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Major Geomorphological Features of Western Rajasthan and their Correlation with Vegetational Environment

Sakshi Mishra
Jyoti Vidhyapith Women's University Jaipur

Abstract: ***This study examines the major geomorphological features of western Rajasthan and analyses their relationship with region´s vegetational environment. The landscape of western Rajasthan is predominantly shaped by arid and semi arid conditions with key landforms including sand dunes of Thar desert, rocky uplands, pediments, playas, and sandy plains. These geomorphic units exert a significant influence on soil characteristics, moisture availability, and microclimatic conditions, thereby determining vegetation patterns. The research integrates secondary data, field observation and spatial analysis to identify correlations between landforms and vegetation types such as xerophytic shrubs, grasslands, and spare tree cover. It highlights how dune mobility, wind action and limited precipitation constrain plant growth, while more stable surfaces like interdunal plains and pediplains support more diverse vegetation. This study contribute to a better understanding of arid land ecosystem and provides insights for sustainable land management and conservation strategies in western Rajasthan.***
Keywords: geomorphological features, vegetational environment, microclimatic condition, western Rajasthan

I. INTRODUCTION

The area under study is situated in the west and northwest of the Aravalli axis which cover a large portion of Rajasthan state. This western arid region cover whole area of some district which are Jaisalmer, Bikaner and Sriganganagar, north western part of Nagaur and Jhunjhunu district. It characterized by tropical desert condition. Eastern boundary is demarcated by 50 cm rainfall and it decrease to less than 15 cm towards west as observed during the present study period. Western boundary is demarcated by the international boundary between India and Pakistan. Thus, the region is situated in between 24-30 N latitude and 69-30 E longitude and covers approximately half area of the Rajasthan state and as well as of the Thar desert.

Luni river forms the lower south-western boundary at the district boundary of Barmer. Northern boundary is demarcated by the state boundary in between the upper northern portion of Rajasthan and lower southern portions of Punjab and Haryana. Thus, the region covers 1) approximately half of the Thar desert which is spread over the area lying in the southeast Pakistan and northeast India; and 2) approximately half of the area of state and nearly whole area of the western Rajasthan, from phytogeographical point of view, the above mentioned area in the present study is divided into main region i.e. arid and semi-arid region. The importance of this demarcation has a unique aspect that it consist phytogeographic base under the spread and distribution of the *calligonum polyonoides*, locally known as '*phog or phogado'*. the division of this region under arid and semi-arid region is based on the investigation result of several field trips in the desert environment of Rajasthan state. A number of studies sites were selected and several field trips were conducted mainly before rainy season which is here termed as 'Pre monsoonal' and just after rainy season termed as 'Post monsoonal'. The whole region is divided into five major geomorphological features :

1) Sand Dunes Formation
2) Sandy Plains Formation
3) Gravel and Compact Soil Formation
4) Saline Formation
5) Stony and Rocky Formation

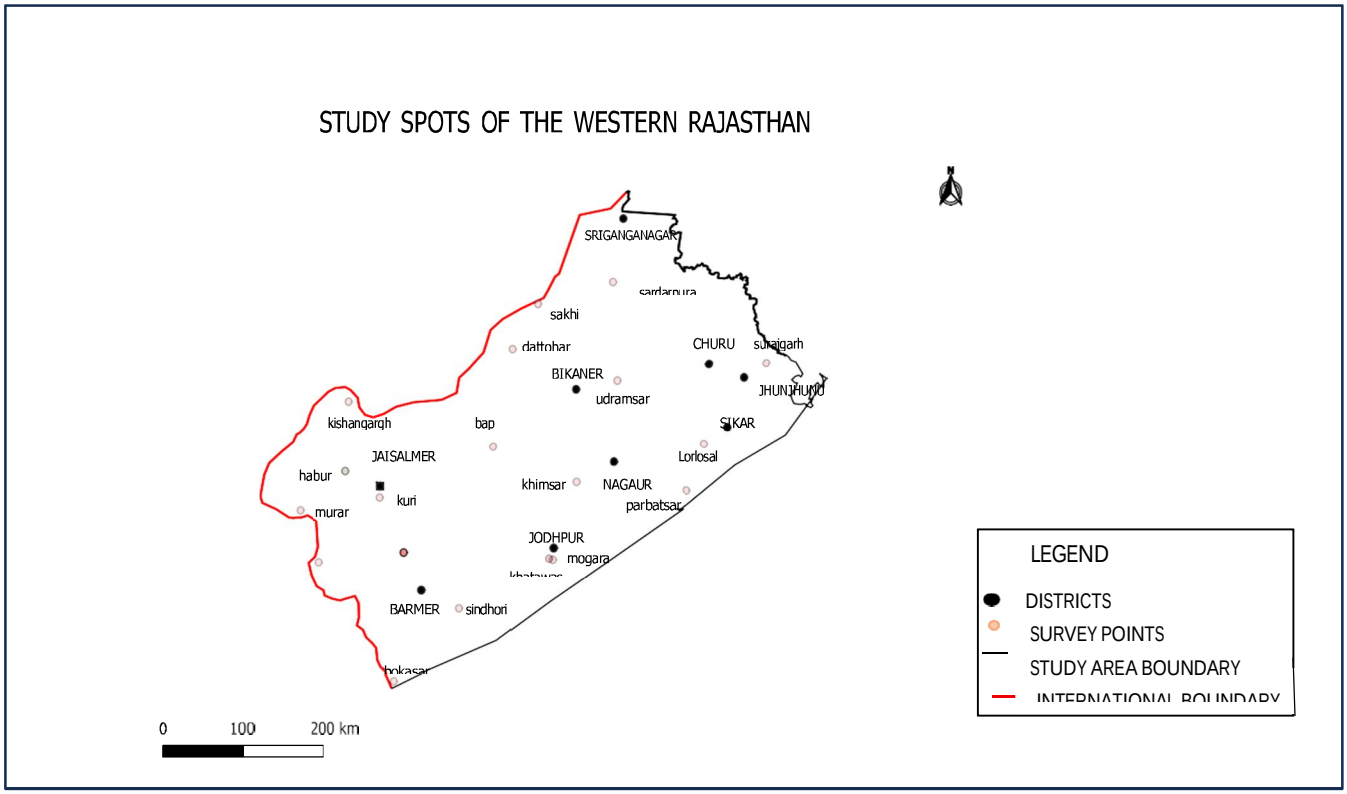
II. ORIGIN AND EVOLUTION OF THE AREA

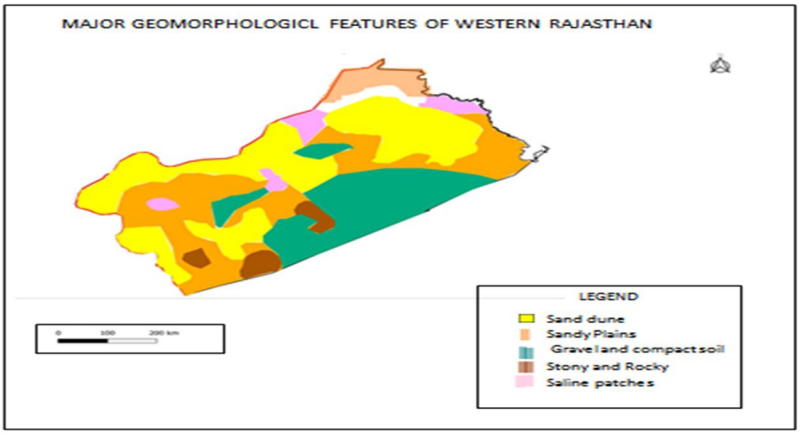
The origin and evolution of the Rajasthan desert passed through some processes and conditions as far as it concerned to the Thar Desert, which is the motherland of present shape of Rajasthan desert. There are two views for place in a natural way. The former view is supported by some archaeologists and botanists like Krishnan and Aiyangar (1941) and Pithawalla (1948). They thought in earlier centuries this area was forested and far less arid land due to the man's destructive activities hence it is more or less a man-

made desert. The later view was based on the evidences presented by the climatologists and geologists, like Blanford (1877), La Touche (1907), Huntington (1907), Wadia (1939), Banerji (1952) and Rode (1964). According to some authorities it is stated that its origin took place due to significant climatic changes in the past geological period of the earth, whereas according to others it was due to geological mechanisms and changing the position of any physiographic feature, like the disappearance of the inland river (the Ghaghra river) etc.

In fact, it was concluded on the basis of observations that the origin of this as a "desert- landscape" should be based on not only over one factor but it is the result of the influence of several combined factors. The present position of the desert is studied during the period of past decade which justified the above statement. It is observed that in comparison to other districts, at Barmer and Bikaner the vegetation is being continuously destroyed by cutting and grazing, which again support the former view.

In comparison to areas of other districts mechanical rock disintegration over the isolated Jalore-Siwan rhyolite hills and hillocks, it is more due to the extremes of heat and cold,n powerful insolation and prevailing wind action which results the "dome shaped and club shaped" features of their rocks. Gradual increase in the spread of the active "barchan dunes" near Sardarpura Beeka and Pallu study sites (Sriganganagar district) thus resulting a formation of recent "Sand dune topography" at several places also justifies and supports the second view of its origin and evolution.





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III. MATERIAL AND METHOD (INVESTIGATION)

A. Major Geomorohological Features And Their Soil Moisture Percentage

1) Sand dunes area

An accumulation or deposition of the sand in huge mass by natural phenomena in the form of hill is known as sand dune. Locally it is popularly known as Dhora or Tiba. Out of all survey spots which covers nearly 45% of the desert region. There are mainly three types of sand dunes 1. Barchan 2. Longitudinal 3. Transverse. Although there are different views regarding the origin and formation of sand dunes (Wadia 1939 and Bagnold 1941) but the common fact very obvious remains that the wind plays an important role in the process of their formation.

Barchan sand dunes are the most active sand dunes of changing form position under the force of the wind and this may gradually be fixed where the sand is hold up by vegetation. These dunes are associated as well as attached with the highest wind velocity area of the region. Russian word 'Barkhan' taken from Kirghis word which means, the moving sand dunes. These are crescent shaped dunes which occur as isolated sand hills. The lee face is on the concave side, the horn point is downwards which indicates the direction of the dunal migration, i.e, land from southwest to northeast as observed iv the present conditions in the desert generally of Rajasthan.

Longitudinal sand dunes are the second type dunes in which their crests are parallel to the predominant prevailing wind direction i.e. southwest to northeast. At many study sites the single ridge of longitudinal sand dunes (Plate-2) extend sometimes about 5km long as observed at Hansasar (Bikaner district) and the whole range extends to several kilometres. At most of the places these dunes are fixed but at few places they exist as mobile dunes e.g. at Sadhowalla (Jaisalmer district).

Transverse dunes are associated with the moderate wind velocity and have abundant supply of sand. These dunes have the form of steep faced waves and are transverse to the general position of crests which is generally at right angles to the direction of the prevailing wind i.e. generally in northwest to southeast direction. It is observed that the wind side of the dune has a long, gentle slope, while the leeward side or slip-faced side is relatively steep in nature. These dunes are observed at Jaisalmer, Barmer, Bikaner, Sriganganagar and Jodhpur district. The sand dunes area is further sub-divided into its three soils group with some variation as (i) the soils fall under the sandy undulating "dunal" areas which cover approximately 54% area (ii) the soils of "interdunal" areas which cover approx. 39% area and (iii) the soil which is situated under the small areas of seasonal depression, are generally situated in between most of the interdunal areas with some vegetation which cover approx.. 7% area. The sandy soils are very deep in the dunal and interdunal areas. The soil is yellowish-brown in colour, calcareous fine sand (dunal areas) to loamy fine sand (interdunal areas) in nature. Sand dune area is the poorest division and posses the least favourable condition for growth and survival of the plants and animals. In this areathe percentage of soil moisture is in an increasing order throughout the area from pre to post monsoonal period. From pre to post monsoonal period, soil moisture percentage values at different depth ranged from 0.00-0.04 to 0.15-0.37 at surface

2) Sandy Plains Area

Sandy plain areas covers approximately 25% area of the total region. It is further sub-divided into two soil groups : (i) the recent is alluvium soil and (ii) the older alluvium soil. The fomer soil group is of the region of the quaternary recent period and at present mainly under the canal region of western and this covers north, north-west, and south-east portion of Sriganganagar district. The later soil group is of the origin of Pleistoscene period (Heron,1948) and covers about one-fourth portion of the area under study which includes Parewar and Lathi (Jaisalmer district) and Deshnok and Khokrana (Bikaner district). At Parewar, some scattered hillocks are observed and among them a few are covered with the huge blown sand deposits on their leeward side which are more or less are free from vegetation cover. Nearly 70% area of the division is covered by the vast sandy plains which are slightly undulating with a gentle slope less than 5 degree but 20% of the division is situated under the scattered sand dunes generally below 5m in height but sometimes reaches 15m near the boundary of the earlier described soil division of sand dunes topography. The remaining 10% includes the scattered smaller areas of saline depressions. Up to 0-50 cm depth, it is quite loose sandy soil, calcareous in nature and is yellowish-brown to pale-brown in colour. It is fine sand to friable loamy fine sand and sometimes after 5cm it is observed that lime occurs in the fine form and soil becomes compact and gravel in nature.

Throughout the area, percentage of soil moisture increased from pre to post monsoonal period i.e. 0.01-0.03 to 0.15-1.20 at surface, 0.51-1.03 to 1.97-2.80 at 50cm depth and 1.44-55 to 3.55-5.27 at 100cm depth.

3) Gravel And Compact Soil Area

This division covers about 12% area of the region. The division is situated in the middle eastern portion of the region including most of the areas of Nagour, half portion of Jodhpur and southwest portion of Churu district. All the study sites includes mainly the formations of Kankar and pebbles.

Among them Pokran area also consists of kankar-pebbles to stony-rockyin nature and locally known as “Mudh”. Leaving Pokran and Bikaner study sites, it is the most fertile division of the region under the Rajasthan desert. Upto 50cm depth the soils are yellowish-brown to light reddish-brown in colour and granular in texture. Percentage of soil moisture increase from pre to post monsoonal period I.e. 0.03-0.06 to 0.11-1.43 at surface, 0.52-1.31 to1.53-4.22 at 50 cm depth and 1.81-2.82 to 3.91-6.21 at the 100cm depth.

4) Saline Formation Area

This geomorphological is observed in a scattered manner due to isolated saline areas (Chaudhary et al.,1966). It covers about 11% are of the region under the desert land of Rajasthan. It has 4 major saline areas: (i) Lanela (Jaisalmer district) (ii) Pachpadra (Barmer district) (iii) Bap (Jodhpur district) (iv) Sakhi (Sriganganagar district). There are 4 more minor saline areas which are less than 20 sq km: (i) Thob (Jodhpur district) (ii) Phalsund (Jaisajmer district) (iii) Lunkaransar (Bikaner district) (iv) Jamsar (Bikaner district). The division is divided into 3 main soil groups which vary with some differences : (i) saline areas lying under the flood plains of Indus system including Ghagar and Saraswati. It includes Sakhi flood plain area of Sriganganagar district. Though the area is interrupted by sand sheets which include deposition of sandy soils and loamy fine sand to clay in nature, broadly it is a flood plain. (ii) saline areas lying under the soils are situated in the hilly and isolated sand dune tracts and are found as basins. The run off water collects during the post monsoonal period. It includes Pachpadra salt basin, Bap salt basin and Lanela salt basin. (iii) saline areas lying under the soils of small saline depressions. It includes the minor saline areas mostly in Bikaner and Jaisalmer district. It is found that upto 50 cm depth, the nature of soils of these saline areas differ from each other

i.e. light mixed with some lime (saline flood plain), dark gray to pale-brown in colour (salt basins). Comparatively, this division has highest percentage of soil moisture in an increasing order from pre to post monsoonal period. Although it is a known fact that moisture as created by saline water has lesser importance from plants growth point of view. Percentage of soil moisture ranges from 0.01-0.26 to 0.12-1.12 at surface, 0.70-2.72 to 1.43-5.70 at 50 cm depth and 1.54-4.83 to 4.92-12.90 at the depth of 100cm.

5) Stony and Rocky Area

This geomorphological feature covers about 7% area of the region. The hilly areas are scattered through the desert with the piedmont topography surrounding them. The division is further subdivided into three groups according to the nature of their rock type (Heron, 1948): (i) Jaisalmer soil group consisting of limestone and yellow sandstone of Jurassic period.

(ii) Barmer soil group consists of shale and limestone which includes mostly the acidic flows tuffs and granite which is known as Malani volcanics and Jalore-Siwana granite. Its origin was of lower Vindhyan period of Paleozoic era. (iii) Jodhpur soil group which includes the sandstone, limestone and shale of upper Vindhyan Cambrian period of Paleo zoic era. These soil groups differ in some chemical nature of rock types and are generally named here according to their district. Approximately each isolated hilly area includes 15% gravel and pebbly rea, 35% scattered hills and hillocks and 50% piedmont topography surrounding them which is usually stony to pebbly in nature. Up to the depth of 2.5cm the soils are light to dark yellow-brown in colour and sandy loam by nature. It is gravel with granular texture and consists of lithological material, the weathered granite rock. The rise in soil moisture percentage is found from pre to post monsoonal period i.e. 0.02-0.32 to 0.18-1.34 at surface, 0.80-3.01 to 1.89-6.39 at 50 cm depth and 1.94-5.64 to 5.31-13.84 at the depth of 100cm.

Barchan Sand Dune At Hansasar

Longitudinal Sand Dune At Sadhowalla

Transverse Sand Dune At Rajgarh

Sandy Plains Area At Deshnoke

Saline Formation Area At Lanela

Gravel And Compact Soil Area At Pokran

Stony and Rocky Area At Pachpadra

B. Vegetational Division

1) Sand Dunes Area Vegetation (Calliogonum type)

The reduced leaf size is observed as one of the important characters among the plant species of desert particularly within this division. According to the xerophytic categorization of the plant species this division shows that approximately, 7% species are leafless, 17% spiny and thorny, 20% with trichomes and remaining 56% species show other characters like sunken stomata, waxy surface, thick cuticle etc. This division has 6 main vegetational groups i.e. approx., 4% climbers, 7% trees, 8% shrubs, 14% undershrub's, 20% grasses and 47% herbs. This division covers approx. 45% of the total area under study having more than two-third of its area with huge and dunes topography of varying heights. Colligonum poliygonoides (Plate- 4) covers 40%, Prosopis cineraria + Calligonum polygonoides + Acacia Senegal covers 25% of the total area under study. Other shrubs and trees species which are associated as Codominant namely, Maytenus emarginata, Acacia jacquemintii and Tecomella undulate. Among undershrubs and herbs the dominant species are: Halozylon salicornium , Boerhavia elegans, Dipterygium glacum, Indigofera argentia, Cassia italica, Cirtullus colocynt5his, Clerodendrum microphyllus, Neruda procumbens, Farsetia hamiltonii, Lepatadaenia pyrotecnica and Tephrosia purpurea. Generally, this vegetation associated survived over 6-20 m depth of ground wter table having total soluble salt contents ranging from 500 ppm to 7000 ppm.

2) Sandy Plains Area Vegetation (Prosopis-Zizyphus-Capparis Type)

The reduced leaf size is found an important feature in plant species of the vegetation of this division. According to the xerophytic categorization approx. 4%of the species are leafless or in which leaves were in modified form, 12% are spiny band thorny, 15% with trichomes and remaining 69% showed characters like sunken stomata, waxy surface, thick cuticle etc. This division has 6 main vegetational groups i.e. approx., 4% climbers, 65% trees, 8% shrubs, 13% undershrub's, 21% grasses and 48% herbs. This division covers approx. 25% of the desert of Rajasthan. It is a vast area covered by loose sand with its 20% area which is covered by the extend and spread of the scattered sand dunes. The dominant vegetational associations among the shrubs and trees are Prosopsis cineraria, Zizyphus nummularia, Capparis deciduas, Calootropis procera, Maytenus emarginata and Lycium barbarum. Among undershrub's and herbs the species are: Aerva persica, Anticharis linearis, Crotalaria burhia, Leptadaenia pyrotechnia, Tephrosia purpuria, Cleome Brachycera, Convolvulus microphylls, Forestia hamiltonii, Boerhavia diffusa.

Among grasses the dominant is: Arstida funiculate, Cenchrus biflorus, Dactylocetnium aegyptium, Eragrostis ciliaris, Lasirus sindicus, Dicanthium annulatum and Pancium turgidum. Generally, this vegetation associated survived over 6-18 m depth of ground water table having total soluble salt contents ranging from 1500 ppm to 10000 ppm.

3) Stony and Rocky Area Vegetation (Euphorbia-Salvadora-Acacia type)

It is concluded on the basis of field observations that reduced leaf size is one of the most important character for the plant species of this division. Xerophytic categorization of the plant species of this division shows that 6% are leafless, 15% are spiny and thorny, 14% are with trichomes and 65% species show characterstics like sunken stomata, waxy leaf surface, thick cuticle etc. This division has 6 main vegetational groups i.e. 6% climbers, 8% trees, 10% shrubs, 15% undershrub's, 15% grasses and 46% herbs. This covers approx. 7% of the total aera under Rajasthan desert and is known as "dune less area". It is scattered throughout the Rajasthan desert and 55% of its rocky and mountainous, while 33% is stony and pebbly. The soil is mostly exposed with bed rocks. The dominant vegetational associations among shrubs and tree species are Euphorbia caducifolia, Azadircichta indica (plate 8) Salvadora oleoides, Acacia Senegal, Anogeissus pendula, Lyceum barburm known as codominants. The undershrubs and herbs are: Barleria acanthoides , Pupalia lapaccea, Seddera latifolia, Cleome gynandra, Dicoma tomensto, Fragonia cretica and Grewia tenax. The codominanats are: Glossonema varians, Lindenbergia urticaefolia, Zygophyllum simplex, Gymnoporia spinosa, Cassia auriculata and Heliotropium subulatum. Among grasses the important species are: Aristidda dipresa, Eragrostis ciliaris, Latipes senegalensis, and Tragus biflorus. Generally, this vegetational association exists below 6 m, 12-18m, and above 24m depth of the ground water table which have total soluble salt contents ranging from 1000 ppm to 10000 ppm.

4) Gravel and Compact Soil Area Vegetation (Capparis- Prosposis- Salvadora Type)

It is concluded that reduced leaf size is one of the most important characters for the desert plant species adaptation point of view. According the xerophytic categorization, approx. 6% species are leafless, 12 are spiny and thorny, 19 covered with trichomes and remaining 63% species show their different characters like sunken stomata, waxy leaf surface and thick cuticle. The division has 6 main vegetational groups i.e. 4% climbers, 7% trees, 7% shrubs, 16% undershrub's, 2% grasses and 46% herbs. Approx. 12% of the total area under study is covered by this kind of vegetational division. Leaving abt 15% of this division, the rest is a vast dune less area which receives rainfall of 50 cm or above. Thus, the division is ecophysiographically concides with the soil division to the semi-arid region. The dominant vegetational association is of Capparis deciduous, Prosposis cinertia, Salvedora oleodis, Lyceum barbrum, Calotropis procera, Zizphus mumlaria. The dominant undershrubs and herbs are: Aerva persica, Leptadaenia pyrotechnical, Withania somnifera, Crotolaria burhia, Tephrosia purpurea, Peristrophe bicalyculata, Bergia odorata, Boerhavia diffusa, Convovulus microphyllus, Cleome pappilosa, Euphorbia granulate, Fagonia cretica Heliotropium marfoloium and Indigofera cordifolia. Among grass and sedge species the dominants are: Aristida funiculate, Cenchrus setigerus, Cyperus rotundus, Dectiloctenium sindicum , Digiteria adscendens and Panicum turgidium. Among climbers the important are: Memordica balsamina, Cocculus pendulus and Mukia maderspatana which are common species from their frequency of occurrence point of view. Generally, this vegetational associations exists over 12 to 18 m depth of groundwater table which have soluble salt contents ranging from 200 ppm to 2000 ppm.

5) Saline Area Vegetation (Tamarix-Salvadora-Suaeda)

It is concluded on the basis of observations of different shapes and sizes of plants leaves of the division that reduced leaf size is the most important character for desert species of this region. Xerophytic categorization of the plant species revealed that approx. 13% are leafless, 10% are spiny and thorny, 19% are with trichomes and remaining 58% show other characters like sunken stomata, waxy leaf surface and thick cuticle. The division has 6 main vegetational groups of its plant species i.e. 3% climbers, 6% trees, 13% undershrubs, 22% grasses, 6 % shrubs and 50% herbs. This division approximately covers 11% of the total area under the desert of rajasthan. It includes the scattered saline depressions, saline patches, the localities under marshy and the saline flood plains etc. hence the vegetation is halophytic desert (Sayanaryana, 1963) and rann saline desert (Champion and Seth). The dominant vegetational association for trees and herbs are : Tamarix diocia, Tribulus terrestrial (plate-12) Salvadora persica and Cappari deciduas, Crotalaria buhia (plate 13) whereas the dominant undershrubs and herbs are : Sporoblus marginatus, Demostachya bipinatta, Cyperus rotundus, Fimbristylis ferguniea and Scripus tuberous. Generally such type of vegetation association exists over below 6m ground watertable depths which have soluble salts content ranging from 500-12000 ppm.

Callogium Polygonoides, at Longewalla (Jaisalmer)

Lerodendrum phlomidis at Rohala (Barmer)

Zipzphus nummularia at Parewar

Avera persica at sadarpur beeka

Acacia nilotica at Jaisalmer surroundings

Azadircichta indica at Rajgarh (Churu district)

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Capparis deciduas at Khatawas

Leptadaenia pyrotechnica at Bikaner surroundings

Tribulus terrestrial at Pachpadra (Barmer District)

Salvadora Persica at Sakhi (Sriganganagar district)

IV. RESULT / CONCLUSION

From different related studies point of view, some investigation has been done on the soil characterstics of Rajasthan desert but during the present study period (pre and post monsoonal period), facts collected at different study points and their several soil samples were analyzed, than after it is concluded that the area under study can be divided broadly into above 5 major geomorphological features and their average soil moisture percentage. Out of several environmental conditions only two aspects that is the percentage variation in soil moisture at 3 levels i.e. surface, 50cm and 100cm was observed and their analytical results revealed on an average percentage of the soil moisture in all the geomorphological features i.e. sand dunes, sandy plains, gravel and compact soil, saline formation and stony and rocky. The plants of the area under study is being influenced by the effect as well as their need of phyto-geomrphological features i.e. sandy plains, sand dunes, gravel and compact soil, saline formation and stony and rocky. The plants of the area under study is being influenced by the effect as well as their need of phyto-geomorphological adaptation increases from time to time due to the impact of degree of sand dunes extension which increases from the vegetation under stony and rocky areas, to gravel and compact soil areas, sandy plains, saline areas and sand dune areas.

Observations, regarding the distribution of plants species which are controlled by adaphic factor as well as physiographical characterstics which gradually increases from phyto- geomorphological features gravel and compact soil, sandy plains, stony and rocky, saline and sand dunes.

About the xerophytic categorization of the plant species of area under study , the investigation revealed some interesting facts based on the field observations that phyto- geomorphological features of sand dunes vegetation leads over the geomorphological features (Table-1). These observations more or less support the fact that sand dune formation whether it may be any kind of sand dune is the most recent formation from geological time scale point of view, so it is consisting the lowest soil moisture percentage all the five major geomorphological formation. Similarly, the fifth geomorphological feature (stony and rocky) is the oldest one from geological point of view, so it is consisting of the highest values of soil moisture percentage among all the 5 major geomorphological formation. It is the first aspect of the study (table-2).

Table -1
Major Geomorphological Features And Their Xerophytic Percentage

S. No.	Major geomorphological Features	Average Percentage of Xerophytes
1	Sand dunes formation	57
2	Sandy plains formation	51
3	Gravel and compact soil formation	43
4	Saline formation (halophytes +xerophytes)	48
5	Stony and rocky formation	40

Table – 2
Correlation Of Eco-Climatic Parameters (Average Percentage Of Soil Moisture And Average Percentage Of Xerophytes) With Their Major Geomorphological Features In Western Rajasthan From Geological Time Scale Point Of View

Major Geomorphological Feature	Average percent of Soil Moisture	Average percent of Xerophytes	Stage
Sand dunes	Lowest	Highest	Youngest
Sandy plains	Low	High	Younger
Gravel and compact soil	Medium	Medium	Younger to older
Saline formation	High	Low	Older
Stony and rocky	Highest	Lowest	Oldest (ancient)

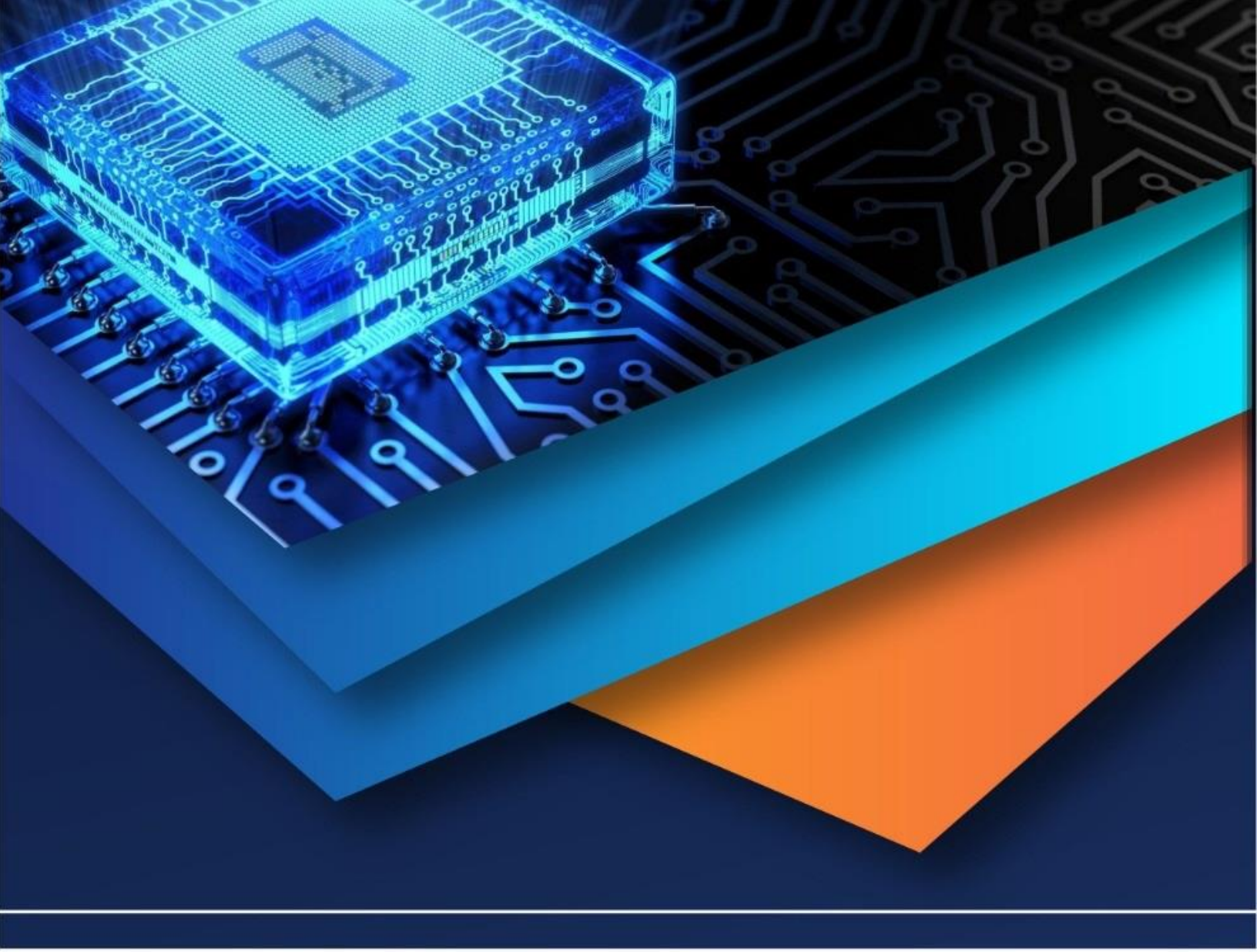
Besides the earlier mention soil moisture aspect the percentage of the xerophytes existing over these 5 major geomorphological features and its observational analytic study that the highest percentage of xerophytes are observed over the first major geomorphological feature that is sand dunes which decreases gradually and observed lowest percentage of xerophytes over the last geomorphological feature i.e. stony and rocky. Hence, more percentage of xerophytes means the most recent geomorphological feature from geological point of view. It is the second aspect of the study. Thus, the first aspect of the study of investigation dealt with lower percentage of soil moisture means recent geomorphological feature as well as the more percentage of xerophytes means the recent geomorphological feature from geological time scale point of view in western Rajasthan.

Although, the above mentioned 2 parameters or aspects i.e. percentage of soil moisture and percentage of xerophytes reveal for the geomorphological feature for their recent to the ancient in this region which is naturally supported by the existing vegetational environment but the age detection observation for all these 5 major geomorphological features from geological time scale point of view is yet due.

REFERENCES

[1] Ahmed, E. 1969. Origin and geomorphology of the Thar desert. Arid Zone, 8: 171- 180.Bhandari, M.M. 1967, Flora of western rajasthan Ph.D. Thesis. University of Jodhpur.
[2] Blanford, W.T. 1877. Geological notes of the Great Indian Desert between Sindh and Rajputana. Rec. Geol. Surv. Ind., 1-21.
[3] Bandyopadhyay, P.C. 2007. Soil Analysis. Gene-Tech Books. New Delhi.
[4] Dana, J.D. 2007. Manual of Geology. Vol. 1-2. Akashdeep Publishing House. New Delhi.
[5] Gupta, R.K. and Praksha, I. 1975. Enviornmental Analysis of the Thar desert. English Book depot. Dehradun.

[6] Heron, A.M. 1948. The Phsiography of Rajputana. Proc. Ind. Sci. Cong., 119-132.
[7] La Touche, D. 1907. Geology of western Rajputana. Mem. Geol. Surv. Ind., 35:24-41.
[8] Mathur, C.M. 1960. Forest types Rajasthan. Indian For. 86(12): 734-739.
[9] Mishra, R. 2002. Geological Enviornment. Anmol Publications Pvt. Ltd. New Delhi.
[10] Pareek, H.S. 1981(a). Basin configuration and sedimentary stratigraphy of western Rajasthan. Jour. Geol. Soc. Ind., 22: 517-527



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