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Full Length Research Article

GEOMORPHOLOGIC CHANGES ASSESSMENT USING REMOTE SENSING AND GIS IN SALEM DISTRICT, TAMIL NADU, INDIA

***Arulbalaji, P. and Gurugnanam, B.**

Centre for Applied Geology, Gandhigram Rural Institute – Deemed University, Tamil Nadu, South India

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ABSTRACT

The present study deals about the geomorphologic changes of the study area during the year 1992 to 2010. The methodology explains the precise study of the application of remote sensing and GIS. The climate, bedrock and time span are the main reason for the geomorphologic changes. The changes were noticed in the study area. During the 18 year gap the denutaional- dissected hills and valleys, dissected upper plateau, water bodies, structural – dissected hills and valley areas are decreased. The pediment and pediplain and anthropogenic origin areas are increased.

INTRODUCTION

Geomorphology deals with the study of landforms, including their description and genesis. Landform is the end product resulting from the interactions of the natural surface agencies and the rock attributes. Depends upon three main factors: a) Climatic setting, including its variation in the past, b) underlying bedrock and c) the time span involved. Remote sensing data products (aerial photographs and satellite images) give direct information on the landscape-the surface features of the Earth, and therefore geomorphologic investigations are easier to carry out based on such data.

Landform features can be better studied on a regional scale using synoptic coverage provided by remote sensing data, rather than in the field (Ravi P.Gupta (2002). The main aim of the present study is to assess the geomorphologic changes of Salem district during the year 1992 to 2010. The aim is worked with the help of remote sensing and GIS techniques. Landsat -7 data has used for deriving the results. GIS is widely used for spatial modeling of land use planning and geomorphologic planning prospect of a large area with more reliability (Selvam *et al*., 2014).

****Correspondig author: Arulbalaji, P.,***
Centre for Applied Geology, Gandhigram Rural Institute–Deemed University, Tamil Nadu, South India.

Study Area

The present geomorphologic study concentrates on the Salem district, it is located in following coordinates Lat. 11°39'52" and Long. 78°8'45" and the total area is 5234 km^2.

The mean sea level is 278m. The study area surrounded by north side of Nagaramalai Hill, South side of Jarugumalai Hill, West side of Kanjamalai Hill, East side of Godumalai Hill, NE side of Shervaroy Hills and SW side of Kariyaperumal Hills.

RESULTS AND DISCUSSION

The present study reconnaissance the geomorphologic changes in-between the years 1992 to 2010 with the help of satellite data. The satellite data are very useful for assessing and mapping for geomorphologic studies (Bocco *et al*., 2001).

Naturally the study area contains six types of landforms, those are Denudational- Dissected Hills and valleys, Structural – Dissected Hills and valleys, Water bodies, dissected upper plateau, pediment& pediplain and anthropogenic origin.

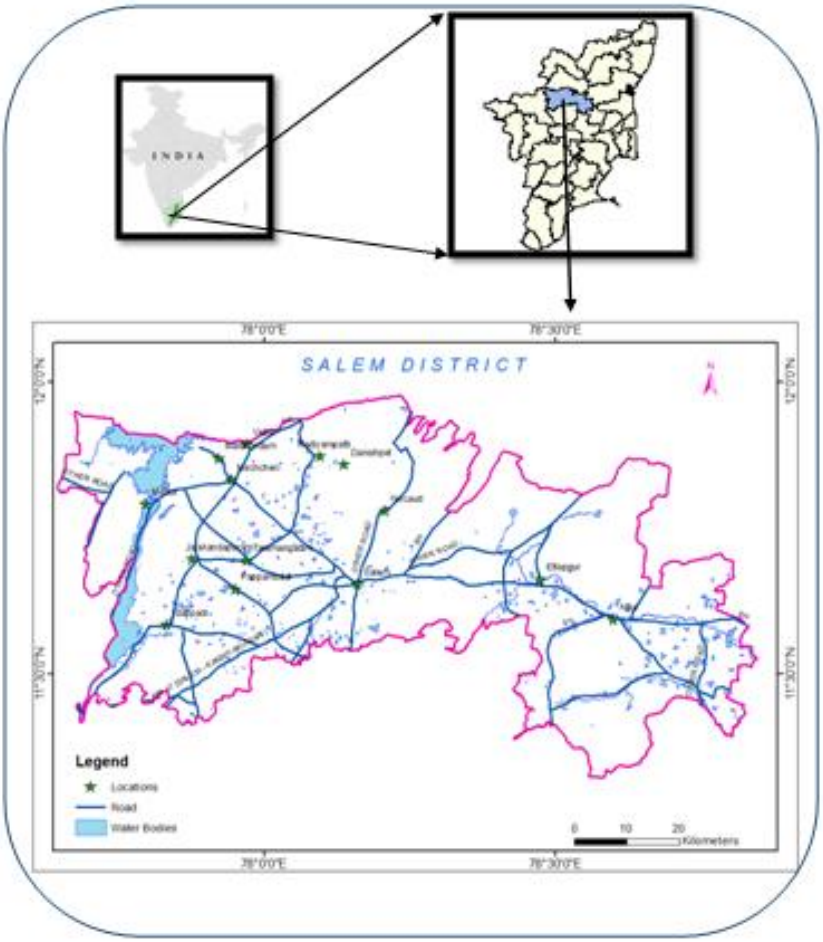
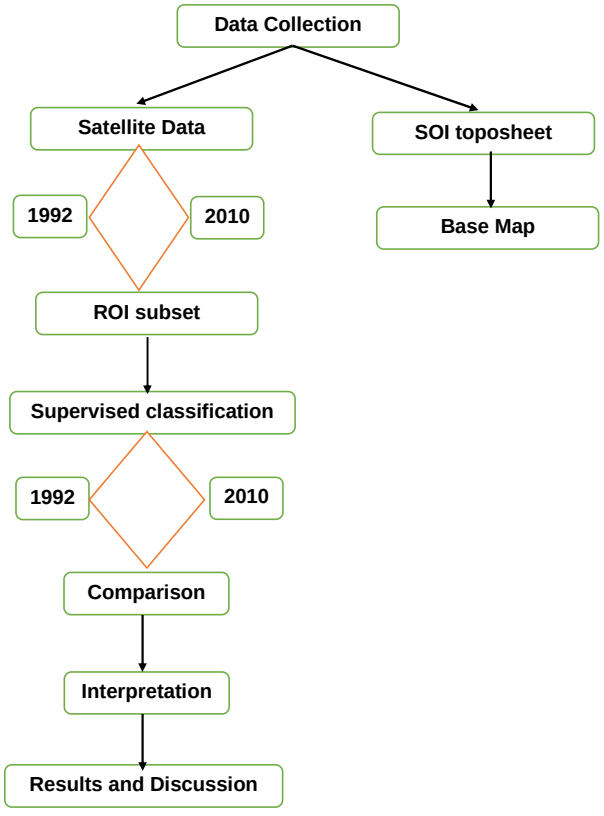


Fig. 1. Study Area

Methodology



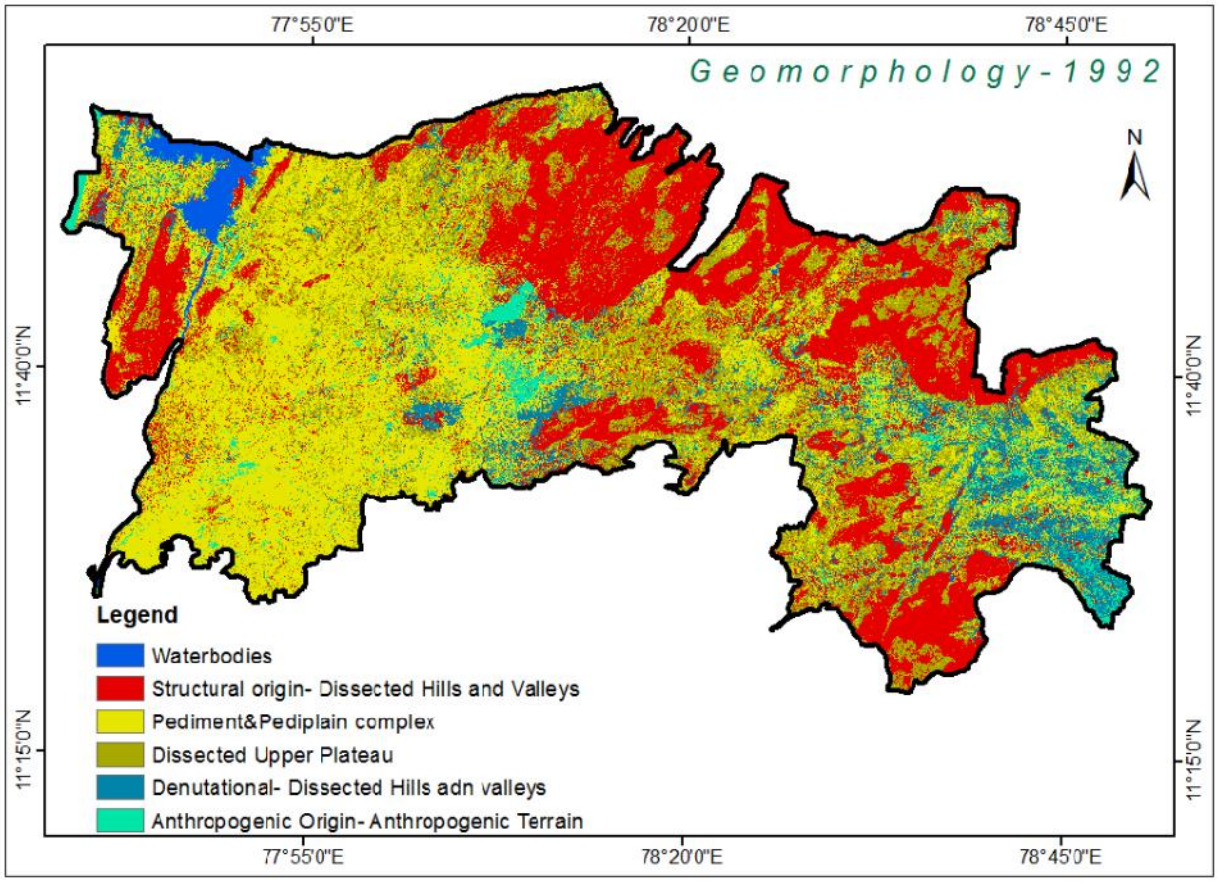


Fig. 2. 1992- Geomorphology Map

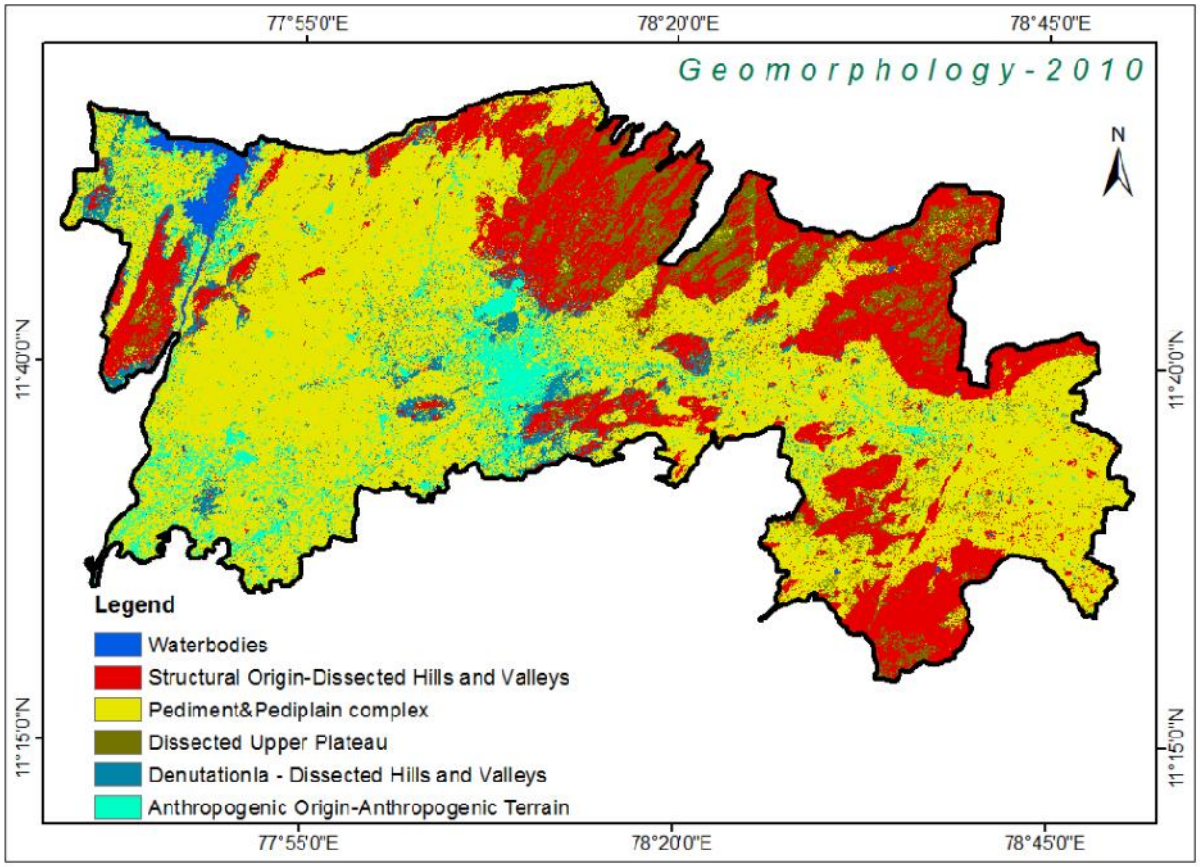


Fig. 3. 2010- Geomorphology Map

Table 1. Representing the areas of different landforms in the year 1992 and 2010

S.No	Landforms	Area covers in1992(km^2)	Area covers in 2010 (km^2)	Changes (km^2)
1	Denutational- dissected hills and valleys	487	281	206 (-)
2	Structural – Dissected Hills and Valleys	1554	1256	298 (-)
3	Water bodies	84	63	21(-)
4	Pediment and Pediplain	1848	2117	269 (+)
5	Dissected upper plateau	1063	1186	123(+)
6	Anthropogenic Origin	194	327	133(+)

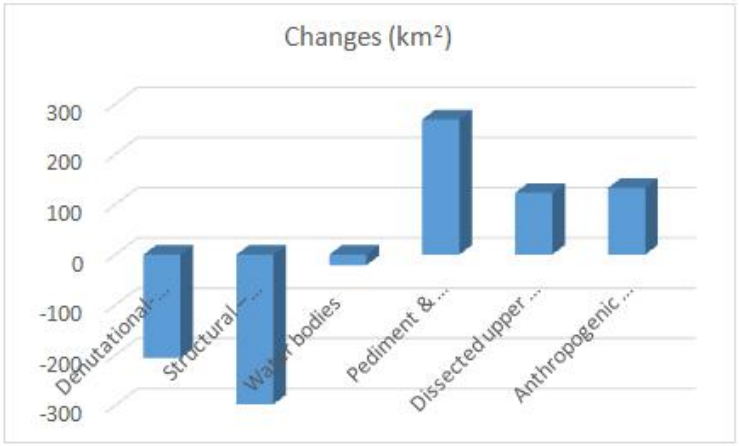


Chart 1. The changes were noticed in all the landforms and it is depicting the following

Conclusion

The entire Salem district was analyzed for geomorphologic Studies. The study area has faced the some morphological changes. These changes are Denudational- Dissected Hills and valleys, Structural –Dissected Hills and valleys and Water bodies have decreased in 206 Km^2, 298Km^2, and 21Km^2respectively. The rest of the landforms area dissected upper plateau, pediment& pediplain and anthropogenic origin have increased in 269Km^2, 123Km^2, and 133Km^2 respectively. These changes might be made by due to climate changes, Geological activities like weathering, River action and human activities.

REFERENCES

Baker, V.R. 1994. Geomorphological understanding of floods. *Geomorphology*, Vol.10, PP 139-156.

Bocco, G. and Riemann, H. 1997. Quality assessment of polygon labeling. *Photogramm. Eng. Remote Sens*., Vol.63, PP.393-395.

Bocco, G., Mendoza, M. and Velazquez, A. 2001. Remote sensing and GIS-based regional geomorphological mapping-a tool for land use planning in developing countries. *Geomorphology*, Elsevier link Vol.39 PP 211-219.

Brunsden, D. 1993. Mass movement; the research frontier and beyond: a geomorphological approach. *Geomorphology*, Vol. 7. PP 471-486.

Hemapriya, R., Sankar, K., Imran, A. and Dar, 2010. Geologic andGeomorphologic Investigation of Gadilam River Basin (India), *Journal of Environmental Research and Development*, Vol. 4, PP 750-757

Irasema Alcantara-Ayala 2002. Geomorphology, natural hazards, vulnerability Elsevier link. Vol. 47. PP 107-124.

Petley, D.N. 1998. Geomorphological mapping for hazard assessment in a neotectonic terrain. *Geogr. J.*, Vol.164. PP 183-201.

Rosenfeld, C.L. 1994. The geomorphological dimensions of naturaldisasters. *Geomorphology*, Vol.10, PP 27– 36.

Selvam, S., Chindam Narsimhulu, Manimaran, G. and Sivasubramanian, P. 2011. Geomorphological and texturalcharacteristics of sediments of St. Marys Island Westerncontinental shelf, India, *Archives of Applied Science Research*, Vol.3, PP 480-487.

Selvam, S., Manimaran, G., Sivasubramaniam, P. and Seshunarayana, T. 2014. Geoenvironmental Resource Assessment Using Remote Sensing and GIS: A case study form Southern Coastal Region. *Res. J. Recent Sci.*, Vol.3 (1), PP 108-115.

Verstappen, H.T. 1989. Geomorphology, natural disasters and globalchange. Symposium on Aerospace Survey and Natural Dis-asters. *ITC J*., Vol 3. PP 159– 164.

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