# **CENTER OF EXCELLENCE FOR GEOINFORMATICS AND GEOHAZARDS**

The Center of Excellence for Geoinformatics and Geohazards, SRM Institute of Science and Technology, Kattankulathur is established for Advance Research on Geohazards mainly Flood, Earthquake, Landslides, EIA etc. through Integrated Geoinformatics.

# Vision

To be a Global Centre of Excellence for Geoinformatics in Geohazard Research, Disaster Management and Mitigation studies

# Mission

- 1. To be a leading Centre of Excellence in Geohazard Research of international repute for the investigation of multi hazard scenario
- 2. To enhance the knowledge based on research, education and information transfer by reducing the impact of hazards through advanced approach
- 3. To provide mitigation strategy of multi-hazard impact by better planning and development.
- 4. To organize social activity for capacity building in Geoinformatics and Geohazards
- 5. To provide academic support to undergraduate/post-graduate/ PhD program in the discipline of Geoinformatics application to Geohazards

# **Research Themes**

- 1. Multi-hazard assessment
- 2. Active tectonic study Identification of Fault/Active fault zones.
- 3. Morphometric and morphotectonics for Geohazards
- 4. Seismically induced landslides
- 5. Liquefaction and its impact on Geohazards
- 6. Landslides morphodynamics
- 7. Crustal deformation studies and 3D visualization.
- 8. Quantification of sub-surface energy and simulation model
- 9. Geospatial model for Geohazards
- 10. Satellite image processing for identification of Geohazard and its dynamics
- 11. GIS customization for Geohazard mitigation
- 12. Designing resistant structures to protect from Geohazards
- 13. Flood disaster management and mitigation
- 14. Flash flood and its causes
- 15. Active tectonics influence on flood
- 16. Impact assessment of seismic activity on flood hazard

# **Future commitment**

- 1. Patent
- 2. Publications in reputed journals (SCI/WOS & SCOPUS Indexed)
- 3. Collaborative research work with International and National Organisation
- 4. External Funded Projects
- 5. Presenting research outcome in National and International conferences
- 6. Conducting workshop/seminar/ training program. Capacity Building

## **Team members**

#### Inter-disciplinary research team are involved from various department at SRMIST

Dr. R.Sivakumar is the Co Ordinator of the Centre along with the relevant experts from the following Department of SRMIST as Members

- Earthquake Research Cell
- Department of Civil Engineering
- > Department of Computer Science and Engineering
- School of Public Health
- Department of Community Medicine
- Department of Chemical Engineering

## **Existing facility/Support from Lab**

The Instruments/ equipments and software from the following labs will be used

- Earthquake Research Cell
- Remote Sensing & GIS
- Strength of Materials Lab
- Structural Engineering Lab
- Environmental Engineering lab
- Artificial Intelligence lab
- Simulation lab
- Existing facilities in the External/ Internal Funded projects

#### **Permanent Equipment and Software**

- 1. Desktop and CPU with advanced configuration
- 2. Software available : Rockwork 17, Strater v3, Voxler v4, QGIS
- 3. Handheld GPS
- 4. Water quality kits

## Funded Research Project in the field of Geoinformatics and Geohazards -

## Dr. R.SIVAKUMAR As Principal Investigator of the following projects

Title of Project	Sponsoring Organisation	Period	Grant	Status
Water quality studies of Rivers and	HSRS/ BDA-	3 YEARS		
Reservoirs/lakes using	Department of Science &	(April 2016	Rs.36.12 lakhs	Ongoing
Hyperspectral remote sensing"	Technology,	to March		
	New Delhi	2019)		
Urbanization impact on Hydrology	NRDMS/Department of	3 YEARS		
of Pondicherry Region at micro-	Science & Techno.	( 0CT 2014-	Rs.20.01 lakhs	Completed
watershed level through integrated	Govt.of India,	to OCT		_
Geological and Geo-informatic	New Delhi	2017)		
studies				

Development of Morphotectonic spatial model and GIS based customized tool for Neotectonic study of Andaman region - A geological and geoinformatics approach"	Selective Excellence (Pilot) Research Program of SRM University Kattankulathur	1 YEAR Oct 2016 to Oct 2017	Rs.2.70 lakhs	Completed
Geo-Informatics based water resources management plan for Ghad Sub watershed, Maharashtra	Department of Science & Technology Govt.of India, New Delhi	Oct2004- OCT2009	Rs.10.02Lakhs	Completed
Population Health Registry	Queen's University, Canada and SRM University Collaborative project	OCT 2010 to JUNE 13	-	Completed

#### Landslide hazard assessment (Sikkim region – Ranjit tectonic widow)

- □ Multi-year Landslide database generation
- □ Analysis of geospatial method
- □ Landslides occurrence and its classification
- □ Influencing parameters effect on Landslides



Landslide classification

## Active Tectonic Index and seismic significance (Lower Tista Sub-basin Sikkim-Darjeeling region)

- □ Analysis of morphotectonic parameters
- □ Relative Active Tectonic Index (RATI) using Principal Component Analysis (PCA)
- □ Active tectonic index using Analytical hierarchical process (AHP )model





Active tectonic index based on PCA

Active tectonic index based on AHP

#### Thematic parameters based Seismic hazard assessment (Sikkim region)

- Development of thematic parameters
- Analysis of seismological parameters and geodatabase generation
- □ Seismic hazard zone based on weighted linear combination (WLC)



Seismic Micro Vulnerability Zone	Location
SMVZ - I	Nakpolatak, Lungma
SMVZ - II	Kibek cave, <u>Tikipehhu</u> , <u>Khorapa Phu, Uttare</u> , <u>Sokborongcho pattam</u>
SMVZ - III	Yathang, Gogong, Lachung, Melli bazaar
SMVZ - IV	Combare, Maidang, Gyathang
SMVZ - V	Gangtok, Gezing, Naya bazaar
SMVZ - VI	Gangtok, Gezing and Naya bazaar

# **Related Collaborative Research Projects Submitted for External Funding**

Title of Project	Investigators:	Sponsoring Organisation	Submitted	Grant	Status
Active Seismotectonic studies and its Impact on The tribal society of Andaman region - A multi-disciplinary approach	Dr. R. Sivakumar (Indian PI), Earthquake Research Cell and Civil Engineering, SRMIST, India Dr. S. S. Sridhar (Indian Co-PI), Department of Computer Science and Engineering, RMIST, India Dr. Shin-Chan Han (International PI), School of Engineering, University of Newcastle, Australia Dr. In-Young Yeo (International Co-PI), School of Engineering, University of Newcastle, Australia	MHRD, SPARC	Submitted 2019	59.27 lakhs	Waiting for result
A comparative assessment of Hydro- meteorological, Anthropogenic and Tectonogeomorphic impact on flood hazards of Chennai City, India and Bangkok, Thailand and Geoinformatics based strategic plan for Urban flood Disaster	Dr. Nitin Kumar Tripathi, Project Investigator, AIT, Thailand & Dr. R. Sivakumar, Project Investigator, SRMIST, India	INDIA- THAILAND PROGRAMM E OF CO- OPERATION IN SCIENCE & TECHNOLO GY, DST	Submitted		Waiting the result from AIT

Remote Sensing,				
Groundwater and				
Sedimentologic	Dr. S J Sangode, Project			Under
Characterization of	Investigator, Pune University	ISRO	Submitted	 Review
denudational processes	Dr. R. Sivakumar, Project	Respond		
in the Chambal Ravines:	Investigator, SRMIST, India			
Cause-effect				
relationship,				
remediation, reclamation				
and socioeconomic				
impacts				



Satellite image of Chennai city (Sentinel 2 - 2018) and Bangkok city (Sentinel2 -2017) Collaborative flood hazard project with AIT, Bangkok



Collaborative seismic hazard project with University of Newcastle, Australia in Andaman region

Year	Student name	Department	Guide name	Research Topic
2013-14	Abhishek Agarwal, Jatin M, Karan Mangnani , Sreeram Laxsmen	Department of Civil Engineering, SRMIST	Dr. R Sivakumar	Seismic Vulnerability Indexing and Design of Suitable Infrastructure Using Geoinformatics - Sikkim
2014-15	Abhirup De, Siddhanth Mohandas, Nohit kumar, Virda Hiren	Department of Civil Engineering, SRMIST	Dr. R Sivakumar	Design Of Retaining Walls In Seismically Active Landslide Prone Areas Of Western Ghats
2016-17	Vardaan K, Tanvi B, Nikhil S	Department of Computer Science and Engineering, SRMIST	Dr. S. S. Sridhar	RNN model for seismic study
2017-18	Sreenivasan Narayanan	Department of Computer Science and Engineering, SRMIST	Dr. S. S. Sridhar	Arcpy based seismic tool development
2017-18	Wassim Ahmad Bhat, Bright Samuel, Neelanjan Maiti	Department of Civil Engineering, SRMIST	Dr. R Sivakumar	Analysis, design and ductile detailing of a vertically irregular building for earthquake prone area in kishtwar-doda, j&k

The	following	is	the	list	of	Graduate	and	Undergraduate	Students	were	carried	out/doing
resea	rch/acade	mic	pro	ject	5							



# **M.Tech**

Year	Student name	Department	Guide name	<b>Research Topic</b>
2012-13	Kuntal Ganguly	Department of	Dr. R	An Integrated Geoinformatics
		Civil	Sivakumar	for Seismological Studies-
		Engineering,		A Case Study, Gujarat
		SRMIST		
2013-14	Subhodwati Bose	Department of	Dr. R	Seismic Microzonation Studies
		Civil	Sivakumar	And Development Of

		Engineering, SRMIST		Simulation Model For The Part Of South India
2014-15	Aloshree Chowdhury	Department of Civil Engineering, SRMIST	Dr. R Sivakumar	Seismic microzonation and designing of suitable structures for Assam by integrated geoinformatics approach



Seismic vulnerability index of Kutch District, Gujarat

Peak ground acceleration of Kutch District, Gujarat

## **Doctoral Research**

Year	Student	Department	Guide name	Research	Research Topic
	name			Specialization	
2020	Snehasish	Department	Dr. R	Earth Science-	Significance of Active tectonic
completed	Ghosh	of Civil	Sivakumar	Geoinformatics	and seismic energy anomaly for
		Engineering,		in Disaster	earthquake hazard study in lower
		SRMIST		Management	Tista – Sub-basin India – An
					Integrated geoinformatics
					approach
2019-till	Adarsh G	Department	Dr. R	Structural	Earthquake resisting structural
date		of Civil	Sivakumar	Engineering	design
		Engineering,			
		SRMIST			
2020 –	Vinothkumar	Department	Dr. R	Geoinformatics	Geoinformatics and
Till Date		of Civil	Sivakumar	and	Geotechnical Application for
		Engineering,		Geotechnical	landslide studies
		SRMIST		Application for	
				geohazard	

**Thesis Title:** Active Tectonics And Seismic Energy Anomaly For Earthquake Potential Study in Lower Tista Sub-Basin, India Through Geoinformatics

**Student name:** Snehasish Ghosh **Supervisor name:** Dr R. Sivakumar **Year:** 2020



**Events** - NRDMS/DST - SRMIST USER INTERACTION MEET - 2018 , UrbanhydroGIS project , Pondicherry in Geoinformatics and Geohazards field





Wellcome address is presented by Dr. R. Sivakumar,<br/>Convener, User Interaction Meet – 2018Dr. S.S. Sridhar, Coconvenor, User Interaction Meet –<br/>2018, introduced Chief Guest and Guest of Honour



Presenting memento to Chief Guest Dr. Ashok Kumar Singh



Presenting memento to guest of honour Mr. V Radhakrishnan





Presentation given by M Ramaraj BDA-HSRS /DST Project, "HYPERWATER", SRMIST

Presentation given by Mr. B.R. Sri Vishnu Prasanth BDA-HSRS /DST Project, "HYPERWATER", SRMIST



Presentation given by Dr. S.S Sridhar



Discussion during the presentation of Dr. S S Sridhar



Participants Observing poster and eqipments during User Interaction Meet – 2018, All members and participants

*Events - Ggeospatial awareness program for school student Pondicherry 2018 - Geoinformatics and Geohazards ,* 



Usage of water quality analyzer – Elico for Testing of water quality parameter of pH,



Hands-on-training using handheld GPSHands-on-training using handheld GPSinstrument to the school student Batch Iinstrument Batch IIResearch Publications in the field of Geoinformatics and Geohazards:

## **Research Publications in journal**

- 1. Snehasish Ghosh and R Sivakumar 2019 Assessment of geomorphometric anomaly and its significance on seismotectonic activity through geoinformatics, Journal of Earth System Science,128 (7): 178. Springer Publication IF: 1.104, 2018 (SCI) & Scopus (0.801)
- 2. Vardaan, K, Bhandarkar, T, Satish, N, Sridhar, S, Sivakumar R and Snehasish Ghosh 2019 Earthquake trend prediction using long short-term memory RNN, International Journal of Electrical and Computer Engineering, 9, Issue 2, pp.1304-1312
- 3. Snehasish Ghosh and Sivakumar. R 2018 Assessment of morphometric parameters for the development of Relative Active Tectonic Index and its significant for seismic hazard study: an integrated geoinformatic approach, Environmental Earth Sciences 77 (17) : 600. Springer Publication IF: 1.435 (SCI) & Scopus (0.801)
- 4. Vardaan K, Tanvi B, Nikhil S, S. Sridhar. R sivakumar, S Ghosh (2019) Earthquake trend prediction using long short-term memory RNN, international journal of electrical and computer engineering vol.9, No.2 pp. 1304-1312, Scopus 1.001
- 5. Sandeep mahajan and Sivakumar . R (2018) Evaluation of physical and morphometric parameters for water resource management in Gad Watershed, Western Ghats, India: an integrated geoinformatics approach Springer Environmental Earth Sciences (2018) 77:556
- Prabhu Kolandhavel and R. Sivakumar (2019), Investigation of groundwater potential zones in NandiAru Sub Basin, Tamilnadu, India—an integrated geophysical and geoinformatics approach, Arabian Journal of Geosciences, Volume 12, PP 105
- 7. R.Sivakumar, S.S. Sridhar, Ramaraj M and Srivishnu Prasanth B R, 2018, A Comparative Analysis of Remote Sensing and in Situ based TSS and Turbidity Study for Freshwater Lake-An Integrated Approach", Journal of Advanced Research in Dynamical and Control Systems, Volume 10, Issue 8, pp: 1185-1190.
- 8. Subbiah ManthiraMoorthi and R sivakumar, 2018, Automatic Registration of INSAT-3D Daily Images Using Mutual Information and Stochastic Optimization Technique, Springer Journal of the Indian Society of Remote Sensing Volume 46, <u>Issue 9</u>, pp 1527–1535

- 9. Sandeep Mahajan and Sivakumar, 2018, Evaluation of Rural Drinking Water Policy for Developing Country on Habitation Level through Geo-Informatics, Jour of Advanced Research in Dynamical & Control Systems, Volume10, Special Issue.
- 10. SnehasishGhosh and Sivakumar. R 2018 Assessment of morphometric parameters for the development of Relative Active Tectonic Index and its significant for seismic hazard study: an integrated geoinformatic approach, Environmental Earth Sciences 77 (17) : 600. SCI 1.435
- 11. Ronnie and Sivakumar.R 2018 Integrated Geoinformatics techniques for erosion studies and development of management plan A case study, International Journal of Pure and Applied Mathematics Volume 119 No. 15 2018, 331-339
- 12. Sivakumar R and SnehasishGhosh, 2018 Development of Active Tectonic Index through drainage pattern and morphotectonic indices using geoinformatics for South Andaman region, India, Journal of Advanced Research in Dynamical & Control Systems, 10: 08-Special Issue 2018 Scopus 0.135
- 13. Sreenivasan Narayanan, S.S. Sridhar, R sivakumar 2018 "Development Of Arcpy Based Customized Tool In GIS For Seismic Information System", International Journal of Pure and Applied Mathematics, Volume: 118, Special Issue, pp: 377-382, Scopus 0.394.
- 14. SubbiahManthiraMoorthi and R sivakumar, 2018 "Comparison Of Contour Feature Based And Intensity Based Insat-3D Met Images Coregistration For Sub Pixel Accuracies",ICTACT Journal On Image And Video Processing, Volume: 8, Issue: 4, pp: 1731-1738,
- 15. K. Prabhu and R sivakumar, 2018, "Hydrochemical Elucidation of groundwater for drinking and irrigation purposes A case study of Nandi river basin, Tamilnadu, India", Ecology Environment and Conservation, Volume:24, Issue:3, pp:306-313, Scopus 0.186
- 16. Prabhu.K and R sivakumar 2018, "Geoelectrical Resistivity Survey for Groundwater Potential A Case Study of Nandi River Basin, Tamil Nadu, India", Applied Ecology and Environmental Research, Volume: 16, Issue:2, pp:1961 – 1972, SCI 0.721.
- 17. Sivakumar.R and Snehasish Ghosh, 2017 Earthquake Hazard Assessment through Geospatial model and development of EaHaAsTo tool for visualization - An integrated Geological and Geoinformatics Approach, Environmental Earth Sciences, Springer Vol:76 Issue:446 pp:1-22 SCI (1.569) & Scopus (1.811)
- 18. Manthiramoorthi.S, DebajyotiDhar and Sivakumar. R 2017 Coregistration of LISS-4 multispectral band data using mutual information based stochastic gradient descent optimization Current science 113(5):877-888 SCI (0.967)
- 19. M. SureshKumar, R. Sivakumarand M. Nagarajan,2017 Selection of alternative landfill site in Kanchipuram, India by using GIS and Multicriteria Decision Analysis, Applied ecology and Environmental Research Vol. 15 issue.1: 627-636. SCI (0.788)
- Sivakumar.Rand SnehasishGhosh, 2016 Determination of threshold energy for the development of Seismic energy anomaly model through integrated geotectonic and geoinformaticsapproach Natural Hazard, Springer Vol.86 711-740 SCI (1.746) & Scopus (1.077)
- M. SureshKumar, R. Sivakumarand M. Nagarajan 2016 A Geo-Information System For Optimum Municipal Solid Waste Management (A Case Study Of Kanchipuram Municipality, Tamil Nadu, India), Indian Journal of Science and Technology Vol. 9 Issue 37 pp:1-8Scopus (1.289)
- 22. P Murugan, R Sivakumar, R Pandiayan and M Annadurai ,2016 Algorithm to Select Optimal Spectral Bands for Hyperspectral Index of Feature Extraction, Indian Journal of Science and Technology Vol. 9 Issue 37 pp:1-13Scopus (1.289)
- M. SureshKumar, R. Sivakumarand M. Nagarajan 2016 Analysis of Physico Chemical Characteristics of Ground water in KanchipuramMunicipality ,Tamilnadu, India, Rasayan Journal of Chemistry Vol. 9 No. 3 pp:454 - 459 Scopus (0.427)
- 24. P Murugan, R Sivakumar, R Pandiayan and M Annadurai ,2016 Performance Comparison of Band Ratio and Derivative Ratio Algorithms in Chlorophyll-A Estimation using Hyperspectral Data, International Journal of Earth sciences and Engineering, Vol.9-No-3 pp:347-352Scopus (0.197)

- 25. M. SureshKumar, R. Sivakumarand M. Nagarajan 2016 Impact of municipal solid waste dump yard on ground water –A case study of Kanchipuram Municipality, Tamilnadu, india International Journal of ChemTech Research Vol. 9 No. 9 pp: 571-579Scopus (0.373)
- 26. A.Arunkumar, R.Sivakumar.Y.SaiRutwikRedddy, M.V.Bagyaraja, T.Nishant and V.Revatnth,2016 Preliminary study on Marine debris pollution along Marina Beach, Chennai, India, Regional studies in Marine science, *Elsevier* Vol 5,35-40Scopus
- Murugan.PSivakumar.R Pandiayan and M.Annadurai, 2016, Comparison of in-situ Hyperspectral and Landsat ETM+ data for Chlorophyll-a mapping in Case-II water Krishnarajapuram lake, Bangalore, Journal of the Indian Society of Remote Sensing, Springer DOI 10.1007/s12524-015-0531-8 SCI (IF 0.676) & Scopus( 0.691)
- 28. Sushmitha.S andSivakumar.R 2016,Spectral archiving for canopy content identification using Free and Open source Software International journal of Engineering research and Technology Vol.4 Issue 20 pp:50-53
- 29. A.Arunkumar and R.Sivakumar, 2016, Marine Debris- A global problem Least studies in India. Current science Vol.110 No.7 Issue 10 pp. 1153-1154SCI (0.96) & Scopus (0.760)
- Arvind.S and Sivakumar.R 2016, Agriculture Change Detection using Change Vector Analysis in Lower velar Watershed, International journal of Engineering research and Technology Vol.4 Issue 20 pp:1-6
- Sivakumar.Rand Snehasish Ghosh,2016 Wetland spatial dynamics and mitigation study- An integrated remote sensing and GIS approach, Natural Hazard, Springer Vol.80, 975-995 SCI (1.746) & Scopus (1.077)
- Sivakumar.R and SnehasishGhosh, 2016 Spatiotemporal dynamic study of lakes and development of mathematical prediction model using Geoinformatic techniques, Arabian Journal of Geoscience, Springer Vol. 9,1-14 SCI (IF 1.224) & Scopus(0.956)
- 33. Sivakumar.R and Snehasish Ghosh, 2014 Lake Morphological change detection and causes through integrated Geological nadGeoinformatics Techniques, Gondwana Geological magazine Vol. 29 (1 and 2)111-122 ICI
- 34. Arunkumar.A, Sivakumar.R and Ramesh. K, 2013 ,Assessing Habitat Suitability for tiger(Pantheratigris) in Panna Tiger Reserve, Madya Pradesh , India: A Geospatial Approach , International Journal of Scientific Transactions in environment and Technovation , Vol:7,Issue.2 pp.77-81
- 35. Murugan.P, Sivakumar.R and Pandiyan, R, 2013, Spectral information retrieval through location specific registration using Kernel based Target Tracking Method for Hyperspectral Satellite Image, International Journal of Earth sciences and engineering, ISSN-0974-5904 Vol.6-No-5 pp: 993-999Scopus (0.156)
- 36. MintuMedhi, and R. Sivakumar, 2013, Development of "Biomass-Infosys" Tool for Above Ground Biomass Estimation Using Geo-Informatics, International Journal of Advanced Remote Sensing and GIS 01/2013; 2(1):363-373.
- 37. Gambhir, R.K. ManthiraMoorthi. Ramakrishnan.S and Sivakumar.R, 2013, Comparative study of intensity based cost functions for automated satellite image registration, IEEE Computer Society India Council Digital Object Identifier: 10.1109/IAdCC.2013.6514405 Year: 2013, Page(s): 1240-1245
- 38. Sureshkumar.M, Nagarajan.M and Sivakumar.R , 2012, Dynamic spatial analysis for transit Management (A case study of Kancheepuram Town), International Journal of Remote Sensing & Geoscience (IJRSG) ISSN No: 2319-3484, Volume 2, Issue 3
- 39. ManthiraMoorthi. S, Rajdeep K, Ramakrishnan and Sivakumar.R, 2012, Performance Study of Optimization Methods for Intensity Based Automatic Satellite Image Registration, International Journal of Imaging and Robotics. Vol.8, Issue No. : 2, ISSN 2231-525XScopus (0.169)
- 40. Preetishsinha, Muthukumaran.S, Sivakumar, R and Mukerjee. S.K., 2008, Condition monitoring of first mode of metal transfer in friction stir welding by image processing techniques, International Journal of advanced Manufacturing technology, Springer vol. 36 pp484-489SCI & Scopus(1.011)

- 41. Lal,R, Sharma, R.N.K and Sivakumar.R , 2008 , Geoinformatics in Tourism– A case study , Journal of Hospitality App Applications and research , Vol3.No.2 pp 67-75
- 42. Ramasamy, SM, Saravanavel, R, Sivakumar, R, and Selvakumar, R., 2004 Certain tectonic anomalies and their active tectonic significance in Chennai, Tamilnadu, India, Remote sensing in Geology, Ed. SM Ramasamy . Rawat Publications, Jaipur pp 215-225
- 43. Ravi Gupta, Maneesh Prasad, Bal Krishna, AyonTarafdar, Satyaprakash, R. Sivakumar,SaurabhBagaria, P. Venkatram and Alex Pentland, 2003, GramChitra Taking GIS to Grassroots The role of Information and Communication technologies in Global Development Analyses and Policy Recommendations-ICT Task force III United Nation Publications,New York pp: 128-138
- 44. R. Sivakumar, 2002, Image interpretation of Remote sensing data GIS Development, March 2002, Volume 6, issue 3, pp 26-27
- 45. Ramasamy, SM., Kumanan, C.J., Sivakumar, R., Mani, R., Joyce E.B., and Ian Bishop. 1998, Mud eruption in Elagiri region, Tamilnadu, South Indian Peninsular shield, Current science, Indian academy of sciences, Vol.74,No.3,pp:254-257,Scopus(0.665)
- 46. Aravindan, S., Ramasamy, SM., Manivel, M and Sivakumar, R,1996, Assessment of soil erosion by remote sensing techniques in Vaigai catchment Quarterly journal, GA&RC .Vol.4, no.2,

#### **Research Publications in Books/chapter**

- 1. The Role of Information and Communication Technologies for Global Development Analysis and Policy Recommendations, Task Force Series 3 , 2003, 'GramChitra Taking GIS to Grassroots', United Nations, New York. Page-128-138
- 2. Remote sensing in Geology, 'Certain tectonic anomalies and their active tectonic significance in Chennai, Tamilnadu, India' Rawat Publications, Jaipur, 2004. Page-215-225
- SnehasishGhoshand R sivakumar(2019) Identification of Geomorphic Anomaly and Morphotectonic Signature to Study the Seismotectonic Activity & Its Impact on Infrastructure Development through Integrated Remote Sensing and GIS Techniques, GCEC 2017, Proceedings of the 1st Global Civil Engineering Conference, Editors: BiswajeetPradhan, (Ed.)Lecture Notes in Civil Engineering, Vol. 9, chapter 47, pp 611-627
- SandeepMahajanand R sivakumar(2019) Quantification of Geomorphic Indices for Identifying Water Retaining Problem in Basaltic Terrain and Preparation of Water Resource Management Plan Through Integrated Remote Sensing and GIS Techniques, GCEC 2017, Proceedings of the 1st Global Civil Engineering Conference, Editors: BiswajeetPradhan, (Ed.) Lecture Notes in Civil Engineering, Vol. 9, chapter 47, pp 611-627

#### **Conference papers**

- 1. R Sivakumar and Snehasish Ghosh (Dec 2020) Active Tectonics Evaluation by analyzing morphometric correlation and drainage pattern in South Andaman Region, One-day online conference on "The role of Geomorphology in Modern Society", Hellenic Committee for Geomorphology and Environment of the Geological Society of Greece under the auspices of International association of geomorphology, Greece, 16 Dec, 2020
- Snehasish Ghosh and R Sivakumar (Dec 2020) Geomoprhometric Anomaly and Active Tectonics Vulnerability Towards Existing Settlements & Infrastructures in Sub-Himalayan Tributary Basins of Tista River, India, One-day online conference on "The role of Geomorphology in Modern Society", Hellenic Committee for Geomorphology and Environment of the Geological Society of Greece under the auspices of International association of geomorphology, Greece, 16 Dec, 2020
- 3. R.Sivakumar, SnehasishGhoshand S.S. Sridhar(Jan2019) Integrated geological and geoinformatics based Seismic hazard Zonation for South Andaman region and Development of Web based ANDMNSEISMOIS tool, 4<sup>th</sup> world congress on disaster management (WCDM), Mumbai

- SnehasishGhosh and R Sivakumar (May 2018) Development of Active Tectonic Index for South Andaman region, India, International Conference on Theoretical and experimental Advances In Civil Engineering (ICONTEACE – 2018), SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India (11-12 May, 2018)
- SnehasishGhosh and R Sivakumar (Nov 2017) Estimation of Active Tectonic Index using Analytical Hierarchical Process (AHP) through Geoinformatics, 9th International Conference of Geomorphology (9<sup>th</sup> ICG-17), VigyanBhawan, New Delhi, India (6-11 November, 2017)
- 6. SnehasishGhosh and R Sivakumar (July 2017) Identification of Geomorphic Anomaly and Morphotectonic Signature to Study the Seismotectonic Activity & Its Impact on Infrastructure Development through Integrated Remote Sensing and GIS Techniques, Global Civil Engineering Conference (GCEC 2017) Kuala Lumpur, Malaysia, 25 - 28 July, 2017
- SandeepMahajan and R Sivakumar (July 2017) Quantification of Geomorphic Indices for Identifying Water Retaining Problem in Basaltic Terrain and Preparation of Water Resource Management Plan through integrated Remote sensing and GIS techniques, Global Civil Engineering Conference (GCEC 2017) Kuala Lumpur, Malaysia, 25 - 28 July, 2017.
- 8. SnehasishGhosh and R Sivakumar (May 2017) Quantification of seismic energy anomaly and its significance on seismic hazard assessment through Geoinformatics, 4th International Conference Geography, Environment and GIS for students and young researchers(GEG 2017), Targoviste, Romania, May 18-20, 2017
- 9. SandeepMahajan and R Sivakumar (May 2017) Assessment of drainage morphometric parameters to identify the geomorphic constrains for water resource potentiality study through Geoinformatics,4th International Conference Geography, Environment and GIS for students and young researchers(GEG 2017), Targoviste, Romania, May 18-20, 201.
- M. SureshKumar, R. Sivakumarand M. Nagarajan 2017 GIS based Route Optimization for the Effective Municipal Solid waste Management in Kanchipuram City, International Conference on Innovative Technologies for Sustainable Built Environment –ITSBE17 14-16 March 2017, Crescent University Chennai
- 11. R.Sivakumar,2017, Geospatial Approaches for Urbanisation and Industrialisation studies and its impact on ground water quality for Pondicherry region Geospatial World Forum 2017 22-25 January 2017, HICC, Hyderabad
- 12. R.Sivakumar, 2015, Urbanization Impact on Water resources through Geoinformatics techniques- A case study NRDMS User meet .11 February 2015,Hyderabad
- 13. R.Sivakumarand Manikandaprabhu,2015, Hydrogeomorphological studies of Bellary taluk, Karnataka through integrated geological and Geospatial approach, India Geospatial Forum 2015 10-12 February 2015, Hyderabad
- 14. R. Sivakumarand SnehasishGhosh, 2015, Earthquake Information System- A Customized GIS approach -India Geospatial Forum 2015 10-12 February 2015, Hyderabad
- 15. R. Sivakumar, S.S.Sridhar and SnehasishGhosh, 2014, Seismological Study of Ranjit Tectonic Thrust Zone of Sikkim Himalaya for the Development of Integrated Geospatial and Neural Network Based Simulation Model, ISPRS Technical Commission VIII Symposium, Operational RS Applications: Opportunities, Progress and Challenges, 09 – 12 December 2014, Hyderabad, India
- 16. Sivakumar.R and SnehasishGhosh, 2014, Climate dynamics and its effect on Lake morphology through integrated geo-informatics technique- A case study, International Tropical Meteorology Symposium (INTEROMET 2014) -21-24 February 2014, SRM University, Kattankulathur, Tamilnadu
- 17. Sivakumar.R and SnehasishGhosh, 2013, Impact of climate dynamics over wetland morphology of Kattankulathur block, Tamilnadu through integrated geo-informatics technique, 8th International Congress on Climate Change, Territorial Classification & Socio-Economic Crisis April 23-25, Trichy, India
- 18. Suresh Kumar.M, Nagarajan.M and Sivakumar.R, 2013, A geo-spatial study for municipal solid waste Management (A case study of Kancheepurammunicipality ,Tamilnadu, India), International

conference on Civil Engineering and Infrastructural issues in Emerging Economies – ICCIEE-2013 SASTRA University

- 19. Sivakumar, R, 2008, Integrated hydrogeological studies for-optimum water resources planning A case study on Gad sub watershed ,Maharashtra, Hyperspectral remote sensing and it Applications, Hyperspectra conference 2008, Annamalai University
- Sivakumar.R andVinodkumar Application programmer interface development (API) in GIS for water resources modelling, International conference on GIS, GPS and Remote sensing 2006 New Delhi 30 Jan-1 February 2006
- 21. R. Sivakumar, A.P.Krishna and M.S.Nathwat 2006 Need of advanced curriculum development for Geoinformatics Education, International conference on GIS,GPS and remote sensing 2006 New Delhi
- 22. R.Sivakumar and AntimaHaldar 2005 Forest change detection through Geoinformatics- A case study from Haryana National seminar on Green Productivity and sustainable development BIT Ranchi
- 23. Sivakumar.R , Catchment treatment model for Varshanad sub watershed Tamilnadu International conference on GIS, GPS and Remote sensing MapIndia 2005 New Delhi 7-9 February 2005
- 24. Vinodkumar and R.Sivakumar 2005 An integrated geoinformatics and simulation modeling of water resources for Torvacha Sub watershed, Pondicherry, International conference MapIndia 7-9 February 2005 New Delhi
- 25. Sivakumar, R. 2005 Urbanisation and Hydrology aspects Need for detailed research and capacity building, DST Brain storming session on Training and Research in water resources, Andhra University, Visakhapatnam
- 26. Sivakumar.R, 2004, High Resolution Images in Rural Mapping A case study from Haryana National seminar on Role of Geo-informatics for Decentralised planning for better governance-Ranchi 7-9 October 2004
- 27. Satyaprakash and R. Sivakumar 2002 Integrated Rural mapping using Remote Sensing and GPS techniques The Asian GPS Conference 2002 24-25 October 2002 New Delhi

#### **Patent Published**

1. R Sivakumar, Snehasish Ghosh, S. S. Sridhar (2021) A Method Of Determining Seismic Energy Potentiality Zone In The Sub-Surface Based On Focus Distance Computation Equation, patent application no. 202041054054, filling date 11.12.2020, Published date:26.02.2021

#### **CONTACT ADDRESS**

Dr.R.Sivakumar Co Ordinator Center Of Excellence for Geoinformatics and Geohazards Professor, Department of Civil Engineering SRM Institute of Science and Technology Kattankulathur,Chengalpattu District, Tamilnadu,- 603203-India E mail. sivakumr@srmist.edu.in