

ACF Rajasthan Geography

Physiography of Rajasthan	8
Based on present landforms, we can divide Rajasthan into the following Physiographic Division:	9
Western Sandy Plain	10
Sandy Arid Plain	11
Marusthali	12
Dune Free Tract of Jaisalmer-Barmer-Bikaner	12
Semi-Arid Plain or Rajasthan Bangar	13
Luni Basin	13
Shekhawati region	14
Nagauri Upland	14
Ghaggar Plain	14
Aravalli Range and Hilly regions	14
North-Eastern Hilly Region or Alwar hills	15
Central Aravalli Ranges	15
Sambhar Basin or Shekhawati lower Hills	16
Marwar Hills	16
Mewar Rocky region and Bhorat Plateau	16
Abu Block	16
Eastern Plain	17
Chambal Basin	17
Banas Plain	18
Middle Mahi Plain	18
South-East Rajasthan Plateau(Hadoti Plateau)	18
Vindhyan Scarpland	19
Dacca Lava Plateau	19
River	19
Drainage system prevalent in the state	20

Rivers of Bay of Bengal Drainage system	20
Chambal river	20
KaliSindh river	21
Banas river(Hope of the Forest):	21
Berach river:	22
Kothari river:	22
Khari river:	23
Parvati river:	23
Banganga river:	23
Gambhiri river:	23
River of Arabian Sea Drainage	24
Luni river	24
Sabarmati river:	25
Mahi river:	25
Rivers of Inland Drainage:	26
Ghaggar river:	26
Sota-Sabi:	26
Kankani river:	26
Kantli river:	27
Some small rivers:	27
Lakes	27
Saline water lake:	27
Sambhar lake:	27
Pachpadra lake:	28
Lunkaransar lake:	28
Deedwana lake:	28
Fresh water lake:	28
Jaisamand lake:	28
Rajsamand lake:	29
Pichhola lake:	29
Fateh Sagar lake:	29
Udai Sagar:	29
Bal Samanad:	29

Kolayat Lake:	30
Anasagar lake:	30
Nakki Lake:	30
Pushkar lake:	30
Siliserh	30
Climate of Rajasthan	31
The Rajasthan has different condition with respect to other places having same latitude	31
Climatic condition in Rajasthan plain	31
Climatic Conditions in East of the Aravallis	32
The Hot-Weather Season	33
The Rainy Season	33
The Cold Weather Season	34
The season of retreating Monsoon(October to December):	34
The cold weather season(December to February):	34
Climatic Aspects	35
Rainfall	35
Solar radiation and Sunshine availability	35
Air Temperature and Relative Humidity conditions	35
Winds Regime and Associated Phenomena:	35
Evapo-transpiration requirements	36
Water	36
Surface Water	36
Ground Water	36
Rainfall	36
Conservation	37
General Water Conservation	37
Urban Water Conservation	37
Municipal and Industrial Water Conservation	37
Rural and Agricultural Water Conservation	37
Groundwater	38
Forest	38
The forests of state can be divided into four broad forest types.	38

Tropical Thorn Forests	39
Tropical Dry Deciduous Forests	40
Central Indian Sub - tropical Hill Forests	40
Mixed Miscellaneous Forests	40
Forest Conservation	41
Soil	41
Soils of Rajasthan:	41
Classification of soils:	42
Two systems of soil classification are common:	42
Old system of classification:	42
Desert Soil:	43
Dunes & Associated Soils:	43
Brown Soils:	43
Sierozems:	43
Red Loams:	44
Alluvial Soils:	44
Hill soils(Lithosols):	45
Saline-Sodic soil(Solonchaks)	45
New Comprehensive system:	45
Aridisols:	45
Alfisols:	46
Entisols:	46
Inceptisols:	47
Vertisols:	47
Soil Conservation method:	47
National Park, Wildlife Sanctuary and Conservation Reserve	48
National Park:	48
Keoladeo Ghana National Park, Bharatpur	49
Ranthambore National Park, Sawai Madhopur	49
Mukundara National Park, Kota	49
Sariska National Park, Alwar	49
Desert National Park	50

Wildlife Sanctuary	50
Tal Chhapar Wildlife Sanctuary	50
Bassi Wildlife Sanctuary	50
Gajner Wildlife Sanctuary	51
Jaisamand Wildlife Sanctuary	51
Khodeswar Rain Shelter, Jalore	52
Kumbhalgarh Wildlife Sanctuary	52
Mount Abu Wildlife Sanctuary	52
National Chambal Sanctuary	53
Phulwari Ki Nal Wildlife Sanctuary	53
Sajjangarh Wildlife Sanctuary	53
Sita Mata Wildlife Sanctuary	54
Todgarh Raoli Wildlife Sanctuary	54
Conservation Reserve	54
Khetri Bansyal Conservation Reserve	55
Bir Conservation Reserve	55
Jawai Bandh Conservation Reserve	55
Umed Ganj Conservation Reserve	55
Rotu Conservation Reserve	55
Gogelao Conservation Reserve	55
Shakambari Conservation Reserve	56
Guda Vishnoiyan Conservation Reserve	56
Sundhamata Conservation Reserve	56
Jod beed Gadhwala Conservation Reserve	56
Bisalpur Conservation Reserve	56
Minerals	56
Types of Minerals	57
Metallic Mineral	57
Non-Metallic Mineral	57
Metallic Mineral	57
Ferrous Mineral	57
Iron Ore:	57

Manganese	58
Non-Ferrous	58
Bauxite	58
Copper	59
Lead and Zinc	60
Silver and Gold	61
Tungsten	61
Beryllium	62
Non-Metallic Mineral	62
Fuel Mineral	62
Petroleum	62
Other Non-Metallic Minerals:	64
Mica:	64
Gypsum	64
Marble	64
Felspar	65
Quartz	65
Wollastonite	65
China Clay	65
Power Resources: Renewable and Non-Renewable	66
Non-Renewable Source	66
Coal	66
Thermal Energy	67
Nuclear/Atomic Power/Energy resources:	69
Rajasthan Atomic Power Project (RAPP)	69
Banswara Thermal Power Station:	70
Natural Gas:	71
Renewable Source	71
Solar	72
The major field of solar energy development are:	72
Bio-Gas	73
Wind Power	73

Population(Rajasthan)	74
Density	75
Sex-ratio	76
Literacy	77
Male Literacy	78
Female Literacy	79
Rajasthan: Rural and Urban Population(2011)	80

Physiography of Rajasthan

1. The Aravali Range runs across the state from the **Southwest** peak of Guru Shikhar (Mount Abu), which is 1,722 m in height, to Khetri(Jhunjhunu) in the **Northeast**.



- 2.
3. This range divides the state into **60% in the northwest** and **40% in the southeast**.
4. The northwest tract is **sandy and unproductive** with little water. Still, it improves gradually from desert land in the far west and northwest to comparatively fertile and habitable land towards the east. The area includes the Thar Desert.
5. The **South-eastern area**, higher in elevation and more productive, has a much-diversified topography.
6. In the South, the hilly tract of Mewar.
7. In the Southeast, a large area within the districts of Kota and Bundi forms a tableland.

- a. To the northeast of these districts is a rugged region (badlands) following the Chambal River line.
8. Further north the country levels out the northeastern Bharatpur district's flat plains are part of an alluvial basin.
9. Merta City lies in the geographical centre of Rajasthan.

Based on present landforms, we can divide Rajasthan into the following Physiographic Division:

1. Western Sandy Plain

- a. Sandy Arid Plain
 - i. Marusthali
 - ii. Dune Free Tract
- b. Semi-Arid Plain or Rajasthan Bangar
 - i. Luni Basin
 - ii. Shekhawati region
 - iii. Nagauri Upland
 - iv. Ghaggar Plain

2. Aravalli Range and Hilly Regions

- a. North-Eastern Hilly region or Alwar hills
- b. Central Aravalli Range
 - i. Sambhar Basin or Shekhawati Lower Hills
 - ii. Marwar Hills
- c. Mewar Rocky region and Borhat Plateau
- d. Abu block region

3. Eastern Plain

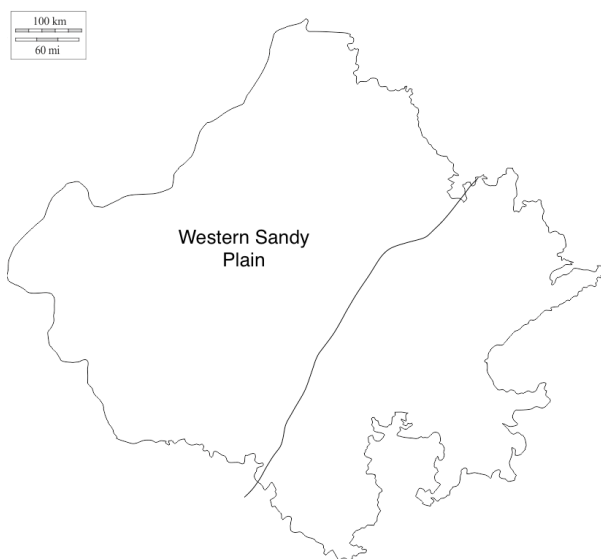
- a. Chambal Basin
- b. Banas Basin
- c. Chhappan Basin or Middle Mahi Plain or Bagar Tract

4. South-Eastern Rajasthan Plateau(Hadoti Plateau)

- a. Vindhyan scarp land
- b. Deccan Lava Plateau

Western Sandy Plain

1. Location of Western Sandy Plain:
 - a. Latitude: 24°30'N - 30°12'N and
 - b. Longitude: 69°15'E to 76°45'E

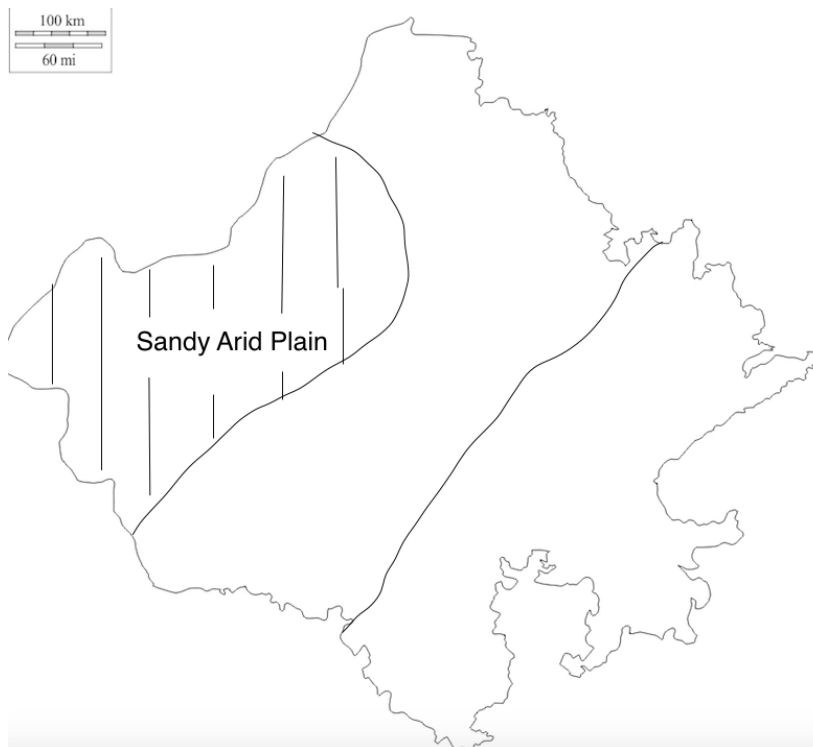


- c.
 2. Western Sandy Plain includes Marusthali(the eastern portion of Thar desert) and adjoining Bangar(steppe land) to the Aravalli west.
 3. The western sandy plain is a vast expanse of windblown sand, poorly watered and sterile.
 4. The west of this is known as the Thar Desert, which is perfectly dry and desolate with thin patches of prickly grass and other desert plants.
 5. The region comprises Bikaner, Barmer, Churu, Jodhpur, Jaisalmer, Nagaur, Hanumangarh, Sriganganagar, Pali, Sirohi, Sikar and Jhunjhunu district and contains about 58% of the area and 30% of the population of the state.
 6. It covers an area of about 1,96,747 sq. Kms extend from 640kms from north-east to south-west with an average width of 300kms from west to east. The eastern boundary of the region is marked by the western submontane zone of the Aravalli range upto the northern point of Udaipur district. Beyond which the border is characterised by a 50cm rainfall line and Great Indian Watershed.
 7. The region slopes, generally, from **east to west** and **north to south**. The north-eastern part of the region has a general elevation of about 300meters.

Still, towards the south, the height is about 150 meters excepting the Jalore-Siwana upland which lies above 300 metres.

8. The most important river in this region is **Luni** which rises in the Aravalli south-west of Ajmer and flows towards the south-west.
9. The whole of the Marusthali and the Bangar receive less than 50 cm of annual rainfall.

Sandy Arid Plain

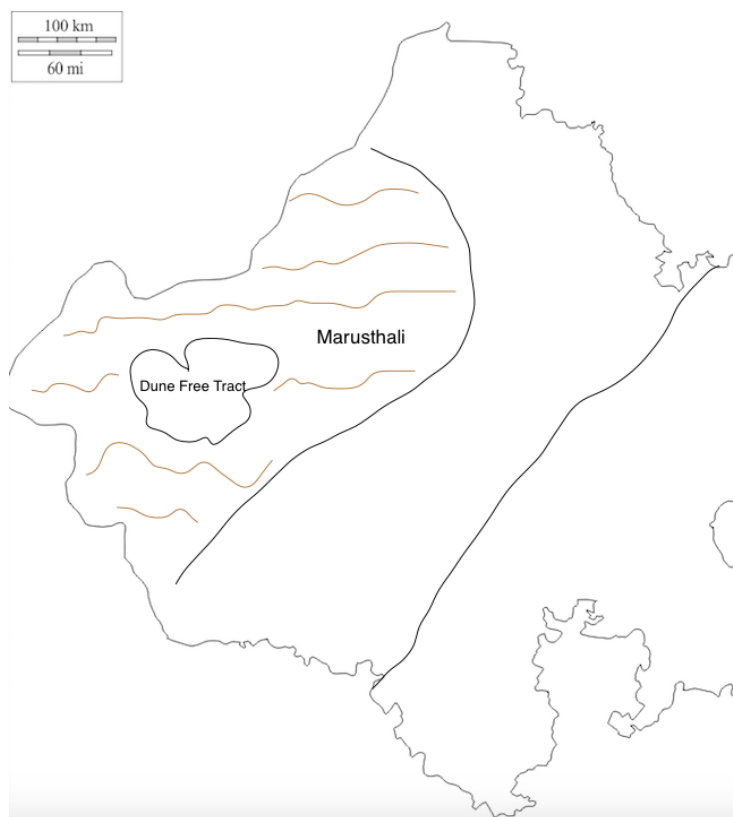


- 1.
2. In Sandy Arid Plain, there are vast **stretches of sand, and rock outcrops** are standard features.
 - a. The outcrops mainly of Aravalli genesis, schists, Malani granite and Vindhyan are exposed in the Thar area.
 - b. In the north-west extensive slightly elevated area of Jurassic and Eocene rocks, mainly limestones are found in Jaisalmer, Barmer, Bikaner, Churu, Hanumangarh and Ganganagar districts.
 - c. The erosional topography is evident in Barmer, Jaisalmer, Bikaner and other areas where rock outcrops are exposed at the surface.

Marusthali

- It covers Bikaner, Jaisalmer, Churu, some western Nagaur and western two-thirds of Barmer and Jodhpur district.

- Shifting sand, locally termed "**Dharians**" are common especially in the west, near Shagarh village, where they extend many kms and where their surface continuously changes.
- There are different types of dunes and dune accumulation in other parts of the Marusthali.
- Based on their shape, size, wind direction and vegetable cover, different types of dunes have been recognised in this region, namely:
 - Longitudinal dunes(Seif of Sahara or Arg of Arabia)
 - Crescent- Shaped dunes(Barchans) of Turkestan and
 - Transverse Dunes.

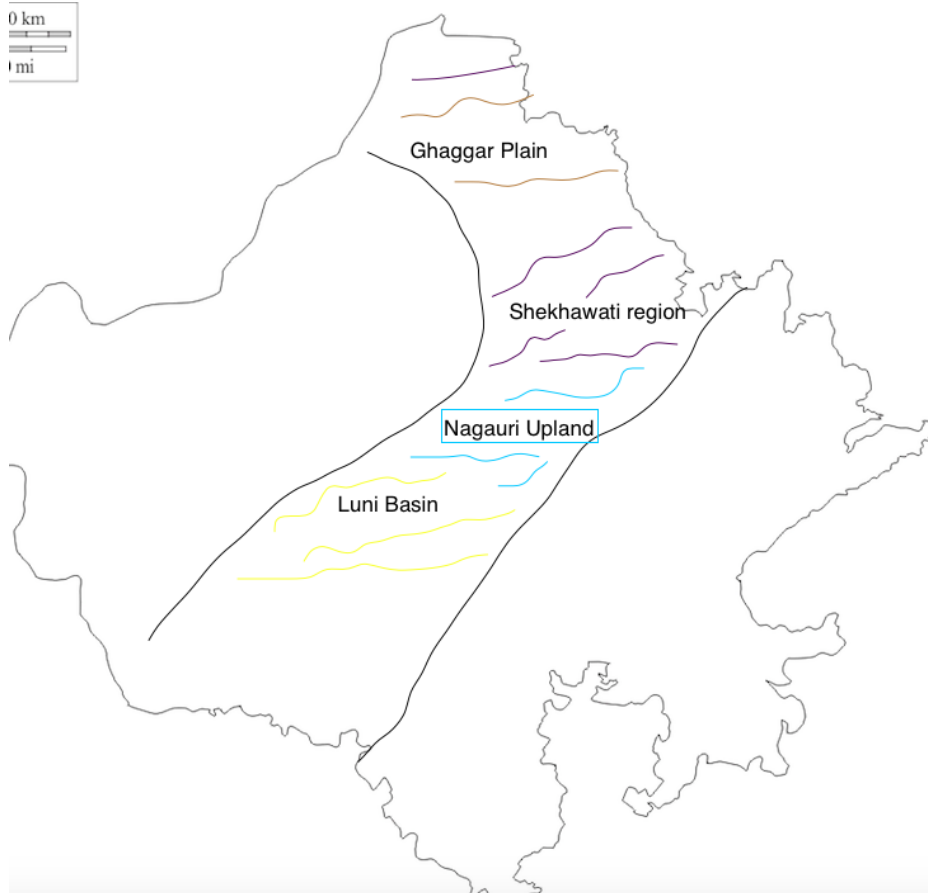


Dune Free Tract of Jaisalmer-Barmer-Bikaner

- Next comes the rocky, comparatively dune free tract of Jaisalmer-Barmer-Bikaner and it covers nearly 65sq. Km around the Jaisalmer town, half of Pokhran tehsil, western and southern parts of Phalodi tehsil of Jodhpur district.
- The limestone and sandstone rocks exposed here belong to Jurassic and Eocene formation.

Semi-Arid Plain or Rajasthan Bangar

1. In the westernmost part lies the semi-arid Bagar land drained by the Luni in its south-eastern portion. In this part, the older rocks protrude (to stick out from a place or surface) above the surrounding sandy surface.



Luni Basin

- This basin includes Parbatsar, Merta, Degana tehsils of Nagaur, Bilara and Jodhpur, eastern part of Barmer district, Pali and Jalore districts.

Shekhawati region

- North of the Luni Basin upto Rajasthan border within the semi-arid transitional plain in the inland drainage area.
- The 50cm isohyetal line marks the eastern boundary.

Nagauri Upland

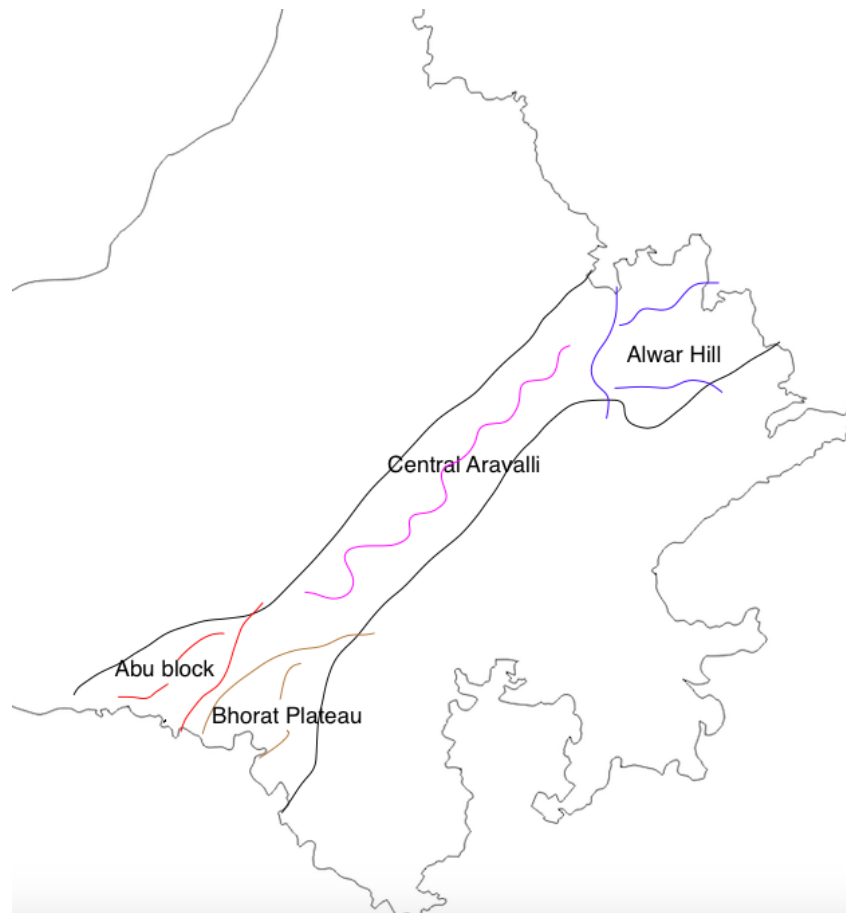
- The whole region comprising Didwana, Nagaur and Jayal Tehsil is sterile and sandy.
- There are no hills except tehsil parbatsar where the mountain ranges on the southern side are the off-shoots of Aravalli hills.

Ghaggar Plain

- The region covers 3/4 area of the Ganganagar district.
- There is no stream or river except the Ghaggar Nile which flows through the ancient bed of the Ghaggar river which is now extinct.

Aravalli Range and Hilly regions

1. The Aravalli range running across Rajasthan like a curve scimitar from South-west to North-East is the principal and the dominant landform of the region.
2. This range though not of uniform width extends for about 692 kms from Palanpur in Gujrat to Delhi.



- 3.
4. Based on dimension, relief, slope and drainage pattern, the Aravalli range and Hill tract can be subdivided into the following physiographic sub-units.

North-Eastern Hilly Region or Alwar hills

1. It stretches from the low ridges of Delhi to the isolated hills of Alwar and Jaipur.
2. The offshoots of the peaks and hills to the west are found in Sikar, Sri-Madhopur, Neem-ka-thana and Khetri tehsils.

Central Aravalli Ranges

1. It comprises the district of Ajmer, Jaipur and south-western part of tonk.
2. The upland with scattered ridges in the western part is bounded by sambhar basin in the west, Alwar hills and plains in the north, the Karauli Tableland in the east and the Banas plain in the south.

Sambhar Basin or Shekhawati lower Hills

- The central axis of the Aravalli range lies in the Shekhawati hill located eccentrically to the west. The backbone of the Shekhawati hills consists of high parallel ridges of hard siliceous phyllites and slates.

Marwar Hills

- It(4400sq. Km) includes the tehsil of Beawar, Ajmer and Kishangarh. Taragarh(873m) overlooks the city of Ajmer.

Mewar Rocky region and Borat Plateau

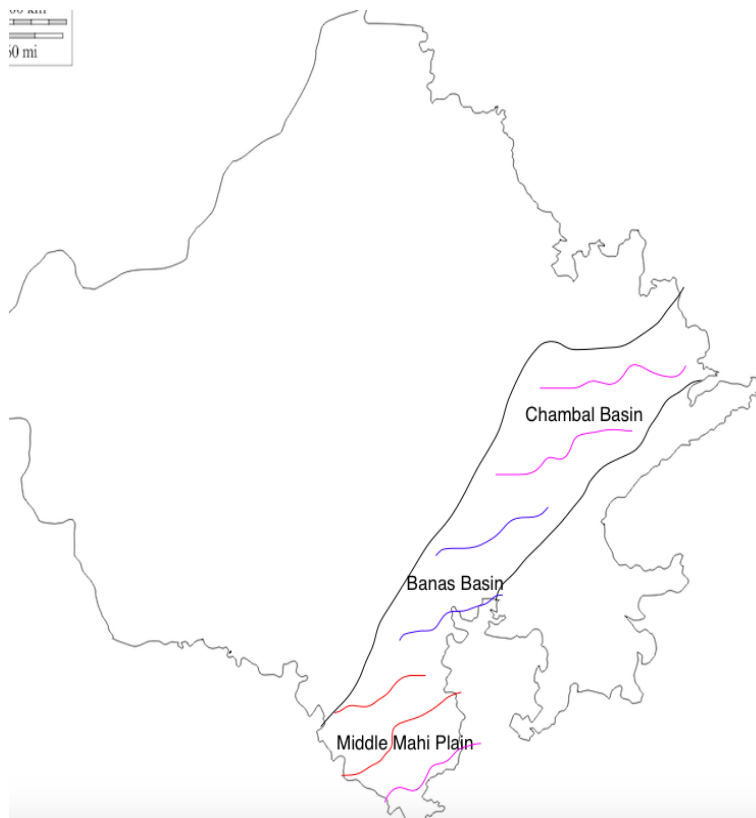
1. The Mewar hills cover the Udaipur district's whole except these eastern tehsils(Maoli, Rajsamand and Vallabhnagar), the south-eastern margin of pali district and parts of Gujarat state situated between Banks Plain and Abu block.
2. It is the most distinctive hilly region covering 17,007sq. Km.
3. The highest portion of the Aravalli range except for the Abu block, lies north-west of Udaipur between the fort of Kumbhalgarh and Gogunda, in the form of a plateau, locally known as "**Bhorat.**"
4. Borat having an altitude of nearly 1,225m from it, bold strike ridges of the Alwar quartzite, with almost level tips project to about 300m and some of the peaks to more than 1,300m above the sea level. In comparison, the highest point rises to 1,431m at **Jarga Parbat.**
5. The western most ridge in east Sirohi, thought of no great height, is steep and rugged, locally known as **Bhakar.**
6. Some of the hill spurs girdle the saucer-shaped Udaipur basin, locally known as **Girwa**(girdle of hills).

Abu Block

1. It covers almost the whole of Sirohi district, except the west margin, it is entirely hill.
2. The Aravalli range has been detached in south-western parts and spreads in the form of clusters of hills in Sirohi.

Eastern Plain

1. The region presents a strange and confusing amalgam of lowland and upland topography which is the result of its geological history and the exogenetic forces that have gone into its making.
2. The plain of Bharatpur appears to be an extension of the upper Ganga Plain, and the Kota plain is virtually an extension of the Morena plain. Still, the Banas plain through an alluvial tract is instead a peneplain.
3. The central Mahi plain is a tangled wilderness of valley known as Chappan, covering part of Udaipur, Dungarpur, Banswara and Pratapgarh and draining to the Arabian Sea.



4.

Chambal Basin

- The Chambal-Sind basin's plain presents a homogeneous topography instead or characterised by flood plains, river bluffs, interfluves, and ravines best developed in the region.

Banas Plain

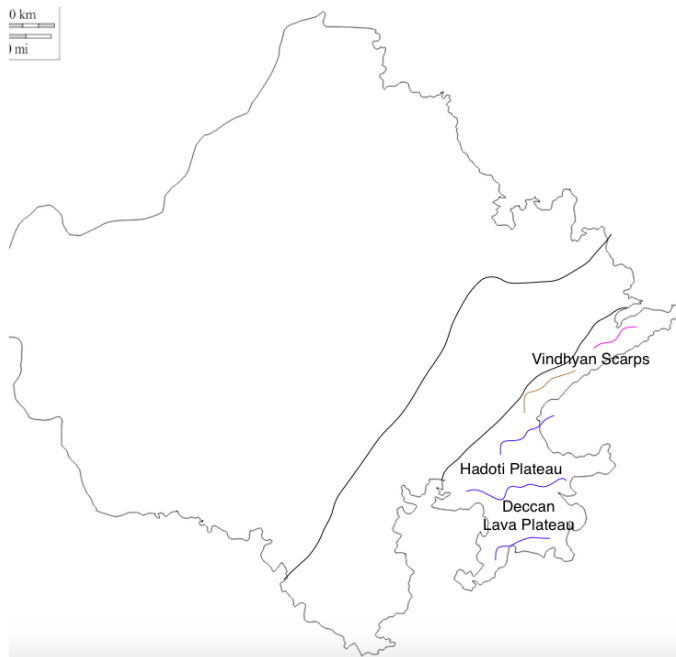
- The Banas Plain(Upper) extends from east of the Aravalli to Malpura upland in the east and north-east, Bhilwara, Chittorgarh and three tehsils Udaipur(Rajasmand, Maoli and Vallabh Nagar) form part of it the banks plain is limited by 50cm.
 - a. The Mewar Plain or the Stony Plain of Mewar is a dissected plain of Archaean Gneiss. The plain gradually slopes towards the east and northeast with an average height of between 280-500m.
 - b. The Malpura-Karauli Plain: It is a flat upland which heron recognised as a "tertiary peneplain". It is mostly composed of schist and gneiss with 250-350m elevation and occasional sweeps of ridges.

Middle Mahi Plain

1. It lies east of the Mewar hills and south of the Banas plain, covers Dungarpur district.
2. The western part is hilly, the central and eastern part, known as **Chhapan** are fertile plains with extensive cultivation based on high rainfall.

South-East Rajasthan Plateau(Hadoti Plateau)

1. The region locally called Pathar(stone) and Uparmal(high tableland), comprises the eastern and south-eastern part of the state and is known as Hadoti.
2. In Rajasthan the plateau lies in the east of features along with the Chambal river is south-east of Mewar plain and covers the more significant part of Bhilwara, bound, Kota, barn and Jhalwar districts.



3.

Vindhyan Scarpland

- The most typical development of the Vindhya occurs south of the Chambal though its extension upto the Aravalli flanks and beyond are also well-marked. The lower-vindhyan are well exposed in Karauli tableland and extended through Sawai Madhopur to Bundi and Kota.

Dacca Lava Plateau

- The western parts of the Vindhyan plateau lie in the form of three concentric escarpments. These three concentric escarpments are formed by the exposed rocks of three main sandstones. The slate stones are also found in between the exposed rocks of these sandstones.
 - a. This physiography unit of south-east Rajasthan is also known as **Uparmal**(high or stony Plateau).

River

Drainage system prevalent in the state

1. Rivers of Bay of Bengal Drainage System
2. River of Arabian Sea Drainage system
3. River of Indian Drainage system

Rivers of Bay of Bengal Drainage system

1. Chambal river



- a. _____
- b. Old mythological name Charmawati.
- c. Chambal is the only perennial river of Rajasthan which flows throughout the year.
- d. Origin: Manpur village(Madhya Pradesh)
- e. The total length of the river: 966km
 - i. Total length in Rajasthan: 153km
- f. It enters Rajasthan near Chauraigarh and Bhanpura(Beigun tehsil, Chittorgarh)
 - i. Where the Gandhisagar dam has been built
- g. It makes the boundary between Kota & Bundi districts.