CURRICULUM VITAE

Dr. BASAVARAJAPPA. H.T

Professor of Earth Science, Former Chairman &
Head of The Department, Chairman BOS & BOE
(Geology and Applied Geology)
Coordinator, CAS-I
basavarajappaht@gmail.com

ADDRESS:

Office
Department of Studies in Earth science,
Centre for Advanced Studies in Precambrian Geology,
University of Mysore, Manasagangotri,
Mysore- 570 006, Karnataka, India.
+91-821-2419718, 2419730.
Mob: **9448800520**

Residential
#77, 25th cross, B - block, 3rd stage, Vijayanagara, Mysore-570017,
Karnataka, India.
® +91-821-2412740

- Date of Birth: 22-07-1961(Twenty second-July-Nineteen Sixty one)

Google Scholar h index:	**14**
Google Scholar i10 index:	**11**
Reseachgate Score:	**30.57**
Researchgate h index	**13**
Citations:	**545**

Total number of Publications	***234***
Peer Reviewed and cited publications:	**100**
Submitted papers:	**14**
Total number Books/ Edited Volumes:	**11**
Abstract published in International/National Seminars:	**109**
Total Publications Impact Factor:	***408.2***

AREA OF SPECIALIZATION:

Precambrian Geology, Tectonic & Crustal Evolution, Field Geology, Mineralogy, Mineral Chemistry, Mineral Exploration & prospecting, Economic Geology, Geochronology, Groundwater applications, Petrology, Study on Gems & Precious stones, Geochemistry, Structural Geology, Fluid inclusions, Geomorphology, Soil science, Natural Resources, Photogrammetry, Geotectonics, Neotectonics, Microtectonics, Geodynamics, Disaster Management and Natural hazards, Engineering Geology, Waste disposal & Landfill sites selection, Wasteland studies, Sand mining-management and its environmental impact, Climate Change, Hyperspectral Study, Remote Sensing and GIS Applications to Earth & Environmental Science.

EDUCATIONAL QUALIFICATION:

(Indicate your educational qualifications, starting with latest)

Period	Qualification	University / Institute/ Board	Subject / field
1987/94	**PhD**	University of Mysore Department of Studies in **EARTH SCEINCE And Centre for Advanced Studies in Precambrian Geology** Manasagangothri, Mysore	**Subject:** Geology **Field:** Petrology, Geology, Geochemistry, Structural, Fluid Inclusions on Biligiri-Rangan Hills, Karnataka, India
1984/86	**M.Sc.**	University of Mysore Department of **Earth Science** Manasagangothri, Mysore	GEOLOGY
1981/84	**B.Sc.**	University of Mysore Government Science College Chitradurga	Chemistry Botany Geology

ACADEMIC DISTINCTIONS: Awards/Recognitions

Sl No	Name of the Award	Conferring Agency	Year
1.	Distinction and Rank in M.Sc.	Mysore University	1986
2.	R. Srinivasa Rao cash prize	Mysore University	1986
3.	Rajamunivenkatashetty and Buchhamma Gold medal	Mysore University	1986
4.	L. Rama Rao Gold medal	Mysore University	1986
5.	Fellowship Award	District Social Welfare Dept. Mysore	1986
6.	YOUNG SCIENTIST, KAAS AWARD 1998 (Earth Science) Karnataka	Karnataka Association of Academy of Advanced Science –Bangalore	1998
7.	VIJAYASHREE AWARD-2005- Excellence in Earth science	Indian International Friendship Society, New Delhi	2005
8.	Review Board Member of PUC Text book committee,	PU Board, Govt. of Karnataka	2013

9.	Karnataka Vikaasa Rathna	Karnataka Rajya Okkaligara Vikaasa Vedike	2015

PROFILE OF PROFESSIONAL CAREER/LIFE SKETCH:

- **Born in 1961 in remote small village, Bhahaddurghatta-Hosahatty, Chitradurga dist, Karnataka.**
- **Primary education Kelagote Govt. School, Higher Primary Burajanahatty Govt. School, Bhapuji High School and College Education up to degree 1984 (B.Sc) Mysore University in Govt. Science College, Chitradurga.**
- **In the PG, Distinction and II Rank in M.Sc. University of Mysore, Department of Studies in Geology. Recipient of Gold medals and Cash awards during PG and 3rd place in Science Faculty.**
- **About 208 publications in the form of Peer Reviewed National and International Papers, Edited Volumes, Proceeding Books, Chapters in Books and Abstracts in the credit.**
- **Visited Abroad - 1991 France, Paris and Germany for the international collaboration and Training on EPMA geochemical analysis.**

AFTER ENTERING THE SAME DEPARTMENT OF STUDIES IN GEOLOGY:

- **1987 Research officer** permanent post and registered for the PhD along with the Research and Teaching work in the PG Department.
- **1994 PhD awarded in Precambrian Geology (Structure, Metamorphic Petrology, Fluid inclusion studies and Geochemistry of Archaean Charnockites around Biligirirangana granulites, Chamarajanagara district by University of Mysore.**
- **1994 Reader** in the Department by Board of Appointment.
- **1998 Karnataka Advanced Applied Sciences (KAAS) Award.**
- **2000- 2001** served as a Chairman, Board of Examiner.
- **2000** -onwards started Research in Geological Remote Sensing and GIS Applications.
- **2002- Professor** by Board of Appointment.
- **2003** to till date, **Chairman** –Indian Geomatic Society Mysore Chapter.
- **2003** to till date **Treasurer**, Mineralogical Society of India.
- **2005 Vijayashree Award** from Inter National Friendship, Society, New Delhi.
- **2006 to 2010, Chairman, Board of Studies** in UG & PG and Research in Geology, Applied Geology, & Earth Science and Resource Management.
- **2007 & 2008, Head and Chairman** of the Department.
- **2008 to till date, President** of Department of Geology Alumni Association.
- **2007 to 2012- Coordinator**, UGC-SAP IV & V phase.
- **2013 to till date - Coordinator**, CAS-I phase.
- **2015** – Editorial Manager for IJCIET (International Journal of Civil Engineering and Technology).
- **2015** – Editorial Board Member for IJSET (International Journal of Science Engineering and Technology)

- **2016- Successfully conducted Indian Science Congress in the University in the Accation of Centenary celebrations. ISCA 103**
- **2016** – Sectional Local Secretary for 103rd Indian Science Congress in Earth System Science section.
- **10 PhDs** Produced in the Earth Science both National & International.
- Publications peer reviewed **97** both National and International.
- Presented and Published Abstracts and proceedings in conferences and seminars both national and international **111**
- **2017** – Editorial Board Member for IJCRT (International Journal of creative research thoughts UGC aproved Issn no. 2320-2882).
- **2018-**– Editorial Board Member for UPI (International Journal Engeneering and Technology UGC aproved)

NEW FINDINGS: Contributions to Earth Sciences

- Finding of **Kollegal Shear Zone** in Mysore and Chamarajanagara dist, Karnataka India.
- Noticed **D1, D2, D3, & D4 deformational episodes** in the study area and **M1, M2, M3 & M4 Metamorphism** (KSZ).
- Later **Dextral & Sinistral** type of shearing events and **many active fault Zones trending N40^{0}W, N45^{0}E and N60^{0}W. Older BILIGIRI-RANGAN Archaean rocks in Karnataka.**
- **Incipient Charnockite** formation in KSZ is structurally controlled latest stage of Metamorphism in M4 +- 550My.
- **M3**- Rétrogression .**M2**- Granulite formation **M1**-Gneisses formation.
- First-formation is Magmatic origin.
- Regional P-T is **P=5.5 to 8.0 Kb and T= 560^0 to 950^0 C.**
- Fluids present both **High/Low density and saline type.**
- Crustal Thickness is about **30 to 25Km**.
- **Auriferous Quartz Veins** are reported in the study area.
- Gem verity of **Corundum** is reported in the study area.
- **Scapolite bearing Calc Silicates** are reported from the study area.
- Active fault zones are reported at **B.R.Hills temple & Near Hogenakkal** areas.
- **Tectonic Model** has been developed in the study area. An overprint of Southern Granulites Terrain on Dharwar Craton.
- **Very High-Low fluids** are identified and reported at Kollegal Shear Zone.
- **First time**: Fluids from **younger Sedimentary basins** of South Indian terrains are also reported.
- **Latest Incipient un-deformed Charnockite** formation **PAN AFRICAN** TYPE, structurally controlled **+- 550 m.y** have been reported in Kollegal Shear Zone.
- Around 12-14 type of rocks are Igneous, Metamorphic and Metasedimentary rocks also reported in the study area.
- **Detailed** 1.Geological, 2.Geomorphological map, 3. Structural map 4. Contour map, 5. Lineation map, 6.Lithological map 7. Land use land cover maps, 8. Soil maps are also developed.

- Geologically the Biligirirangana terrain confirms to an ancient Achaean terrain and it is also proved a single geomorphic unit.
- Identified the **lineaments are Syngenetic** with the regional structural trend.
- Tectonically Biligirirangana hills can be considered to be the **deformed southern extension** of the Dharwar Craton.
- **Cluster analyses** have been employed to bring out relation ship of assorted metamorphic variables.
- Remote Sensing and Geoinformatics are employed in to the study area
- First time an attempt has been made, paper presented on **Medicinal Geology** in Department of geology, Visakhapatnam Andhra Pradesh from Mysore University.
- Geospatial data acquired on Wastelands studies and its developments in Chamarajanagara and Mysore district.
- Heavy metal analysis and their Environmental impacts assessment through Geochemical and correlation of GIS applications on River water bed sediments of Kabini River. Nanjangud area.
- Applications of Remote Sensing and GIS on **Mysore city Waste disposal site selection, waste management and Environmental impact on ground water prospecting zones. Abstract published** in 39th COSPAR July 2012.

VISITS ABROAD:

- **Visited as a Scientist for Training in EPMA to America, Paris and France in 1991.**
- **As a Visiting Scientist, Bonn University, Germany, 1991.**

Achievements in the Department

- **Renovation of the Department building and Electricity at the time of Chairman & Head ship 2007 and 2008.**
- **The Syllabus changed (Applied Geology and Geology) as per the international standard UGC guidelines as a BOS Chairman 2006 - 2010.**
- **Setting of the Remote Sensing and Photogrammetric Lab 2000 &2001.**
- **Setting of the GIS Lab in 2005.**
- **Changed the Department Nomenclature GEOLOGY to EARTH SCIENCE 2009-10.**
- **Upgraded the Seat matrix of M.Sc Geology and Applied Geology. 2007-08.**
- **Admission of PG seats extended outside the university, out of State and out of Country candidates, based on availability of seats on each course, since from 2007 & 2008**
- **Department has been upgraded to Award of Center for Advanced Studies in Precambrian Geology in 2013. as a UGC SAP Co-Ordinator 2004-12.**
- **Upgraded GIS and Remote Sensing Labs with High hand Computers and Software's**
- **Hyper Spectral Research lab setting 2017. Under UGC- CAS.**
- **Fluid Inclusion Research lab setting 2017. Under UGC- CAS.**
- **AAS Research lab setting 2017. Under UGC- CAS.**
- **Developing Open air Museum in the Department.**
- **Successfully completing CAS- Phase-I, 2013-18.**

PAPERS PUBLISHED:

1. 1992: Fluid inclusions in Charnockites, Biligirirangan Hills, Karnataka, in High Grade Metamorphics, Theophrastus Publications A.S.33j., Theologou. Geographies, Athens, Greece, Srikantappa C, **Basavarajappa H.T** & Janardhan A.S, Vol.1, Pp.53-65.IMP F-2

Significance: Charnockites are the predominant rock types occurring in the Biligiri-Rangan hills. Numerous metabasic and metasedimentary enclaves are found within the charnockite massif. The types of fluid inclusions present in charnockites of the Biligiri-Rangan hill and their distribution is reported. Fluid inclusion studies on charnockites show the low density of CO2 rich inclusion (0.83 g/cm3) and H2O-NaCl-bearing aqueous inclusions are seen in samples collected within the shear zones. Such types of inclusions appear to have formed during retrograde metamorphism during shear deformation in the area.

2. 1992: Highly saline fluid inclusions in Chamundi granite, South India. In Current Science, Srikantappa C, Prakash Narasimha K.N, & **Basavarajappa H.T,** Vol. 62, Pp.307-309. IMP F-2

Significance: Fluid inclusions in minerals and rock represent a potentially valuable source of information about the composition and density of fluids present during the formation and evolution of rocks. Our preliminary studies on Chamundi granite have indicated presence of highly saline inclusions (upto 50-60 wt% Nacl equivalent) as well as low-salinity inclusions (8 to 22 wt% Nacl equivalent). Data on temperature of homogenization suggest that they represent remitant fluids of magmatic origin trapped in minerals.

3. 1998: Regional high grade metamorphism of 3.4 Ga Biligirirangan Granulites in the Dharwar Craton, India, Gondwana Research, Srikantappa C and **Basavarajappa H.T,** Vol.8, Pp.92-93. IMP F-9

Significance: Charno-enderbitic to charnockite granulites are the predominant rock types exposed in the Biligiri-Rangan hills with enclaves of basic granulite and minor pyroxenite. Among metasediments, banded magnetite quartzites occur as parallel bands interbanded with quartzites and politic rocks. Sm-Nd, Rb-Sr whole rock and U-Pb zircon data from the Biligiri-rangan granulites (BRG) indicate a protolith age of about 3.4 Ga with regional high-grade metamorphism around 2.5 Ga (Buhl., 1987). Based on Sm-Nd and Rb-Sr whole rock data. All along the western margins of the BRG, a shear zone termed as the Kollegal Shear Zone has been recognized. Along this north-south to north-northeast trending ductile/ brittle shear zone, charnockites as well as basic granulites show evidence of retrogression to middle/ lower amphibolite-facies conditions.

4. 1998: Morphometric response of the geology and structure in and around Biligirirangan Hill ranges. In Journal of Mineralogical Society of India, **Basavarajappa H.T**, Satish M.V, Balasubramanian A and Nagaraj D, Vol. 32, No.1, Pp.21-22. IMP F- 0.5

5. 1998: Metamorphic evolution of the Biligirirangan Granulites (BRG) Karnataka, India, in journal of the Mineralogical Society of India, **Basavarajappa H.T** and C. Srikantappa. Vol.32, No.1, Pp.54. IMP F- 0.5

6. 1999: Retrograde Charnockite-Gneiss relations in the Kollegal Shear Zone (KSZ). Karnataka India. The Indian Mineralogist, **Basavarajappa H.T** and C. Srikantappa. Vol.33. No. 2, pp70-80. IMP F- 0.5

Significance: Within the Kollegal Shear Zone (KSZ) in the Dharwar Craton, charnockitic to enderbitic granulites of the Biligiri-Rangan hills have been highly deformed with the formation of mylonites,

ultramylonites and psuedotachylites. Granulites show various retrograde metamorphic reactions with the predominance of epidote-amphibolites facies gneisses in the shear zone. Low to high salinity aqueous fluids predominate (3 to 35 wt% 5% NaCl equi) in the shear zone rocks with low density CO2 –rich (0.76-96 g/cc) inclusions in contrast to high density CO2 inclusions in the BRG (1.00 to 1.09 g/cc). retrogression of charnockite to gneiss is isochemical.

7. 1999: A major geo-transect corridor across the green stone-granite and granulite –gneiss domains of the south Indian Shield, Deep continental studies in India NEWSLETTER, Srikantappa C, Srinivas G, **Basavarajappa H.T**, Prakash Narsimha K.N and Basavalingu B, Mysore Petrology group. Vol.9, No.2. IMP F-1.5

Significance: Detailed geological mapping in selected areas of the transect corridor approx. 30 Km wide. Petro-mineralogical studies of the meta-igneous and meta-sedimentary rocks. Characterisation of the nature and composition of fluids (eg. CO2, H2O, NaCl, KCL, CH4, N etc.,) in crustal blocks and in shear zones. Major, trace and REE geochemistry of different rock units. Geochronological study, synthesis of data from all the above investigations including the geophysical data.

8. 1999: Diagenetic transformations in Quartz of Kurnool group (Precambrian), Andhra Pradesh., in Journal of Indian Association of Sedimentologist. Harish. V and **Basavarajappa H.T,** Vol. 18. No.1, Pp.52-59. IMP F-2

Significance: Petrographic studies of Kurnool Group reveal medium to fine grained subrounded to rounded detrital grains cemented by silica mostly as secondary enlargements. In most of the cases these secondary enlargement. In most of the cases these secondary enlargements are noticed over the coarser fraction rather than the finer fraction. The effect of pressure solution is distinct and has resulted in the development of point, concavo-convex, suture and tangential type of grain contact. The silica forming authigenic overgrowth was probably derived from the associated shale-siltstones through dissolution of minute quartz grains and pore water. The quartz show well developed overgrowths indicating pressure solution and sea water as the possible source of silica cementation.

9. 2000: Geology, structure, Metamorphism and tectonic setup of 3.4 b.y. old Biligirirangan Granulites, South India. In International geological congress, Brazil. **Basavarajappa H.T** and Srikantappa. C, e-journal. IMP F-4

10. 2000: Metamorphic evolution and fluid regime in the Deep Continental Crust along the North South Geo transect from Vellar to Dharapuram, South India, Indian Mineralogist. Srikantappa C, Srinivas G, **Basavarajappa H.T,** Prakash Narasimha K.N. and Basavalingu B, Vol.34, No.1, Pp.32-37. IMP F-2.4

Significance: A traverse along the Vellur-Dharapuram, representing northern part of the Kuppam-KanyaKumari geotransect has been undertaken under the Deep Crustal Studies programme of the Department of Science and Technology, to unravel the metamorphic evolution and fluid regime. Along this traverse, three important crustal blocks namely the northern Archaean Biligiri-Rangan Granulites (BRG), the central Bhavani Gneisses (BG) and the Southern Chennaimalai-Dharapuram granulites (CDG) occur. These blocks are bounded on either side by shear zones which are considered to be part of the crustal scale Palghat-Cauvery Shear System (PCSS). From North to South, these shear zones are referred to as Mettur Shear Zone (MSZ), Moyar-Bhavani Shear Zone (MBSZ) and Chennimalai Shear Zone (CSZ).

11. 2000. Petrography and Geochemistry of late Proterozoic siliciclastics from Kurnool group, Kurnool sub basin, Andhra Pradesh. Harish V and **Basavarajappa H.T,** Jour. of Indian Association of Sedimentologist, Vol.19, No, 1 & 2. Pp.93-105. IMP F-2

Significance: The Banaganapalle and Paniam siliciclastics of Kurnool Group are medium to fine grained having quartz as the dominant framework constituent with subordinate feldspar and rock fragments. Quartz is represented mostly by monocrystalline non-undulatory variety with a few (<5%) monocrystalline undulatory, polycrystalline and authigenic quartz variety. Grains are rounded to subrounded in nature. Petrographically the siliciclastics are classified as quartz arenites. Chemically the siliciclastics are enriched in SiO2 and depleted in Al2O3, TiO2, Na2O, CaO indicating matured nature of the siliciclastics. From the petrographic and geochemical studies it is suggested that the siliciclastics of Kurnool Group had their source from the Archaean granites, gneisses and lower Cuddapah sediments. Also, from the chemistry an eugeosynclinal passive margin tectonic sedimentation setting is envisioned for the siliciclastics of Kurnool Group.

12. 2001. Earthquake prone areas around Mysore and environmental planning. National Seminar on Environmental hazards priorities and protection in the 21st Century, Mysore, Karnataka state pollution control Board. Srikantappa C, **Basavarajappa H.T** and Shahida Sulthana. N, March 2nd to 3rd, Pp.34-36. IMP F-1

13. 2001. Provenance and depositional environment of late Proterozoic Silica-clastics sequence of Kurnool group, Andhra Pradesh, Harish V and **Basavarajappa H.T**, Journal of Indian Sedimentalogist Association, New-Delhi, Vol. 20, No.2, Pp.207-222. **IMP F-2**

14. 2002 .Metamorphic evolution and fluid regime in the Deep Continental Crust along the North South Geo transect from Vellar to Dharapuram, South India., Srikantappa C., Sreenivas G, **Basavarajappa H.T,** Prakash Narasimha. K.N. and Basavalingu. B, Journal of Geological Society of India, Vol.3,. IMP F-2

15. 2003. Metamorphic evolution and fluid regime in the Deep Continental Crust along the North South Geo transect from Vellar to Dharapuram, South India., Srikantappa. C., Sreenivas. G, **Basavarajappa H.T,** Prakash Narasimha. K.N. and Basavalingu. B. Memoir –50, Geological Society of India, Pp.319-373. IMP F-2

16. 2003. Petrography and P-T conditions of metamorphism of Sargur group of rocks around Hadinaru, Mysore district. **Basavarajappa H.T,** Srikantappa C, Prakash Narasimha. K.N, the Indian mineralogist, Vol. 36, No. 2, & Vol.37, No. 1, Pp.102-109. IMP F-1

17. 2003. Petrography and Fluid Inclusion study on Proterozoic Palnad siliciclastics (Kurnool groups) Andhra Pradesh. Harish V., Prakash Narasimha K.N and **Basavarajappa H.T**, Journal of Geological Society if India. Vol.61, Pp.612-618. IMP F-2

18. 2004. Petrochemistry of basic granulites from the Moyar Shear Zone, Tamil Nadu, India, Journal of Applied Geochemistry, Hyderabad, India, Prakash Narsimha. K.N, Srikantappa. C and **Basavarajappa H.T,** Vol.6, No.1, Pp.113-120. IMP F-2.5

19. 2004. Petrochemical characteristics of Archaean metasediments from the Biligiri-Rangan granulite terrain, Dharwar Craton, The Indian Mineralogists. **Basavarajappa H.T,** Prakash Narasimha. K.N and Srikantappa. C and Vol.38, No.2, Pp.25-38. IMP F-2

20. 2005. Land use and land cover studies around Kollegal taluk, Chamarajanagar District using Remote Sensing and GIS techniques, **Basavarajappa H.T** and Dinakar S, the Indian Mineralogists., Special Vol.1, No.1, Pp.89-94. IMP F-1

21. 2008. Quantitative morphometric analysis of sub-water sheds in and around Yelandur Taluk Chamarajanagara District using GIS, Satish M.V, Dinakar S and **Basavarajappa H.T,** Remote Sensing and GIS Applications, Edited Volume, University of Mysore, Vol.1, No.1, Pp.156-164. IMP F-1

22. 2008. Mapping of ground water potential zones through RS and GIS in Yelandur Taluk, Dinakar S, **Basavarajappa H.T,** Nagesh D, Satish M.V and Honnegowda H, Remote Sensing and GIS Applications, Edited Volume, University of Mysore, Vol.1, No.1, Pp.168-178. IMP F-1

Significance: Remote Sensing has come in handy in mapping of geological, geomorphological, structural, land use/ land cover and other related feature that help in assessment of groundwater prospect in a region. In the study efforts have been made to evaluate groundwater potential zones using IRS-1D, PAN+LISS-III geocoded data of year 2001 on 1:50,000 scale. Thematic maps in respect to geology, geomorphology, lineament, land use/ land cover have been prepared by standard visual interpretation techniques. Slope map was prepared by referring Survey of India (SoI) toposheets on 1:50,000 scale. Various thematic maps have been integrated by performing union using Arc Info (GIS software) and the resultant composite coverage was used to classify the area into excellent, good, moderate, and poor groundwater prospect zones based on the weightage values. The study reveals that out of 266. 16 sq.kms., 50.51, 87.21, 123.14, 5.30 sq.kms falls under excellent, good, moderate, and poor groundwater prospect zones respectively.

23. 2008. Morphometric analysis of sub-watersheds of river Suvarnavathi Catchment, using GIS, Chamarajanagara District, Karnataka, **Basavarajappa H.T,** Dinakar S, Satish M.V, Honne Gowda H, Remote Sensing and GIS Applications, Edited Volume, University of Mysore, Vol.1, No.1, Pp.45-53. IMP F-1

24. 2008. Spinifix textured Metabasalts of Sonakana Greenstone Belt, Central India, Deshmuk S.D, Hari K.R, Diwan P and **Basavarajappa H.T,** Journal of The Indian Mineralogist, Vol.42, No.1, Pp.71-83. IMP F-2

Significance: The metabasalts of Baghmara Formation of late Archaean Sonakhan greenstone belt, exhibit spectacular pillow structure and hydrothermal alteration. The presence of spinifex texture, major element concentration and REE data suggest a Komatitic affinity for these metabasalts which is being reported for the first time from this area.

25. 2008. A comparative analysis of DEM generated from SRTM data and digital topographic map; A case study of north east of Hajjah, Yemen, Ali M. Qaid, **Basavarajappa H.T**, Moawad D. M and Omo-irabor O.O, Journal of Geomatics (ISG), Vol. 2, Pp.37-41. IMP F-2

26. 2008. Integration of Geological, Geochemistry and Remote Sensing data for evolution of the Precambrian rocks, north east of Hajjah, Republic of Yemen. Journal of Applied Geochemistry, Ali M. Qaid, and **Basavarajappa H.T.,** Vol.10, Pp.76-91. IMP F-2.4

27. 2008. Morphometric analysis of Rasyan Valley Basin- A case study in the Republic of Yemen using Remote Sensing and GIS Techniques, Mohammed Mansure Almuliki and

Basavarajappa H.T, journal of Mausam, Govt. of India, New Delhi, Vol.59, No.2, Pp.185-194. IMP F-5

Significance: Remote Sensing and GIS has given more importance for investigation of the geomorphological features based on the morphometric analysis due to the diversity of data information by using digital map characters which help in moderating of data base information to get a different data like distance, area, point, line, polygon and qualitative data. This has decreased the errors which resulted by manual map sources. The main aim of this paper is the study of a morphometric analysis and characteristics of river basin area, basin shape, length, width and the ratio of length to the width, the ratio of rotation and circularity of the basin. It is also a study of relief characteristic, like slope and basin texture hypsometric curve. And also a study of drainage network characteristics like streams, stream order, length, drainage density, turn ration, bifurcation ratio, weighted bifurcation ratio, type of drainage, and the relationship between all variables that mentioned above with rock types and structural movements of internal and external factors which are represented by relief, climate, soil, type of vegetation along with the human impact on the other hand. Results have been discussed for Rasyan valley basin in the Republic of Yemen using Landsat data.

28. 2008. Application Optimum Index Factor Technique to LANDSAT 7 data for Geological Mapping of north East of Hajja, Yeman Ali. M. Quieed and **Basavarajappa H.T,** American Euratian Journal of Scientific Research, IDOSI Publication. Vol.03 (1), Pp.84-91. IMP F-5.1

Significance: North east of Hajjah represents the southwestern extension of Nabitah belt which is a part of the Arabian Shield. The geology of the area is very complicated and exposed to the different tectonic movements. Landsat-7 Enhanced Thematic Mapper Plus (ETM+) provides six bands with 30 m resolution, one panchromatic band with 15 m and one thermal band with 60 m resolution. Optimum Index Factor (OIF) is one of the most common statistical methods which were applied in order to designate the most favorable three band combinations. It is based on the total variance within bands and correlation coefficient between bands. In this study OIF technique was applied to all bands of ETM+data. A number of 56 band colour combinations were produced and analyzed using OIF. The highest value of OIF is 45.65 with the first rank which is recorded the band combination 5-6-7. The aim of this study is to use OIF technique to rank all the possible band colour combinations of ETM+data for geological mapping of north east of Hajjah. The different analyses of all OIF values and their ranks showed that OIF technique is helpful for selecting the suitable combination for geological mapping of the study area.

29. 2008. Effective factors on water resources in Rasyan valley basin, Republic of Yemen., M. M. Al Muliki and **Basavarajappa H.T,** Journal of Applied Geochemistry, Hyderabad, India, Vol.10, No.1, Pp.122-131. IMP F-2.4

30. 2009. Calibration of ASTER and ETM+ Imagery Using Empirical line Method a case study NE of Hajjah ,Yeman., Ali Ahmad Quieed, **Basavarajappa H.T,** and Rajeendran, Geospatial information Science, ID-1009-5020, Vol.12(3), Pp: 197-201. IMP F-5.1

Significance: This study is aimed at using the Empirical Line Method (ELM) to calibrate advanced spaceborne thermal emission and reflection radiometer (ASTER) and enhanced thematic mapper plus (ETM+) data. Two targets (Amran limestone as light target and quartz-biotite-sericite-graphite schists as dark target) which were widely exposed and easy to identify in the imagery were selected. The accuracy of this method was evaluated from three targets (vegetation cover, Amran limestone and Akbra shale) of the surface reflectance. Analytical spectral devices (ASD) FieldSpec3 was used to measure the spectra of target samples. ETM+ were less influenced by the atmospheric effect when compared to ASTER data. Normalized differences vegetation indices (NDVI) displayed good results with reflectance data when

compared with digital Number (DN) data due to its highly sensitive to ground truth reflectance (GTR) most of the difference observed before and after calibration of satellite images (ASTER and ETM+) were observed in the SWIR region.

31. 2009. Application of Principle Component Analysis ASTER and ETM+ data Using for mapping of the Alteration Zones in the North East of Hajjah, Yeman., Ali M. Qaid, **Basavarajappa H.T** and Ranjbar. H, Asian Journal of Geoinformatics, Vol.9, No.2, Pp.15-21. IMP F-5.2

32. 2009. Integration of VNIR and SWIR Spectral Reflectance for Mapping Mineral Resources. A case study North East of Hajjah, Yeman, Ali. M Quieed, **Basavarajappa H.T** and Rajendran S, Photonirvachak, Springer Journal of Indian Remote Sensing Vol.37, Pp.305-315. IMP F-2.4

Significance: laboratory reflectance spectra of 18 rock samples from the Precambrian basement of north-east of Hajjah were measured and analyzed using the instrument of FieldSpec3 with spectral range 0.25-2.5 mm. the aim of the study is to use the spectral reflectance of rocks for mapping the mineral resources in the north east of Hajjah. The altered system in the study area comprises of silicification, sericitification, oxidation, clay minerals and carbonatization. Silicified alteration is not distinguishable in the regions of Visible-Near-Infrared (VNIR) and Short Wave Infrared (SWIR) of the electromagnetic spectrum, due to lack of diagnostic spectral absorption features in silica in this wavelength. Although the arsenopyrite and pyrite are wide spread in the whole study area their features do not appear in any range of spectra because they exhibit trans-opaque behavior and often lack distinction in VNIR and SWIR. The entire spectral reflectance curves of samples show alteration. Based on the examination of laboratory spectra all samples in the study area show promise in the field of mineral resources.

33. 2009. Applications of Wasteland Studies using Remote sensing and GIS of Chamarajanagar District, Karnataka, India, Pushpavathi K.N and **Basavarajappa H.T,** Journal of Environmental Geochemistry, Vol.12, No.1 & 2, Pp.5-12. IMP F-2

34. 2009. Mapping of Geological and geomorphological land forms on Chamarajanagar Taluk, Karnataka, India by Remote Sensing and GIS Techniques, **Basavarajappa H.T,** Pushpavathi K.N and Balasubramanian A, Journal of the Indian Academy of Geosciences, Vol.52, No.1, Pp.1-10. IMP F-2.5

Significance: Geological and geomorphological mapping was carried out in Chamarajanagar taluk, Karnataka through Visual interpretation of IRS-1C PAN +LISS-III false color composite. Various litho units such as Charnockites, granites and gneisses, schists of Archaean age were mapped. The study area is traversed by 3 sets of joints-trending in N-S, NE-WS and E-W direction. 4 sets of lineaments in the study area trending in NNE-SSW, NNW-SSE, NE-SW & E-W. Suggested that the study area was subject to D1, D2 and D3, formation in the past. Major geomorphic units delineated are Denudational hill, Residual hill, Isohydral hill, Pediment, Pediplain, and Valley. Different land forms under each geomorphic units are also mapped.

35. 2009. Heavy Metal Contaminations of Soils and Vegetation in the Nagarthalli Mysore District, Karnataka, India, Azadhe T. Hejabhi and **Basavarajappa H.T**, Journal of Environmental Geochemistry, Vol.12, No.1 & 2, Pp.1-4. IMP F-2

Significance: A survey was conducted to determine the trace metal (Cu, Pb, Zn, Ni, Co, Cd and Cr) status of soils and plants in the Nagarthalli using Atomic Absorption Spectrophotometry (AAS). All values were higher in soil samples compared to plant samples. The average total concentrations of all metals in the soil samples were lower than the permissible limits mentioned in some resources. The heavy metal uptake

by plants shows the greatest accumulation of Fe in all plants and it is found that the presence of Ni (161.34 mg/g-1) and Zn (142.24 mg/g-1) in coconut is beyond the limits. Zn, Ni is present in appreciable amounts in the vegetables. The heavy metal content of the soil and their total uptake by plant has the relation: Dc>Zn>Cu survival plant due to agricultural practices of manuring and polluted waters indicates tolerance to toxic heavy metals. This research is emphasizes in many countries the people use the fruit and vegetables with the accumulation of toxic heavy metals may lead to health disorders.

36. 2009. Benefication studies Manganese ore of Chikkanaikanahalli, Tumkur District, Southern India, Journal of the Indian Academy of Geosciences, Chinnaiah, Sethumadhav M.S, Somashekar K.N and **Basavarajappa H.T,** Vol.52, No.1, Pp.19-24. IMP F-2.5

37. 2009. Remote Sensing and GIS applications for wasteland identification- A case study in Kollegal Taluk, Chamarajanagar District, Karnataka, India, Pushpavathi K.N and **Basavarajappa H.T,** Journal of Environmental Geochemistry (ISSN 0972-0383), Vol.12, No.1 & 2, Pp: 13-18. IMP F-2

Significance: the main aim of the study is to identify the wastelands in Kollegal taluk which is one of the drought prone areas of the Chamarajanagar district in Southern Peninsular India. Unscientific handling of the land resources has resulted in the development of vast stretches of wastelands and also formed one of the major factors of decrease in per capita arable land besides causing ecological imbalances. The major causes of land degradation and subsequent formation of wastelands can be primarily attributed to faculty agricultural practice and indiscriminate deforestation. Faculty agricultural practices include the lack of soil conservation measures and the faculty irrigation practices that often lead to the formation of the salt affected soils.

38. 2009. Geochemistry of Metasedimentary rocks from Moyar Shear Zone, Tamil Nadu, India, Prakash Narsimha K.N, Srikantappa C and **Basavarajappa H.T,** Journal of the Indian Academy of Geosciences, Vol.52, No.2, Pp: 47-50. IMP F-2.5

Significance: Metasedimentary rocks form one of the important lithounits of the Moyar shear zone in the Nilgiri high grade granulite terrane in Southern India. They are mainly composed of Banded Magnetite Quartzite and Psammo-pelitic rocks. Major and trace elements data indicate that the origin of the metasedimentary rocks is due to chemical precipitation admixed with argillaceous deposition.

39. 2010. Structure and Stratigraphy of Manganese Deposits of Chikkanayakana Halli, Tumkur, Karnataka, India, Journal of Indian Academy of Geosciences, Chinnaiah, Sethumadhav M.S, Somashekar K.N and **Basavarajappa H.T,** Vol.53, No.1, Pp. 1-8. IMP F-2.5

Significance: The late Archaean manganese ore bodies occurring in the Chikkanayakanahalli schist belt of Dharwar Super group of Karnataka state, India have been discussed. In the present investigation, characterization of the structural features of metasedimentary and infiltration manganese ores of the Chikkanayakanahalli area. Chikkanayakanahalli schist belt consisting of amphibolite, chlorite schist, gneiss, quartzite, limestone, ferruginous quartzite and iron ores, and dolerite dykes. Contains metasedimentary and lateroid manganese ore formations have been folded into antiform and synform and subjected to green schist to amphibolite facies of metamorphism.

40. 2010. Heavy metal Pollution in Kabini river sediments, Taghinia Hejabhi A, **Basavarajappa H.T,** and Qaid Saeed A.M**,** International Journal of Environmental Research (ijer) Vol.4, No.4, Automn, Pp: 629-636. IMP F-4.3

Significance: The river Kabini which is tributary of Cauvery drains through industrial area at Nanjungud, Karnataka. Out of the sediment load carried by the river, 2 micron the clay fraction was analyzed for total heavy metal contents and advanced statistical techniques such as cluster analysis and correlation matrix were applied in order to investigate the source of heavy metal concentration in the sediments. The river carries natural and anthropogenic pollutants, mainly heavy metal concentration of Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn which are released from industrial effluents, agricultural return flows and domestic sewage. The heavy metals find their residence in the colloidal form in water and in 2 micron clay fraction in the river bed sediments. Systematic sampling of the river bed sediments at predefined locations has revealed that the metal accumulation is very close to normal and also beyond threshold limits. Compared with the maximum background values in Kabini river sediments, Pb was the highest in terms of contamination level, especially at point of influx of paper mill effluents, followed by Zn and Cu.

41. .2011. Heavy metal Pollution in water and sediments in the Kabini River, Karnataka, India, Azadhe T. Hejabhi, **Basavarajappa H.T,** Karbassi A.R, Monavari S.M, International Journal of Environment Monitoring Assessment, DOI 10.1007/s10661-010-1854-0, Springer, e-journal, Pp.1-13. IMP F-2.4

Significance: The river Kabini in Karnataka, India carries natural and anthropogenic pollutants, mainly heavy metal concentrations of Cr, Cu, Fe, Mn, Ni, Pb, and Zn which are released from industrial effluents, agricultural return flows and domestic sewage. Kabini, which is a tributary of the Cauvery, drains through the industrial area at Nanjungud, Karnataka, India. Heavy metals were determined in water and sediments (2 mm) of Kabini river. In the present investigation, chemical partitioning studies was carried out to know the association of base metals with various sedimentary phases. The concentrations of heavy metals are higher in loosely bonded fraction than the other studied fractions. Furthermore, the degree of sediment contamination was assessed by geochemical index. It should be pointed out that Cu and Cr show the highest pollution intensity. Cluster analysis was used to know about the intercorrelation amongst the studied metals. It is evident that higher concentrations of metals are found in the vicinity of industrial effluents. The concentrations of Cr followed by Zn and Ni are rather higher than the maximum background values in the Kabini river sediment. This is especially true at the influx of paper mill effluents into the river.

42. 2011. Characteristic levels of Heavy metals in Sediments of the Kabini River in Karnataka, India, Azadhe T. Hejabhi and **Basavarajappa H.T,** Environmental Geochemistry, Vol.14, No.1, Pp.11-16. IMP F-2.5

Significance: Heavy metal concentrations in bed sediment were investigated for distribution and sourced of contamination in the Kabini river. Surface sediment samples were collected from seventeen locations along the main stream of the main river Kabini (Southern part of Mysore, India), heavy metal concentrations of Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn were determined using Atomic Absorption Spectrometry (AAS) employing HNO3 based digestion. Results show cluster analysis helped to show that groups of elements were significantly interrelated. Furthermore, analysis indicates that Cu was not only due to weathering of parent rocks but also due to anthropogenic effluents of pulp and paper industry and other pollutants contributed to the river. Whereas Zn originated from the discharge at point sources pollutants, along the river, particularly in the industrial area, Pb showed the anthropogenic sources of heavy metal in the sediments. It could have come from non-point sources such as atmospheric deposition and surface draining toxic chemicals within industrial areas.

43. 2011. Sources of Heavy Metals in Bed sediments of Kabini River, Karnataka, India, Azadhe T. Hejabhi and **Basavarajappa H.T**, The Journal of Indian Mineralogist, Vol.45, No.2, Pp.87-95. IMP F-2

Significance: The source of heavy metal (Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn) concentration has been studied for Kabini River bed sediments. The variations of heavy metal concentration partially depend on lithology of the river basin and partially the anthropogenic activities. The sediments are derived from Sargur Supracrustals, amphibolites, gneisses, carbonates and ultrabasic rocks. The weathering of gneissic and serpentine soils is carrier of natural load of cationic heavy metals. Statistically the Cu, Pb, Zn and Ni formed cluster-A, shows that the sources of Cu content in sediments is from its parent rocks and anthropogenic effluents of industrial areas. Pb and Cu relationship is demonstrated similar to Zn and Ni, behavior which is affiliating to multiple industrial activities. Cr formed cluster-B, Mn as cluster-C, and Fe forms cluster-D. Cluster-D joins the cluster R and C, which advocates the sources of Fe are different from other heavy metals.

44. 2012. Mapping and Integration of Geology and Geomorphological Landforms of Mysore district, Karnataka, India using Remote Sensing and GIS Techniques, **Basavarajappa H.T,** Pushpavathi K.N. Balasubramanian A and Manjunatha M.C, Frontiers of Earth Science Research, Proceeding/Edited Vol.1, No.1, Pp.164-175. IMP F-2

Significance: Geological and Geomorphological mapping was carried out in Mysore district, Karnataka through visual interpretation of IRS-1C, PAN+LISS-III false color composite. Various litho units such as Charnockites, granites and gneisses, schist's of Archaeans age were mapped. The study area is traversed by 3 sets of joints-trending in N-S, NE-SW and E-W direction. There are 4 sets of lineaments in the study area trending in NNE-SSW, NNW-SSE, NE-SW & E-W. It was suggested that the study area was subjected to F1, F2, and F3 Sargur type of structure and deformational folds and joints formation in the past. Major geomorphic units delineated are Hills, Plataea, Piedmont zone, Plain, Reservoirs, River/stream and settlements. Different land forms under each geomorphic unit are also mapped.

45. 2012. Applications of Remote Sensing and GIS on Mysore city Waste disposal site selection, waste management and Environmental impact on ground water prospecting zones, **Basavarajappa H.T,** Balasubramanian A, Parviz Tazdari and Somashekar K.N, Abstract published in 39th Cospar-Scientific Assembly, Mysore, India. IMP F-2

Significance: Landfill site selection is a complex process involving geological, hydrological, environmental and technical parameters as well as government regulations. As such, it requires the processing of a good amount of geospatial data. Landfill site selection techniques have been analyzed for identifying their suitability. Application of Geographic Information System (GIS) is suitable to find best locations for such installations which use multiple criteria analysis. The use of Artificial Intelligence methods, such as expert systems, can also be very helpful in solid waste planning and management. This method is innovative due to its establishment in general indices to quantify overall environmental impact as well as individual indices for specific environmental components. Since this method requires processing large quantities of spatial data. To automate the processes of establishing composite evaluation criteria, performing multiple criteria analysis and carrying out spatial clustering a suitable methodology was developed.

46. 2012. Mapping and Integration of Geology, Geomorphological landforms of Yelandur taluk, Chamarajanagar district, Karnataka, India using Remote Sensing and GIS, **Basavarajappa H.T,** Pushpavathi K.N. Balasubramanian A. and Manjunatha M.C, Environmental Geochemistry (ISSN 0972-0383), Vol.15, No.2, Pp. 37-41. IMP F-2.5

Significance: Geological and Geomorphological mapping was carried out in Yelandur taluk, Chamarajanagara district, Karnataka State through visual interpretation of IRS-1D, PAN+LISS-III and geocoded data prepared by SOI-year 2001 on 1:50,000 Scale. Various litho units such as peninsular

gneisses, dykes and Charnockites of Archean age were mapped using GIS analysis. The general trends of majority of the lineaments are towards NNW and N10-150E. Major identified geomorphic units are denudational hills, pediments, inselbergs, shallow & moderately weathered pediplains and valleys were demarcated. Different land forms under each geomorphic unit were also mapped.

47. 2012. Heavy Metal partitioning in sediments of the Kabini River in south India., Environmental Monitoring and Assessment, Springer, Science+Business media., Azadhe T. Hejabhi and **Basavarajappa H.T,** DOI.10.1007/s10661-012-2631-z-, Springer, e-journal, Environmental Monitoring Assessment, 185, Pp: 1273-1283. IMP F-2.4

Significance: Cu, Cr, Fe, Mn, Ni, Pb, and Zn in the sediments of the Kabini River, Karnataka, India was studied to determine the association of metal with various geochemical phases by sequential extraction. The variations of heavy metal concentration depend on the lithology of the river basin and partly on anthropogenic activities. The Kabini River sediments are dominated by Sargur supracrustals with amphibolites, gneisses, carbonates, and ultrabasic rocks weathering into gneissic and serpentine soils carrying a natural load of cationic heavy metals. The source of heavy metals in the Kabini riverbed sediments is normally envisaged as additional inputs from anthropogenic over and above natural and lithogenic sources. Geochemical study indicates the metals under study were present mostly in the least mobilizable fraction in the overlying water and it is concluded that heavy metals in these sediments are to a great extent derived from multisource anthropogenic inputs besides geochemical background contributions The results show that lead and chromium have higher potential for mobilization from the sediment due to higher concentration at the exchangeable ion and sulfide ion bounded, also Cu and Pb have the greatest percentage of carbonate fraction, it means that the study area received inputs from urban and industrial effluents. Association of the Fe with organic matter fraction can be explained by the high affinity of these elements for the humic substances. Further, Zn and Ni reveal a significant enrichment in sediment and it is due to release of industrial wastewater into the river. These trace metals are possible contaminants to enter into aquatic and food chain.

48. 2012. Beneficiation Studies of the Limestone of Malkhad Areas, Gulbarga District, Karnataka, Chinnaiah, Sunil Kumar R.K, **Basavarajappa H.T** and Madesh P, International Journal of Earth Science and Engineering (IJEE), Vol. 05, No.1, Pp.186-192. IMP F-4.12

Significance: Limestone deposits of malkhed areas were subjected to beneficiation studies for effective utilization of variegated and flaggy limestone. The limestone must be beneficiated to produce uniform raw material for the furnace and cement manufacturing. Careful quarrying and selective recovery are factors in this process, but the chief aspects of beneficiation processes, utilization of low grade limestone (variegated and flaggy limestone) by suitable beneficiation technique will greatly enhance the overall reserves position of limestone deposits. Keeping this in view, in the present investigation, the lowgrade limestone deposits of Malkhed and surrounding area have been subje
cted for beneficiation studies. Such as comminution, sieve analysis, chemical analysis, crushing and grinding, air classification and flotation. Numerous technical and economic problems exist. Llimestone deposit and the rock itself are required for intelligent beneficiation.

49. 2013. "Shear Zone Mapping and Crustal Evolution on Precambrian rocks of Biligiri-Rangan hill ranges, Dharwar Craton, India using Remote Sensing and GIS techniques" International Association for Gondwana Research Conference Series (IAGR), Precambrian Continental Growth and Tectonism (PCGT), **Basavarajappa H.T,** Vol.16, No.3, Pp.24-26. IMP F-8.9

Significance: The structural and tectonically deformed features like lineaments and shear zones of varying lengths are mapped on 1:1,50,000 scales from IRS-1C LISS-IV FCC satellite data were carried out with the help of ERDAS 8.5 version software using digital image processing. In NW & NE part of the hill ranges, cone like small hills are present with pediments and pediplains. The continuation of these

lithologies presently termed as Sargur Supracrustal are positively indicates their exists a continuum. The only factor that distinguishes the transition zone terrain and Biligiri-Rangan is that the later in a granulite grade charnockite terrain with mafic pyroxene granulite bodies interbanded with quartzites, politic lithologies with BIF. Based on these works that the granulitic block of Southern India can be divided into two categories a) Post accretional granulitic blocks of BR-hills b) Syn accretional blocks of Nilgiris.

50. 2013. Regional High Grade Metamorphism and Tectonic setup of Precambrian (~3.4 Ga old), Biligiri-Rangan granulites, Dharwar Craton, South India. **Basavarjappa H.T,** Srikantappa C and Raith M, Journal of Indian Mineralogist, Current Trends of Research in Precambrian Geology and Vision-2020, Vol.1, No.1, Pp.35-36. IMP F-2

Significance: Demarcation of Kollegal Shear Zone (KSZ) trending $N15^0E$ with a width of 25-28 Km. CO2-rich fluid inclusions showing a higher density of 1.09g/cm3 and P-T data derived synmetamorphic fluids. High salinity inclusions (upto 35 wt% NaCl). Biligiri-Rangan granulite uplifted represents the deeper part of the Precambrian continental crust exposed in the northern region (7.5 Kb) around Kollegal, where as in the Southern part around Chamarajanagar and Talavadi, Dimbam areas of shallower crustal levels (6.5 Kb) have been exposed. A tectonic regime with early collisional event have been followed by late extentional tectonics have invasaged based on P-T-t paths. The protolith for granulite is 3.4 M.y old and subsequently have been deformed and metamorphosed during collisional tectonic region. These rocks have been intruded by dolerite dykes. Reworking of the early crust, migmatization, magmatism and formation of pink and grey granulites (KSZ and town of Kollegal) took place during an extensional late tectonic regime and upliftment throughout the neo-Proterozoic and Pan-African time clearly shows the emplacement of pegmatitic veins, barren quartz veins, are associated particularly in the Shear zone with syn to post tectonic granitic melts of the study area.

51. 2013. "Delineation of Ground water prospecting zones of Hard rock terrain using Remote Sensing and GIS around Kollegal Shear Zone (KSZ), Chamarajanagar district, Karnataka, India", **Basavarajappa H.T,** Dinakar S, Nagesh D, Manjunatha M.C and Balasubramanian A, International Journal of Earth Sciences and Engineering (IJEE)- Elsevier, ISSN: 0974-5904, Vol.06, No.05, Pp:1185-1194. IMP F-4.1

Significance: Remote Sensing (RS) and Geographic Information System (GIS) are essential tools for mapping & integration of geology, geomorphology, slope, soil, drainage, lineament, land use/ cover and other related features that help in assessing the ground water resources of a region. This paper aims to integrate RS and GIS techniques to delineate groundwater potential zones in the typical hard rock terrain of a region in Karnataka, South India. Efforts have been made to evaluate the groundwater potential zones using the False Colour Composite (FCC) images of IRS-1D (PAN+LISS-III). Slope map was prepared by using Survey of India (SoI) toposheets (year-2001) of 1:50,000 scale. Thematic maps have been prepared by adopting visual interpretation techniques and were integrated by using Arc Info GIS v3.2. The resultant composite coverage was used to classify the area into excellent, good, moderate and poor groundwater potential zones based on certain weightages. The final results highlight the favorable conditions of groundwater potential zones in the hard rock terrain around Kollegal Shear Zone (KSZ) of South India, which is a suitable model for application to similar geological conditions.

52. 2013. Integration of Soil and Lineament on Suitable Landfill Sites Selection and Environmental Appraisal around Mysore City, Karnataka, India, using Remote Sensing and GIS techniques. **Basavarajappa H.T,** Parviz Tazdari and Manjunatha M.C, International Journal of Civil Engineering and Technology (IJCIET), Issue:6, ISSN 0976-6308 (Print), 0976-6316 (Online), **I.F: 5.327,** Vol: 4, Issue: 6, Pp: 177-185.

Significance: Environmental appraisal is a complex process involving the interplay of geological, hydrological and several other environmental parameters including geospatial data of an urban area. This study aims to delineate the suitable landfill sites of municipal & industrial wastes in the city of Mysore, Karnataka, India through Remote Sensing (RS) and Geographic information system (GIS) techniques along with Ground Truth Check (GTC). Mysore urban exhibits flat to gently undulating topography with an elevation varying from 700-725 m above MSL with a gentle slope towards the south. The perennial Cauvery River flows from west to east direction in the northern parts of the study area. The spectral signature of satellite images (7 bands) of IRS-1D, PAN+LISS-III including geo-spatial data from Survey of India (SoI) toposheet (scale-1:50,000) were processed using GIS (spatial analysis) to classify the study area into two zones i.e., buffer zone and core zone. Mysore is one of the major cities in Karnataka producing nearly 600 tons of solid wastes every day that need more landfill sites in future due to increase in their volume. The existing waste treatment plant in the study area is operating within the core zone above a major lineament affecting the groundwater resource, human health and surrounding environment. The integration of Remote Sensing, GIS analysis and GPS survey demarcates seven alternative locations to the existing landfill site, considering the environmental, biophysical and socio-economical factors.

53. 2013. "Applications of Remote Sensing and GIS on waste disposal site selection and Environmental Impact Assessment around Mysore City, Karnataka, India", **Basavarajappa H.T,** Parviz Tazdari, Manjunatha M.C and Balasubramanin A, International Journal of Earth Science and Engineering (IJEE), ISSN 0974-5904, Vol.06, No.06(02), Pp:1801-1808. IMP F-4.1

Significance: Landfill site selection is a complex process involving the interplay of geological, hydrological, environmental and geotechnical parameters incorporating government regulations. As such, it requires the processing of a good amount of geospatial data. Application of Geographic Information System (GIS) involving the required ground level data is suitable to find the best locations for such identification which use multiple criteria analysis. For the Site Selection of an industrial waste disposal (or) the dumping of and normal daily urban wastes of a city, combining GIS with Analytical Hierarchy Process (AHP) will be more appropriate. The method is innovative and establishes general indices to quantify overall environmental impact as well as individual indices for specific environmental components i.e. surface water, groundwater, atmosphere, soil and human health. To automate the processes of establishing composite evaluation criteria, performing multiple criteria analysis and carrying out spatial clustering, a suitable methodology was developed. The feasibility of site selection in the study area based on different criteria was used to obtain the layered data by integrating Remote Sensing and GIS. This methodology is suitable for all practical applications in other cities.

54. 2013. "Applications of Remote Sensing and GIS on Geology and Geomorphological landforms in Precambrian rocks of Kollegal Taluk, Chamarajanagar District, Karnataka, India", **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, Journal of Environmental Geochemistry, (ISSN 0972-0383), Vol.16, No.1, Pp: 1-10. . IMP F-2.5

Significance: Remote Sensing (RS) and Geographic Information System (GIS) are essential tools for mapping and integration of geology, geomorphology, lithology, soil, drainage, lineament, slope, land use/cover and other related features of a region. This paper aims to integrate RS and GIS techniques helps in the assessment of geology and geomorphological landforms in the typical hard rock terrain of Kollegal taluk of Chamarajanagar district which belongs to Dharwar Craton, adjacent to high grade granulites of Biligiri-Rangan hills in Southern India. Efforts have been made to evaluate the geological units and geomorphological landforms in Precambrian terrain using the visual interpretation and digital image processing of IRS-1C, PAN+LISS-III false color composite (FCC) through GIS analysis. The study area represents the metamorphic rocks such as Gneisses, Charnockite, Pyroxene Granulite exhibiting medium to coarse-grained texture Hornblende Gneiss, Pink Granulites, Migmatites, dolerite dykes and Banded Ferruginous Quartzite's. Different landforms under each geomorphic units are also mapped. The final results highlights the applications of RS and GIS on the assessment of geology and geomorphological

landforms in Precambrian rocks of Kollegal taluk, Chamarajanagar district, Karnataka, which is a suitable model for application to similar geological terrain.

55. 2014. "Integration of Geology, Drainage and Lineament on Suitable Landfill Sites Selection and Environmental Appraisal around Mysore City, Karnataka, India through Remote Sensing and GIS", **Basavarajappa H.T**, Parviz Tazdari, Manjunatha M.C and Balasubramanian A, Journal of Geomatics, Indian Society of Geomatics (ISG), Vol.8, No.1, April issue, Pp: 119-124. IMP F-2

Significance: Urban environmental appraisal is a complex process involving the interplay of geological, hydrological and several other environmental parameters including geospatial data. Mysore urban exhibits flat to gently undulating topography with the elevation varying from 700-725 m above MSL with a gentle slope towards the South. The perennial river, Cauvery flows from west to east in the northern parts of the study area. The spectral signature of satellite images (7 bands) of IRS-1D, PAN+LISS-III and geospatial data from SoI toposheet (scale-1:50,000) were processed by GIS analysis, to classify the study area into two zones i.e., buffer zone and core zone. Mysore is one of the major cities in Karnataka producing nearly 600 tons of solid wastes every day that need more landfill sites. The existing landfill site in the study area is operating within the core zone above a major lineament and affecting the groundwater, human health and surrounding environment. This study aims to delineate the safe disposal sites of municipal & industrial wastes in the city of Mysore, Karnataka, India through Remote Sensing (RS) and Geographical Information System (GIS) along with ground level data. The integration of RS, GIS analysis, GPS survey including Ground Truth Check (GTC), demarcates seven alternative safe locations to the existing landfill site, considering the environmental, biophysical and socio-economical factors.

56. 2014. "Applications of Remote Sensing and GIS in Morphometric Analysis on Precambrian Rocks, Kollegal Shear Zone, Chamarajanagar District, South India" **Basavarajappa H.T,** Dinakar S, Satish M.V, Nagesh D and Manjunatha M.C, International Journal of Earth Sciences and Engineering (IJEE), ISSN 0974-5904, Vol.07, No.01, Pp: 230-241. . IMP F-4.1

Significance: Morphometric studies are a tool in hydrological investigation in developing and management of drainage network. This study focuses to delineate the drainage network in Precambrian terrain around Kollegal Shear Zone (KSZ) of Chamarajanagar district which is belongs to Dharwar Craton, adjacent to high grade granulites of Biligiri-Rangan hills in Southern India. The drainage network was delivered on Geocoded FCC of IRS -1D (PAN+LISS III merged, year-2001) on SOI toposheets of 1:50,000 scales were used as a base map. The values of linear, aerial and relief variables are calculated and GIS analysis accounted using Raster calculator option of spatial analyst. The area (Au) and perimeter (P) of the drainage network has been measured with CAD-Overlay 2000 software by performing clean and build option (i.e., closed polygon, and the values are expressed in sq km). The variation in stream length ratio changes due to change in slope, lithology and topography, while the variation in the values of bifurcation ratio describes the control of lithology/ structure and morphology on the development of network in the study area. The stream order varies from 1-5 with the total number of 7,167 stream orders with their total length of 5,945.56 Kms.

57. 2014. "Assessment of river basin for engineering restoration in Ghataprabha catchments using Geo-informatics applications" Basavaraj Hutti and **Basavarajappa H.T,** International Journal of Computer Engineering and Technology (IJCET), ISSN 0976-6367 (Print), 0976-6375 (Online), **I.F: 6.1302,** Vol:5, Issue:1, Pp: 94-102.

Significance: Geographical design of river basin buffers with long-term vegetation cover for engineering restoration in Ghataprabha catchments needs to assess how much farmland is located in the buffers of a concerned catchment. Traditionally, this assessment was done by field surveying and manual mapping, which was a time-consuming and costly process for a large region. In this paper, geoinformatics which includes remote sensing (RS), geographical information system (GIS) and global positioning system

(GPS) as cost-effective techniques were used to develop catchments based approach for identifying critical sites of Ghataprabha catchments buffer restoration. The method was explained through a case study of Ghataprabha catchments and results showed that only three of the sub-basin catchments were eligible in terms of higher priority for river basin buffer restoration. This research has methodological contributions to the spatial assessment of farming intensities in basin catchments buffers across a river basin and to the geographical designs of variable buffering scenarios within catchments. The former makes the river basin management strategy possible, and the latter provides alternative restoration scenarios to meet different management purposes, both of which have direct implementations to the engineering restoration of river basin buffers in the real world. This study, thus, highlights the great potential of geoinformatics applications to the planning and management of river basin buffer restoration in Ghataprabha catchments.

58. 2014. Application of Geoinformatics on Delineation of Groundwater Potential Zones of Chitradurga District, Karnataka, India, **Basavarajappa H.T,** Manjunatha M.C and Jeevan L, International Journal of Computer Engineering and Technology (IJCET), IAEME, **I.F-8.5328,** ISSN 0976-6375, Vol. 5, Issue 5, Pp.94-108.

Significance: Water is the main source of domestic, engineering, industrial and agricultural uses which affects the surface and groundwater quality and quantity. Geoinformatics encompasses Survey of India (SoI) toposheet, Satellite Remote Sensing (RS), Geographic Information System (GIS) and Global Positioning System (GPS) for mapping & integration of geology, drainage, lineament, soil types, slope category, land use/land cover and other related features in assessing the ground water resources of a region. The present study aims to map, integrate the Geo-informatics application to delineate groundwater potential zones in hard rock terrain of Chitradurga District, Karnataka. Efforts have been made to evaluate the groundwater level contour (in meters) using SoI toposheets (1:50,000) and False Color Composite (FCC) images of IRS-1C/1D PAN+LISS-III (2005-06). Slope map is prepared by using (SoI) topomap (year-2001) of 1:50,000 scale. Thematic maps have been prepared by adopting Visual Image Interpretation Techniques (VIIT) and are integrated using Arc GIS v10 software. The resultant composite coverage is used to classify the area into excellent, good, moderate and poor groundwater potential zones based on certain weightages. This study demonstrates the potentiality of Geo-informatics technique in preparation of more consistent and accurate baseline information on groundwater prospects. The final results highlight the favorable conditions of groundwater potential zones in hard rock terrain in Chitradurga District, Karnataka, which is a suitable model for exploration in similar geological conditions.

59. 2014. Geoinformatic Techniques on mapping and reclamation of Wastelands in Chitradurga district, Karnataka, India, **Basavarajappa H.T** and Manjunatha M.C, International Journal of Computer Engineering and Technology (IJCET), **I.F-8.5328,** IAEME, Vol.5, Issue.7, July, Pp:99-110.

Significance: Wastelands are essentially understood as low-quality land from an agricultural point of view, often referred to as degraded land. Unscientific handling of land resources has resulted in the development of vast stretches of wastelands and also formed one of the major factors of decrease in per capita arable land causing ecological imbalances. The present paper aims to identify the Wastelands of Chitradurga District, Karnataka through hi-tech tools of Geoinformatics. The major causes of land degradation and subsequent formation of wastelands can be primarily attributed to 'faculty agricultural practice and indiscriminate deforestation'. Agricultural practices include the lack of soil conservation measures and irrigation practices that often lead to the formation of the salt affected soils. The study was taken up to map and record the wastelands using Survey of India (SoI) toposheets of 1:50,000 scale, IRS 1D PAN+LISS III satellite data and Google Earth software with limited Ground Truth Check (GTC) and final wasteland layer is generated. The database provides spatial baseline information in distribution, extent and temporal behavior of wastelands in planning and implementation of development strategies in wastelands reclamation of the country.

60. 2014. Sand Mining, Management and its Environmental Impact in Cauvery and Kabini river basins of Mysore district, Karnataka, India using Geomatics Techniques, **Basavarajappa H.T,** Manjunatha M.C and Jeevan L, International Journal of Civil Engineering and Technology (IJCIET), **I.F-7.9290,** Vol.5, Issue.9, Sept, Pp: 169-180.

Significance: Sand is one of the most important non-living resource/mineral formations on the earth's surface. The sand formation is recorded only in the recent ages of the earth's history. Sand has become a very important mineral resource in our society due to its applications in various fields. Sands of river streams have no substitute for use as building material in reinforced concrete cement. It can be used for making concrete, filling roads, building sites, brick-making, glass industries, sandpapers, reclamations to replace eroded coastline etc. Efforts have been made to evaluate IRS-1D, PAN+LISS-III of False Color Composite (FCC) through Visual Image Interpretation Techniques (VIIT) using GIS software's. The whole study area is drained by Cauvery and Kabini river basins that carry sand from different locations and deposits largely at meandering. Especially, Talakadu area has massive deposits of sands on the windward side of river. It covers sand dunes in the river bank by the fault running through the river Cauvery. Rapid urbanization is the major cause for sand demand and is responsible for unsustainable extraction of sand from dried river paths. Currently sand extraction is permitted up to three feet, but it is being dug up even up to 25-30 ft which later fails the possessing irrigation wells. Production of adulterated sand is a mixture of sand from estuary and coastal land that are gradually increased due to high cost of sand. It is a growing imbalance as prevailing uncontrolled sand mining and its adulteration continues to cause significant environmental damage and socio-economic problems. A complex interaction between economic, demographic, social and political encouragement are required to avoid the adverse effects of sand mining on riverbed environments. The final results highlight the impacts of environment and its management in Cauvery and Kabini river basins of Mysore District, Karnataka, which is a suitable model in similar geological conditions.

61. 2014. "Precambrian Deep Crustal Metamorphism and Fluid Regime in Biligiri-Rangan Granulites, Dharwar Craton, India", **Basavarajappa H.T** and Srikantappa C, The Indian Mineralogists, The Mineralogical Society of India, Mysore, Vol.48, No.2, July-issue, Pp:289-338. IMP F- 0.5

Significance: Massive to banded charnockites and charno-enderbitic granulites exhibiting regional foliation trending N-S with steep dips are the predominant rocks exposed in the Precambrian Biligiri-Rangan hills.

62. 2014. Analysis on Land use/land cover classification around Mysuru and Chamarajanagara district, Karnataka, India, using IRS-1D PAN+LISS-III Satellite Data., **Basavarajappa H.T,** Dinakar S and Manjunatha M.C, International Journal of Civil Engineering and Technology (IJCIET), **I.F-7.9290,** Vol.5, Issue.11, November(2014), Pp: 79-96

Significance: Land is a non-renewable resource and mapping of LU/LC is essential for planning and development of land and water resources in a region of engineering projects under progress. Land is an area of the earth surface, which embraces all reasonable stable or predictably cyclic, attribute of the biosphere including the atmosphere, soil and underlying geology. Hydrology, plant and animal population are the results of the past and present human activity to the extent that significantly influences on present and future LU/LC system. Proper management and development of these lands should be initiated to increase the land productivity, restoration of soil degradation, reclamation of wastelands, increase the environmental qualities and to meet the needs of rapidly growing population of the country. Remote Sensing (RS) satellite data with its synoptic view and multispectral data provides essential information in proper planning of LU/LC conditions of the larger areas. An attempt have been made to delineate the level-1, level-2 and level-3 LU/LC classification system through NRSC guidelines (1995) using both digital and

visual image interpretation techniques by Geographical Information Systems (GIS) software's. The classification accuracy is found to be more in case of digital technique as compared to that of visual technique in terms of area statistics. Efforts have been made to classify the LU/LC patterns using False Color Composite (FCC) data of IRS-1D PAN+LISS-III (Band: 2,3,4) through MapInfo v7.5, ArcView v3.2, Erdas Imagine v2011 and ArcGIS v10. The final results highlight the potentiality of geomatics in classification of LU/LC patterns around Chamarajanagara district, Karnataka, in natural resource mapping and its management which is a suitable model for application to similar geological terrain.

63. 2014. Delineation of Groundwater Potential Zones in Precambrian Hard Rock Terrain of Tumakuru district, Karnataka, India using Geomatics Application. **Basavarajappa H.T,** Jeevan L and Manjunatha M.C, International Journal of Civil Engineering and Technology (IJCIET), IAEME, **I.F: 7.9290,** Vol.5, Issue.2, Dec, Pp: 305-315.

Significance: Systematic planning of groundwater exploitation through modern approach is essential for management and sustainability. Geomatic encompasses Remote Sensing (RS) Satellite data, Geographic Information Systems (GIS), Global Positioning System(GPS) and Survey of India (SoI) toposheets for mapping & integration of geology, drainage, lineament, soil types, slope category and other related features in assessing the groundwater resources of a region. Individual features in all thematic layers have assigned certain weights based on their relative importance in groundwater occurrences using SoI topomap (scale-1:50,000) and False Color Composite (FCC) images of IRS-1D PAN+LISS-III (2008). The thematic layers are finally integrated to generate a groundwater potential zones map through Erdas Imagine v2013. The final result highlights the potentiality of geomatics technique in mapping of excellent, good, moderate and poor groundwater potential zones in hard rock terrain of Tumakuru district, Karnataka.

64. 2014. Spatial Data Integration of lithology, geomorphology and its impact on Groundwater prospecting zones in Gundlupet taluk, Chamarajanagar district, Karnataka, India through Geomatics Technique, **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, Journal of Environmental Geochemistry, Vol.17, No.1 & 2, Pp: 73-82. . IMP F-2.5

Significance: Mapping of lithology, geomorphology, drainage, lineament, soil, slope, land use/land cover are carried out in typical hard rock terrain of Gundlupet taluk, Chamarajanagar district, Karnataka which belongs to Dharwar Craton, adjacent to high grade granulites of Biligiri-Rangan hills in Southern India. The present study aims to integrate the geomatics technique in assessing the effects of groundwater prospecting zones. Groundwater resources in hard rock terrain are limited. Hence estimation and development of groundwater in hard rock terrain has to be planned scientifically for a better management. Efforts have been made to evaluate the lithological units and geomorphological landforms in Precambrian terrain using Visual Image Interpretation Techniques (VIIT) and Digital Image Processing (DIP) of IRS-1D, PAN+LISS-III False Color Composite (FCC) through GIS software's. The study area represents the metamorphic rocks such as Gneisses, Charnockite, Pyroxene Granulite, Hornblende Gneiss, Pink Granulites, Migmatites, Dolerite Dykes and Banded Ferruginous Quartzite's. Different landforms under each geomorphic units are also been mapped. The final results highlight the potentiality of geomatics technique in mapping of lithology, geomorphological landforms that help in assessing the impacts on groundwater prospect zones in hard rock terrain of Gundlupet taluk, Karnataka.

65. 2015. Morphometric Analysis on Precambrian rocks in Part of Cauvery Basin, Chamarajanagar district, Karnataka, India using Geomatics Technique, **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, International Journal of Civil Engineering and Technology (IJCIET), IAEME, **I.F: 9.1215,** Vol.6, Issue.1, Jan, Pp: 97-112.

Significance: Morphometric analyses are the suitable tool for hydrological investigations in developing and management of land and surface water resources of a larger region. Survey of India (SoI) toposheet, Remote Sensing (RS) Satellite data, Geographic Information Systems (GIS) and Global

Positioning System (GPS) are integrated in mapping of stream order, drainage, slope and other related features of a river basin. The present aim is an attempt to map the morphometric parameters and hydrologic behavior in Precambrian rocks of Dharwar Craton and Northern Granulite Terrains in South India. The drainage network is delivered on geo-coded FCC of IRS-1D, PAN+LISS-III satellite image and merged on SoI toposheets of 1:50,000 scale. The values of linear, aerial and relief variables are calculated and accounted by GIS analysis. The variation in stream length ratio changes due to change in slope, lithology, landforms and topography, while the variation in the values of bifurcation ratio describes the control of lithology/structure and morphology on the network development. These help to delineate the geometry of the basin, drainage network and texture. The final results highlight the applications of geomatics technique in mapping, management and development of surface water resources on hard rock terrain in Southern tip of Karnataka.

66. 2015. Geomatics analysis on Land use land cover Classification system in Precambrian Terrain of Chitradurga district, Karnataka, India, Manjunatha M.C, **Basavarajappa H.T** and Jeevan L, International Journal of Civil Engineering and Technology (IJCIET), IAEME, **I.F: 9.1215,** Vol.6, Issue.2, Feb, Pp: 46-60.

Significance: Earth's land use/land cover (LC/LU) classification provides information particularly on natural resources, mapping and monitoring. There is a significant change on LC/LU across the globe due to the climatic changes, rapid increase in population and over demand of the growing economic minerals. The present aim is to map, implement and monitor the land use/land cover classification using high-tech tools of geomatics in database generation, analyses and information extraction. Land use/land cover maps are prepared using satellite images in conjunction with collateral data like Survey of India (SoI) toposheets of 1:50,000 scale. Remote Sensing (RS) satellite data with its synoptic view and multispectral data provides essential information in proper planning of LU/LC conditions of larger areas. An attempt have been made to delineate the level-1, level-2 and level-3 LU/LC classification system through NRSC guidelines (1995) using both digital and visual image interpretation techniques by Geographical Information Systems (GIS) software's with limited Ground Truth Check (GTC). More accurate classification is observed in case of digital technique as compared to that of visual technique in terms of area statistics. The final results highlight the potentiality of geomatics in classification of LU/LC patterns around Chitradurga district, Karnataka, in natural resource mapping and its management.

67. 2015. Groundwater Quality Analysis in Precambrian rocks of Chitradurga district, Karnataka, India using Geo-informatics Technique, **Basavarajappa H.T** and Manjunatha M.C, ELSEVIER, ScienceDirect, Aquatic Procedia, Vol.4, Pp: 1354-1365. . IMP F-4.2

Significance: Water is the main source for domestic, engineering, industrial, agricultural and multipurpose uses which affects surface as well as groundwater quantity. The study area falls within the semiarid region and frequently facing water scarcity and quality problems. The present study generates the primary data to map the spatial variation of groundwater quality in Precambrian hard rock terrain of Chitradurga District through Geo-informatics technique. Efforts have been made to evaluate a total number of 50 representative groundwater samples (C1 to C50) collected in well points from different parts of the study area during premonsoon period (April-2012) to assess its parameters such as Fluoride (F-), Nitrate (NO3-), Carbonate (CO3-), Chloride (Cl-), Calcium (Ca2+), Magnesium (Mg2+), Sodium (Na+), Sulphate (SO42-), Iron (Fe), Potassium (K+), Total Dissolved Solids (TDS), Potential of Hydrogen (pH) and Total Hardness (TH). Groundwater quality is found to be more controlled by rock-water interaction & residence time of water in aquifers and affected by both anthropogenic and geogenic factors at many locations. Each lithological units, water bodies, agricultural lands and major lineaments are mapped and digitized using IRS-1D, PAN+LISS-III satellite data through GIS software's to evaluate the possible contamination of groundwater quality by rock-water interactions, agro-chemicals and storage & movement of water. This study highlights the potentiality of Geo-informatics technique in preparation of more consistent and accurate baseline information predicting the groundwater quality in Precambrian hard rock terrain of the study area; which is a suitable model in similar geological conditions.

68. 2015. Climate Change and its impact on Groundwater Table Fluctuation in Precambrian terrain of Chitradurga district, Karnataka, India using Geomatics Application, Manjunatha M.C, **Basavarajappa H.T** and Jeevan L, International Journal of Civil Engineering and Technology (IJCIET), IAEME, **I.F: 9.1215,** Vol.6, Issue.3, March, Pp: 89-96.

Significance: The study area falls within the semiarid region and frequently facing water scarcity problems. Rain is a form of precipitation, snow, sleet, hail and dew. The precipitation occurs when separate drops of waterfalls on the earth's surface from clouds. Not all rain reaches the surface, however; some evaporates while falling through dry air, a type of precipitation called Virga. The precipitated water percolates to deeper zones to be stored as groundwater. The present study generates the primary data to map the groundwater table fluctuation in hard rock terrain of Chitradurga District through Geomatics technique. Efforts have been made to evaluate a total of 20 representative raingauge station samples and analyzed the season rainfall variation over a period of 31 years (1981-2011). 47 representative well samples are collected to study the season-wise groundwater fluctuation of about 11 years (2000-2011). Rain gauge stations are plotted on a base map with their respective amount of rainfall. Then the contours of equal rainfall (isohyetes) are drawn using GIS software's. The average rainfall between the successive isohyets taken as the average of two isohyetal values is weighed with the area between the isohyets. The different rainfall intervals obtained (area between the two adjacent lines) are useful in determining the rainfall variation over the study area. The final results highlight the impacts of climatic change over groundwater table fluctuation in typical Precambrian rocks of Chitradurga District, Karnataka, which is a suitable model in similar geological conditions.

69. 2015. Climate change and its impact on Groundwater Table Fluctuation in Precambrian rocks of Chamarajanagar district, Karnataka, India using Geomatics Technique, **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, International Journal of Geomatics and Geosciences, Vol.5, No.4, Pp: 510-524. . IMP F-5.2

Significance: Change in climatic conditions directly affects the hydrologic cycle and gradually the groundwater table. Rise in temperature increases the evaporation of surface water and transpiration in wetlands. This results in low precipitation amounts, timings and intensity rates; which impacts on surface water bodies (rivers and lakes) as well as subsurface water bodies (change in volume and distribution of groundwater recharge process) and direct changes in major long-term climate variables such as air temperature, moisture content, precipitation and evapo-transpiration. Geomatics encompasses Survey of India (SoI) Toposheets, Remote Sensing (RS) Satellite Images, Geographic Information Systems (GIS) and Global Positioning Systems (GPS) with limited Ground Truth Check (GTC). Efforts have been made to evaluate the data from 27 representative rain gauge stations and analyzed the season-wise rainfall variation over a period of 26 years (1984-2009). 36 representative well samples are considered to study the groundwater table fluctuation from season to season of about 12 years (1998-2009). The spatial variability of mean annual precipitation depends upon the topographic factors like exposure of station to the prevailing wind, elevation, orientation and slope of the hills/mountains. The average and mean rainfall over the area are calculated using arithmetic mean, thiessen polygon and iso-hyetal methods. Average rainfall is the simple arithmetic mean rainfall measured in the area; while Iso-hyetal method has been adopted for spatial distribution of rainfall with respect to a particular direction. Rain gauge stations are plotted on a base map with their respective amount of rainfall and then the contours of equal rainfall (isohyets) are drawn using Surfer v8.5. The different rainfall intervals obtained (area between the two adjacent lines) are helpful in understanding the variation of rainfall over the study area. The final results highlight the impacts of climatic change over groundwater table fluctuation in typical Precambrian rocks of Chamarajanagara District, Karnataka, which is a suitable model in similar geological conditions.

70. 2015. Geoinformatics Technique in mapping of lithology and Geomorphological landforms in Precambrian rocks of Kollegal Shear Zone (KSZ), Southern Karnataka, India, **Basavarajappa H.T,** Dinakar S, Satish M.V, Nagesh D and Manjunatha M.C, Journal of Geomatics, ISG, Vol.9, No.1, Pp: 129-140. IMP F-2

Significance: Geoinformatics technique is the essential tool in mapping of lithology, geomorphology, drainage, lineament, soil, slope and other related features of a region. The present study aims to map the geology, lithological contacts, weathered layered and geomorphological landforms in Precambrian hard rock terrain of Kollegal Shear Zone (KSZ) which belongs to Dharwar Craton, adjacent to high grade granulites of Biligiri-Rangan hills in Southern India. Geoinformatics encompass Survey of India (SoI) toposheet, Remote Sensing (RS) Satellite data, Geographic Information System (GIS) and Global Positioning System (GPS) with limited Ground Truth Check (GTC). Efforts have been made to evaluate the thematic maps such as lithology, geomorphology, weathered layered, drainage, lineament, soil types, slope categories are derived using False Color Composite (FCC) data of IRS-1D, PAN+LISS-III. Slope and drainage maps are derived from SoI toposheet (2001) of 1:50,000 scale using visual and digital image interpretation techniques through GIS software's. The final results highlights the application of geoinformatics technique in assessment of lithological units and geomorphological landforms on Precambrian rocks of KSZ, Chamarajanagara district, Karnataka, which is a suitable model for application to similar geological terrain.

71. 2015. Mapping and Reclamation of Wastelands through Geomatics Technique in Precambrian Terrain of Mysuru district, Karnataka, India, **Basavarajappa H.T,** Manjunatha M.C and Pushpavathi K.N, International Journal of Civil and Structural Engineering (IJCSE), IPA, Vol5, No.4, Pp: 379-391. . IMP F-9.12

Significance: Wastelands are low-quality land from the agricultural point of view, often referred as degraded lands. The development of vast stretches of wastelands is caused by unscientific handling of land resources which causes ecological imbalance. The present work is undertaken to reclaim the wastelands of the study area through hi-tech tools of geomatics. This study aims to map and record the waste and unutilized lands using Survey of India (SoI) toposheets of 1:50,000 scale, IRS-1D PAN+LISS-III satellite and Google Earth images through GIS software's with limited Ground Truth Check (GTC). The database provides spatial baseline information in distribution, extent and temporal behavior of wastelands in planning and implementation of developmental reclamation strategies. The final results highlight the specific wasteland categories in Mysuru district using geomatics technique considering the environmental, biophysical and socio-economical factors.

72. 2015. Integration of Hyperspectral and Geochemical signatures on Iron ore deposits around Holalkere range of Megalahalli, Chitradurga Schist belt, Karnataka, India, **Basavarajappa H.T**, Manjunatha M.C and Rajendran S, Journal of The Indian Mineralogist, MSI, Vol.49, No.1, Pp: 85-93. IMP F-2

Significance: The advent hi-tech tools of hyperspectral signatures and GPS applications have opened a new vista in exploration and systematic mapping of economic ore deposits. The present study aims to integrate the hyperspectral signatures with major elements of iron ore deposits of Holalkere Range of Megalahalli, Chitradurga Schist Belt, Karnataka, India. The samples collected from field are studied in the laboratory using thin and polished sections under microscope and X-Ray Diffraction (XRD) analysis. Efforts have been made to evaluate the spectral signatures of 4 representative iron ore samples collected from different locations and analyzed through ASD Spectro-radiometer instrument operating in Visible and InfraRed (325 to 2500 nm) region with major elements concentration. The study show that the absorption features of rock samples depends on both major and minor mineral constituents. In this study, the spectral characters of the iron ore samples are studied with spectra of mineral library of USGS, JPL and JHU.

73. 2015. Discrimination of Banded Magnetite Quartzite (BMQ) deposits and associated lithology of parts of Chikkanayakanahalli Schist Belt of Dharwar Craton, Karnataka, India using Remote Sensing technique, **Basavarajappa H.T,** Jeevan L, Rajendran S and Manjunatha M.C, Cloud Publications, International Journal of Advanced Remote Sensing, Vol.4, Issue.1, Pp: 1033-1044. . IMP F-2.4

Significance: Remote Sensing technology has its potentiality in occurrence and mapping of mineral resources on surface of the earth. Study of light interaction phenomenon of Remote Sensing lead several geological investigations in discrimination of banded magnetite quartzite (BMQ) deposits and associated lithology (limestone, greywackes, Mn and Fe rich phyllitic chert, basic Meta basalt and basement granitic gneisses, granitoids and migmatites) in part of Chikkanayakanahalli schist belt, India. In the present study, the deposits and associated different rock types of the region are validated using low-cost medium resolution Landsat Enhanced Thematic Mapper plus (ETM+) Satellite Image. The digital image processing techniques such as Principal Component Analysis (PCA) and band ratios analysis are studied and showed the potential for mapping the surface deposits. The result of RGB images of Principal Components (R: PC1, G: PC2, and B: PC3) and band ratios used in mineral and hydrothermal analysis by discriminating the BMQ deposits and other rock types. The study demonstrates the capability of low-cost satellite image, potentiality of image processing methods.

74. 2015. Spatial data integration and mapping of Groundwater potential zones on Precambrian terrain of Hassan district, Karnataka, India using Geomatics application, **Basavarajappa H.T,** Manjunatha M.C and Basavaraj Hutti, International Journal of Civil Engineering and Technology (IJCIET), Vol.6, Issue.5, Pp: 123-134. IMP F-9.12

Significance: Water is the main source of human's daily life and being used in various fields. Mapping and integration of lithology, drainage, lineament, soil, slope and other related features are useful in assessing the groundwater resources of a larger area. Thematic maps have prepared through Visual Image Interpretation Techniques (VIIT) and integrated by using GIS software's. The present aim is to apply the Geomatics tools to demark the groundwater potential zones of the study area. Efforts have been made to evaluate the groundwater potential zones by assessing the weightage for different thematic layers based on collateral data and digitization. Various litho units such as granites, gneisses, schists and quartzites are encountered during field survey. Soil and lineament form the basic geological structures which are easily identifiable in the Landsat-7 satellite imagery and helps in understanding the nature of lithology in delineation of groundwater prospect zones. Slope map is prepared by using Survey of India (SoI) toposheets of 1:50,000 scale. The final result highlights the favorable conditions of groundwater potential zones in Precambrian terrain of the study area which is a suitable model in similar geological conditions.

75. 2015. Land use/ land cover classification analysis and soil conservation in Precambrian terrain of Chamarajanagara district, Karnataka, India using Geomatics application, **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, International Journal of Science, Engineering and Technology (IJSET), Vol.3, Issue.3, Pp: 739-747. IMP F-5.16

Significance: Land and soil management in developing countries like India is very much necessary in better monitoring for future sustainable resources. These resources are over stretched and undergoing degradation at an unacceptable rate due to rapid increase in population. Land use refers to mans activities & various uses which are carried on land; while land cover refers to natural vegetation such as water bodies, rock/soil, artificial cover and other resulting due to land transformations. Although land use is generally inferred based on the cover, yet both are closely related and interchangeable. Soil is a natural body developed by natural forces acting of natural materials. Soil is the loose and weathered rock material that covers the land surface of the earth and supports the growth of vegetation. The present aim is an attempt to classify the land use/land cover (LU/LC) and conserve the fertile upper layers of the study area.

Geo-coded FCC of IRS-1D, PAN+LISS-III satellite image and merged SoI toposheets of 1:50,000 scale are well utilized to digitize the soil map. The final results highlight the Geomatics applications in mapping, management and monitoring of land and soil resources on hard rock terrain in Southern tip of Karnataka.

76. 2015. Suitable Waste disposal sites selection for Tumakuru city, Karnataka, India using Geomatics application, **Basavarajappa H.T,** Jeevan L, Manjunatha M.C and Mohamad Ali M, International Journal of Civil Engineering and Technology (IJCIET), Vol.6, Issue.6, Pp: 133-146. IMP F-9.12

Significance: Waste management problems and issues result from indiscriminate waste disposal which stems from improper planning and implementation. The present study aims to integrate RS and GIS applications to locate the suitable landfill sites in developing city Tumakuru of Karnataka state. Spatial data such as; lineaments, soil, drainage networks and tanks of the study area are extracted from a geo-rectified (25m resolution) satellite image (IRS-1D, PAN+LISS-III), Survey of India (SoI) toposheet (scale-1:50,000) and updated on Google Earth Image. All the thematic layers extracted through Visual Image Interpretation Techniques (VIIT) on-screen digitizing using GIS software's. The newly located disposal sites are geo-located by considering the transportation distance and added as a layer to the map of the study area. The final results delineate the safe disposal sites of municipal & industrial wastes along with hydrological parameters and its environmental impact over existing site. The integration of RS, GIS analysis, GPS survey including Ground Truth Check (GTC), demarcates four alternative safe locations over existing landfill site; considering the environmental, biophysical and socio-economical factors.

77. 2015. Spatial data integration of lithology, geomorphology and its impact on groundwater prospect zones in Precambrian terrain of Chitradurga district, Karnataka, India using Geomatics application, Manjunatha M.C and **Basavarajappa H.T,** Global Journal of Engineering Science and Research Management (GJESRM), Vol.2, Issue.8, Pp: 16-22. IMP F-3.77

Significance: Mapping of lithology and geomorphology are carried out in typical hard rock terrain of Chitradurga district, which belongs to Dharwar Craton, Southern India. Groundwater resources in hard rock terrain are limited which need proper management and developmental programme strategies in its sustainability. Efforts have been made to evaluate the lithological units and geomorphological landforms in Precambrian terrain using Visual Image Interpretation Techniques (VIIT) and Digital Image Processing (DIP) of Landsat-7 False Color Composite (FCC) through GIS software's. Different lithological formations and landforms under each geomorphic unit have been mapped. The present study aims to integrate the geomatics application in assessing the demarcation of groundwater prospecting zones of the study area using bore well data collected during the year 2010. The final results highlight the potentiality of geomatics application in mapping of lithology and geomorphological landforms for groundwater exploration in hard rock terrain of Chitradurga district, Karnataka.

78. 2015. Demarcation and Reclamation Strategies of Wastelands in Precambrian terrain of Gundlupete Taluk, Chamarajanagara district, Karnataka, India using Geomatics application; **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, International Journal of Geomatics and Geosciences (IPA), Vol.6, No.1, Pp: 285-294. IMP F-4.39

Significance: Being Natural resources like land, water, soil, forest, agricultural land etc., have been devastated and degraded to a greater extent due to rapid increase in population. Wastelands are presently laying unutilized due to inherent disabilities related to location, environment, soil as well as current financial constraints. Mapping and integration of lithology, geomorphology, soils are carried out in typical hard rock terrain of Gundlupete taluk in southern tip of Karnataka State. The present study aims to integrate the geomatics technique to demark the wasteland categories of the study area. Efforts have been made to evaluate the lithological units and geomorphological landforms using Visual Image Interpretation Techniques (VIIT) and Digital Image Processing (DIP) on Landsat-7 Satellite image through GIS

software's. The study area exhibits predominantly granites, gneisses with mafic dykes are mainly doleritic, amphibolites, hornblend and two pyroxene granulitic in composition occur as intrusive bodies in granites. Geomorphology represents denudational hills, residual hills, pediment, linear ridge, pediplain, pediplain gullied, structural hills and valley fills. The final result demarks the different wasteland categories observed in hard rock terrain of Gundlupete taluk, Karnataka for further reclamation measures and land developmental programmes.

79. 2015. Lineament extraction analysis for geotectonic implications around Biligiri-Rangan hill ranges in Southern Karnataka, India using IRS-1D, LISS-IV Satellite Image, **Basavarjappa H.T,** Dinakar S, Satish M.V and Manjunatha M.C, Journal of Geomatics, Vol.9, No.2, Pp: 223-231. IMP F-4.39

Significance: Lineaments are linear fracture commonly associated with dislocation and deformation. A lineament is a regional scale linear or curvilinear feature, pattern or change in pattern that can be attributed in analyzing the structural and tectonic aspects of an area. Larger lineaments have larger zone of influence and larger amount of deformation is associated with them. In central parts of the study area represents highly sheared and fissile type of intermixed gneisses with granitoids, migmatitic gneisses with massive retrograde and incipient type of charnockite exposures with mylonites are noticed with basic granulites, younger dolerite dyke rocks are cross cutting all other earlier rock types. Ductile to ductile brittle, dextral and sinistral type of shears are also noticed. The present aim is to study the tectonic activity on Precambrain basement rocks in Southern tip of Karnataka state by lineament extraction through satellite image. Remote Sensing images show best enhancement techniques for the linear features like fracture system and lineaments. These are useful in groundwater, mineral exploration and engineering geological applications. Lineaments are derived by DIP techniques on IRS-1D LISS-III image through GIS softwares. Remote Sensing techniques have been further boosted to lineament studies since the identification and mapping of lineaments become relatively easy using high resolution satellite images. The final results show geotectonic implications around Biligiri-Rangan hill ranges of Southern Granulite Terrain (SGT) of Indian subcontinent.

80. 2015. Rock-water interaction and Chemical quality analysis of Groundwater in Hard rock terrain of Chamarajanagara district, Karnataka, India using Geo-informatics, **Basavarajappa H.T,** Manjunatha M.C and Pushpavathi K.N, Journal of Organic and Inorganic Chemistry, iMedPub Journals, Vol.1, No.1, Pp:1-15. IMP F-8.7

Significance: Groundwater is one of the main natural resources having its application in various fields which affects its quantity. Groundwater pollution occurs when used water is returned to the hydrological cycle. The present study aims to assess the spatial variations of groundwater quality parameters in Southern tip of Karnataka using Geoinformatics technique. Efforts have been made to evaluate a total number of 46 representative groundwater samples (C1 to C46) from different parts of the study area during pre-monsoon period (April-May 2005) to assess its parameters such as F-, NO3-, CO3-, Cl-, Ca2+, Mg2+, Na+, SO_4^{2-}, Fe, K+, pH and EC. Groundwater quality is found to be more controlled by rock-water interaction and residence time of water in aquifers and affected more by anthropogenic factors at many locations. Each Land Use/Land Cover (LU/LC) patterns and major lineaments are mapped and digitized using SoI topomap of 1:50,000 scale and IRS-1D, PAN+LISS-III satellite data through GIS software's. Wide applications of chemicals, pesticides, fertilizers, herbicides in large agricultural and vegetative lands; mining activities are the major factors that are contaminating the soil and leaching through seepage, fractures, faults and joints (lineaments) into the groundwater. The study reveals the potentiality of Geoinformatics application in preparation of more consistent and accurate baseline information predicting the groundwater quality in Precambrian hard rock terrain of the study area.

81. 2015. Spatio-Temporal Variation in Groundwater Quality Analysis on Chitradurga district, Karnataka, India using Geo-informatics Technique, Manjunatha M.C and **Basavarajappa H.T,**

Journal of International Academic Research for Multidisciplinary, Impact Factor: 2.417, Vol.3, Issue.11, Pp: 164-179.

Significance: Most of the villages in India depend mainly on groundwater for domestic purposes which affect its quality. Unsustainable withdrawal/ over exploitation of groundwater in various fields and drought conditions during extreme summer seasons have depleting the water level in the study area. Groundwater quality is contaminated mostly by anthropogenic (agricultural activities) and geogenic substances; are adversely affecting the water at many regions. Efforts have been made to evaluate the seasonal variation (pre & post monsoon during 2011) in groundwater quality parameters of 50 groundwater samples in Precambrian terrain of Chitradurga district. Intensive use of agrochemicals, sewage water, polluted drain water and Municipal waste water has posed a serious threat to groundwater quality through bore/ tube wells and Govt. pipeline water supply. All the samples are analyzed with respect to World Health Organization (WHO) and Bureau of India Standards (BIS). Lineaments are overlaid on land use/ land cover categories using IRS-1D, PAN+LISSIII satellite image through GIS software's to evaluate the possible threats/ locations of groundwater quality such as rock-water interactions, agro-chemicals and storage & movement of water. Ordinary kriging method is utilized in preparation of thematic maps of groundwater quality parameters viz Fluoride (F-), Nitrate (No3), Chloride (Cl-), Potential of Hydrogen (pH) and Total Hardness (TH). The final results highlight the seasonal variation in groundwater quality analysis during the year 2011 in Precambrian hard rock terrain of Chitradurga district, Karnataka, India.

82. 2016. Validation of Derived Groundwater Potential Zones (GWPZ) using Geo-informatics and Actual yield from well points in parts of Upper Cauvery basin of Mysuru and Chamarajanagara districts, Karntaka, India, **Basavarajappa H.T,** Dinakar S and Manjunatha M.C, International Journal of Civil Engineering and Technology (IJCIET), Vol.7, Issue.1, Pp: 141-161. IMP F-9.12

Significance: Groundwater is a most important natural resource of the earth and its demand is rapidly increasing with growing population, agricultural expansion and industrialization. The present study aims to integrate the thematic layers viz., lithology, geomorphology, soil, lineament, land use/land cover, slope, rainfall and other related features to explore the occurrence & movement of groundwater using geo-informatics technique. Integration of various themes is achieved through the development of a models/ assigned weightages which relates and delineates GWPZ and finally to generate a composite map. About 140 bore wells yield data have been collected to quantify the yield from GWPZ map derived from geo-informatics. The final output map is reclassified into four groundwater prospect zones by merging the polygon of same classes using dissolve operation such as Very Good, Good, Moderate and Poor. The final results highlight the high-tech application of Geo-informatics in validating the GWPZ with reference to actual bore well yield data in parts of Upper Cauvery basin in Southern tip of Karnataka State, India.

83. 2016. Land use/land cover change detection analysis in Hosadurga taluk of Chitradurga district, Karnataka, India using Geoinformatics technique, **Basavarajappa H.T,** Manjunatha M.C and Maruthi N.E, Journal of International Academic Research for Multidisciplinary, Vol.4, Issue.2, Pp: 304-314. IMP F- 2.4

Significance: Land is one of the non-renewable resources and mapping of land use/ land cover (LU/LC) is essential for planning and development of land, water resources of a region with suitable technology. The present aim is to detect the changes in LU/LC patterns and its extent due to different socio-economic factors in the study area. Efforts have been made to evaluate the LU/LC patterns using SoI topomap (1:50,000) with limited field visits; geo-coded FCC of IRS-1D, PAN+LISS-III multispectral, multi-temporal satellite image and updated on Google Earth image through GIS software's. Different classes of vegetation activities affect the surface flow of run-off water leading to maximize infiltration. There is a significant change on LC/LU across the globe due to the climatic changes, rapid increase in population and over demand of the growing economic resources. Land use systems need thorough systematic monitoring and management in maintaining food security, minimizing the deforestation,

conservation of biological diversity and protection of natural resources. The final results highlight the LU/LC change detection analysis and its extent in the study area using geoinformatics technique.

84. 2016. Delineation of Groundwater Potential Zones in Mysuru district, Karnataka, India using Geoinformatics technique., Vahid Sharifi, Srikantaswamy S, Manjunatha M.C and **Basavarajappa H.T,** Journal of International Academic Research for Multidisciplinary, Vol.4, Issue.2, Pp: 315-328. IMP F- 2.4

Significance: Water is one of the main natural resources that essential for human's daily life, domestic, industrial and other various fields. This needs periodic assessing and monitoring for its sustainability. Mapping and integration of lithology, geomorphology, drainage, lineament, soil, slope, land use/land cover and other related features had carried out in Southern tip of Karnataka State using GIS techniques in assessing the groundwater prospect zones. The present study aims to predict the good, moderate, poor and very poor groundwater prospects zones using water level measured in available dug/bore wells of the study area collected during the year 2014. Each lithological units and geomorphological landforms are mapped during limited field visits and digitized using Visual Image Interpretation (VIIT) and Digital Image Processing (DIP) on Satellite Remote Sensing data through GIS's software. The final results highlight the potentiality of GIS application in mapping of groundwater prospect zones and its periodic monitoring and exploration in Southern tip of Karnataka State.

85. 2016. Rainfall Variation and its impact on Groundwater table fluctuation in Mysore taluk, Karnataka, India using GIS analysis, Vahid Sharifi, Srikantaswamy S, Manjunatha M.C and **Basavarajappa H.T,** Journal of Environmental Science, Computer Science and Engineering and Technology, Vol.5, No.2, Pp: 137-152. IMP F- 5.87

Significance: Precipitation is an important factor in hydrological cycle that acts as the major source of all water resources on earth. Rise in temperature increases the evaporation of surface water bodies & transpiration in wetlands. Groundwater in hard rock aquifers is essentially confined to fractured and/or weathered horizons which need thorough understanding, management and periodic monitoring. Groundwater is the invisible and ultimate indicator of the atmospheric anomalies in the hydrological cycle. The present aim is to analyze the rainfall variation impacts on groundwater table fluctuation in the study area through GIS potentiality. Selection of observation well points relies heavily on traditional methods; need a proper systematic approach which is lacking. Groundwater level data provides direct value of groundwater occurrences below ground level (bgl). Aquifers have the capacity to store large volumes of water and are naturally buffered against seasonal changes in temperature and rainfall. A sincere attempt has been made to evaluate 6 rain gauge stations data of 11 years (2001-11) in determining the rainfall fluctuation; while 9 observation well points are considered to determine the groundwater table fluctuation of the same 11 years. Arithmetic mean, theissen polygon and iso-hyetal methods are well utilized in the present study in digitization of spatio-temporal maps using field data collection through GIS's software. The final results highlight the capability of GIS tool in mapping, management and period monitoring of rainfall variation and groundwater table fluctuation in Mysore taluk, Karnataka, India.

86. 2016. Geomatics application on climate change and its impact on Groundwater table fluctuation in parts of upper Cauvery basin (Mysuru and Chamarajanagara districts), Karnataka, India, Basavarajappa H.T, Dinakar S and **Manjunatha M.C,** Journal of Environmental Science, Computer Science and Engineering and Technology, Vol.5, No.2, Pp: 153-166. IMP F- 5.87

Significance: Analyses of season-wise rainfall variations have been analyzed using 31 years (1971-2001) rainfall data. Rainfall trend alters the hydrological cycle and directly affects the surface & sub-surface water conditions. The spatial variability of mean annual precipitation depends upon the topographic factors like exposure of station to the prevailing wind, elevation, orientation and slope of the mountain. 13 years of Groundwater level has been recorded to study its fluctuation from 1990-2002. The average and

mean rainfall & subsurface water level over the area are calculated using Arithmetic mean, Thiessen polygon and Iso-hyetal methods. Average rainfall, water level is the simple arithmetic mean measured in the area; while Iso-hyetal method has been adopted for rainfall & groundwater fluctuation analysis. Rain gauge stations are plotted on a base map with their respective amount of rainfall and then the contours of equal rainfall (isohyets) are drawn using Surfer software and same groundwater levels. The different in rainfall & groundwater intervals obtained (area between the two adjacent lines) are helpful in understanding the variation of rainfall; groundwater over the study area. The final results highlight the impacts of climatic change over groundwater table fluctuation in parts of Upper Cauvery basin in Karnataka state, which is a suitable model in similar geological conditions.

87. 2016. Mapping and Reclamation of Wastelands in Yelanduru Taluk of Chamarajanagara District, Karnataka, India using Geo-Informatics Technique, Basavarajappa H.T, Pushpavathi K.N and **Manjunatha M.C,** International Journal of Scientific Research in Science and Technology (IJSRST), Vol.2, No.3, Pp: 91-98. IMP F- 5

Significance: Wastelands mapping and its reclamation analyses has been applied on Yelanduru taluk in Southern tip of Karnataka using high-tech tools of geoinformatics. With the increasing population the natural resources like forest, agricultural land etc., have been devastated and degraded to a great extent. Unscientific handling of land resources in a region causes ecological imbalance & vast stretches of wastelands. The present study aims to propose appropriate management strategies to reclaim the wastelands in the study area. Efforts have been made to evaluate the unutilized lands using Survey of India (SoI) topomap of 1:50,000 scale, IRS-1D PAN+LISS-III satellite and Google Earth images through GIS software's with limited Ground Truth Check (GTC). This reveals the spatial baseline information in distribution, extent and temporal behavior of each wasteland categories for better planning and developmental reclamation strategies. Major identifiable wasteland categories are barren rocky; land with scrub; mining wasteland and salt affected area. The final result specifies each wasteland categories in the study area using geoinformatics technique considering the environmental, biophysical and socio-economic factors.

88. 2016**.** Geoinformatics application on land use/ land cover classification analysis in Kollega taluk of Chamarajanagara district, Karnataka, India **Basavarajappa H.T**, Pushpavathi K.N and Manjunatha M.C, Global Journal of Engineering Science and Research Management 112(6):112-122. **IMP F- 3.77**

Significance: Land resources planning and its development is an important issue in the present era. Major changes in any part of earth's surfaces will significantly influences the environmental factors such as atmosphere, soil, topography, vegetation, underlying geology, hydrology, plant & animal population. The present aim is to classify the Land Use/ Land Cover (LU/LC) categories based on NRSC' standards (1995) to increase land productivity, restoration of soil degradation, reclamation of wastelands and increase the environmental qualities. An attempt have been made to evaluate the level-I, level-II and level-III LU/LC classification system using IRS-1D PAN+LISS-III through GIS. The classification accuracy is found to be more in case of digital technique as compared to that of visual technique in terms of area statistics. The final results demonstrate the accurate mapping of classified LU/LC categories for implementation, management, mapping, measurement and monitoring through geoinformatics techniques.

89. 2016. PCA on Lineament Enhancement for Groundwater Significance in parts of Upper Cauvery Basin, Southern tip of Karnataka, India using IRS-1D, LISS-III Satellite image, Basavarajappa H.T, Dinakar S and Manjunatha M.C, Journal of Environmental Science, Computer Science, and Engineering & Technology, Vol.5, No.4, Pp: 721-735. IMP F- 5.87

Significance: Principal Component Analysis (PCA) analyzing the patterns in high resolution on satellite data is an Advent Statistical Technique (AST) that shows its application in enhancement of linear features. PCA works on basic assumptions such as, linearity, pattern recognition, large existing variances & extraction of linear relationship among a set of variables. The present aim is to enhance the linear features

using PCA technique on IRS-1D LISS-III image. PCA plays an important role in Remote Sensing for geological information extraction of fault, fissures, joints etc. Efforts have been made to evaluate the PCA analysis on all bands of Visible and Near-Infrared and Short-Wave Infrared of Indian Remote Sensing (IRS) satellite image using GIS software's. The results show the ability to enhance the lineaments focusing on groundwater investigations in Southern tip of Karnataka State.

90. 2016. Mapping and Reclamation of Wastelands in Chamarajanagara Taluk, Southern Tip of Karnataka, India using Geoinformatics Technique, **Basavarajappa H.T,** Pushpavathi K.N and Manjunatha M.C, Global Journal of Engineering Science and Research Management (GJESRM), Vol.3, Issue.10, Pp: 95-110. IMP F- 3.77

Significance: Land and water are the most valuable natural resources which has importance in human's daily life. Mapping and demarcation of wastelands was carried out in Chamarajanagara taluk, Karnataka, using geoinformatic techniques for proper maintenance in future use. The present aim is to map and reclaim the wasteland categories available in the study area for several implementation programs. Efforts have been made to evaluate these categories through Visual Image Interpretation Techniques (VIIT) on IRS-1C PAN+LISS-III in False Color Composite (FCC) and updated using Google Earth Image. Various litho units such as gneisses, charnockite, two-pyroxene granulite, amphibolite, migmatites and hornbled schists of Archean age were mapped. Geomorphological landforms were represented by denudational hills, residual hills, pediment, pediplain moderate, pediplain shallow weathered and valley; while each type of soils were also mapped. The final output highlights the demarcation and reclamation strategies of the study area for its sustainability using geoinformatics techniques

91. **2017** Determination of Spectral Characteristics on Archaean Komatiites in Ghattihosahalli Schist Belt (Gsb) of Kumminagatta, Chitradurga District, Karnataka, India. **Basavarajappa H.T,** Manjunatha M.C, Rajendran S and Jeevan L, International Journal of Advanced Remote Sensing and GIS , Volume 6, Issue 1, pp. 2416-2423. IMP F- 1.97

Significance: Komatiites contain economic important nickel, chromium, titanium and copper deposits and their spectral absorption characters are highly important in the remote sensing technique to map and explore such deposits bearing rocks. This study integrates hyperspectral signatures; petrological and geochemical characters of serpentinite bearing ultramafic komatiite rock noticed at the Ghattihosahalli Schist Belt (GSB), near Kumminagatta village, in the Chitradurga district of Karnataka, India and demonstrate specific spectral absorptions of the rock. The measurement of spectral signatures of the rock using spectroradiometer produced significant absorptions near 700, 900 to1100, 1400, 2300, 2380 and 2470 nm in the 350-2500 nm wavelength. The spectral absorptions depend mainly on the optical and physico-chemical characters of the rock and are studied with the spectra of mineral library of USGS and JPL and characterized. This study can be used in the remote sensing technique to map similar rocks and bearing mineralization of the remote areas.

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92. **2017** Land use/Land Cover change detection Analysis in Holalkere Taluk of Chitradurga District, Karnataka, India using Geoinformatics. Manjunatha M.C, **Basavarajappa H.T** and Maruthi N.E, Journal of Environmental Science, Computer Science and Engineering and Technology Vol,6 Issue, 3 Pp291 to 301. IMP F- 7.22

Significance: Land resource is one of the highly sensitive systems that offers sustainability to all forms of life on earth. The present aim is to focus mainly on planning and management of land resources for

environmental and socio-economical outcome for sustainable use to meet the future needs. Mapping of LU/LC Change Detection Analysis (CDA) was analyzed using SoI topomap; geo-rectified multi-spectral and multi-temporal image of IRS-1D PAN+LISS-III through GIS software's. There is a significant rise in agricultural land as well as in built-up land that affecting other LU/LC categories such as mining, dumping and water crisis. Geo-informatics is one of the advent high-tech tools in analyzing the causes, rates, magnitude, patterns, trends in local scales ecosystem for better mapping and monitoring. The final results highlight the change detected on land surface features for better land utilization

93. **2017** Geomatics Technique on Climate Change and its impact on Groundwater table Fluctuation in Mysuru District, Karnataka State, India. Manjunatha M.C and **Basavarajappa H.T.** Journal of Environmental Science, Computer Science and Engineering and Technology Vol,6 Issue,4 Pp404 to 420. IMP F- 7.22

Significance: Average global temperatures are higher than they have ever been during the past millennium and the levels of CO2 in the atmosphere have crossed all previous records. The earth's climate is most affected by difference in temperatures on land, sea, water and topography. Climate is the average weather conditions with a minimum period of 30 years including temperature, rainfall, and wind. The present study aims to generate the primary data to map the rainfall trends and its impact on groundwater level fluctuation through geomatics techniques. Efforts have been made to evaluate a total of 40 representative rain gauge station samples and analyzed the seasonal rainfall variation over a period of 32 years (1983- 2014). 50 representative groundwater well samples are collected to study the season-wise groundwater fluctuation of about 14 years (2001- 2014). Rain gauge stations are plotted on a base map with their respective amount of rainfall, and then the contours of equal rainfall (isohyetes) are drawn using GIS software. The average rainfall between the successive isohyets taken as the average of two isohyetal values is weighed with the area between the isohyets. Climate change and certain human activities threatened directly the groundwater resources globally. The final results highlight the capability of geomatics technique in analyses of impacts of climate over groundwater level fluctuation in typical Precambrian rocks of Mysuru District, Karnataka, which is a suitable model in similar geological conditions.

94. **2017** Hyperspectral Signatures and Field Petrography of Corundum Bearing Litho-Units in Arsikere Band of Haranahalli, Hassan District, Karnataka, India. **Basavarajappa H.T,** Maruthi N.E and Manjunatha M.C. INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS.VOL,5 ISSUE, 4 PP 3791-3798. IMP F- 5.97

Significance: Precambrian basement rocks of Karnataka composed of active and dynamic geological settings with economic mineral deposits and variety of gemstones. These gemstones were noticed all along the lithological contacts of Green stone & Schist Belts, younger granites and granitoids of Dharwar Craton. Corundum is a rock-forming mineral occurs in igneous, metamorphic and sedimentary rocks which represent rich amount of Aluminium oxides (Al_2O_3) in hexagonal crystal structure. The extreme hardness of corundum makes an excellent abrasive for industrial uses. The present study aims to characterize the spectral behavior of Corundum and associated rocks using Spectro-radiometer instrument calibrating in between 400-2500 nm wavelength. Spectro-radiometer instrument records 10 nm resolution data to bring out diagnostic features on lithological contacts for better discrimination of gemstones and altered minerals. The final results highlight the spectral characters of corundum and associated rocks for better mapping and exploration in similar terrains of Karnataka State.

95. **2017** Geoinformatics Technique on Land Use/Land Cover Classification Analysis in Yelanduru Taluk of Chamarajanagara District, Karnataka, India**. Basavarajappa H.T,**

Pushpavathi K.N and Manjunatha M.C Journal of Environmental Science, Computer Science and Engineering & Technology, Vol-7. Issue- 1. Pp40-53. IMP F- 7.22

Significance :Land embraces all reasonable stable or predictably cyclic, attribute of the biosphere including the atmosphere, soil and underlying geology. Mapping of Land Use/ Land Cover (LU/LC) is essential for planning and development of land and water resources of engineering projects under progress. An attempt have been made to delineate the level-I, level-II and level-III LU/LC classification system through NRSC guidelines (1995) using both Digital Image Processing (DIP) and Visual Image Interpretation Techniques (VIIT) through GIS software's. Efforts have been made to classify the LU/LC patterns using False Color Composite (FCC) data of IRS-1D PAN+LISS-III (Band: 2, 3, 4) through ERDAS Imagine v2011 and ArcGIS v10. The classification accuracy is found to be more in case of digital technique as compared to that of visual technique in terms of area statistics. Remote Sensing (RS) satellite data with its synoptic view and multispectral data provides essential information in proper planning of LU/LC conditions of the larger areas. The final results highlight the potentiality of geoinformatics in LU/LC classification in Yelanduru taluk, Karnataka, in natural resource mapping and its management.

96. **2018.** Petrochemical characteristics and Hyperspectral signatures on Corundum bearing Precambrian lithounits of Varuna area, Mysuru district,Karnataka, India. **Basavarajappa H.T,** and **Maruthi N.E** INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS.VOL,6 ISSUE,1 PP 998-1009. IMP F- 5.97

Significance: Varuna area of Mysuru District, in Dharwar Craton is composed of precambrian dynamic geological settings is prospects of nearly four kinds of litho units with economically viable minerals including gemstones varieties particularly in contact zones of ultramafics, amphibolite schist with gneiss and granitoids. The study carried out by using advent high-tech tools of Spectro-Radiometer (Spectral Evolution SR-3500) instrument, DARWin SP.V.1.3.0 and GIS software's. Four types of random samples were collected such as gneiss, granitoids, ultramafics and corundum bearing amphibolite schist in the field along with quartzite ridge through GTC (Ground Truth Check). The spectral signatures of the collected samples were derived in a closed laboratory environment to achieve better accuracy. Hyperspectral (350-2500 nm) signatures were developed as the modern technology & works mainly on physico-chemical and optical properties of the litho units which help in mapping of precious gemstones at lithological contacts and mineralized zones. Spectro-radiometer instrument provides a high spectral resolution data of 10 nm to bring out diagnostic features on lithological contacts for better discrimination of gemstones bearing litho-units. The present study aims to apply the advent techniques of hyperspectral signature in mapping, exploration of corundum bearing litho units in Varuna area of Mysuru district in Precambrian basement rocks of Karnataka State.

97. 2018. Geoinformatics technique on land use/land cover and change detectionanalysis in mulshi taluk of western ghats, india. , Basavarajappa H.T Reza Ravanshad, and David Rodrigues. INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS.VOL,6 ISSUE,1 PP 2221-2232. IMP F- 5.97

significance: The land cover of Mulshi taluk in Pune district over the last two decades, due to infrastructural development. Mulshi taluk in the Western part of Maharashtra encompasses the Western Ghats of India, which are one of the hotspots of biodiversity of the world. Over the last two decades, this area has seen many infrastructural changes urban develop along with the creation of lake cities, extension of highways leading to the coastal areas and development/sale of land. This increase in the urbanized area has put a strain on the water resources of Pune City. The objective of this paper is to detect the change in the land-use/cover of the Mulshi taluk and understand the drivers of change in the rural landscape. This study will help in identifying measures that need to be taken for sustainable development using geoinformatics. Post classification change detection has been performed between two images of the area from (1992 and 2011). The drivers of this were determined by field surveys and interviews with the local

people. A future land cover scenario for the year 2020 has been predicted using Idrisi's Land Change Modeller (ILCM). The unplanned expansion of the built up areas into the surrounding parts will have a direct impact on the rural environment. The changes in agriculture indicate a trend towards a migration from traditional crops to cash crops like sugarcane.in other economically important crops in the study area.

98. 2018. Physico-chemical charectristics and Hyperspectral signature study using geomatics on gem verity of Corundum bearing Precambrian litho-units of Mavinahalli area, Mysuru district, Karnataka, India. **Basavarajappa H.T, Maruthi N.E, Jeevan L and Manjunatha M.C . International Journal of Computer Engineering & Technology (IJCET)** Volume 9, Issue 1, Jan-Feb 2018, pp. 102–112, IMP F- 9.35

Significance: Mavinahalli area of Mysuru District, within amphibolite facies South of the Dharwar craton unity of sargur supracrustal rocks contain ultrabasic enclaves. The study area consist of major 5 kinds of litho-units and with economicaly viable minerals including gemstones varities main rock types in contact zones of ultramafics, fuchsite quartzite with kayanite, Amphiolite and hornblende schist with crystaline limestone, Banded iron formation with high grade metapelites and grey migmatite granodiorite tonalitic banded gneiss. the study carried out by petrochemical study and spectral signature study using advent high-tech tools of Spectro- Radiometer (Spectral Evolution SR-3500) instrument, DARWin SP.V.1.3.0 and GIS software's. The spectral signatures of the collected samples were derived in laboratory environment to achieve better accuracy. Hyperspectral (350-2500nm) were developed as works mainly on physico-chemical and optical properties of the litho units which help in mapping of precious gemstones at lithological contacts and mineralized zones. the present study aims to charactrize the spectral behavior of Corundum and associated rocks. Spectral radiometer instrument bring out diagnostic features on lithological contact for better discrimination of gemstones and altered minerals. The final results Highlight the spectral characters of corundum and associated rocks for better mapping in similar terrains of Karnataka State.

99. **2018**." Hyperspectral signature studies on Pricambrian rock types of Southern part of Chitradurga schist belt, Dharwar Craton, Karnataka, India" **JEEVAN L and BASAVARAJAPPA H T.** INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS.VOL,6 ISSUE,1 PP 758-763. IMP F- 5.97

Significance: Precambrian rocks of southern part of Chitradurga schist belt host economic minerals like Limestone, Dolomite, Iron, Manganese and Gold mineralization, hence the author is tried to build few spectral library of the altered and unaltered rocks of the study area by understanding the spectral properties of the minerals.Hyper-Spectral signatures are the representation of the spectral response of certain features in a graphical manner as a function of wavelength and reflectance measured by the ASD instrument. The Visible near Infrared – Short wave Infrared (VNIR-SWIR) regions of electromagnetic domain is characterized by the absorption resulted either due to the electronic process or vibrational process and these features delineates the mineral occurrences, the spectral character of the most of the minerals occur within a complex describes the spectral behavior of the rock.The intimate mixture (i.e. rock) of major minerals is identified mainly by above said two process, one the electronic process at less than 1.0 µm to delineate Fe^{2+} and Fe^{3+} and another process between the wavelength 1.0 to 2.5µm SWIR region of EMS shows diagnostic mineral features of AL-OH, Mg-OH, Fe-OH, Si-OH, CO_3 NH_4 and SO_4. The spectral analysis resulted in the determining the physico chemical properties of the mineral. The chemical analysis (XRF) and petrographic study of the Precambrian rocks given the parallel supports for the results of spectroradiometry.

100. 2018 Hyperspectral Signature study finds Corundum alters to Diaspore influence of climate change of Dharwar craton Arasikere Band of Haranahalli, Hassan District, Karnataka, India. **Basavarajappa H.T and Maruthi N.E.** Journal of Environmental Science, Computer Science and Engineering & Technology. VoL,7 Issue,2 Pp 238-246.IMP F-7.22

Significance: Arsikere of Hassan District, western Dharwar Craton is composed of Precambrian basement rocks and active dynamic geological setting with prospects of many different kinds of economic mineral deposits, including variety of gemstones particularly in different Cratanic Archaean group of lithological contact zone of Green Schist belts and younger granites and granitoids of the Karnataka. Corundum is a rockforming mineral occurs in igneous, metamorphic and sedimentary rocks.Corundum (Al2O3) is a different precious and rare mineral species with high water content influence of climate change due to airid condition in nature Corundum alters to Diaspore [Al(OH)O]. its defect-induced weaknesses such as fragility, splintering, and cracking become apparent since the temperature of the mineral species may be increased to high temperatures during the process. These deformations may be broadly related to water loss (molecular(H2O) andhydroxyl(OH)group). In this study thermal properties and thermal stability as dehydratial behaviors of gemquality diaspore, including some associated mineral inclusions, were studied by petrochemical and spectral signature study using advent high-tech tools of Spectro- Radiometer (Spectral Evolution SR-3500) instrument, Thesepatterns indicated that the weight losses of the diaspore were due to the water loss only and that these losses occur in the temperature ranges between about about 5920C and 7180C in diaspore. The present study aims to charactrize the spectral behavior of Diaspore and associated rocks. Spectral radiometer instrument bring out diagnostic features on lithological contact for better discrimination of gemstones and altered minerals. The final results Highlight the spectral characters of corundum and associated rocks for better mapping in similar terrains of Arsikere band of Haranahalli on Precambrian basement rocks of Karnataka State.

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Manjunatha M.C and Pushpavathi K.N, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

87. Mapping and Integration of Lithology and Geomorphological Landforms in Precambrian rocks of Chitradurga district, Karnataka, India using Geomatics Technique, **Basavarajappa H.T** and Manjunatha M.C, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

88. Delineation of Groundwater Potential Zones in Piriyapatna basin, Mysore district, Karnataka, India using Remote Sensing and GIS, Manjunatha M.C and **Basavarajappa H.T,** in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

89. Applications of Remote Sensing and GIS in Landuse/Land cover Classification in Precambrian rocks of Chitradurga district, Karnataka, India, **Basavarajappa H.T** and Manjunatha M.C, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

90. Petrography and Geochemistry on High Grade Manganese deposits in Precambrian rocks of Halekal Band of Hosahatty village, Chitradurga taluk, Chitradurga district, Karnataka, India, **Basavarajappa H.T** and Manjunatha M.C, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

91. Geomatics Technique in Land use/Land Cover classification analysis in Precambrian rocks around Chamarajanagar district, Karnataka, India, **Basavarajappa H.T,** Dinakar S and Manjunatha M.C, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

92. Geomatic Techniques on Delineation of Groundwater Potential Zones in Precambrian rocks of Tumkur district, Karnataka, India, Basavarajappa H.T, Jeevan L and Manjunatha M.C, in National Seminar on Emerging Trends in Geosciences, Department of Geology, Osmania University, Hyderabad -2014.

93. Basavarajappa H.T and **Manjunatha M.C,** 2015. "Groundwater Quality Analysis in Precambrian rocks of Chitradurga district, Karnataka, India using Geo-informatics", International Conference on "Water Resources, Coastal and Ocean Engineering", Department of Applied Mechanics and Hydraulics, National Institute of Technology Karnataka, Surathkal, Edited Vol.01, Pp: 83.

94. Manjunatha M.C, Basavarajappa H.T and Jeevan L, 2015. Integration of Hyperspectral Signature and Geochemistry on Komatiite in Ghattihosahalli band of Kummanagatta, Chitradurga Schist Belt, Karnataka, India, in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru, Abstract Vol.01, Pp: 39.

95. Jeevan L, Basavarajappa H.T and Manjunatha M.C, 2015. ASTER-GDEM and ETM+ data for discrimination of Lithological units on Precambrian Terrain in Southern parts of Chitradurga Schist Belt, Dharwar Craton, India, in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru, Abstract Vol.01, Pp: 40.

96. Edwin Precilla S, Jeevan L, Manjunatha M.C and Basavarajappa H.T, 2015. "Geomatic Techniques on Morpho-tectonic Study around Malai Mahadeshwara Hill Ranges of Northern Granulite Terrain, Southern India", in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru, Abstract Vol.01, Pp: 41.

97. Maruthi N.E, Siddaraju M.S, Jeevan L, Manjunatha M.C and Basavarajappa H.T, 2015. "Application of Hyperspectral Signatures on Corundum bearing litho-units in Arsikere band of Haranahalli, Hassan district, Karnataka, India", in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru, Abstract Vol.01, Pp: 42.

98. Siddaraju M.S, Maruthi N.E, Harshavardhana A.S and Basavarajappa H.T, 2015. "Geological Setting and Petrographic Study of Rayadurga to Kalyanadurga Eastern Dharwar Craton, South India", in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru, Abstract Vol.01, Pp: 11.

99. H.T. Basavarajappa, 2016. Demarcation of Kollegal Shear Zone (KSZ) and Neo-Metamorphism in Precambrian terrain of Biligiri-Rangan Hill Ranges, Southern Granulites, Karnataka, India, 103rd Indian Science Congress, Earth System Sciences, University of Mysore, Mysuru, Proceedings vol.1, Pp: 101-104

100. Basavarajappa H.T, Manjunatha M.C, 2016. Anthropogenic pressure on Forest cover and it's change detection analysis in Holalkere taluk, Chitradurga District, Karnataka, India using Geoinformatics. National Seminor held on Biological Science Departments Kuvempu University, Shankaraghatta, Shivamogga. Pp:80

101. Basavarajappa H.T, and Ahmed Abrar 2016. Field Petrography and Mineral Characterization of Gold bearing Rocks around Gadag Schist belt, Karnataka, India. XL Indian Social Science Congress December 19-23, 2016. DoS in Earth Science, Manasagangothri University of Mysore, Mysuru, Karnataka.Vol Pp 413.

102. Basavarajappa H.T, Manjunatha M.C. and Rajendran, S. Comprehensive model using Petrography, Geochemistry and Hyperspectral Signatures in central part of Chitradurga District, Karnataka, India. XL Indian Social Science Congress December 19-23,

2016. DoS in Earth Science, Manasagangothri University of Mysore, Mysuru, Karnataka.Vol Pp 413.

103. Maruthi N.E, Jeevan. L, Manjunatha M.C and Basavarajappa H.T, Hyperspectral Signatures on Corundum Bearing Litho-Units in Varuna area, Mysuru District, Karnataka, India. XL Indian Social Science Congress December 19-23, 2016. DoS in Earth Science, Manasagangothri University of Mysore, Mysuru, Karnataka.Vol Pp 416.

104. Siddaraju M.S. Basavarajappa H. T and Manjunatha M.C. Geological Studies of the Gap area in Closepet Granite, Dharwar Craton, India Using Digital image Interpretation on Landsat-7 ETM+ image. XL Indian Social Science Congress December 19-23, 2016. DoS in Earth Science, Manasagangothri University of Mysore, Mysuru, Karnataka.Vol Pp 419.

105.) Basavarajappa H.T, Maruthi N.E, Jeevan. L, Manjunatha M.C And Siddaraju M.S, 2017. Hyperspectral signatures on Corundum bearing litho-units of precambrian basement rocks around closepect granite Pavgada area, Karnataka. Two days National Seminar held on Department of Geology Govindram Seksaria Science College, Tilakwadi, Belagavi. Abstract Vol.01, Pp: 31&32.

106.) Basavarajappa H.T, Manjunatha M.C, Siddaraju M.S, Maruthi N.E and Jeevan. L 2017. Spectral signature studies on Colubmite bearing pegmatite of Karigatta Schist belt, Mandya district, Karnataka, India. Two days National Seminar held on Department of Geology Govindram Seksaria Science College, Tilakwadi, Belagavi. Abstract Vol.01, Pp: 24-26.

107.) Basavarajappa H.T, Jeevan L, Manjunatha M.C, Maruthi N.E and Siddaraju M.S 2017. Spectral signatures of Nontronite mineral in Precambrian meta basalts around Nandihalli, Hosahatti band Chithradurga schist belt. Two days National Seminar held on Department of Geology Govindram Seksaria Science College, Tilakwadi, Belagavi. Abstract Vol.01, Pp: 26&27.

108.) Basavarajappa H.T, Manjunatha M.C Jeevan L, , Maruthi N.E and Siddaraju M.S 2017. Hyperspectral Signature Studies on Chrysotile mineral in ultramafics of Kadakola area of Mysuru District, Karnataka, India. Two days National Seminar held on Department of Geology Govindram Seksaria Science College, Tilakwadi, Belagavi. Abstract Vol.01, Pp: 27&28.

109.) Jeevan L and Basavarajappa.H.T. 2016. ASTER-Image processing approach for mapping carbonate deposits and associated lithounits in southern part of Chithradurga Schist Belt, Dharwar Craton, India. . XL Indian Social Science Congress December 19-23, 2016. DoS in Earth Science, Manasagangothri University of Mysore, Mysuru, Karnataka.

CONFERENCES/SEMINARS ORGANIZED:

CONDUCTED:

1. Organized and conducted Four weeks **Environmental Education Training program/ e-fresher course organized** as a member and resource person at Dept. of geology UOM, **1997.**

2. Organized and Conducted **National Seminar on Neo-tectonics** organized, successfully conducted, paper presented as organizing secretary at Dept of geology, UOM ,1996.

3. Organized and **National Seminar on Petrology and Mineralogy with MSI convention** working member of IGC-1998 at Mysore University.

4. Organized and **Conducted III convention of MSI-2001** as organizing Secretary at Mysore. Third convention of Mineralogical society of India and **NATIONAL SEMINOR** ON Challenges In Precambrain Geology In The New Millennium Jan 2001.paper presented and organized as a organizing secretary at DOS in Geology, UOM.

5. Conducted as a coordinator, One Day **Remote sensing exhibition /workshop** for the awareness of Remote sensing studies for the benefit of Mysore University Teachers and students Jayalakshmivilas Mansion on 3rd may 2002.

6. Organized and Conducted the Inter **National Seminar on Geoinformatics** - 2004 as Organizing Secretary -2004 Dec. 13 and 14 at Mysore**. DOS in Geology**

7. Organized and conducted the work shop on **MAP INFO** by OMCAD Ltd.– Bangalore at Dept. Geology, university of Mysore, Manasagangothri Mysore. 2005

8. Conducted the work shop on **ERDAS** by Licon Ltd. – Bangalore at Dept. Geology, university of Mysore, Manasagangothri Mysore. 2006

9. Organized and conducted the Two days work shop on Mineral **exploration** at Dept. Geology, university of Mysore, Manasagangothri Mysore.2009.as a convener.

10. Organized and conducted the Two days National Seminar and MSI convention As a Co-convener march 17and 18. Dept. Geology, university of Mysore, Manasagangothri Mysore.2009

11. Organized and conducted the work shop / Training Programme on **ERDAS** by Licon Ltd. – Bangalore with the collaboration of main ERDAS Kolkata, for the all staff members at Dept. Geology, University of Mysore, Manasagangothri, Mysore- 2006.

12. Organized and Conducted the Professional Training Programme on Software **GEOMATICA by PCI Geomatica Ltd. New Delhi , with the collaboration of main Geomatica, Netherlands** for the Final Year Pg Students of **2007-08**, at Dept. Geology, University of Mysore, Manasagangothri Mysore.

13. Organized and Conducted the **Professional Training Programme** on **Field Geological Training** at the Chitradurga, Field training center, Geological Survey of India, Govt. of India

for the Final Year PG Students of **2006-07**.With the collaboration of Hyderabad and Bangalore GSI.

14. Organized and Conducted the **Professional Training Programme** on **Field Geological Training** at the Chitradurga, Field training center, Geological Survey of India, Govt. of India for the Final Year PG Students of **2007-08** with the collaboration of Hyderabad and Bangalore GSI.

15. Organized and Conducted the **ANNUAL TOUR** and **Field Geological Training** for the Final Year PG Students of **1988-89**. South India., Parts of Karnataka, Tamil Nadu and Kerala.

16. Organized and Conducted the **ANNUAL TOUR** and **Field Geological Training** for the Final Year PG Students of **1992-93**. South India, Parts of Karnataka, Tamil Nadu and Kerala.

17. Organized and Conducted the **ANNUAL TOUR** and **Field Geological Training** for the Final Year PG Students of **1998-99**, South India, Parts of Karnataka, Tamil Nadu, Goa and Kerala.

18. Organized the **Study trip** for the PG Students attended and participate in the Lecture Series Seminar at Dharwad, Karnataka University, 2006.

19. Organized the **Study trip** for the PG Students attended and participate in the Lecture Series Seminar at Kuvempu University, 2007 at Applied Geology Department.

20. Organized the **Study trip** for the PG Students attend and participate in the Lecture Series Seminar at Mangalore University, 2008 at Moraine Geology Department

21. Organized the **Study trip** for the PG Students attended and participate in the Lecture Series Seminar at Bangalore University, 2009 at Geology Department.

22. Organized and conducted the golden jubilee workshop and Alumni meet 2011 department of earth science on sedimentary basinal study on Indian rocks.

23. Organized and conducted the International Work Shop on MAGMATIC ORE Deposits (PGE, Ni-Cu-Sulphides, Cr, Ti, &V) 2012 Department of Earth Science University of Mysore. on 1st - 8th December, 2012.

24. Organized and conducted the XIII convention of Mineralogical Society of India and National Seminar on Current trends of Research in Precambrian Geology and Vision 2020., 2013, Department of Earth Science University of Mysore.

25. Organized and conducted the DST PASCE., Project expert committee meeting2013 Department of Earth Science University of Mysore.

26. Organized Two days Geological field workshop to Post Graduate Students along with Staff Members of the Department on Southern Granulite Terrain of Biligiri-Rangan Granulites,

Karnataka, Dharwar Craton and Bababudan Schist Belt in Chikmangalur district, Karnataka; held from 20th & 21st March-2014.

27. Organized and conducted One day National workshop on Precambrian Geology, Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Mysore-570006 on 29th March-2014.

28. Organized One day Training programme on "Surveying using Total Station" at Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, Manasagangothri, University of Mysore, Mysore, on 10th May-2014

29. Organized Post Graduate Earth Science Special Lecture Series at Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysore, Sponsored by Karnataka Science and Technology Academy, Bangalore, from 29th -31th Oct-2014.

30. Organized One-day Prof M.V. Vishwanathaiah Special Endowment Lecture series held on 20th March-2015, in Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysore, sponsored by UGC-CAS, New Delhi.

31. Organized in One-Day XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India, organized by Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru on 31st March-2015, sponsored by University of Mysore, UGC-CAS-I, New Delhi and Mineralogical Society of India (MSI), Mysore.

32. Organized Two-Day Seminar on Benefits of Nuclear & Material Sciences in Day-to-Day life (BNMS-2015) on 21st & 22nd Aug-2015, at Rani Bahadur Auditorium, University of Mysore, organized as part of Centenary Celebrations of University of Mysore and in association with Indian Nuclear Society, Mysore.

33. Organized Four-Days of 103rd Indian Science Congress as a Local Sectional Secretary for ESS section in Department of Studies in Earth Science, CAS in Precambrian Geology, University of Mysore, Mysuru from 4th Jan to 7th Jan -2016.

34. Organized Three Day "**Field Workshop on Precambrian Geology**" held at Department of Studies in Earth Science, Centre for Advanced Studies (CAS) in Precambrian Geology, sponsored by UGC-CAS-I & University of Mysore, Mysuru during 26th, 27th and 28th March-2016.

35. Organized Prof. M.N Vishwanathaiah Endowment Lecture on "Dharwar Craton: Geological setting and Tectonic evolution held at Department of Studies in Earth

Science, Centre for Advanced Studies (CAS) in Precambrian Geology, University of Mysore, Manasagangothri, Mysuru – 570 006 on 6th June -2016.

36. Organized Two-Day Seminar on Challenges and Opportunities in Earth Science Education and Research on 29th & 30th Jan-2018, at Rani Bahadur Auditorium, University of Mysore, organized Under the UPE- Scheme of UGC.

Research projects completed:

- Integrated geological Studies in the Kuppam - Kanyakumari transect across the deep continental crust of South India, DST, (Rs. 21 Lakhs) as a Co-PI from 2001-04.
- Medicinal geology from UoM, UGC (Rs. 10,000/-) as a PI in 2001.
- Structure and Tectonic study using Remote Sensing and GIS around Biligiri-Rangan Hill Ranges, Southern India, UGC (Rs. 10.46 Lakhs) as P.I from 2004-07.

Research projects on going:

- Study on **CORBAN FLUX** interaction on Atmosphere, Water and Rock by ISRO international Project as a Co-PI (Rs. 30 Lakhs) from 2013-16
- "Application of Hyperspectral Remote Sensing and GIS on Iron Ore Deposits and Precambrian rocks of Chitradurga district, Karnataka, India" UGC-MRP, New Delhi as a P-I (10.55 lacks) from 2013-16.
- CAS Phase-I, Centre for Advanced studies in Precambrian Geology for a period of 5 years, (1.5 Crore).

Number of PhD candidates successfully completed :National -06 ; Foreign-03 =09

Number of PhD candidates currently working : 07+01 =08

BOOKS/EDITED/ ABSTRACT /PROCEEDINGS VOLUME:

Sl. No.	Author/s	Title	Publisher	Year	Page No.
1.	Chief Editor and organizer	Remote Sensing And Gis Applications	Bellur Kamalamma Publications, Mysore	2007-08	1-199
2.	Editor & organizer	Abstract Volume On Neotectonics National Seminar Abstract Volume On Mineralogy And Petrology And Iii Convention Of Msi	Department of Studies in Earth Science, University of Mysore	1996	1-109
3.	Editor and organizer	National Seminar Abstract volume on Precambrian studies through New Millennium 2000	Department of Studies in Geology, University of Mysore	2001	1-99

4.	Editor and organizer	National Seminar Abstract Volume On Remotesensing And Gis	Department of Studies in Geology, University of Mysore	2004	1-98
5.	Editor and organizer	Applications National Seminar Abstract volume on Recent trends in Mineral Exploration (Mineral, water and fuel)	Department of Studies in Geology, University of Mysore	2009	1-99
6.	Editor and Co-conveners	Abstract Volume "XIII Convention of Mineralogical Society of India and National Seminar on "Current Trends of Research in Precambrian Geology and Vision-2000"	Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology,	2013	1-156
7.	Editor	Prof. C. Srikantappa Volume, A Special Volume of XIII Convention of MSI and National Seminar on Precambrian Geology	Journal of The Indian Mineralogist, Mineralogical Society of India	2014, Vol.48, No.2	151-350
8.	Editor	Prof .C. Naganna Volume, A Special Volume of XIII Convention of MSI and National Seminar on Precambrian Geology	Journal of The Indian Mineralogist, Mineralogical Society of India	2014 Vol.48, No.2	1-150
9.	Editor	XIV Convention of Mineralogical Society of India and National Seminar on Recent Advances in Research on Precambrian Terrains in India	Journal of The Indian Mineralogist, Mineralogical Society of India	2015 Vol.1	1-50
10.	Editor	103rd Indian Science Congress	Department of Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology,	2016 Vol.1	1-235

POST DOCTORAL STUDIES:

- **SEDIMENTALOGICAL AND GEOCHEMICAL STUDIES OF KARNOOL GROUP (PRE-CAMBRIAN), ANDHRA PRADESH, SOUTH INDIA: 1995**

Achievements:

- Geological mapping.
- Carbonates revealed that calcite and quartz are the dominant constituents by X-Ray diffraction.
- Chemistry of Kurnool sediments revealed that they were deposited in a marine environment.

- Petrographic study to understand the genesis of sediments and environmental significance. The results obtained indicated that the sediments were brought and deposited in a beach to shallow marine environment.
- The macro and micro stylolites associated with the carbonates have been studied to understand the probable tectonic influence in the area.
- Pre and post diagenetic effects in the area were studied in order to reveal the environment of deposition.

- **LITHOSTRATIGRAPHY, MICROFACIES AND DEPOSITIONAL ENVIRONMENT OF NORTH-EASTERN PART OF KALADGI BASIN, KARNATAKA, SOUTH INDIA. 1997.**

Achievements:

- Geological mapping.
- Study of macro and micro structures revealed that the sediments are deposited in a beach to shallow marine environment.
- The shale is deposited in a marine alkaline environment inferred by the argillites by X-Ray diffraction.
- The facies analysis is based on parameters such as lithology, grain size, geometry, primary physical structures and microscopic study. Five facies are identified and forms the fining upward sequence.
- The study of pre and post diagenetic effects contact between the different grains and arethogenic quartz over growth around the detrital quartz grain has been carried out.

- **GEOMORPHOLOGICAL IMPACTS OF TECTONIC MOVEMENTS IN AND AROUND BILIGIRIRANGAN HILL RANGES KARNATAKA, INDIA.2003.**

Achievements:

The Geomorphological field investigations and the survey of literature, it could be concluded that there exits continuity between the eastern Dharwar Craton and parts of Biligirirangana hills. Thus Biligirirangan hills form a structurally complex terrain showing at least three periods of deformation, shearing events and active faults trending $N40^0W$ and $N60^0W$.

Tectonically Biligirirangan hills can be considered to be the deformed southern extension of the Dharwar Craton, which was subsequently exhumed during thrusting over the Dharwar craton.

Quantification in terms of morphometric attributes of a drainage basin is pertinent to appreciate morphometric variables involved as variable systems. Cluster analysis has been employed in detail (ward, 1963), to bring out relationship of assorted morphometric variables. Using lithologic and morphologic controls which twenty-three morphometric variables have been subjected to cluster analysis of the entire order sub basins, sixteen morphometric variables have been subjected to cluster analysis on two distinct lithologic clans, viz., Charnockite terrain and peninsular gneisses and sixteen morphometric variable have been subjected to cluster analysis on two distinct morphological clans, viz. highland area and lowland area, here morphometric systems and sub-systems have been established.

➢ **PETROLOGY, GEOCHEMISTRY AND FLUID INCLUSION STUDIES IN KOLLEGAL SHEAR ZONE (KSZ) AND MIGMATITIC GNEISSES AROUND CHAMARAJANAGAR, KARNATAKA, INDIA. 2005**

Achievements:-

This Kollegal shear zone is deformed and disturbed by metamorphisms of mainly 4 types (M1, M2, M3, and M4). The younger granitoids are formed at the time of M4 by crustal collision Fig. with very low temperature and pressure i.e. 4 to 5 kb and 550 to 650oC with formation of pan African type of charnockitization is a significant investigation by the author in this study. A tectonic region of early collision followed by a late stage extensional tectonics is envisaged based on P-T-t path in the study area. Reworking of early crust along shear zone, the migmatisation, magmatism and intrusion of younger rocks took place during the extensional tectonic regime, during Neo-Proterozoic to Pan African types, (M4).

The earliest syn-metamorphic fluids are reserved in quartz and garnet and in matrix of plagioclase is granulites and gneisses of the Kollegal shear zone. The CO2 monophase inclusion of high density appears to have been derived from mantle sources. Occurrence of high-density CO_2 inclusions indicates extensive magmatic under plating below the crust.

Fluid inclusions suggest that most of the CO2 inclusions to be post-peak metamorphic with reference to M2 and their CO_2 density data pass mineral P-T box for M2 indicating fluids are synmetamorphic with earlier lower density of M1, P-T box of gneisses with lower density of hydrous inclusions.

Fluids in retrogression represents M3 and finally very low density fluids fall on M4 i.e. Pan African type.

➢ **MEDICINAL VALUES OF MINERAL SPECIES AND THEIR POTENTIAL AVILABILITY IN KARNATAKA STATE, INDIA**

Significance:

This proposed research study is an inter disciplinary work provides data with regards to the sources of raw materials, their availability, potential usage manufacturing distribution and consumption by population this advanced approach in earth science would be beneficial to the people working in this field and beneficial to the state of Karnataka for meeting the future requirements of chemicals and in medicine manufacture.

- Natural minerals used.
- Mineral groups, medicines and their therapeutic categories.
- Potential availability of minerals.
- Evaluate the economic viability of extraction, in particular, Ayurvedic system.

➢ **PETROLOGY, GEOCHEMISTRY, AND FLUID INCLUSION STUDIES AROUND KOLLEGAL SHEAR ZONE, CHAMARAJANAGARA DIST. KARNATAKA, SOUTH INDIA. 2003**

Significance:

- Field geology and field mapping of Kollegal Shear Zone (K S Z) rocks.
- Fluid inclusion studies of KSZ.
- Geochemistry.
- Mineral chemistry.

- Tectonic Structural mapping and interpretations.
- Groundwater Prospecting Shear Zones in the study area.

➢ **GEOMORPHOLOGICAL AND LAND USE LAND COVER STUDIES USING REMOTE SENSING AND GIS APPLICATIONS ON KOLLEGAL SHEAR ZONE , CHAMARAJANAGARA DIST. KARNATAKA, SOUTH INDIA. 2005**

Significance:

- Land cover/ land use.
- Geomorphology.
- Structural.
- Lineaments.
- Morphometric analysis.
- Tectonic study.
- Ground water prospecting zones in shear zones.

➢ **GEOMORPHOLOGICAL LAND AND MORPH METRIC ANALYSIS AND WATER HARVESTING TECHNIQUES ON RASYAN VALLEY BASIN (RVB) OF YEMEN. FOREIGN NATIONAL. 2008**

Significance:

- Land cover/ land use.
- Geomorphology.
- Morphometry.
- Structural.
- Lineaments.
- Tectonic study.
- Ground water prospecting zones in shear zones.
- Surface Rain water harvesting.

➢ **HYDROTHERMAL ALTERATION ZONES ON MINERAL EXPLORATION USING REMOTE SENSING AND GIS TECHNIQUES OF YEMEN. FOREIGN NATIONAL.2009**

Significance:

- Remote sensing Applications on Mineral exploration using Hyperspectral analysis
- Calibration of ASTER and ETM+, SRTM –Shuttle Radar Topography Mission, LANDSAT-7 Images.
- Spectral Signatures.
- Optimum Index Factor Study.
- Study of NDVI.
- Creation of DEM.
- SRTM DEM.
- ELM- Empirical Line Method.
- PCA-Principal Component Analyses.
- Band Ration analyses.
- Lineaments extractions.

- GIS and GPS Applications, ASD –Analytical Spectral Devices-Field spec-3.

➢ **WASTE LAND STUDIES USING GEOMORPHOLOGY AND REMOTE SENSING WITH GIS APPLICATIONS CHAMARAJANAGARA DIST, INDIA..2010.**

- Geomorphology
- Land use Land cover
- Morphometric analysis
- Soil study and mapping
- Geology and structure
- Lineaments
- Waste Land studies.

- **GEOCHEMISTRY AND HEAVY METAL ANALYSIS AND ENVIRONMENTAL IMPACT ON KABINI RIVER BED SEDIMENTS AROUND NANJANGUD AREA MYSORE DISTRICT.2012**

- Geochemistry
- Heavy metal analysis
- Environmental pollution
- Environmental impact
- Correlations
- GIS analysis

- **APPLICATIONS OF HYPERSPECTRAL REMOTE SENSING AND GIS ON NE-SW TRANSECTS OF CHITRADURGA DISTRICT, KARNATAKA, INDIA. 2017**
    - Geology, Geomorphology, Lithology, Drainage & structure, Lineament
    - Land use Land cover, Soil, Slop aspects
    - Groundwater & Wasteland studies
    - Morphometric analysis
    - Groundwater quality assessment
    - Climate and Groundwater table fluctuation
    - Petrography
    - Remote Sensing, GIS and GPS Applications in mapping of Iron ore deposits
    - Integration of Hyperspectral analysis and Geochemistry

<u>POST DOCTORAL STUDIES ON-GOING:</u>

- **APPLICATIONS OF HYPERSPECTRAL REMOTE SENSING AND GIS ON HYDROTHERMAL ALTERATION ZONES OF TUMKUR DISTRICT, KARNATAKA, INDIA.**
    - Remote sensing Applications on Mineral exploration using Hyperspectral analysis
    - Calibration of ASTER and ETM+, SRTM –Shuttle Radar Topography Mission, LANDSAT-7 Images.
    - Spectral Signatures.

- Optimum Index Factor Study.
- Study of NDVI.
- Creation of DEM.
- SRTM DEM.
- ELM- Empirical Line Method.
- PCA-Principal Component Analyses.
- Band Ration analyses.
- Lineaments extractions.
- GIS and GPS Applications, ASD –Analytical Spectral Devices-Field spec-3.

- **HYPERSPECTRAL STUDY ON CORUNDUM BEARING PRECAMBRIAN ROCKS OF PARTS OF KARNATAKA, INDIA USING GIS TECHNIQUES**
  - Mapping of Corundum litho-units.
  - Characteristics of Corundum minerals
  - Petrography of contact litho-units
  - Geochemistry
  - Mineral Chemistry
  - Hyperspectral signatures
  - Integration and Correlation
  - Remote Sensing and GIS

- **STRUCTURAL ANALYSIS AND MICROTECTONIC STUDY OF KOLLEGAL SHEAR ZONE (KSZ), NORTHERN GRANULITE TERRAIN (NGT), KARNATAKA, SOUTH INDIA**
  - Detailed Structural mapping
  - Petrography, Micro-structure and Textural analysis.
  - Geochemistry and Mineral Chemistry
  - Geochronology

- **PETROCHEMICAL AND GEOCHRONOLOGICAL STUDIES OF RAYADURGA TO KALYANDURGA GAP AREA OF CLOSEPET GRANITE, DHARWAR CRATON**
  - Geological mapping and structural aspects
  - Mineral assemblages, reaction textures of closepet granite
  - Geochemical behavior of major, trace and REE
  - Physico-chemical conditions and mineral chemistry
  - Estimation of Radiometric ages based on suitable geochronological method.

- **NEOTECTONIC STUDIES USING GEOINFORMATICS TECHNIQUE OF MALAI MAHADESHWARA HILL RANGES OF SOUTH INDIA**
  - Geomorphological features using satellite images

- Delineation of Tectonic features
- Understanding the cause of change in Cauvery river course.
- Evaluation of Neotectonic features using satellite data coupled with GIS analysis.
- Collection of base line information, field mapping, structure analysis, shear and paleochannels using GPS.
- DIP using ASTER GDEM and SRTM using ArcGIS v10.

- **DISASTER MANAGEMENT STUDIES IN PARTS OF KARNATAKA, INDIA THROUGH REMOTE SENSING AND GIS**

- **SUITABLE SITE FOR DAM CONSTRUCTION IN MEKEDATU AREA, KOLLEGAL TALUK, CHAMARAJANAGAR DISTRICT, KARNATAKA, INDIA USING GEOINFORMATICS**

DISSERTATIONS GUIDED:

Nearly about 69 ***Dissertations*** *and 58* ***Field projects*** *have been guided for the M.Sc students on*

1. Structure and Neotectonic landforms around M.M Hills, Eastern Dharwar Craton, India.
2. Dam and Reservoir selections
3. Geophysical survey
4. Flood zone assessment and Hazards
5. Seismic Zones / earth quakes studies
6. Waste management and site selection for the Mysore city waste Disposal
7. Field mapping and uranium mineralization in late Archean (Precambrian) Proterozoic Sedimentary rocks.
8. Environmental Issues in Precambrian terrain of Dharwar Craton
9. Soil pollution and Soil Erosion using Remote Sensing and GIS Applications
10. Applications of Parcel level study using remote Sensing and GIS
11. Geomorphology, Geology, Land Use/Land Cover, Soil mapping of the Mysore district
12. Hyperspectral Remote Sensing on Soils of Karnataka
13. Applications of GIS of Soils study in Karnataka.
14. Arsenic contamination and Environmental Impact on Soils of Raichur district.
15. Field mapping and study of Uranium deposits Jharkhand area
16. Geological Field work on Donimalai, Sandoor, Bellary dist.
17. Geological Field work and face mapping of Donimalai, Sandoor, Bellary dist.
18. Geological and Mapping of mining around Kumara swami mine, Sandur, Bellary.
19. Geological mapping of iron ore deposits of Keshawapura in Chitradurga district, Karnataka, India.
20. Geological mapping on underground mine of Hutti Gold Mine Ltd.

21. Geological mapping of iron ore deposits of Donimalai, Narayan mines, Sandur schist belt, Bellary (Dist), Karnataka, India.
22. Geological Mapping using GIS and Comparitive studies between Hyperspectral Signatures and Petrography of rocks of Bettadabeedu area, Sargur Schist Belt, Dharwar Craton, India.
23. Geological Study and Mapping of Kanchiganahal, Ingaladhal and K.M Kere Block of Chitradurga Schist Belt, Karnataka, India
24. Geological Study and Processing of Iron ore Production of Donimalai Iron Ore Mine and Phase Mapping along 2w (North Block).
25. Delineation and interpretation of Byramangala Reservior Watershed Kengeri, Bangalore urban district, Karnataka, using GIS Techniques and field investigation.
26. Geological Study area of Chitradurga Schist Belt, Dharwar Craton, India.
27. Geological study and mapping of Bettadabeedu area, Mysuru district, Dharwar Craton.
28. Geological Study and mapping of Hutti Gold Field, Raichur, Karnataka.
29. Geological study and mining aspects of Uranium exploration in Singbhum thrust belt.
30. Seismic interpretation and Well logging techniques.
31. Petrography and Geochemistry of the around Marutavmalai, Nagercoil Granulite block, Tamil Nadu.
32. Geological study, processing and face mapping of 2W (North block) of Donimalai Iron ore mine.
33. Flood assessment studies of Cauvery and Kapila river course around T.Narsipura and Nanjungud taluk of Mysore district, using Remote Sensing and GIS.
34. Field geology and petrographic study of Sargur group of rocks around Hadinaru village, Mysore district, Karnataka.
35. Application of Remote Sensing in Land use/land cover studies of Chamarajanagar taluk.
36. Data based GIS analysis of Mysore University, Manasagangothri campus, Mysore.
37. Geomorphological and geological studies around Srirangapatna taluk, using GIS and Remote Sensing techniques.
38. Paleo-environmental Reconstruction in Mangrove Sedimentary core using Mineral Magnetic techniques.
39. Geological mapping of Ingaldhalu and Kanchiganahalu block of Chitradurga Schist Belt.
40. Petrochemical and Geochronological signatures of Rayadurga and Kalyandurga Gap area of Closepet Granite.
41. Iron Ore deposits of Lakshmipuram village, Sandur Schist Belt, Bellary district, Karnataka, India.
42. Mapping and validation of Iron ore deposits and associated mineralized zones of lithological contacts in Chitradurga district, Karnataka, India using High Resolution and Hyperspectral Remote Sensing and GIS.
43. Hyperspectral Remote Sensing and GIS study on Mapping of Hydrothermal alteration zones of Precambrian rocks on parts of Chitradurga Schist Belt, Karnataka, India.
44. Application of Remote Sensing and GIS in Landfill (Waste disposal) site selection and environmental impacts around Mysore, Karnataka, India.
45. Sandstone type Uranium Mineralization carried out at the Cretaceous Mahadek sediments of Wahkut area in the Meghalaya Plateau, India.
46. Petrographic studies of Gold Mineralization in Gadag Schist Belt, Gadag, Karnataka, India

47. Geological Mapping, Petrology and Uranium mineralization in Tummalapalle area, Cuddapah district, Andhra Pradesh, India.
48. Geological Mapping, Mining Methods and Mineral Exploration of Iron Ore Mine, Vyasanakere, Hospet, Bellary, Karnataka.
49. Morphometric Analysis of Chittar Watershed, Neyyar River Basin, Trivandrum, Kerala using GIS.

Ph. D. Thesis Adjudicated:

1. Doctoral degree of ***Dr. V. Harish*** on Sedimentology and Sedimentary Petrology and Geochemistry of Cuddapah and Kurnool basin, Andhra Pradesh, Department of Geology, University of Mysore, Mysuru, 1995.
2. Lithostratigraphy, Microfacies and depositional environment of north-eastern part of kaladgi basin, Karnataka, South India, Osmania University, Andhra Pradesh, 1997.
3. Doctoral degree of ***Dr. Shivanna*** on Sedimentology and Sedimentary Petrology and Geochemistry and investigations on stromatolites of North - Eastern part of the Kaladgi basin Karnataka, Department of Geology, University of Mysore, Mysuru, 1998.
4. Doctoral degree of ***Dr. M.V. Satish*** on Geomorphological structural studies Using visual interpretations of Remote sensing and GIS applications of Biligirirangana hill ranges, Karnataka, India, Department of Geology, University of Mysore, Mysuru, 2000.
5. Doctoral degree of ***Dr. Meenakshi K,*** on Petrology, Geochemistry and Fluid inclusion studies in Kollegal Shear Zone (KSZ) and Migmatitic gneisses around Chamarajanagar, Karnataka, India; Department of Geology, University of Mysore, Mysuru, 2002.
6. Remote Sensing and GIS Techniques on integrated Coastal zone management and its environmental impact in Goa State, Goa, 2004.
7. Doctoral degree of ***Dr. Dinakar S,*** Geological, Geomorphological and Land use/land cover studies using Remote Sensing and GIS around Kollegal Shear Zone, South India, Department of Geology, University of Mysore, Mysuru, 2005.
8. Ground water resource evaluation by geochemical and geophysical methods using GIS and Remote Sensing, Zaheerbad area, Medak district, Andhra Pradesh, Hyderabad, Department of Applied Geochemistry, Osmania University, 2006.
9. Geochemistry of carbonates from Aryalur-Pondicherry sub-basin of Tamil Nadu department of applied geochemistry, Osmania University, 2006
10. Doctoral degree of ***Dr***. ***Mohammed Mansoor Abdo Mohammed Almuliki,*** Geomorphological studies using Remote Sensing and GIS techniques of Rasyan valley basin (Republic of Yemen), Department of Geology, University of Mysore, Mysuru, 2007.
11. Surface geochemical indicators and their application in hydrocarbon prospecting: a study from Jamnagar area, Saurastra basin, Gujarat, India, Department of applied geochemistry, Osmania University-2007.

12. Doctoral degree of ***Dr. Ali Mohammed,*** Qaid Saeed, Appliation of Remote Sensing and GIS Techniques in mapping of Hydrothermal alteration zones in North East of Hajjah, Yemen, Department of Geology, University of Mysore, Mysuru, 2008.
13. Near shore morphodynamics and sediment process-using remote sensing data of Gahirmatha inlets, Orissa, east coast of India., department of geology., Osmania University, 2008.
14. Costal dynamics and coastal zone management in central Karnataka coast- a remote sensing and GIS approach., department of Marian geology, Mangalore University, 2008.
15. Geomorphological land and Morph metric analysis and water harvesting techniques on Rasyan Valley Basin (RVB) of Yemen, Foreign National, 2008.
16. Hydro and Pedo Geochemistry of Patancheru Industrial Area, Medak District, Andhra Pradesh. Applied Geochemistry Department: Department of Applied Geochemistry, Osmania University, 2008.
17. Microbial prospecting studies for hydrocorbon exploration in Jamnagar sub basin, Saurastra Gujarat, Department of Applied Geochemistry, Osmania University-2008.
18. Integrated hydrogeological and environmental investigations for groundwater characterization in hard rock terrain, Maheshwaram water shed, Ranga reddy district, AP. department of geology, Osmania University, 2008.
19. Hydrothermal Alteration Zones on mineral exploration using Remote sensing and GIS techniques of Yemen, Foreign National, 2009.
20. Hydro and Pedo-geochemistry in relation to land use/land cover in and around Machera, Guntur district, Andhra Pradesh - a Remote Sensing and GIS approach department of applied geochemistry, Osmania University, 2009.
21. Mapping irrigated areas of India using terra aqua MODIS time - series through ideal spectra generation, spectral matching techniques and hyperspectral, vegetation indices, Department of Applied Geology, Kuvempu University, 2009.
22. Doctoral degree of ***Dr. Pushpavathi K.N,*** Integrated, Geomorphological study using Remote Sensing and GIS for development of Wastelands in Chamarajanagar district, Karnataka, India, Department of Earth Science, University of Mysore, Mysuru, 2010.
23. Environmental impact assessment a control measures in mining-a study of lime stone mines in Ranga reddy district, Andhra Pradesh Department of geology, Osmania University, 2010.
24. Integrated assessment of geomorphological and hydrological studies using RS and GIS around Kuderu halla, T. Narsipura taluk, Bangalore University in 2010.
25. Hydro and Pedo Geochemistry in Relation to Land use and Land cover in Mungi village, Nyalkal Mandal, Medak district, Andhra Pradesh – Remote Sensing and GIS approach, Department of Applied Geochemistry, Osmania University, Hyderabad, 2010.
26. Hydrogeological studies of Muguru Addahalla Watershed in Chamarajanagar and Mysore districts using Remote Sensing and GIS techniques, Department of Geology, Bangalore University, Bengaluru, 2010.
27. Microbiological Studies in Conjunction with different geochemical methods for the evaluation of Hydro Carbon Prospects in Sagar District of Vindhyan basin, India, Department of Applied Geochemistry, Osmania Univeristy, Hyderabad, 2010.
28. Doctoral degree of ***Dr***. ***Azadhe Taghinia Hejabi,*** Geochemistry, Heavy metal pollution and environmental impact of Kabini river sediments using GIS, Nanjungud, Karnataka, India, Department of Earth Science, University of Mysore, Mysuru, 2011.

29. Structural constraints and isotope geological study around Bastar Craton, India, Jadavpur University- 2011.
30. Environmental impact assessment a control measures in mining-using GIS and Remote Sensing a study of lime stone mines in Ranga reddy, Andhra Pradesh department of geology, Osmania University, 2011.
31. Environmental impact assessment a control measures in mining-area of using GIS and Remote Sensing a study, Andhra Pradesh, Department of geology, Osmania University., 2012.
32. Isotope Geochemistry and Surface Geochemical Studies of Mesozoic Kutch sedimentary basin, Gujarath, western India: Implications to Hydrocarbon prospects, Osmania University, Applied Geochemistry, 2012
33. Stratigraphic Position of the Quartzite Outliers Located South of Muddanuru, Cuddapah District, Andhra Pradesh, India using Remote Sensing and GIS, Department of Geology, Osmania University, 2012.
34. Integrated Geological and Environmental Studies in Kothur Industrial Area, Mahaboobnagar District, Andhra Pradesh, Department of Geology, Osmania University, 2012.
35. Exploration of Iron Ore Deposits in parts of Northern districts of Tamil Nadu State, India using Multi & Hyperspectral Remote Sensing data and Geo-spatial Techniques, Priest University, Vallam, Thanjavur, 2012.
36. Land and Water Resource Evaluation in Karanjavagu Watershed of Manjira River, Medak District, Andhra Pradesh - A Remote Sensing and GIS Approach, Department of Applied Geochemistry, Osmania University, Hyderabad, 2013.
37. Geochemistry of fluoride bearing groundwater, Kalwakurthy area, Mehaboobnagar district, Andhra Pradesh, Department of Applied Geochemistry, Osmania University, Hyderabad, 2013.
38. Impact of Pollution on Groundwater in parts of Ranga Reddy district, Andhra Pradesh, India, Department of Geology, Osmania University, Hyderabad, 2013.
39. Ground- and Image-Based Hyperspectral Sensing to characterize Carbonate mineral resources of Salem, Namakkal and Ariyalur Districts, South India, Department of Faculty of Science and Humanities, Anna University, Chennai, 2013.
40. Geochemical Investigations for Uranium Mineralization in the outliers - NNW of Cuddapah Basin in the parts of Nalgonda and Mahaboob Nagar Districts, Andhra Pradesh, Department of Applied Geochemistry, Osmania University, Hyderabad, 2013.
41. Hyperspectral Remote Sensing and GIS on Mineral Resources of Crystalline Limestone and Carbonate rocks, Department of Information Science and Technology, Anna University, 2013.
42. Hyperspectral and multispectral approaches for exploration and characterization of certain deposits of Bauxite, iron ore and limestone in south India, Faculty of Science and Humanities, Anna University, Chennai, 2013.
43. Tectono-Metamorphic Evolution of the Moyar Shear Zone, South India, University of Kerala, Thiruvananthapuram, Kerala- 2015.
44. Comparison of Heuristic, Analytical Hierarchical process, Artificial Neural Network and Frequency Ratio Models for Landslide Susceptibility mapping in Kothagiri taluk, Southern

India", by Mr. M. Kartic Kumar, Department of Civil Engineering & Technology, SRM University, Tamil Nadu – 2015.

45. Sea water intrusion along East and West coasts of South Andaman island through Geophysical and Geochemical techniques, by Mr. Vazeem Iqbal, Department of Disaster Management, Pondicherry University, (A Central University), Brookshabad, Port Blair Campus, Andaman-744112 – 2015.
46. Geochemistry of Groundwater in and around Mangampeta Barite Deposit, Kadapa District, A.P, by Mr. K. Ashok, Department of Applied Geochemistry, Osmania University, Hyderabad, Andhra Pradesh – 2016.
47. Hydro geological studies in parts of Govindrao pet Mandal Warangal District, Telangana, India. By Mr. Sammaiah Banoth, Department of Geology
48. Geochemistry of urban dust in Hydrabad city India. by Nikhat Anjum, Department of Applied Geochemistry, Osmania University, Hyderabad - 2017
49. Leachate and its impact on ground water quality around Jawaharnagar municipal dumpsite, Medchal district, Telangana, India. by B. Soujanya Kamble Department of Environmental Science Osmania University Hyderabad - 2017

TEACHING EXPERIENCE: 29 years of teaching experience in the field of Petrology, Geochemistry, Structural geology, Mineralogy, Photo geology, Remote Sensing and applications, Geoinformatics, Geomorphology, Applied Geomorphology, Shear Zone and Geo-tectonic applications with respect to the Remote Sensing and GIS Environment aspects of Earth Science division.

RESEARCH EXPERIENCE: 30 years Research experience in thrust areas of national and international Geological aspects, in the field of Petrology, Geochemistry, Fluid Inclusion studies, Structural Geology, Applied Geomorphology, Geotectonic, Remote Sensing, GIS, GPS applications and Geo-environmental aspects. Shear zone studies, Natural hazards by geological actions and earthquake studies and seismological tectonic events. Hyper Spectral Remote Sensing and detection of Precambrian Rocks and minerals. **Remote Sensing and GIS** and GPS**, Field Geology** techniques and experiences of Field mapping and knowledge of Structural studies and analysis in field Geology. Surface and sub surface geological exploration and economic mineral deposits identification through the high resolution and hyperspectral studies.

FIELD OF SPECIALIZATION: Precambrian Geology - Remote Sensing and GIS, Petrology, Geochemistry, Fluid Inclusion studies, applied geomorphology, structural geology, field mapping techniques, EPMA, ICP Techniques, Remote Sensing and GIS applications, Geotectonic and shear zone applications and Medicinal geology, Seismo tectonic studies of Southern India. Geomatic studies, Geo-modelling tectonic modelling involved in deep crustal studies including Neo-proterozoic and Neotectonic studies on Dharwar Craton in South Indian terrain and other parts of India high grade rocks of Granulites terrains. Hyper Spectral Remote Sensing and detection of Precambrian Rocks and minerals.

TECHNICAL EXPERIENCE: EPMA, ICP, AAS, DTA, XRD, Remote Sensing and GIS, GPS, Field Geology techniques and experiences of field mapping and knowledge of structural studies, field geology and total station survey. Surface and sub surface geological exploration and economic mineral deposits identification through the high resolution and hyperspectral studies.

EPMA Analytical Training at France, Paris:

- ❖ Fluid inclusion studies has been carried out on metamorphic, Igneous and sedimentary rocks, using the instruments CAIXMECA and LINKAM micro thermometry till extracted significant data from the work and published research paper (Trained in Mysore University).
- ❖ The major and trace element analyses is studying in AAS new model by Precloric acid and Hydrofluoric acid and digestion method (Trained in Mysore University).
- ❖ Experience of rare earth elemental analysis in the ICP (trained in IIT, Mumbai).
- ❖ P-T estimation and Mineral Chemistry has been carried out by using Electron Micro Probe Analyzer (trained in France and Germany).
- ❖ Experienced in using instruments like X-ray diffraction (XRD) differential Thermal Analyses (DTA) Scanning Electron Microscope (SEM).

ACADEMIC DUTIES PERFORMED:

CHAIRMAN/MEMBER OF AUTHORITY/COMMITTEE ETC:

1. **Former Chairman and Head**, Department of Studies in Geology (**2007/08).**
1. **Chairman BOS** Department of Studies in Geology (**2006/10**).
2. **Coordinator UGC SAP IV** Phase (**2007 to present**).
3. **Chairman** of the Indian Society of Geomatics, Mysore **Chapter**. Mysore (**2003/11).**
4. **Editorial Board Executive council member** of the Journal of applied geochemistry, Hyderabad **2008/11.**
5. **Member** of the Board of studies and BOE in Geology, Mysore University (2000 **to Present).**
6. **Member** of the Board of studies and BOE in Geology, **Bangalore and Mangalore, Karnataka, Kuvempu Universities.**
7. **Life member** of Mineralogical Society of India, Mysore.
8. **Acting Executive council member** of the Mineralogical Society of India, Mysore.
9. **Treasurer** of Mineralogical society of India.
10. **Life member** of Indian Geomatic, Space science Center, Ahmadabad.
11. **Life member** of India International Friendship Society, New Delhi.
12. **Executive Council Member** of the Dept. DOS in Geology.
13. **Founder member** of Environmental Awareness, Environmental Society of Mysore.
14. **Executive Council Member** of the Faculty of Science and Technology, University of Mysore, Mysore.
15. **Doctoral committee Counseling member** of the Anna University, Chennai.
16. **Doctoral Committee counseling member** of the DOS in Geology, University of Mysore, Mysore.
17. **Doctoral Committee counseling member** of the Kuvempu University.
18. **Doctoral committee Counseling member** of the Bangalore University.
19. **Member of the PG Council** of University of Mysore.

20. **Member** of the Standing / equivalence committee for SC/ST CELL UOM.
21. **Board of Studies in Geology and Applied geology,** Bangalore University.
22. Member of Text Book Review committee (Geology) of Pre-University Board, Govt. of Karnataka.
23. **Managing Editor,** International Association of Engineering and Management Educaiton (IAEME), Open accessed International Journals, Chennai.

RESEARCH INTERESTS:

Field Geology, Field mapping, Geochemical -analytical Studies, Fluid inclusion Studies, Rocks, Mineral, Gems, Ornamental stones and Decorative stones Prospecting identification Chemistry, analyses, Land Scape designing, Maintenance of rock gardens, Geoinformatics and Remote Sensing, Geomorphological, Slope, Soil, Earth Quakes, Shear Zones, Structural Geotechnical , Rock stability, Hydrological, Urban Planning, Environmental Issues, Lithological classifications, advising in Advanced Education System. DIGITIZATION and Digital image processing and Cadastral level thematic mapping of the entire Karnataka state. Remote sensing and GIS techniques in Mineral exploration using Hydrothermal Alteration zones of Precambrian rocks in India and around the World**.** For the Earth and Environmental Science, Reservoir constructions, irrigational activities, Slope and Slope parameters, Lineament Studies, Shear Zone Studies, Plate tectonics, Earthquake studies, Seismo tectonics.

Technical experience : EPMA, ICP, AAS, DTA, XRD, XRF, Spectral Radimetre, GPS, TOTAL Station and other surveying equepments.

EPMA Analytical Training at France Paris,

- Fluid inclusions studies has been carried out on metamorphic, Igneous, and Sedimentary rocks, using the Instruments **CAIXMECA and LINKAM** micro thermometry till extracted significant data from the work and published research paper. (Trained in Mysore University).
- The major and trace element analyses are studied in **AAS** new model by Percloric acid and Hydrofluoric acid and digestion method. (Trained in Mysore University).
- Experience of rare earth elemental analysis in the **ICP** (trained in IIT Mumbai).
- P-T estimation and Mineral chemistry has been carried out by using Electron Micro Probe Analyzer (trained in France and Germany).
- Experienced in using instruments like X-ray diffraction (XRD) differential Thermal Analyses (DTA) Scanning Electron Microscope (SEM).
- Newly involved in the Geophysical, Seismic and Earth quake studies, Applied Geomorphology, Photo geology Remote sensing Application and Geo-and Neo-tectonic studies, Deep Crustal Studies, Medicinal geology through Ayurvedic Sciences.

FIELD EXPERIENCE: Experience in Field Mapping and Structural studies in Igneous, Sedimentary, and Metamorphic terrain, regularly conducting field workshops around Sargur rocks Low and high grade Granulite terrain of South India., Geomorphotectonic studies and Geomorphometric analyses, Waste land studies and its developmental activities including Geomatics of the South Indian Rocks.

TRAINING/ SHORT COURSES ATTENDED:

Technical Training:

- Electron Micro Probe Analyzer (EPMA) Training at CAMECA, Paris, FRANCE. (1991).
- Induction Coupled plasma Spectrophotometer Earth Science Dept. IIT Mumbai (1991).
- Field Mapping and Structural aspects in Dharwar Supracrustals of Chitradurga. Field training conducted jointly by GSI and DST at Chitradurga training center, 1994.
- *Remote sensing, Image interpretation, Digitization and GIS applications on Geological Studies, UNESCO sponsored training at Anna University, Chennai, and IIRS in Chennai. 2002 Trained on ERDAS imagine, Geomatics, Arc GIS, CAD, AutoCAD Land disk.
- Remote sensing, Image interpretation, Digitization and GIS applications on Geological and Environmental studies its Applications Training, Department of Studies in Geology, in GIS lab- bY the Experts from ERDAS India Pltd, Bangalore and Kolkatta.,
- Map Info and Vertical Mappe- from Omcad pltd, Bangalore.
- Geomatica-10 by New Delhi Assisted by the Netherlands.
- Internet and Website training at Mysore University
- Finance and Accounts Training at Mysore University
- One day workshop on "Surveying using Total Station Instrument"

EXPERTISE IN:

Field Geology, Field mapping, Geochemical -analytical Studies, Fluid inclusion Studies, Rocks, Mineral, Gems, Ornamental stones and Decorative stones Prospecting identification Chemistry, analyses, Land scape designing, Maintenance of rock gardens, Geoinformatics and Remote Sensing, Geomorphological, Slope, Soil, Earth Quakes, Shear Zones, Structural Geotechnical , Rock stability, Hydrological, Urban Planning, Environmental Issues, Lithological classifications, advising in Advanced Education System. DIGITIZATION and Digital image processing and Cadastral level thematic mapping of the entire Karnataka state. Remote sensing and GIS techniques in Mineral exploration using Hydrothermal Alteration zones of Precambrian rocks of India and out side India**.** Mining aspects, rain water harvesting, wasteland studies, Neotectonics, Environmental applications, Analysis of Shear zone aspects. Visual and digital interpretation of Aerial photographs and Satellite images of Low and High resolution.
Life size models of Live Volcano and other geological models for science exhibitions.

SOFTWARE'S KNOWN:

ERDAS, GEOMATICA, MAP INFO, Auto CAD Land Disk, Arc GIS, Vertical Mapper, and Window Movie Maker.

RESOURCE PERSON: For the Earth and Environmental Science. Related to the Petrology, fluid inclusions, Geochemistry, Structural geology, field geology, Remote Sensing, Geoinformatics, Geomorphology, Photo geology and Photogrammetric, GPS Surveying, Land use/Land cover and Waste land studies and its Developments, Reservoir constructions,

irrigational activities , Slope and Slope parameters, Lineament Studies, Shear Zone Studies, Plate tectonics, Earthquake studies, Seism tectonics.

SURVEYING EQUIPMENTS KNOWN: Compass, GPS and Total Station Survey Instrument.

LABORATORY EXPERIENCE

Mineral analysis and rock analysis with EPMA, ICP, XRD, XRF, FTIR Petrology and Fluid Inclusion study of different rocks on IGNEOUS, SEDIMENTARY and METAMORPHIC Photogrammetric, Image analysis and image processing.

APPRECIATIONS RECEIVED:

SPECIAL INTERVIEWS FOR T.V PROGRAMME:

❖ In future, Global tectonics, Earthquake in South India, Petroleum deposits in India and Pralaya concept, by Journalism AVRC Mysore University 1999-2000 to **Chandana TV-Dooradarshan, ZEE News channel, Cauvery News, Asia Net, Feb,2001.**

❖ All India Radio Programme in the Mysore AkashVani Mysore radio station Scientific Programme on **Talakadu Sand Dune** origin July 11 2008.

❖ Public awareness about **Sand Mining** in the Mysore District News Paper Scientific Environmental Statement 16 July 2008.

SPECIAL LECTURES/ KEY NOTE/ INVITED TALKS DELIVERED:

❖ Award lecture on **Kollegal Shear Zone**, Biligirirangana Hill ranges, Karnataka, India, 1998, at Dept of Geology, Bangalore University.

❖ A lecture on **Earthquakes of South India and Karnataka** in Mandya district 0ffice- 1997.

❖ A field excursion and lecture on **Earth quakes studies in Coorg District**, Karnataka, 2001.

❖ **TV Interview and Phone in Programme in City media of Mysore and Bangalore in UMN and CITY cable.**

❖ Environmental Impact of Sand mining and its management in Cauvery and Kabini river basins of Mysore District, Karnataka, India using Geoinformatics Techniques, **Basavarajappa H.T** and Manjunatha M.C, in National Seminar on Sand Mining Impact on Environment, organized by Department of Studies and Research in Environmental Science, Tumkur University, Tumkur on 22nd Sept-2014.

❖ 103 Indian Science Congress 2016 Key note delivered on Demarcation of Kollegala Shear Zone in Southern granulite terrain

❖ Indian Scocial Science Congress 2016. Key note delivered on Hyperspectral studies through Remote Sensing.

❖ Indian Scocial Science Congress 2016 Key note delivered on Structure and Tectonic setup of Precambrian rocks of Biligirirangan Hill ranges.

❖ 3rd International STEM Conference 2017 Key note delivered on Climate change and Global worming

MEMBERSHIP OF PROFESSIONAL BODIES

REFEREE TO THE FOLLOWING JOURNALS:

CONTRIBUTION TO: Editorial Boards and Scientific Journals:

1. **JOURNAL OF INDIAN MINERALOGIST (MINERALOGICAL SOCIETY OF INDIA, MYSORE)**

➢ Since from the 20 years working for this scientific journal as a executive member of the this international publication

➢ As a Treasurer 9 years working and improving the membership for the publications

➢ Improving in all respect to this journal actively involved in the publication

➢ Continuously every year organizing the national seminars and conventions of the society in all over the India.

2. **INTERNATIONAL JOURNAL OF SCIENTIFIC AND RESEARCH PUBLICATIONS**

- Member of Peer Review committee.

3. **INDIAN SOCIETY OF GEOMATICS, AHAMADABAD**
(MYSORE CHAPTER-2003)

➢ Since from the 7 years working for the Mysore Chapter**, Chairman and as life member** of the this society

➢ As a **member and Chairman** of the society working and improving the membership

➢ Actively involved in all respect of the Mysore Chapter and Society of Geomatics

➢ conducted the work shops in the name of the Society and the Mysore Chapter

4. **JOURNAL OF APPLIED GEOCHEMISTRY**
(SOCIETY OF APPLIED GEOCHEMISTRY, HYDERABAD)

➢ Since from the year 2008-2011 Editorial **Board Member** of the Society.

➢ Working and improving the membership for the publications and the Society.

- Conducted the workshops in the name of the Society.

5. **DEPARTMENT OF STUDIES IN GEOLOGY ALUMNI ASSOCIATION (DOSGAA) (DOS in Geology University of Mysore, Manasagangothri, Mysore)**

- Since from the year 2008 **President and founder member of DOSGAA**.-Under this ACADEMIC organization.

6. **IAEME – International Association for Engineering and Management Education**
   - ➢ **Editorial Manager** for IJCIET – International Journal of Civil Engineering and Technology

7. **Reviewer for Journal of King Saub, Iran**
8. **Reviewer for IJSRP – International Journal of Scientific Research and Publications**

9. **Reviewer for AJGS – Arabian Journal of Geosciences**
10. **Reviewer for IJCRT- International Journal of Creative Research Thoughts**.

CONSULTING SERVICES:

- Petrological Study and identification of different rocks in Granite industry
- Ground Water exploration in hard rock terrains.
- GPS survey
- Total station survey
- Geological field investigations
- Black granite investigations
- **On line Groundwater survey**

COMMUNITY SERVICES:

- Motivating the Earth Science and Environmental hazards in the public's, School children and colleges.
- Giving the awareness on Remote Sensing and GIS, GPS applications.
- Inspiring the Earth Science Students community to join the different NGOs and GOs.

Putting Efforts in Upgrading the Department to DRSA -IV Level to CAS-I:

- Since from 2000 - 2012 compiling the achievements, publications developing the different laboratories finally Submitted the proposal and Successfully presented in front of the Expert committee to reviewed the Department At New Delhi- and finally succeeded to achieve the goal on Upgrading the Department to CAS first in Karnataka Geology Departments, and First in the history of Mysore University and South India.
- Planning for continues training centre for Earth Science community in different aspects.
- Planning for training on Remote Sensing and GIS applications to School and College Teachers of Karnataka.
- **Planning for motivation on Disaster Management cells and Training Institutes for all Education, Administrative, Planning & Implementation and Societal needed Organizations throughout Karnataka**.

Vision:

My social commitment and vision for education is to promote education for all irrespective of the economic barrier. Particularly promote girl's education in rural background which reaches our country 2020 vision. My ambition is that like me everybody in our system to be educated which is the primary step in the development of our social system and economic growth. The one person education in the rural family makes them to understand and to go with rural India.

I take this responsible opportunity to contribute the society and growth of education in every possible aspect of my limits, uttermost humanity.

My ultimate vision is "To render quality service in Science & Technology, that the steps I take and the University I serve for will be globally recognized. Quality Education, Research, Administration and overall development of all sectors of the University is considered to achieve greater heights and compete globally".

This academic vision and social commitment I appeal to the Ministry of Higher education, Government of Karnataka to give me an opportunity to work as Vice Chancellor. I am confident that I will contribute to society and growth of education in our soil.

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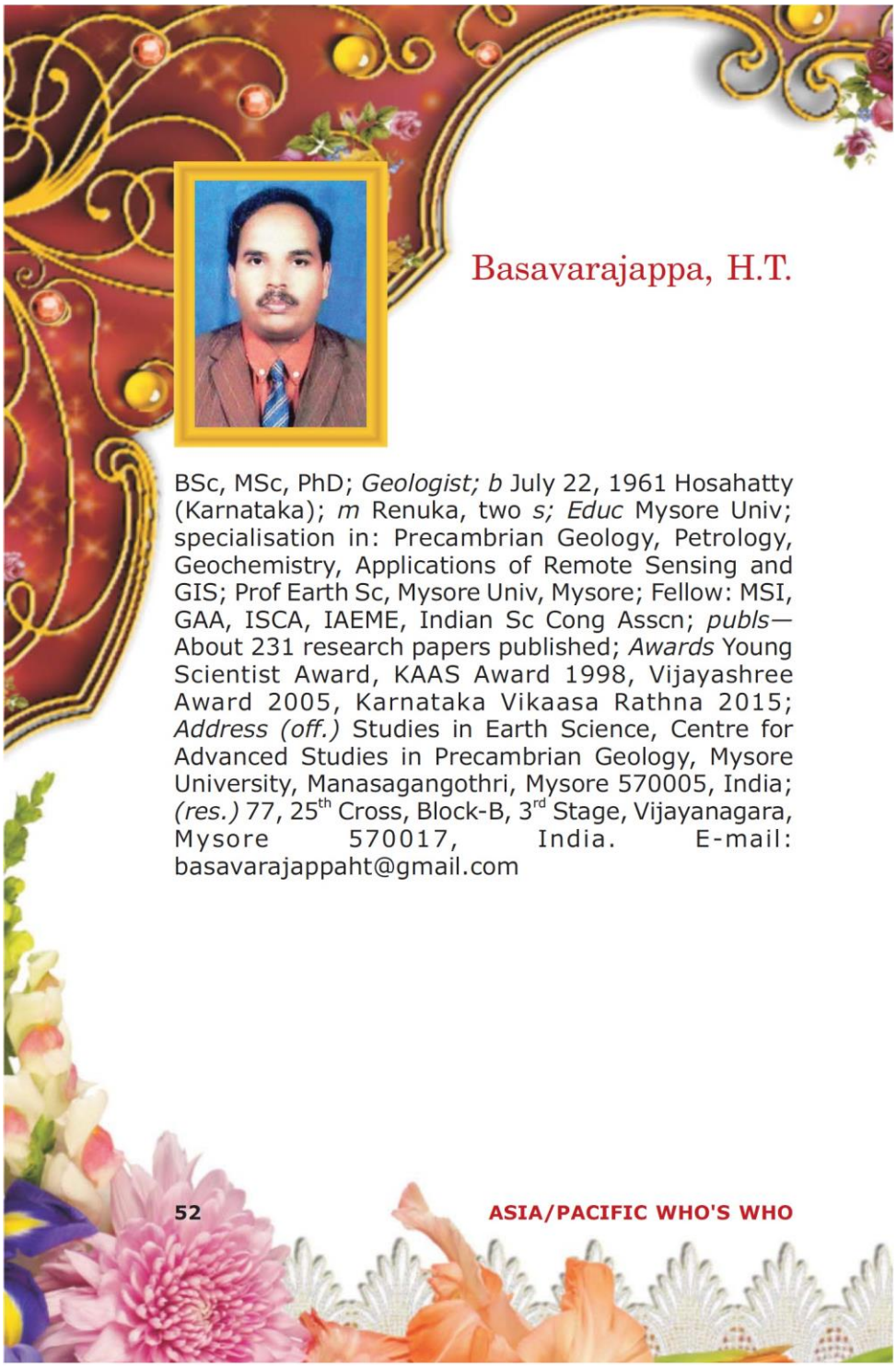

Basavarajappa, H.T.

BSc, MSc, PhD; *Geologist; b* July 22, 1961 Hosahatty (Karnataka); *m* Renuka, two *s; Educ* Mysore Univ; specialisation in: Precambrian Geology, Petrology, Geochemistry, Applications of Remote Sensing and GIS; Prof Earth Sc, Mysore Univ, Mysore; Fellow: MSI, GAA, ISCA, IAEME, Indian Sc Cong Assn; *publs*— About 231 research papers published; *Awards* Young Scientist Award, KAAS Award 1998, Vijayashree Award 2005, Karnataka Vikaasa Rathna 2015; *Address (off.)* Studies in Earth Science, Centre for Advanced Studies in Precambrian Geology, Mysore University, Manasagangothri, Mysore 570005, India; *(res.)* 77, 25th Cross, Block-B, 3rd Stage, Vijayanagara, Mysore 570017, India. E-mail: basavarajappaht@gmail.com