

System Analysis in Geomorphology: A Case study from the Ichamati River

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Abstract : *System is a set of interrelated elements where there is an input and there may or may not be output. A system is dynamic rather than quiescent. There are different types of systems i.e., morphological system, cascading system, process- response system and control system. Negative feedback is an important branch of control system and it helps us to understand most of the geomorphological problems. Energy is the sole objective of this dynamic character. A system always shifts from one disorder to order one. And the disorder of a system is measured by the term entropy. This is a subject matter of thermodynamic. Threshold is a limit point and crossing of the limit point indicates a significant change of geomorphic system. Ichamati river is an important distributary channel in the district of North 24 Parganas, India. The paper has examined the river in different angles of system approaches, i.e., morphological system, process-response system, control system, stream energy model and specific energy expenditure model have been applied to visualise its internal hydrodynamic characters.*

Key Words: *System, Ichamati river, morphological system, process response system, control system, energy expenditure model*

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A Study on Educational Status of Scheduled Caste Population of Birbhum District in West Bengal

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Abstract : *Educational development is very important to uplift the socio-economic status of any community and it is truer in the case of the downtrodden community like Scheduled Caste. Birbhum has a higher concentration of Scheduled Caste (SC) than the state's average but the literacy rate of the Scheduled Caste population is well behind the state's average. This paper attempts to assess the literacy status, enrolment, educational level, and dropout status of the Scheduled Caste population in the district. Primary data has been used to analyze the educational status which has been collected during 2018-19. A total of 910 Scheduled Caste heads of the household have been surveyed in 9 C.D. Blocks and 3 Municipalities in the district. The survey data shows there is a high literacy disparity exists between male-female and among the sub-caste in the district. The majority of the head of the Scheduled Caste household is illiterate and among the literate, majority of them are with low educational level. The enrolment rate of the Scheduled Caste pupil is decreasing with higher educational levels; on contrary, the dropout rate is increasing. In recent times, due to the various governmental initiatives, the educational scenario of the Scheduled Caste population in the district has progressed to some extent but still needs special attention.*

Key Words: *Male-female Literacy Disparity, Dropout, Educational Level, Gender Parity Index, Adult Education Programme*

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An Analytical Study of Punjab State, India

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Abstract : *In the mid-1960s, the Green Revolution caused exponential growth in Punjab's agricultural sector, but today it faces a slowdown. In the early 1990s, Punjab was India's third wealthiest State in terms of per capita income after Maharashtra and Haryana but is now in tenth place due to sluggish agricultural growth. Wheat and rice cultivation in Punjab has dominated the economy, but growth is based on high levels of groundwater extraction, and heavy fertilizer and pesticide use have ruined the State's ecological balance. Gradually, within the past 15 years, Punjab's agricultural growth began to decline. The Green Revolution in Punjab has transitioned from a period of high growth to a period of stagnation, completing a complete cycle that is now at stake. In this paper, an attempt has been done to show the growth and crisis phase of the Punjab agricultural economy. The importance of agriculture in Punjab's economy in terms of GDP from agriculture and share of the State in the central pool of food grains and growth of various inputs like area under major crops in Punjab, net irrigated area by different sources, consumption of chemical fertilizers, changing trend of operational landholding has been shown in the present study by using secondary data from statistical abstract of Punjab. The findings show that the share of agriculture in the State's gross domestic product declined. The contribution of wheat and rice also declined in terms of percent and was reported from 37.9 percent in 2017-18 to 35.4 percent in 2018-19 and of rice to be 30.9 percent in 2017-18 to 25.5 percent in 2018-19 respectively. The cropping pattern in the State has changed significantly in favour of wheat and rice, the area under maize declined and pulses almost escaped from the cropping pattern. Another important finding is that the increasing use of electric tube wells to pump the groundwater severely impacts groundwater availability in the future. The consumption of chemical fertilizers also increased tremendously in the State which has its socio-economic impact. So, in totality, an attempt has been made to show the problem of the agricultural sector in Punjab.*

Key Words: *Exponential, Ecological balance, Gross domestic product (GDP), Operational landholding, cropping pattern*

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Entropy Modelling for Spatio-temporal data Analysis: An Evidence from Network Topology of Auto Rickshaw (road) Network Connectivity Analysis of Agartala, India

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Abstract : *Connectivity is a spatial dynamic phenomenon that indicates a major concern in the eyesight of transport development of an area. The use of transport analysis is necessary for spatial studies and future transport planning. This research aims to measure the connectivity level of the transport network based on the connectivity indices and statistical relative Shannon entropy model to normalise the degree of connectivity and to estimate the efficiency level based on variance differences. It helps to determine the best close-fitting indices for analysing the spatio-temporal modelling approach. For this drive, the operational characteristics of the services of auto rickshaw transport are explored under a series of routes structure procured from both primary and secondary data collection. Spatial analysis with the Inverse Distance Weighted (IDW) interpolation method will include defining and mapping the spatial distribution of the auto transport network of Agartala City. This will help to find out the most accessible as well as inaccessible zones of the auto rickshaw transport services of the city. The results of the Shannon Entropy method by determining the efficiency level show that the Beta is most significant over the Alpha and Gamma Index. This indicates that the auto rickshaw moves in heterogeneous conditions and is mostly concentrated in a particular location, especially in the northern-eastern parts of the city. It also identifies a disparity created in connecting the suburb areas of Agartala City. The results also helped us to identify key areas requiring control in the movement of the auto rickshaw transport network in Agartala city which pointed the way for further delicacy management of the transport system.*

Key Words: *accessibility, Connectivity, Network, Spatial transport.*

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A Study of Dependence of Risk Habits on Educational Status in Three Cityscape Typologies of Pune city

Sayani Dutta¹ and Erach Bharucha²

Abstract : *The growing use of tobacco is a cause of great concern around the world due to its serious effects on health. Non-communicable diseases (NCDs) are the leading causes of death globally and are associated with tobacco use. However, the causes of such habits are rooted to individual and societal factors that need to be explored. This study undertook a cross-sectional survey in three areas of varying cityscape typologies of Pune i.e. the city centre, neo-urban & peri-urban regions to explore the burden of the risk habits and its association with one's educational status. Behavioral interventions are need of the hour as lack of certain attributes such as basic education that is a determining factor of one's health behavior makes an individual susceptible to risk habits which has an impact on health*

Key Words: *tobacco, risk factors, cross-sectional study Pune*

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Human-Tiger Conflicts: Geo-ecological Challenges of the Sundarbans

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Abstract : *Since the early days of British East India Company, 1781, immigrating human population and consequential habitat destruction had contributed to the threatening of the ecosystem of wildlife, most particularly tiger in Sundarbans, the only mangrove forest of the world with tiger habitation. Human-tiger conflicts and associated casualties has existed here from the early years of human settlement when the mangroves brimming with wild animals were cut down for the expansion of agricultural opportunities and expansion of human habitation (Mallick,2018). Today overcrowded human density on the forest fringes results in extremely high biotic pressures such as illicit deforestation, fishing and crab collection. Sundarbans is one of the vulnerable physiographic, climatological, ecological and cultural region of the world where a part of islands and their ecological and cultural resources disappear every year due to tidal nature of associated rivers, climatic hazards like tropical cyclones and related floods, decimated forest through bridled extractive practices (Sen,2019). Village people living in the enclosure of Sundarbans Tiger Reserve are now aware of such issues but they have no other alternative in their unskilled, uneducated economic life except the collection and utilization of forest resources. There are various academic as well as administrative study and research to trace the nature of human-tiger conflicts and its causes in Sundarbans but the traditional knowledge base understanding of the experienced local people is an integral part of this study because their perceptual realization and associated practices are the real guidelines for a sustainable solution in Sundarbans geo-ecological challenges. This paper will analyze the nature and pattern of human-tiger conflicts as both the species suffer terribly due to the alarming susceptibility in present Sundarbans.*

Key Words: *Mangrove ecosystem, man-tiger conflicts, cyclones, geo-ecological changes, environmental sustainability*

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Resilience to Natural Hazards: A Case Study of Ghoramara Island, Sundarbans

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Abstract : *Natural hazard is a natural phenomenon which cannot be controlled by human beings directly. Natural disasters can cause loss of life or damage to property, it also typically leaves some economic damage in its wake. Therefore, community resilience is the most important thing to combat any kind of hazard and disaster. Here the case study area is Ghoramara Island which is situated about 30 km away towards north of the Bay of Bengal and 92 km away from Kolkata towards its south, at the Sundarbans Delta complex ,within the state of West Bengal, India . The island was about 26 square km in 2000 which shrunk to 6.7 square km approximately in 2011. Presently in 2020 it is roughly 5 square kilometer area, and is quickly disappearing due to erosion and rise of sea-level. This island was once attached with Sagar Island but presently it has been separated from the main island. This water locked island has been susceptible to the vagaries of nature especially cyclones with heavy rainfall, like Aila in 2009, Fani in 2019, Bulbul, 2019, Amphan, 2020, and Yaas in 2021. The main focus of the study is to assess the socio-economic status and combating capacity of the residents of this island which has negatively affected due to these hazard. Apart from this the study also focusses on the morphology of the land and its relation with their living condition. Through the analysis and ground survey it could be said relocation of the island people is the most fruitful thing government can do for the people but since it is very vast work therefore on temporary basis some morphological upgradation and economic accessibility can make this quite resilience to combat natural hazards. Later on it could be said in conclusion, that the shrinking trend of the island has left no choice to make a prosperous settlement again.*

Key Words: *shrinking island, change in economic sources, community resilience, natural disaster mitigation, relocation planning.*

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Assessing Spatial Disparity and Challenges of Health Care Infrastructure in Indian Sundarbans using GIS

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Abstract : *Sundarban, as one of the backward area of West Bengal, does not have a uniform development terrain in the health care aspects and such a situation explains the relevance of an attempt to examine the intra-regional distribution of health infrastructural development and challenges. Thus, the distribution patterns of health care facilities, suffering status of the populace of Sundarban have been analyzed area-wise and population-wise using primary and secondary datasets. Almost 4.3 million inhabitants of Sundarban suffer from various health related problems, like malnutrition, low life expectancy, prevalence of waterborne and vector borne diseases, etc. The female members suffer from irregular and insufficient dietary habits, which results into accelerating rate of maternal, infant and child mortality rates, underweight children. Henceforth, the present effort is designed to recognize the bona fide scenario of spatial disparities in health infrastructure and health care facilities, accessibility and related challenges in Sundarban employing GIS-based mapping.*

Key Words: *health infrastructure, health care service, spatial disparity, GIS technique, Sundarban*

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Geographical Note

**An Inquiry Into the Neglected Aspect of Geography
During the Last Four Decades in the Geographical
Domains of Himachal Pradesh**

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Abstract : *Geography is one of the most prized and essential subject in everyone's life. In the last three decades, it has gone through many phases and the syllabus changed three times to date in Himachal Pradesh. Earlier geography was one of the essential subjects in every college, but in the last decade, it has lost its eminence and now it has been kept in a non-essential category and finds no place in the list of subjects introduced for newly opened colleges. Despite the introduction of many advanced branches like Remote Sensing, G.I.S. and Computer Cartography in the syllabus some important aspects of the study of Geography such as the detailed study of maps and field surveys have been thoroughly neglected. This paper makes an inquiry into the neglected aspect of geography in the undergraduate colleges of Himachal Pradesh.*

Key Words: *Domains, Remote Sensing, G.I.S., Computer Cartography*

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