

RESEARCH ARTICLE


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Spacial analysis of Lithology and forest in Doddahalla watershed, Chikmagalur district, Vedavati river sub-basin, Karnataka, India

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Abstract

The Lithology are a significant geographical component of this watershed and are from the stratigraphy of topographical opportunity scale goes under Archean to Lower Proterozoic. The various kinds of geography in the investigation region which incorporates Basal Polymict Conglomerate, Granite(Shimoga), Meta basalt and Tuff Migmatites And Granodiorite - Tonalitic Gneiss, Quartz Chlorite Schist With Orthoquartzite and Ultra Mafic Schist. In the investigation zone, Migmatites And Granodiorite - Tonalitic Gneiss are predominant (453.4 km), Quartz Chlorite Schist With Orthoquartzite happened (89.9 sq km), Granite (Shimoga) (46.9 sq km), Ultra Mafic Schist is (2.1 sq km), Basal Polymict Conglomerate and Metabasalt and Tuff (0.9 sq km) .By land use land cover information increment in agriculture ranch 12 to 27 %, forest 5 to 6 % and scrub 1 to 11 % all information from 1991 to 2018.

Keywords: Granite (Shimoga); Lithology; Land Use Land Cover and Forest

Introduction

Forest and the water are naturally interwoven as forested watersheds have altogether been diverse conduct from non-forested watersheds as the previous is more useful in the penetration, precipitation of rainfall. The idea of the vegetation in the catchment zone is significant in ground water revive also overflow and soil dampness conditions, soil disintegration and soil quality (Biao et al. 2010; Bruijnzeel 2004). Notwithstanding the way that the water and forest relationship isn't too shortsighted, being a result of numerous elements of climatic, topographical and organic nature, the significance of forest in water protection has

been acknowledged all around (Bradshaw et al. 2007; Makarieva et al. 2006). Topography along these lines assume a fundamental job in the circulation and event of ground water .In South India, the enormous Late Archaean Closepet batholith gives a surprising chance to examine the emplacement of granitic magmas at various crustal levels, thus crops out along a characteristic crustal segment traversing 10–13 km inside and out, from granulitic lower covering in the South to greenschist-facies high class in the North. Because of its stretch shape, the principle body of the Closepet batholith has been recommended to be syntectonically emplaced during strike-slip tectonics by Drury et al.

Location of the Study Area

The Geology of the investigation territory is spatially situated between 13° 36' to 13° 55' N latitude and 75° 53' to 76° 12' E longitudes, covering an aeronautical degree of 594 sq. km. The Doddahalla Watershed falls under Archaean and Proterozoic greenstones of Chitradurga schist belt (roughly 3000-2600 million years dependent on the radioactive natural. (Fig 1 and 2)

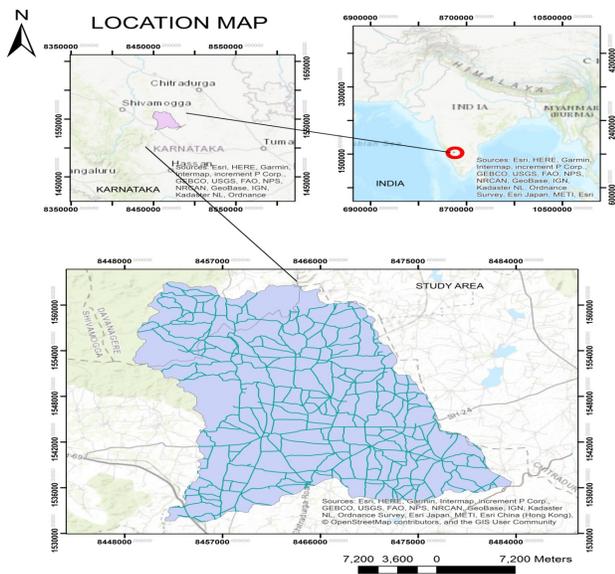


Fig. 1. Location map

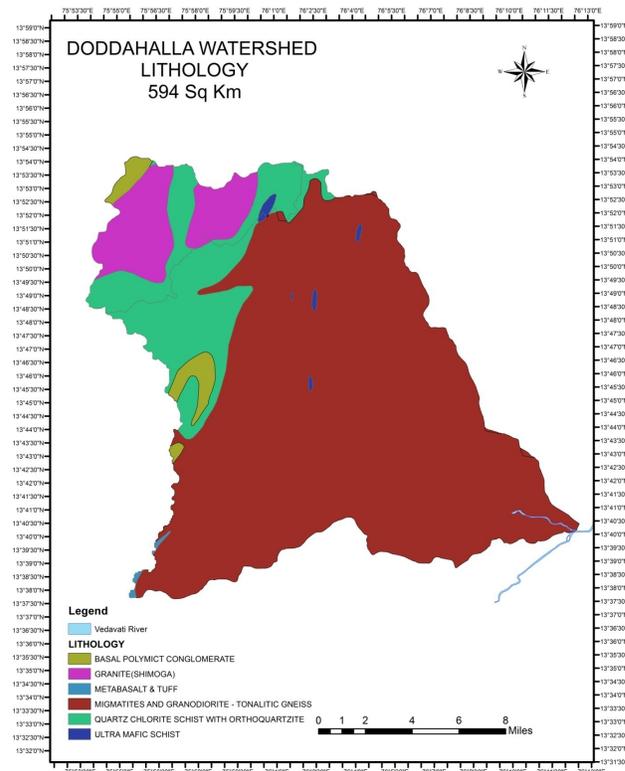


Fig. 2. Doddahalli watershed lithology

Methodology

The Doddahalla watershed of Chikmagalur area of Karnataka information were collected from the Karnataka State Remote Sensing and by Karnataka State Natural Disaster Management Center Bangalore application focus. Making distinctive topical guides of lithological highlights in the chose region utilizing Remote Sensing and GIS Techniques. Bend ARC GIS variant 10.2.2 helpful instrument to producing distinctive Lithological maps zones of Karnataka. Utilized 1:50,000 scale toposheet for referenced reason.

Where progressive Land Use Land Cover spread information from 1991 to 2018 propose that lithology has assumed an indispensable job in water stockpiling underneath the surface where we can see increment in development of cropland, 45 to 57 % of area , Agriculture 12 to 27 % of area ,Forest development kept up 5 to 6 % of region where as Scrub Land which likewise kept up 1 to 5 % of territory . The principle observa-

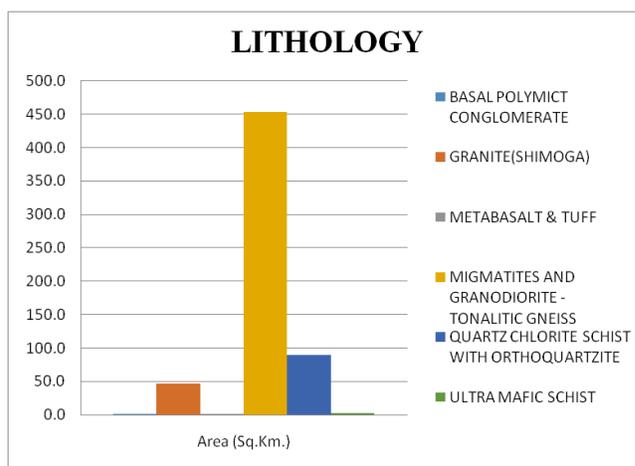


Fig. 3. Lithology



Table 1. Lithology

Sl.no.	Lithology Type	Area (Sq.Km.)	% of Area
1	Basal polymict conglomerate	0.9	0.1
2	Granite (Shimoga)	46.9	7.9
3	Metabasalt & tuff	0.9	0.1
4	Migmatites and granodiorite – tonalitic gneiss	453.4	76.3
5	Quartz chlorite schist with orthoquartzite	89.9	15.1
6	Ultra mafic schist	2.1	0.4
		594	100

tory factor is that Water Bodies kept up 2 % of region during that time which hold the way that fairly vacillation in precipitation, humidity, temperature lithology helped in keeping up water bodies consistent.

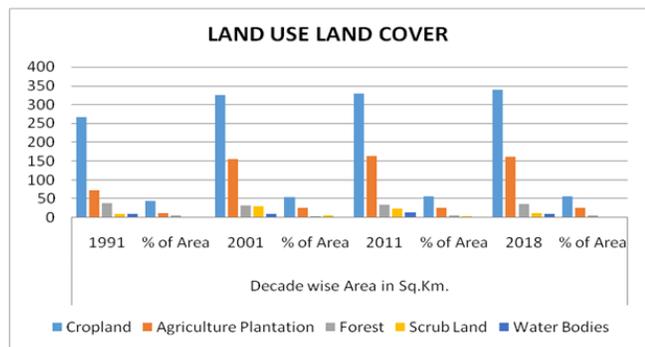


Fig. 4. Land use land cover

Table 2. Land use land cover

Sl.no.	Land use and Land Cover	Decade wise Area in Sq.Km.							
		1991	% of Area	2001	% of Area	2011	% of Area	2018	% of Area
1	Cropland	266	45	325	55	330	56	339	57
2	Agriculture Plantation	72	12	155	26	163	27	162	27
3	Forest	38	6	32	5	35	6	37	6
4	Scrub Land	9	1	30	5	23	4	11	2
5	Water Bodies	11	2	9.5	2	15	2	10	2

Conclusion

In view of the writing overview and visual translation of satellite information combined with geographical field work, lithounits have been recognized and portrayed, Migmatites and Granodiorite - Tonalitic Gneiss spread the significant part followed by Basal Polymict Conglomerate, Ultra Mafic Schist complex, Granite (Shimoga), Quartz Chlorite Schist with Orthoquartzite, Ultra Mafic Schist. The overall pattern of the developments is NNW to SSW (Dharwarian pattern) and dipping NW and NE heading (From 15° to 80°), these arrangements structure some portion of Chitradurga schist belt.

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