AHMUL/03051/2012
ISSN-2319 9318

Special Issue, March 2019

International Multilingual Refereed Research Journal

Vidyawarta®

Indian Council And Social Science Research

(Western Regional Center,Mumbai)

And

Jeevandeep Shaikshanik Sanstha

Arts, Commerce & Science College, Khardi

Tq.Shahapur, Dist.Thane.

(Affiliated to Mumbai University)

Organized

Two Day's Interdisciplinary National Conference on

Impact of Globalisation on Indian Tribal Community

On Dated : 01 & 02 March, 2019

Organized By

Jeevandeep Shaikshanik Sanstha

Arts, Commerce & Science College, Khardi,

Shahapur,Dist-Thane- 421601

Prof. D.M.Bhutale
Convener

Prof.K.R. Kalkate
I/C. Principal

38) LINEAR ASPECTS OF BASIN MORPHOMETRY OF DEV RIVER BASIN, ...
Mr. Jivan B.Kolpe, Dr. Nilesh S.Padalkar & Prof. Mohammed Ayub ||147

39) Critical study of tribal in thane district
Dr. Rupwate R.L., Bhiwandi ||149

40) Globalization It's Impact on Tribal Communities in India
Dr. Sanjay S. Kamble ||150

41) Impact of Globalization on Tribal Communities in India with Reference To ...
Dr. Sudhakar B. Gavande, Dist. Palghar ||155

42) Status of Literacy Ratein Tribal Society subject to Karjat Tahsil
Asst. Prof. Kshama C. Karekar, Dist. Raigarh ||160

43) MOBILITY, CONNECTIVITY, CHANGES IN THE LIFE, LITERATURE OF AN INDIAN ...
PROF. Kumnale Ashok Ramrao, Dist. Thane ||162

44) The Saviour and the Subaltern:A Neo-Colonial reading of Malgonkar'sThe...
Lawrencia Susan K. A., Pimpalgaon (B) ||165

45) Concept Globalization and ICT in Academic Libraries
Prof. Thakare N.B. & Mr. More M.P., Dist-Palghar ||168

46) LITERACY STATUS OF SCHEDULED CASTE AND TRIBAL POPULATION IN SELECTED ...
Mr. Kadam Rajaram, Dr. Jadhav Ashish & Mr. Shende Popat, Dist. Kolhapur ||171

47) Impact of Globalization on the Literary Rates among STs in India : In ...
Asst. Prof. Pawar Jayram Sunil, Dist. Pune ||175

48) Impact of Globalization on the Selected Indian English Novels
Mr. Sandeep Sambhaji Dhore, Pune ||177

49) STATUS OF INDIGENOUS FISHERMEN IN GLOBALISATION POLICY FRAMEWORK
Dr. Dipesh Karmarkar, Ulhasnagar ||181

50) Globalization and Challenges in Library Management in the 21st Century: ...
Mr. Rajaram V. Kapadi, Goveli ||185

51) जागतिकीकरण आणि भारतातील मल्हार कोळी
प्रितम प्रकाश गावडे, पुणे ||189

channel morphology in relation to erosional processes. Rivers over Rock. Fluvial Processes in Bedrock Channels, American Geophysical Union, Washington DC, , vol. 107, pp. 133–151.

4. Kale V S and Gupta A (2001): Introduction to Geomorphology (Kolkata: Orient Longman).

5. Green, J. and Short, N.M. (1971) volcanic landforms and surface feature: Atlas and Glossary, Springer-Verlag, Berlin, P.514

❑❑❑

38

LINEAR ASPECTS OF BASIN MORPHOMETRY OF DEV RIVER BASIN: USING GEOGRAPHICAL INFORMATION SYSTEM

Mr. Jivan B.Kolpe
M.A/M.Sc Student Dept. of Geography,
C.T.Bora College Shirur

Dr. Nilesh S.Padalkar
Assistant Professor Dept.of Geography,
C.T.Bora College Shirur

Prof. Mohammed Ayub
HOD.Asso. Prof. Dept.of Geography,
C.T.Bora College Shirur

Abstract:

In present paper attempt to the linear aspect of basin morphometry of Dev River is left bank sub tributary of Kukadiriver using Geo graphical Information System. The morphometric analysis has been carried out to determine the drainage basin characteristics an evaluation of morphometric characteristics of a drainage basin requires preparation of stream number, stream order, bifurcation ratio, stream length, etc. with the help to understand the nature of the drainage basin. A GIS techniques is one of the most powerful tools for the analysis of morphometry.

KEYWORDS:- GIS, Stream Order, Stream Number, Bifurcation Ratio, Mean Bifurcation Ratio, Main channel Length etc.

Introduction:-

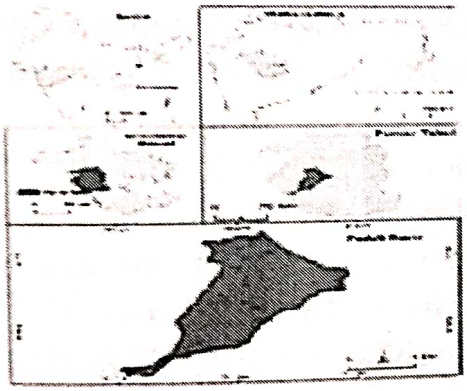
Morphometry may be define as "the measurement and mathematical analysis of the configuration of the earth surface and of the shape and dimension of its landforms". (j.k.

clarke, 1970_. The basin morphometry is defined as the measurement of shape , form and network analysis of drainage basin.

Study Area:-

Study area is located at a latitudinal extent between 18°, 56',58"to 19°,6',53"N and a longitudinal extent between 74°,15',4" E to 74°,24',42"E.Dev river is originated at 913 meter mean above the sea level(MSL) near Vadgaon Darya village is a major left bank tributary of kukadi river. The total length of Dev river channel is 19.6642 km.form its origin to confluence of Kukadi river. The total area of the basin is 110.0245 sq.km.and it falls in the survey of India (SOI) Toposheet No.(47I/8,47 J/5) for watershed boundary. Delineation bas map preparation is on 1:50000 scale and its perimeter 60.1306km.

Objective:- To analyse the Linear aspect basin morphometry of Dev River



Database and Methodology:-

SOI Toposheet Scanning of Toposheet
Arc. GIS. 10.1.(Rectification, Clips,Mosac,)
Digitization and attachment of attributes data
Analysis of Morphometric parameters
Result of morphometric Parameters.

The morphometric analysis of the Dev River was based on the survey of India Toposheet (47 I/8,47J/5) at 1:50000 scale. It is scanned and geometrical parameters were rectified and geo-referenced with appropriate projection (Universal Transverse Mercator Projection, Zone 43 N, and Datum GCS, WGS 1984). The digitization work of Toposheet carried out for entire analysis of the basin morphometry using GIS software (Arc GIS.10.1 version) the stream order were calculated using the Strahler (1964) method.

Linear Aspects:-

The network analysis is the most important basin parameter for changing the geomorphic environment of the region. Drainage network depends on the geological structure, and the lithology of the area. The direction of the river flow is form north to the south.

1. Stream Ordering (Su):- Stream order (Su) is defined as a measure of the position in the hierarchy of the tributaries.(L.B.Leopold, Wolman,J.P.Miller,1969).In present drainage network of the Dev river basin is classified into stream order as followed by Strahler (1952) stream ordering system.

The total numbers of stream (423)were identified in the present drainage basin, which are first, second, third, fourth, fifth order streams.

2. Stream Number (Nu) :-

"The order wise total number of stream segments is known as the stream number". The total number of the stream identified in this river basin (423). Out of that 325 in first order, 73 in second order, 18 in third order, 6 in fourth order. According to the Horton Law(1945) the numbers of stream segment are inversely proportional in the order number. Lower the stream order higher the stream number of the basin.

High amount of the stream order indicates less permeability and infiltration. A low amount of stream indicates high infiltration.

DEV RIVER BASIN

Table No.1

Stream order, Stream Number Segment, Percentage of stream segment.

Stream orders (Su)	Stream Numbers segment (Nu)	Percentage of stream segment
1	325	76.83
2	73	17.25
3	18	4.25
4	6	1.41
5	1	0.23

Source: Computed By the Researcher

Bifurcation Ratio:-

The bifurcation ratio (Rb) is the ratio of number of stream segment of the given order'Nu' to the number of the stream in the next higher order (Schumm,1957). High value of the bifurcation ratio indicated the strong structural control of the drainage development.

Math. Formula:Rb=Nu/N(N+1)

Where,

Rb= Bifurcation Ratio

Nu=Number of the stream order in given order

Nu+1=Number of streams segment of the next higher order

DEV RIVER BASIN

Table No.2

Stream Orders Su	Stream Numbers Nu	Bifurcation Ratio Rb	Mean Bifurcation RatioRbm
1	325	-	3.5015
2	73	4.4520	
3	18	4.0555	
4	6	3	
5	1	6	

Source-Computed by Researcher.

Su=stream order

Nu=Number of stream

Rb; Bifurcation ratio

Rbm=mean bifurcation ratio

The mean bifurcation ratio of the Dev River basin is 3.5015 indicating that bifurcation is normal is region. This is because of uniform climate, rock types and uniform history of geological development.

Length of Main Channel (C1):-

This is the length along the longest watercourse from the outflow point of designated sub watershed to the upper limit to the watershed boundary. Main channel length is computed by using ArcGIS software 10.1 versions is 19.6642Kms.

Conclusion:- The quantitative analysis of morphometric parameters such as linear aspect using GIS techniques. The Dev river basin is fifth order basin with 423 stream which are interlinked. The mean bifurcation ratio of the Dev river basin is 3.5015 km from Fifth orders. The negative relationship between the stream order and stream number as order increases the number of stream also decreases. The morphometric analysis carried out in Dev River has dendritic drainage pattern and elongation shape of the basin.

REFERENCES:-

1. Biswas,S.Sudhakar,S .and Dasia V.R., (1999), "Prioritisation of Sub Watershed based or Morphometric Analysis of Drainage Basin: A Remote Sensing and GIS approach." Journal Indian society of Remote Sensing, Vol, 27. No. 3. Pp 155 – 166.

2. Geena. G.B., Bullukraya.P.N., (2011), "Morphometric Analysis of Korattalaiyar River basin, Tamilnadu, India: A GIS Approach." International journal of geometric and Geo sciences Vol 2.No,2.pp 383-391

3. Horton .R.E .(1932),"Drainage basin characteristics", Transaction American , geophysics Union. 13 pp. 350-61

4. Koshak .N,Dawad.G,(2011),A GIS Morphometric analysis of Hydrological catch ments within Makkah Metropolitan area, Saudi Arabiya. International journal of Geometric and Georeferance Vol2.NO,2.pp 544-554

5. L.B ,Wolman, M.G., and Miller,J.,p., (2010),Erosion Susceptibility zoning and of mini-watershed using Geometrics approach. Inter national journal of Geometrics and geosciences 1,No.3,pp. 511-527.

❑❑❑