



## DEPARTMENT OF CIVIL ENGINEERING

### INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

ROORKEE - 247 667 (UTTARAKHAND) INDIA



### FROM THE HOD DESK



Dear All,

*It gives me immense pleasure to present before you the activities of the department from July 2020 to Dec. 2020, through inaugural issue of e-newsletter of the department. You will observe that the department has been actively involved in multi-farious activities during the challenging time of COVID-19 pandemic. Academics and teaching looked at a new direction and that was online teaching. It was indeed a new experience to have virtual interaction with students, online submission, online examination, etc. New methods of interaction with colleagues and attending virtual meetings, taking decisions etc. were involved. However, this did not hamper the spirits of the students, the faculty and various stakeholders. They picked the new threads and started to work with the same enthusiasm, for example, new faculty appointments, new students joining virtually, new activities. Work went on and on.....*

*I hope that you will find this e-newsletter informative, and it will provide us opportunity to know more about the department. It is an humble attempt to stay connected with you electronically.*

Thanks

**Dr. Sanjay Kumar Ghosh**

### ACHIEVEMENTS OF THE DEPARTMENT

1. 17 Research projects were sanctioned at a total cost of ₹ 630.78 lacs.
2. A total of 15 students were awarded their Ph.D. degrees.
3. The faculty published 71 research papers.
4. 288 Consultancy works from various government agencies and private organizations were carried at a total value of ₹ 1775.87 lacs.
5. 33 International students joined the various academic programs.
6. 4 new Faculty members as Assistant Professor joined the department. The faculty strength now stands at 52, Plus 2 distinguished Visiting Professor and 2 Adjunct Faculties.
7. Prof. Lee Fook Hou of NUS, Singapore joined as Distinguished Visiting Professor for a period of 2 years.

### INAUGURATION OF NEW LABORATORY

परिवहन अध्ययन, विश्लेषण एवं अन्वेषण कक्ष  
Transportation Studies, Analysis and Research Laboratory



The Department of Civil Engineering has recently established a **"Transportation Studies, Analysis and Research Laboratory"**. It could have been possible due to dedication and untiring efforts of Prof. Rajat Rastogi and Prof. Amit Agarwal. The Laboratory will facilitate the modelling and simulation of large urban agglomerations. It is equipped with many advance equipment- Radar Gun, Hand Held Vehicle Counter for intersection, Hand Held Speedometer, HPC Workstations, Noise Analyzer, High Resolution HD Video recorder etc., and software - Trazer Suit, PTV VISSIM, N-Logit, EMMES, Rail Track, HEADS, SNAP Surveys, HDM-4, Geomedia WebMap Professional, TRL Software Pack - ARCADY, PICADY, OSCADY, TRANSYT, CUBE Analyst, MATSim, SIMUNTO VIA for exploring various research problems for traffic engineering and transportation planning. The laboratory was inaugurated by **Prof. Sanjay Kumar Ghosh**, HOD and **Prof. Manoranjan Parida** (Deputy Director) on July 28, 2020.

## NEW FACULTY JOINED



**Dr. Vinnarasi R.** joined as Assistant Professor on June 15, 2020. She has carried out her doctoral studies from Indian Institute of Technology, Delhi, M. Tech. from Indian Institute of Technology, Guwahati and B.Tech. from Thanthai Periyar Government Institute of Technology, Vellore. Her area of specialization is water resources and hydraulic engineering.



**Dr. Alok Bhardwaj** joined as Assistant Professor on July 13, 2020. He has carried out his doctoral studies from National University of Singapore, Singapore, M. Tech. from Indian Institute of Technology, Bombay and B.Tech. from G.B. Pant University of Agriculture and Technology, Pantnagar. Thereafter, he pursued his post-doctoral research at the Earth Observatory of Singapore, Nanyang Technological University, Singapore. His area of research interest is geospatial technology based application.



**Dr. Bihu Suchetana** joined as Assistant Professor on August 5, 2020. She obtained her doctoral degree from University of Colorado Boulder, USA, Masters from Indian Institute of Science, Bangalore and B.Tech. from Indian Institute of Engineering, Science and Technology, Shibpur (formerly BESU, Shibpur). Her area of research interest is environmental engineering.



**Dr. Saurabh Vijay** joined as Assistant Professor on Dec 07, 2020. He has carried out his doctoral studies from University of Erlangen-Nuremberg (FAU), Germany, Masters from Indian Institute of Technology, Roorkee and B.E. from University of Rajasthan. He pursued his post-doctoral work at DTU Space, Technical University of Denmark, Denmark and Byrd Polar and Climate Research, The Ohio State University, USA. His research interest lies in geospatial based technologies.

## DISTINGUISHED VISITING PROFESSOR



Prof. Lee Fook Hou

**Prof. Lee Fook Hou** from National University of Singapore has joined as **Distinguished Visiting Professor** in the Civil Engineering Department (Geotechnical Engineering Group) on November 23, 2020. He is the Director of Centre for Soft Ground Engineering and a Fellow of Academy of Engineering (Singapore). Prof. Lee has been a faculty member at the National University of Singapore (NUS) since 1986. He developed and commissioned the NUS Geotechnical Centrifuge, which is the only geotechnical centrifuge in Southeast Asia. Prof. Lee is a Fellow of the Singapore Academy of Engineering. He has carried out his doctoral and M.Phil. Studies both from Cambridge University, UK, Master of Engineering from National University of Singapore, Singapore and Bachelor of Engineering from Monash University, Australia. The department will certainly be benefitted with his vast experience and rich knowledge.

## RECOGNITIONS



Prof. C. S. P. Ojha

Fellowship Award,  
The Indian National Academy of Engineering  
(INAE) by the Governing Council.



Prof. Mahendra Singh

President,  
International Society for Rock  
Mechanics (ISRM), India.



Prof. N. K. Samadhiya

President,  
Indian Geotechnical Society

## TRAINING COURSES ORGANIZED

Name of Course	Course Coordinator	Duration
Hydraulic and Structural Design of Spillways and Energy Dissipators under DRIP Project, CWC, New Delhi	Prof. Z. Ahmad	July 9, 2020
Webinar on Flood Management in India	Prof. Sharad K. Jain	Sept 25, 2020
FDP on "Multifunctional Characteristics of Advanced Materials For Defence Applications"	Prof. Rajib Chowdhury	Dec 7-11, 2020
TEQIP sponsored course on 'Advancements in Geospatial Technology'	Prof. Alok Bhardwaj	Dec 14-18, 2020

## RESEARCH PROJECTS AWARDED

Name of PI	Title of the Research Project	Amount ₹(Lacs)
Prof. Alok Bhardwaj	Satellite Imagery Computer Vision Modelling for Landuse Landcover, funded by National Geographic Foundation for Science and Exploration, South Korea	36.39
Prof. Amit Agarwal	Mapping Dynamic Air Pollution Information to the Choices of the Travelers: Towards Sustainable Transport, funded by SERB, New Delhi	25.30
Prof. Anupam Chakrabarti	Fracture and Fatigue Studies in Textile based Auxetic Composite, funded by ISRO, Bengaluru	27.00
Prof. Gargi Singh	Halting the Release of Antimicrobial Resistance and Pathogens into the Environment from Indian Dairies (AMRIT), funded by SERB, New Delhi	20.90
Prof. G. D. Ransinchung R. N.	RAP Incorporated Geopolymer Concrete Technology, funded by Ministry of Road Transport & Highways, New Delhi.	41.78
Prof. Mahendra Singh	Geotechnical Investigations of Sample Supplies by GSI under the Project :Generation of Meso-level 1:10,000 Scale User-friendly LHZ Maps and Landslide Inventory for Tapovan-Vyasi Corridor of Haridwar Badrinath National Highway, Uttarakhand, funded by NDMA, New Delhi	7.99
	Guidelines for Determination of Rock Mass Shear Strength in Bed Rock of Landslide Affected Slopes, funded by NDMA, New Delhi	11.28
Prof. Pramod Kumar Gupta	Utility of High Strength Self Compacting Alkali Activated Slag Concrete (HS-SC-AASC) filled Steel Tubes in Enhancement of Strength and Durability in Ports, Harbour and Offshore, funded by Ministry of Shipping	24.40
Prof. Pushpa Choudhary	Pedestrian Safety in Mixed Traffic Conditions: Probing Executable Solutions to Enhance Vulnerable Road user's Safety using a Pedestrian Simulator, funded by SERB, New Delhi	31.90
Prof. Raja Chowdhury	Polyphasic Assessment of Diversity of Phototrophic Microorganisms from Cold Environments and its Bioprospecting Potential, funded by DST, India (along with Czech Republic)	25.69
Prof. Rajib Chowdhury	Topology Optimization of Large-Scale Engineering Structure: Numerical Simulations and Experimental Investigations, funded by DRDL, Hyderabad	45.21
Prof. Sonalisa Ray	Development of Sustainable Concrete Utilizing Mine Waste Rock, funded by Hindustan Zinc Limited, Udaipur.	35.40
Prof. Sudakshina Dutta	Microstructurally Guided Computational and Experimental Analysis of Failure Mechanisms in Fibre Reinforced Geopolymer Concrete, funded by SERB, New Delhi	32.94
Prof. Sudipta Sarkar	Nutri-Cycle Waste-derived Biodegradable Polymeric Hybrid Fertilizer BPHF for Recycling Nutrients from Treated Waste Water to Agricultural Fields, funded by DST, New Delhi	37.55
Prof. Umesh Kumar Sharma	Durability of Concrete Repair and Protection Systems, funded by Ushta Infinity Construction Corporation Pvt. Ltd., Vadodara	18.28
Prof. V. A. Sawant	Study on Response of Subgrade Soil of Penta-rail Track and Means to Improve the Functionality Requirements of Track, funded by Terminal Ballistics Research Laboratory, Chandigarh	48.00
Dr. Vinay K. Tyagi	SARASWATI 2.0-Identifying Best Available Technologies for Decentralized Wastewater Treatment and Resources Recovery for India, funded by DST, New Delhi	160.77

## INVITED GUEST EDITOR

Prof. Anumita Mishra	'Recovery and Reuse of Resources and Energy in Innovative Landfill Technologies', ASCE., 2020 (Special Issue).
	Associate Editor for Journal of Hazardous, Toxic and Radioactive Waste, ASCE., 2020.
Prof. Alok Bhadwaj	'Improving Disaster Damage and Loss Assessments by Modeling and Remote Sensing Techniques', Journal of Remote Sensing. (Special Issue).
Prof. Sharad K. Jain	Journal of Hydrologic Engineering, ASCE. (Special Issue).
	Hydrological Processes Journal on Catchment Scale Hydrological Modelling Frontiers. (Special Issue).
	Flood Management: Multi-Disciplinary Approaches for Data Observation, Analysis, Forecasting, and Management. (Special Issue).



## CIVIL CONCLAVE-2020

With an aim of enhancing & encouraging brilliant minds of country, the Students Affairs Committee of the department took the initiative to organize 'Civil Conclave -2020', an inter-IIT meet on Nov 7-8, 2020. The event was one and first of its kind that involved case-studies competition incorporating problem statements directly from the industry, research paper presentations and guest lectures by eminent professors from IITs. The inaugural function was graced by Prof. Ajit Kumar Chaturvedi, Director IIT Roorkee, Mr. Rajeev Ranjan Mishra, DG, NMCG and Shri S. Sahni, Chief of Marketing & Sales, TATA Steels Ltd., as Chief Guest, Prof. Sanjay K Ghosh, HOD Civil, other dignitaries and more than 100 participants of other IITs. The theme of the event was 'Unveiling the flume to future'. Prof. M. K. Barua, IIT Roorkee was the Chief Guest of the Valedictory function. Mr. Bhupesh Garg (B.Tech 4<sup>th</sup> year) was the overall coordinator and Mr. Aditya Hriday Upadhyay (B.Tech 4<sup>th</sup> year) overall co-coordinator. The faculty coordinator for the event was Prof. M. A. Iqbal. Prof. Anumita Mishra and Prof. Akanksha Tyagi were the faculty advisors.



The Sponsors for Civil Conclave, 2020 were

- Namami Gange
- Tata Steel Ltd.
- Sika India Pvt Ltd.
- NCC Ltd.
- Methodex System Pvt Ltd.
- Consort Builders Pvt. Ltd.
- Bharat Oil & Waste Management Ltd.
- Ethical Edufabrica Pvt Ltd.

## MEMBER OF NATIONAL/INTERNATIONAL COMMITTEE

Name of Faculty	Organization
Prof. A. A. Kazmi	<ul style="list-style-type: none"> <li>Member, Expert Committee, Technical Evaluation of Biodigesters Developed by DRDO, Ministry of Housing and Urban Poverty Alleviation, Govt. of India.</li> </ul>
Prof. Akanksha Tyagi	<ul style="list-style-type: none"> <li>External Expert, Civil Infrastructure &amp; Engineering Thematic Committee of CSIR Technology Compendium-2020, CSIR-NISTADS.</li> </ul>
Prof. Akhil Upadhyay	<ul style="list-style-type: none"> <li>Expert committee for designing long span steel-based bridges, GOI, Ministry of Steel.</li> <li>Expert committee of bridges for development of standard designs &amp; plan for various type of bridge superstructure based on limit state methods, GOI, Ministry of Road Transport and Highways.</li> </ul>
Prof. Raja Chowdhury	<ul style="list-style-type: none"> <li>Member, International Committee, SETAC/ACLA Working Group - LCA for Emerging Technologies.</li> </ul>
Prof. G.D. Ransinchung R.N.	<ul style="list-style-type: none"> <li>Standing Committee on Concrete Pavement Construction and Rehabilitation- AFH50, Transportation Research Board, Washington D.C., USA.</li> <li>Coordinator, STA, PMGSY for Uttarakhand and Western U.P.</li> <li>Member of H-3 Committee (Rigid Pavement) of IRC.</li> <li>Member of H-6 Committee (Road Maintenance and Asset Management) of IRC.</li> </ul>
Prof. Rajat Rastogi	<ul style="list-style-type: none"> <li>Member, IRC committee H-1 on Transport Planning and Traffic Engineering.</li> <li>Member, IRC committee H-8 on Urban Roads, Street and Transport, 21.</li> </ul>
Prof. Satyendra Mittal	<ul style="list-style-type: none"> <li>Editor, ISET Journal of Earthquake Technology.</li> </ul>
Prof. Sharad Kumar Jain	<ul style="list-style-type: none"> <li>Chairman - Expert Appraisal Committee (River Valley and Hydroelectric Projects), Min. of Env., Forests &amp; CC.</li> <li>Project Appraisal &amp; Monitoring Comm. (Hydrol. and Cryosphere), Ministry of Earth Science.</li> <li>Research Advisory Committee, CIFRI.</li> <li>Program Advisory Committee (PAC)-Earth &amp; Atmospheric Sciences (SERB).</li> </ul>
Prof. Sudipta Sarkar	<ul style="list-style-type: none"> <li>Member, Water Quality Panel (P-3), Handbook for Water Resources</li> <li>Management Sectional Committee (WRD 27), Central Water Commission, Department of Water Resources, Ministry of Jal Shakti.</li> <li>Member, Expert Committee NGT.</li> </ul>
Prof. Z. Ahmad	<ul style="list-style-type: none"> <li>Member of committee for preparing Guideline for Hydraulic Safety of Dams prepared under DRIP, CWC, New Delhi.</li> <li>Member of expert committee on erosion &amp; silting of rivers. Hydrology(S) Directorate, Central Water commission, New Delhi.</li> <li>Member of Dam Safety Review Panel (DSRP) for Rehabilitation of Dams and Barrages/Weirs under DRIP-II in West Bengal.</li> <li>Member of Technical Advisory Group (TAG) for construction of New Railway Bridge over river Ganga between Rajendrapul and Hatidah stations in Danapur Division of E C Rly.</li> <li>Member of committee formed by Govt. of Uttarakhand for the third party verification of the ongoing reconstruction work in Shri Kedarnath.</li> <li>Expert member of NGT.</li> <li>Expert member of Inter-Ministerial committee Inland water transport connectivity to the North East Region (NER) through Bangladesh.</li> </ul>





## AWARDS (FACULTY)

Name of Faculty	Name of Award
Prof. Kaustav Chatterjee	YGE Best Paper Biennial Award - 2020. IGS-Kochi Chapter
Prof. P. K. Garg	Fellow of ISRS, Dehradun.
Prof. Satyendra Mittal	Dedicated Teaching Professional National Award from Kamarajar Institute of Education and Research (KIER), Madurai Road, Theni.
Prof. V. A. Sawant	Best Paper IGS-Chennai Chapter Biennial Award on "Deep Foundation/Retaining Structures" for year 2018-19.

## AWARDS (STUDENTS)

 <b>Mr. Jatin Aggarwal</b> <ol style="list-style-type: none"> <li>1. Department Gold Medal (Manmohan Das Seth Gold Medal).</li> <li>2. Best B. Tech. Project Award .</li> <li>3. Prof. C. L. Toshniwal award.</li> <li>4. Madhusudan Dayal Mithal Medal.</li> <li>5. Rai Bahadur Sohan Lal Bhatia Medal.</li> <li>6. Prabhakar Swarup Civil Engineering Award.</li> <li>7. Shri Shiv Nandan Swaroop and Avadh Narayan Bhatnagar cash Prize.</li> <li>8. Tarachand Kanti Devi cash Prize.</li> </ol>	 <b>Col. K. L. Rahul</b> <ol style="list-style-type: none"> <li>1. Department Gold Medal.</li> <li>2. Sunita Bahadur Memorial Gold Medal.</li> </ol>
 <b>Mr. Satyabrata Tiwari</b> <ol style="list-style-type: none"> <li>1. Rural India Technology-based Upliftment (RITU) Excellence Award .</li> <li>2. Tara Chand Kanti Devi Cash Prize.</li> <li>3. Prof. C.L. Toshniwal Environmental Engineering Cash Prize.</li> <li>4. Kathapallia Cash Prize.</li> </ol>	 <b>Mr. Aman Gupta</b> <ol style="list-style-type: none"> <li>1. Sri. M. A. Rao Cash Prize.</li> <li>2. Vinay Krishna Cash Prize.</li> </ol>
 <b>Mr. Abhay Singh Sajwan</b> <ol style="list-style-type: none"> <li>1. Tarachand Kanti Devi cash Prize.</li> </ol>	 <b>Mr. Vamshi Krishna Rao K.</b> <ol style="list-style-type: none"> <li>1. Amba Prasad- Kalawati Memorial cash Prize.</li> </ol>
 <b>Ms. Avantika Rathore</b> <ol style="list-style-type: none"> <li>1. Luxmi Devi and Shri Banarasi Das Cash Prize.</li> <li>2. Prof.(Mrs.) Renu Bhargava cash Prize for excellence in Environmental Engineering.</li> </ol>	 <b>Ms. B. Kirtimayee</b> <ol style="list-style-type: none"> <li>1. Consolation prize from springer nature for presenting paper in IGC 2020, Visakhapatnam.</li> </ol>
<ul style="list-style-type: none"> <li>♦ <b>Ms. Vipasha Sharma</b> achieved second position in the GIS quiz organized by NRSC as a part of GIS day 2020 celebrations, and got a chance for 1 year no cost license of Arc Info GIS package. Nov 18, 2020.</li> <li>♦ <b>Ms. Soorya S</b> nominated for SERB Overseas Visiting Doctoral Fellowship Programme (OVDF) to carry out her Ph.D. programme for one year at Purdue University. She will be given a scholarship of USD 2000/month and air travel to visit Purdue and back, 2020.</li> </ul>	<ul style="list-style-type: none"> <li>♦ <b>Mr. Lalit Pal</b> nominated for SERB Overseas Visiting Doctoral Fellowship Programme (OVDF) to carry out his Ph.D. programme for one year at Purdue University. He will be given a scholarship of USD 2000/month and air travel to visit Purdue and back, 2020.</li> <li>♦ <b>Ms. Ashu Sharma</b> has been awarded The Best Oral Presentation Award 2020., IEEE India Geoscience and Remote Sensing Young Researchers Conclave, Dec 18-20, 2020.</li> </ul>

## INFRASTRUCTURE (NEW LAB INSTRUMENTS)

 <b>MICRO PROFILOMETER</b> Cost ₹ 39.00 Lacs	 <b>Acoustic Doppler Velocimeter (ADV)</b> Cost ₹ 17.18 Lacs	 <b>Dynamic Material Test Setup with NI Pxl High Speed Data Acquisition, Pneumatic Rotary Actuator</b> Cost ₹ 27.38 Lacs	 <b>UAV Drone and Camera system</b> Cost ₹ 16.32 Lacs
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# INFRASTRUCTURE (NEW LAB INSTRUMENTS)



High Performance  
Liquid  
Chromatography  
(HPLC)  
with fluorescence  
detector  
Cost ₹ 256.00 Lacs



2D Digital Image Correlation  
Cost ₹ 16.82 Lacs



Hydraulics Lab\_UG  
Cost ₹ 12.10 Lacs



UV Spectrophotometer  
DR-6000  
Cost ₹ 8.30 Lacs



AQUASCAT 1000L  
Cost ₹ 16.82 Lacs



Video V-Box  
Cost ₹ 10.45 Lacs



Radar Gun  
Cost ₹ 8.20 Lacs



Automatic Traffic Counter  
Cost ₹ 24.10 Lacs



LoadCell 5000kN  
Cost ₹ 7.67 Lacs



Water Purification System  
Cost ₹ 7.05 Lacs



Orbital Shaking Incubator  
Cost ₹ 4.78 Lacs



Data Logger  
Cost ₹ 8.93 Lacs



Automatic Compression  
Testing Machine  
Cost ₹ 5.15 Lacs



Marshall / Indirect Tensile  
Compression Tester  
Cost ₹ 5.21 Lacs



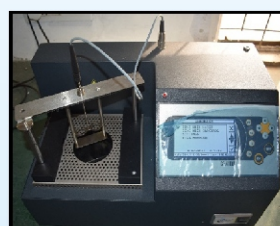
Ductility Test Machine  
Cost ₹ 4.73 Lacs



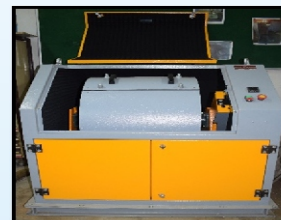
Environmental Chamber  
Cost ₹ 8.98 Lacs



Pivot Automatic  
Penetrometer  
Cost ₹ 6.36 Lacs



Pavelab Automatic Ring  
and Ball Apparatus  
Cost ₹ 4.22 Lacs



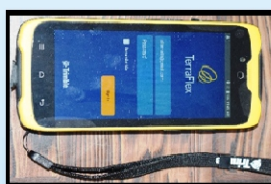
Los Angeles Abrasion  
Machine  
Cost ₹ 2.68 Lacs



CST Apparatus  
Cost ₹ 3.05 Lacs



Digital Level  
Trimble  
Cost  
₹ 7.03 Lacs



Hand Held GPS  
Cost ₹ 7.68 Lacs



Automatic  
Vicat  
Apparatus  
Cost  
₹2.68 Lacs

## EXPERTS SPEAK

### COMMENT NOTE ON FAIR-WEATHER FLOOD IN RISHIGANGA VALLEY IN CHAMOLI DISTRICT ON FEB. 07, 2021



**Prof. Sharad .K. Jain**  
Distinguished Visiting  
Professor, CED  
IIT Roorkee

The flood in Rishiganga valley on Feb. 07, 2021 was unique in the sense that it happened when the weather in the region was fair, except for the reports of high snowfall a few days prior to the event. There was no seismic activity at that time. Yet the floods were generated, indicating that either we are not aware of all the right signals or that the signals were just weak or "missing". The initiation of this disaster was an avalanche in Rishiganga valley which led to fall of glacier mass over a vertical distance of hundreds of meters. This caused melting/mobilization of water present in the glacier (on/below the surface and in crevices). Sudden release of water accompanied by rock pieces/sediments created huge flood waves which rapidly travelled to downstream and caused havoc. Scientists have recently undertaken areal survey of the area and teams have collected ground truth and sample data.

Videos of the event show a steep flood wave approaching the project barrage. This is possible only by a sudden release of large volumes of water trapped somewhere, not very far from the project. The waves subsidized rapidly when the trapped water was drained. Analysis of river flow data of past few months at river gauging stations in Rishiganga valley might throw lights on what was happening prior to the event. If the flow was lower than the normal during this period, it might indicate that water was being held somewhere, either in a surface depression or below the glacier surface.



Photo courtesy: Internet

In future, for timely detection of such events and issue warnings, the following steps would be helpful:

1. Stringent monitoring and analysis of hydro-meteorological data be carried out through out the year by in-situ sensors and satellite data.
2. Intense monitoring of river flows in mountain regions may be carried out. Deviations of flow behavior from 'normal' might give an early indication.
3. Regular monitoring of formation and stability of glacier lakes be done with the help of (high resolution) satellite data.
4. Review of existing design floods standards for hydro-projects, including design floods during the construction stages.
5. All weather road network in mountain regions for faster relief movement.

### GEOSPATIAL TECHNOLOGIES TRANSFORMING COVID-19 MANAGEMENT



**Mr. Rajesh Mathur**  
Director  
ESRI India Technologies Ltd

The First web talk was organised on August 6, 2020. Mr. Rajesh Mathur, Director ESRI India Technologies Ltd. delivered a talk on "Geospatial Technologies - Transforming COVID-19 Management. COVID-19 has effected the whole world, and has lead to many crisis on many fronts. Governments across the globe are trying to contain the spread and also augment healthcare infrastructure.

GIS is helping in geographically visualizing the spread of the disease, identification of containment zones and mapping the location of hospitals along with capacity in terms of beds and staff. GIS based dashboards provide real-time information on number of persons infected location-wise, deaths and recoveries, healthcare capacity utilization, etc. Location based analytical capabilities of GIS provide decision makers deep insight into the ground situation, including trends and patterns, time-series maps and heat maps among others, which help in capacity planning and augmentation as the situation demands.

In India, GIS is being used extensively by various stakeholders engaged in COVID 19 response and management, including municipal corporations, health departments, disaster management authorities among others. Enterprise GIS platforms are facilitating collaboration between various agencies, sharing of geospatial data and best practices, building models and hosting dashboards. Mobile-based applications are enabling government authorities to communicate critical information to the citizens, like location of testing centres, hospitals and containment zones.

In summary, geospatial technologies are providing framework and process for COVID response – data driven and science-based.

#### Editor

**Prof. Sanjay Kumar Ghosh**

#### Editorial Team

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#### Design by :

**R. K. Printers & Publisher  
Roorkee # 9897276995**