate
Regional Remote Sensing Service Centre-North (RRSSC-N), ISRO/DOS IIRS Campus, 4-Kalidas road, Dehradun	20 <sup>th</sup> June 2003 -19 <sup>th</sup> June 2006	Senior Research Fellow
Jharkhand Space Applications Center, Dept. of Information technology, Govt. of Jharkhand, Ranchi	22 <sup>nd</sup> June 2006 - Till date	Junior Scientist

I started my carrier at Regional Remote Sensing Service Centre and contributed in the project entitled “**Biodiversity Characterisation at Landscape level using Satellite Remote Sensing and GIS in Tripura, Mizoram and Uttarakhand states (Phase I) and in Kalsa**

**Watershed, Nainital District, Uttarakhand (Phase II)**” as a J.R.F. During this period (Sep 2002 to Oct 2002) analyzed the species biodiversity, generated maps and carried out the spatial analysis. For a period of about 8 months from November 2002 as Technical Associate in Forest Survey of India carried out the spatial analysis for the project entitled ‘**Vulnerability and Adaptations’ component of India’s Initial National Communication (NATCOM) to United Nations Framework Convention on Climate Change (UNFCCC)**. I again joined RRSSC, Dehradun in June 2003 and during 2003-2006 generated **vegetation cover map for entire Uttarakhand region** and quantified **forest biomass** while working in the project “**Evaluation of storage and flux of carbon in forest ecosystems of Uttaranchal and Himachal Pradesh**”. In Jharkhand Space Application Centre, Ranchi as a Jr. Scientist since 2006 involved in a number of studies related to **management of natural resources**, satellite data based information generation and the projects based on the satellite communication (SATCOM) viz. Tele-Education, Vigyan Prasar, Edusat based course on remote sensing.

### **COMPLETED PROJECTS**

**1. Biodiversity Characterisation at Landscape level using Satellite Remote Sensing and GIS in states of Tripura, Mizoram and Uttarakhand (Phase I and Phase II )**

Funding Agency: Dept. of Biotechnology and Dept. of Space, Govt. of India

Position: Research Fellow

Work Center: Regional Remote Sensing Service Center, ISRO/DOS, Dehradun

Period: 22<sup>nd</sup> Sep 2000 -30<sup>th</sup> Oct. 2002

**2. ‘Vulnerability and Adaptations’ component of India’s Initial National Communication (NATCOM) to United Nations Framework Convention on Climate Change (UNFCCC)**

Funding Agency: Ministry of Environment and Forest, Govt. of India

Position: Technical Associate

Work Center: Forest Survey of India, Dehradun

Period: 7<sup>th</sup> Nov 2002 -19<sup>th</sup> June 2003

**3. Evaluation of storage and flux of carbon in forest ecosystems of Uttaranchal and Himachal Pradesh.**

Funding Agency: Indian Space Research Organization, Govt. of India

Position: Research Fellow

Work Center: Regional Remote Sensing Service Center, ISRO/DOS, Dehradun

Period: 22<sup>nd</sup> June 2006 - Till date

#### **4. Applications of Remote Sensing and GIS in Sericulture Development**

Funding Agency: North Eastern Space Application Center, ISRO/DOS, Shillong

Position: Principal Investigator

Ranchi and Pakur districts were selected for mapping of potential areas suitable for plantation of host plants for Mulberry Sericulture and Saraikela-Kharsawan district was selected for mapping of forest areas suitable for Tasar Sericulture. Geodatabase generated for different thematic layers viz., land use/land cover, soil type, Soil pH, soil depth, drainage, wasteland and water potential status in addition to the temperature and rainfall data procured from IMD to map the suitable areas for mulberry sericulture. In Saraikela-Kharsawan district geodatabase was generated for different land use and vegetation types. Different vegetation types were assessed for the suitability for tasar sericulture based on the dominance of primary host plants. The results are hosted on the web <http://silks.csb.gov.in> by NESAC.

#### **5. Land Use/ Land Cover mapping of Jharkhand using multi-temporal satellite data at 1:50,000 scale**

Funding Agency: National Remote Sensing Center (NRSC), ISRO/DOS, Hyderabad

Position: Principal Investigator

Spatial database of LU/LC of Jharkhand was generated in GIS domain. Maps were generated for all the districts and 163 Survey of India Toposheets. Final report was submitted to NRSC, Hyderabad.

#### **6. Wetland Inventory and Assessment of Jharkhand at 1:50,000 scale**

Funding Agency: Space Application Center (SAC), ISRO/DOS, Ahmedabad

Position: Principal Investigator

Spatial database of Wetlands of Jharkhand was generated in GIS domain. Maps were generated for all the districts and 163 Survey of India Toposheets. Final report was submitted to SAC, Ahmedabad. The atlas is available on the MOEF website [http://envfor.nic.in/sites/default/files/NWIA\\_Jharkhand\\_Atlas.pdf](http://envfor.nic.in/sites/default/files/NWIA_Jharkhand_Atlas.pdf)

#### **7. Jharkhand Weather Services with Space Inputs**

Funding Agency: Agriculture and Sugarcane Development Dept., Govt. of Jharkhand and ISRO, Dept. of Space, Govt. of India

Position: Co-Principal Investigator

Indian Space Research Organization has installed 60 Automatic Weather Station in different blocks covering all the districts of Jharkhand in first phase. In second phase there is a plan of 54 AWS installation. Weather Data Reception Centre has been established at JSAC by the funds provided by Agriculture and Sugarcane Development Dept., Govt. of Jharkhand. The weather data is regularly been uploaded on the JSAC website.

#### **8. Vegetation Carbon Pool Assessment**

Funding Agency: Indian Institute of remote Sensing, ISRO, Dehradun

Position: Co-Principal Investigator

The project was a part of National level project namely “National Carbon Project”. Sampling in forest areas was carried out at 18 sites in six districts of Jharkhand viz., Ranchi, Khunti, Hazaribag, Ramgarh, Gumla and Simdega districts. The data collected on different vegetation attributes will be used for computation of carbon stored in vegetation. The data has been submitted to Indian Institute of Remote Sensing.

#### **9. Soil Carbon Pool Assessment**

Funding Agency: Indian Institute of remote Sensing, ISRO, Dehradun

Position: Co-Principal Investigator

The project was a part of National level project namely “National Carbon Project”. Sampling has been carried out at 64 sites covering all the districts of Jharkhand. Soil samples taken have been evaluated for bulk density and carbon content and the data has been submitted to the Soil Division, NRSC.

#### **10. Jharkhand Agriculture Information System (JAIS)**

Funding Agency: Dept. of Information Technology, Govt. of Jharkhand

Position: Co-Principal Investigator

Generating satellite based district wise detailed crop and seasonal condition assessment at block level for entire State and issue of periodic reports at monthly interval. The reports were being made available to Department of Disaster Management, Govt. of Jharkhand and Deputy Commissioners of all the districts for timely action.

#### **11. Forecasting of Agriculture outputs through Satellite, Agrometeorology and Land based observations (FASAL)**

Funding Agency: Space Application Centre, ISRO/DOS, Ahmedabad

Position: Co-Principal Investigator

Space Application Centre is implementing CAPE/ FASAL Project in co-ordination with Dept. of Agriculture & Cooperation, Govt. of India along with State Remote Sensing Center, Jharkhand. An early monitoring system of rice area provides necessary information on rice growing area and on its conditions. August-September satellite data Synthetic Aperture Radar (SAR) data was used to monitor rice area almost independent of weather. GT site locations were digitized to GIS polygons with attributes corresponding to GT data for each site. District-level trend/time-series and rainfall based agro-meteorological models have been used for rice yield predictions. Remote Sensing estimates for kharif rice acreage and production are released during mid-September – mid-October of each year.

#### **12. Upgradation of GIS facilities of Jharkhand Forest Department**

Funding Agency: Jharkhand Forest Department

Position: Team Leader

In this project GIS facilities were upgraded at GIS lab of Jharkhand Forest Department through installation of new Hardware and Software.

## **ONGOING PROJECTS**

### **1. Updation of Land Use/ Land Cover using multi-temporal satellite data at 1:50,000 scale for Jharkhand State**

Funding Agency: National Remote Sensing Service Centre (NRSC), ISRO/DOS Hyderabad  
Position: Principal Investigator

The objective of the project is to generate land use /cover map of 2011-12 using three season satellite data. Change matrix will be generated with respect to 2005-06 geo-database. Major change areas will be identified. The GIS vector layer created during first cycle is overlaid onto terrain corrected Resourcesat-2 LISS III satellite imagery of year 2011-12.

### **2. Cadastral level geodatabase generation for Jharkhand Forest Department**

Funding Agency: Jharkhand Forest Dept., Govt. of Jharkhand  
Position: Principal Investigator

Cadastral level geo-database generation work for Dalbhum, Saraikela and Ramgarh forest divisions has been completed and submitted to Jharkhand Forest Department. Scanned cadastral sheets were geo-referenced using high resolution satellite data. Geo-referenced cadastral sheets were taken in GIS environment for digitization of forest plots, boundary pillars and important features. The geo-database generated in this project will be used for micro-level planning, working plan generation, research etc.

### **3. Mapping of Forest Right Act: A pilot study in West Singhbhum district, Jharkhand**

Funding Agency: Tribal Welfare Commissionaire, Govt. of Jharkhand  
Position: Principal Investigator

The major objective of this pilot project is to enforce the spirit of Forest Right Act with the help of GeoSpatial Technology (Remote Sensing, GPS and GIS) keeping in view of land related issued in the forest areas. Title rights i.e. ownership will be considered for the land that is being cultivated by tribals or forest dwellers as on December 13, 2005, subject to a maximum of 4 hectares; ownership is only for land that is actually being cultivated by the concerned family as on that date, meaning that no new lands are granted. It will help formally identify, map and record the forest dwellings/villages, cultivated area, grazing lands and other common properties in the areas un-surveyed, wrongly surveyed, and surveyed but additionally required based on the present population of the villagers.

### **4. Edusat based course on “Basics of Remote Sensing, Geographical Information System and Global Positioning System”**

Teaching Centre: Indian Institute of remote Sensing, ISRO/DOS,Dehradun  
Classroom Centre: Jharkhand Space Application Center, Ranchi  
Position: Course Coordinator

This program is conducted by Indian Institute of remote Sensing (IIRS), ISRO/DOS, Dehradun every year and sponsored by National Natural Resources Management System, ISRO, Dept. of Space, Govt. of India. The lectures are transmitted from IIRS, Dehradun to different centre across the country. These lectures are received at JSAC through Satellite Interactive Terminal (SIT) installed at JSAC by Vigyan Prasar (Dept. of Science and Technology). Officials from different departments of Govt. of Jharkhand have taken benefit of this basic course on Remote Sensing, Geographical Information System and Global Positioning System.

## 5. Tele-Education project in Jharkhand

Funding Agency: Indian Space Research Organization, Govt. of India, Dept. of IT, Dept. of HRD and Dept. of S&T, Govt. of Jharkhand  
Position: Project Coordinator

Objective of this project is extension of education to the rural areas. Tele-Education network will also be used for different departments for training purpose. Satellite Interactive Terminals are established at 10 districts and Hub is at JSAC, Ranchi. Now, the Govt. has approved the establishment of 42 new SITs in schools, B.Ed colleges, DIETs and Govt. polytechnic colleges. Tele-Education studio has been established at JSAC.

## 6. Vigyan Prasar Edusat Program

Funding Agency: Vigyan Prasar, Dept. of Science and Technology, Govt. of India  
Position: Project Coordinator

Vigyan Prasar has established an EduSat two way Audio – Video interactive communication network in association with Development and Educational Communication Unit (DECU) of Indian Space Research Organization (ISRO) Ahmedabad. It is mainly proposed for science communication/ science popularization purpose. One SIT has been established at JSAC by Vigyan Prasar. Programs of Vigyan Prasar received at JSAC were attended by children of different schools.

### PROFESSIONAL TRAINING:

Institute/Organization	From	To	Training Details
Forest Research Institute(FRI), Dehradun, Uttarakhand	4.02.2002	8.02.2002	Techniques of Biodiversity Conservation
Regional Remote Sensing Centre (ISRO/DOS), Dehradun Uttarakhand	19.01.2004	30.01.2004	Remote Sensing and Geographical Information System
Orissa Remote Sensing Application Center,	24.02.2007	26.02.2007	Orientation Programme on Vigyan Prasar EDUSAT network

Bhubeneswar, Orissa			
National Institute of Disaster Management, New Delhi	8.10.2008	12.10.2008	Training of Trainer Programme on Applications of Geo-Information in Disaster Management
Jharkhand Space Applications Center, Ranchi	03.06.2008	05.06.2008	Fundamentals of ERDAS IMAGINE and Fundamentals of Leica Photogrammetry Suite
Jharkhand Space Applications Center, Ranchi	3.07.2008	04.07.2008	Introduction to ARC SDE
Jharkhand Space Applications Center, Ranchi	08.07.2008	10.07.2008	Remote Sensing and GIS using PCI Geomatica 10.1 software package
Jharkhand Space Applications Center, Ranchi	7.05.2008	08.05.2009	ENVI IDL Remote Sensing and Image processing software package with Atmospheric correction module
Jharkhand Space Applications Center, Ranchi	2.02.2011	07.02.2011	ERDAS Apollo 2010
Indian institute of Remote Sensing, Dehradun	13.02.2012	29.03.2012	Edusat based Advance Course on Hyperspectral Remote Sensing
Indian institute of Remote Sensing, Dehradun	11.02.2013	15.03.2013	Edusat based course on "Geoweb Services-Technology and Applications"

#### MISCELLANEOUS:

- Contributed in the project “Land Degradation mapping of Jharkhand State at 1:50,000 scale.
- Contributed in the project Wasteland Mapping and Monitoring project of Jharkhand at 1:50,000 scale.
- Contributed in the project "Need based strategic (Watershed) planning using Remote Sensing and GIS- Case study of Kakro- Rasa, Upper Subarnarekha and Salda Watersheds” Jharkhand state.
- Member of Internal Quality Checking team for GIS database prepared in “National Urban Information System” project for Ranchi, Bokaro, Dhanbad and Jamshedpur cities of Jharkhand.
- Participated in workshop at Regional Remote Sensing Service Center-Kharagpur for Hands-on training to carry out the Lund Use/Land Cover mapping of Jharkhand in the month of August 2007.
- Participated in two days workshop cum hands on training on “Second Cycle- Mapping of Land Use/Land Cover using multi-temporal Satellite data in May, 2012.
- Delivered lectures and imparted Hands on Training on Geospatial Technology to participants from different State Govt. Departments and trainees at JSAC.

## OFFICE COMMITTEE:

- Member of Management and Staff welfare committee of JSAC.
- Member of the Committee constituted to carry out the Physical verification of JSAC's assets.
- Member of Internal Purchase Committee of JSAC.
- Chairman of the committee constituted for disposal of old assets of JSAC.

## RESEARCH PUBLICATIONS:

1. Sujimol, M.R., Kamal Pandey, **N.K. Sharma**, and A.K. Tiwari. 2004. Evaluation of IRS – P6 AWiFS data for Forest Classification: A case study of part of Doon Valley. Bulletin of the National Natural Resources Management System (A special issue on Resourcesat-1 Applications). NNRMS (B) –29:42-48.
2. Sharma, N.K. 2005. Spatial analysis of disturbance gradient in a forested landscape of an Indian Central Himalayan watershed. Indian Forester. 131:1474-1482
3. **Sharma, N.K.** A.K. Tiwari and G. S. Rawat 2007. Assessment of diversity in part of Kumaun Himalaya, Uttaranchal showing evidence of Pine dominance. Indian Forester. 133 1 (a):122-132
4. **Sharma, N.K.** G. S. Rawat and A.K. Tiwari. 2009. Measuring pattern diversity in a watershed of Kumaun Himalaya, Nainital district, Uttarakhand. Indian Forester. 135 1 :17-27
5. Bijalwan Arvind, S.L.Swamy, Chandra Mohan Sharma, **Neeraj Kumar Sharma**, A.K.Tiwari. 2010. Land-use, biomass and carbon estimation in dry tropical forest of Chhattisgarh region in India using satellite remote sensing and GIS. Journal of Forestry Research 21 (2): 161-170
6. Sharma Richa, S. Chaudhry, M. Kudrat, A.K. Tiwari, **N.K. Sharma** and S.Sharma. 2012. Vegetation types and their relationship with different topographic variables in the Kumaun Himalayan region. International Journal of Ecology and Development 23 (3):60-79
7. **Sharma, N.K.**, A.T. Jeyaseelan and Ravish Kumar. 2012. Geospatial technology for sericulture development in Jharkhand: a pilot study. Journal of Remote Sensing & GIS 3(2):34-45.



8. **Sharma, N.K.**, J.B. Lamay, Nishi Jaya Kullu, R.K. Singh and A.T. Jeyasselan. 2012. Land Use and Land Cover Analysis of Jharkhand Using Satellite Remote Sensing. Research & Reviews: Journal of Space Science & Technology 08: 1(2):1-10.
9. **N K Sharma**, N J Kullu, P K Swain, A T Jeyaseelan. 2012. Geospatial Analysis of Wetlands in Jharkhand Using Multi-temporal Satellite Data. Journal of Remote Sensing and GIS. 3(3):22-30

#### **PAPER PRESENTED IN SYMPOSIUM:**

1. Lamay, J.B., **N.K., Sharma**, A.T. Jeyaseelan. 2008. Satellite derived land use mapping for sustainable Agriculture in West Singhbhum district of Jharkhand state. Presented at National Seminar on Information Technology in Agriculture and Rural Development, November 21-22, 2008, Birsa Agriculture University, Ranchi
2. **Sharma, N. K.**, Kumar, S., Ghosh, S. and Tiwari, A. K. 2001. Analysis of regional floristic diversity using remote sensing. Presented at National Symposium of Indian Society of Remote Sensing, December 11-13, 2001, Ahmedabad, India.
3. Ghosh, S., Tiwari, A. K., Kumar, S., and **Kumar, N.** 2002. Landscape level analysis of fragmented tropical rain forests in northeast India. Presented at land use, nature conservation, and stability of rainforest margins in Southeast Asia symposium, Sept.29-Oct.3, 2002, Bogor, Indonesia

#### **TECHNICAL REPORTS:**

1. Sharma, N.K., et al. 2010. Land Use/ Land Cover mapping of Jharkhand using multi-temporal satellite data at 1:50,000 scale. Report to National Remote Sensing Centre, Hyderabad. Jharkhand Space Application Centre, Ranchi.
2. Sharma, N.K., et al. 2010. Wetland Inventory and Assessment of Jharkhand using multi-temporal satellite data at 1:50,000 scale. Report to Space Application Centre, Ahmedabad. Jharkhand Space Application Centre, Ranchi
3. Tiwari, A.K., M.Kudrat, Sunil Kumar, Sonali Ghosh, **N.K. Sharma** and N.Datta. 2001. Biodiversity Characterization at Landscape level using Remote Sensing and GIS in state of Tripura. Phase I Report. RRSSC, Dehradun.
4. Tiwari, A.K., Sonali Ghosh, Sunil Kumar, **N.K. Sharma** and P.Chhetri. 2001. Biodiversity Characterization at Landscape level using Remote Sensing and GIS in state of Mizoram. Phase I Report. RRSSC, Dehradun.

5. Tiwari, A.K., Sunil Kumar, **N.K. Sharma**, Sonali Ghosh. 2001. Biodiversity Characterization at Landscape level using Remote Sensing and GIS in U.P.Hills. Phase I Report. RRSSC, Dehradun.
6. Tiwari, A.K., **N.K. Sharma** and G.S.Rawat. 2002. Biodiversity Characterization at Landscape level using Remote Sensing and GIS in Kalsa river Watershed, Nainital District, Uttaranchal. Phase II Report. RRSSC, Dehradun.
7. Tiwari, A.K., M. Kudrat, Sunil Kumar, Ashita Agarwal, **N.K. Sharma**, S.C. Tiwari and Sas. Biswas. 2004. Patterns of biodiversity in Indian Central Himalaya. Report to ISRO-GBP, RRSSC, Dehradun.
8. **Sharma, N.K.** 2000. Studies on sustainable management of forest flora of Mussoorie Hills with special reference to influencing factors. Dissertation submitted to F.R.I. Deemed University for partial fulfillment of M.Sc. in Forestry (Economics and Management).

#### **SOFTWARE EXPERTISE:**

- Image Processing: ERDAS IMAGINE, Geomatica, ENVI
- Geographical Information System: Arc/Info Workstation and ArcGIS Desktop
- Landscape Analysis: FRAGSTATS

#### **ACADEMIC EXPERIENCE:**

- Set the question paper and evaluated the answer sheets of the B.SC. Forestry course of Birsa Agriculture University, Ranchi for three academic years.
- Set the question paper of B.Sc. Wood Science and Technology course of Jawaharlal Nehru Krishi Vishvavidhalaya, Jabalpur.
- Supervised M. Tech thesis work of Shri S.M. Patra, student of S.R.M. University. The topic was “Geospatial Analysis of Tasar Trees In Dominated Forest of Saraikela-Kharsawan district of Jharkhand State”.
- Supervised P.G. diploma dissertation work of Ms. Sugandha Ganguly student of Xavier Institute of Social Services, Ranchi. The topic was “Analysis of Structure and Composition of different Forest types in part of Ranchi District using Satellite Remote Sensing”.
- Supervised M.Sc. dissertation work of Shri Shashank Shekhar student of Vishva Bharti University, West Bengal. The topic was “Geospatial Analysis of Trees Outside ( TOF) in part of Ranchi District”.

- Course Coordinator for the Edusat based course on “Basics of Remote Sensing, Geographical Information System and Global Positioning System” conducted at Indian Institute of Remote Sensing (IIRS), ISRO/DOS, Dehradun and sponsored by National Natural Resources Management System (NNRMS), Dept. of Space.
- Co-Supervisor of the PhD Student Shri Santosh Kumar, F.R.I. Deemed University, Dehradun. The topic is “Geospatial Analysis of Phytomass, Productivity and Biodiversity in part of Jharkhand With Special Reference To Woody Vegetation”.

#### **AWARDS/HONORS/SCHOLARSHIPS:**

- Qualified **National Eligibility Test (NET)** in forestry in the year 2001 conducted by Agricultural Scientist Recruitment Board of Indian Council of Agricultural Research (ICAR) for eligibility as Lectureship/ Assistant Professorship
- Recipient of fellowship under the World Bank Education Program at Forest Research Institute Deemed University, Indian Council of Forestry Research and Education (ICFRE), Dehradun during post graduation.
- Recipient of fellowship from the Indian Space Research Organization, Department of Space, Government of India, while working as Research Fellow and doing Ph.D. at Regional Remote Sensing Service Centre, Dehradun
- Young Scientist Award -2006 by Madhawi Shyam Education Trust, Ranchi, India

#### **MEMBERSHIP OF PROFESSIONAL SCIENTIFIC SOCIETIES:**

- Indian Society of Remote Sensing, India.
- Mountain Forum, International Centre for Integrated Mountain Development
- International Association for Ecology (INTECOL)

**(Neeraj Kumar Sharma)**

**JSAC, Ranchi**