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Indian Geography



INDIAN GEOGRAPHY

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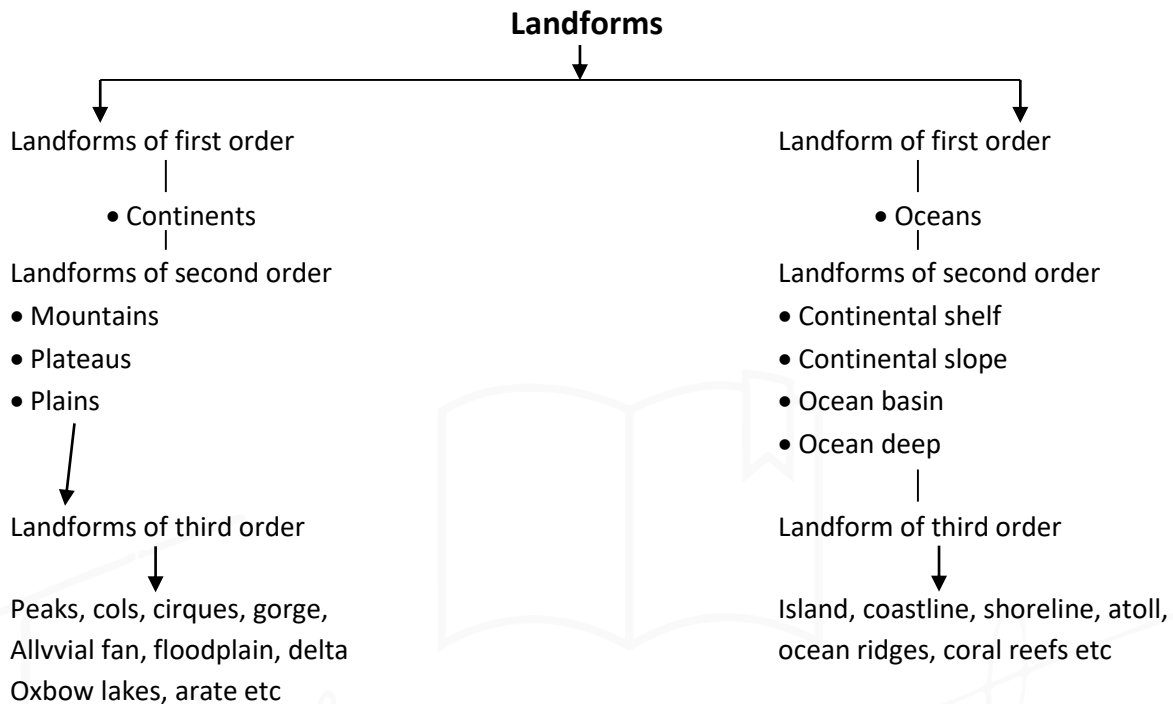
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1 CHAPTER

Major Physical Features, Rivers and Lakes – World



Mountains

Classification of Mountains

1. On the basis of height

- A. **Low mountains:** 700 -1,000 m.
- B. **Rough mountains:** 1000 m - 1,500 m
- C. **Rugged mountains:** 1,500 - 2,000 m.
- D. **High mountains:** > 2,000 m.

2. On the basis of location

A. Continental mountains

a. Coastal mountains: Nearby Coasts.

- **Examples:** Appalachians and Rockies (North America), Alpine (Europe), Western and Eastern Ghats of India etc.

b. Inland mountains: On main landform

- **Examples:** Ural Mountains (Russia), Vosges and Black Forest block mountains (Europe), Himalayas, Aravallis, Satpura etc. (India), Kunlun, Tienshan, Altai etc. (Asia) etc.

B. Oceanic mountains

a. Mostly **below the water surface**, **some** can be found **above** also.

b. **Majorly** on continental **shelves** and ocean **floors**.

c. **Example:** Mauna Kea volcanic mountain of Hawaii Island , Antilean Mountain system

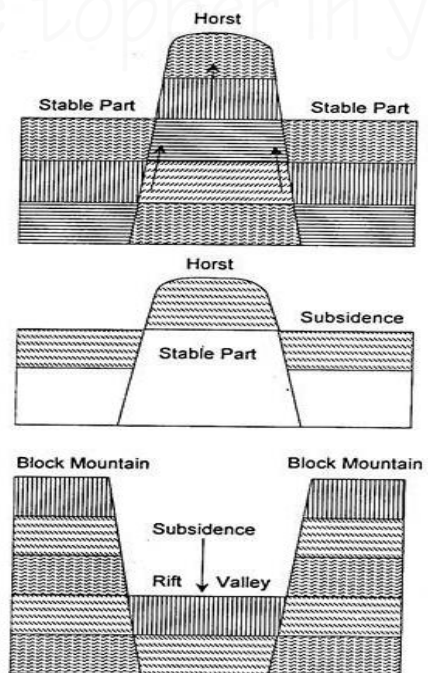
3. On the basis of mode of formation

A. Circum-erosional or relict mountains:

- The remnants of old fold mountains



- **Formation:** A result of **denudation**
 - **Eg:** Vindhya ranges, **Aravallis**, Satpura, Eastern Ghats, Western Ghats etc.
- B. Original or tectonic mountains:**
- **Formation:** Due to **tectonic forces**
 - **These can be further divided into 4 types:**
 - I. Folded Mountains**
 - **Formation:** when **two or more** of Earth's tectonic **plates** are **pushed** together by **compressive forces** generated by **endogenetic forces of earth**.
 - **Location:** **Convergent plate Boundaries**
 - **Characteristics:**
 - **Youngest** mountain group.
 - **Fossils present**.
 - **Concave slope** on **one side** and **convex slope** on the **opposite side**.
 - **Earthquake prone**
 - Most **numerous** and the most **significant**.
 - Have **abundant mineral resources** such as tin, copper, gold, and other metals.
 - **Area of volcanic activity**.
 - **Types:**
 - **Young folded mountains:**
 - ✓ **Least affected by denudation**
 - ✓ **Eg: Rockies, andes, Alps, Himalayas.etc**
 - **Mature folded mountains:**
 - ✓ **Affected by denudation.**
 - ✓ **Characterized by mono clinal ridges and valleys.**
 - **Old folded mountains:**
 - ✓ **Extremely affected by the denudational process.**
 - ✓ **Eg: Aravalis, Vindhya etc.**
 - II. Block/ Fault-Block/ Horst mountains**
 - **Formation:** By **tensile and compressive forces** by **endogenic factors**.
 - **Location:** **Between two faults** or on either side of a **rift valley** or a **graben**.
 - **Eg:** **The Vosges mountains** (in France) and the **Black Forest** (in Germany) etc.
 - **Characteristics:**
 - **Formed when the earth's crust between two fault lines is pushed to rise up** (owing to **horizontal pressure from either side**).
 - **Eg:** **Satpura range** is a **horst** and the rivers **Narmada and Tapi** flow along the **rift valleys** on either side
 - **Generated when a portion of the earth's crust collapses along two fault lines** due to **divergent pressures**.
 - **Eg:** **River Rhine** (Germany) flows along a **rift valley** and the **Black Forest** and **Vosges** represent the **block mountains or horst** on either side of it



- Characterised by steep slopes and flattened summits.
- Moderate size and lack peaks.
- Types:
 - Tilted block mountains: one steep side represented by fault scarp and one gentle side.
 - Lifted block mountains: Flattened summits of tabular shape and very steep side slopes represented by two boundary fault scarps.

Origin: 2 theories

A. Fault Theory:

- opinion that **block mountains are formed due to faulting.**
- **Formed in a number of ways:**
 - **Due to upward movement of the middle block** between two normal faults.
 - **When the side blocks of two faults move downward** whereas the **middle block remains stable at its place**
 - When the **middle block between two normal faults moves downward.**

B. Erosion theory:

- Opinion that these mountains were not formed due to faulting and tilting, rather they were **formed due to differential erosion.**
- The mountains, after their **origin in the Mesozoic era, were subjected to intense erosion.**
- Consequently, **differential erosion resulted in the formation of existing denuded Great Basin Range mountains.**
- **Not acceptable to most of the scientists** since they believe that denudation may modify mountains but cannot form a mountain

III. Dome Mountains

- **Formation:** By magmatic intrusions and upwarping of the crustal surface.
- **Location:** In a **region of flat-lying sedimentary rocks** is warped or bowed upward making a structural dome.
- **Eg:** Normal domes, Lava domes, **Batholithic domes, Laccolithic domes, Salt domes etc.**

IV. Mountains Of Accumulation/ volcanic mountains:

- **Formation:** Due to **accumulation of volcanic materials.**
- **Eg:** **cinder cones, composite cones, acid lava cones, basic lava cones etc**

4. On the Basis of Period of Origin

I. Precambrian Mountains:

- belong to the **Precambrian period,**
- subjected to upheaval, denudation and metamorphosis. So, the remnants appear as **Residual Mountains.**
- **Ex:** Laurentian mountains, Algoma mountains etc.

II. Caledonian Mountains:

- Belongs to **late Silurian and early Devonian periods.**
- **Ex:** The Appalachians, Aravalli and Mahadeo Hills etc.

III. Hercynian Mountains:

- Belongs to **Upper Carboniferous to Permian period in Europe.**
- **Ex:** mountains of Vosges and black forest, Altai, Tianshan Mountains of Asia, Ural Mountains etc.

IV. Alpine System:

- Belongs to the **tertiary period**
- **Ex:** Rockies of North America, Alpine mountains of Europe, Atlas Mountains of North-Western Africa, Himalayas of the Indian subcontinent, etc.

Major Mountains of the world:

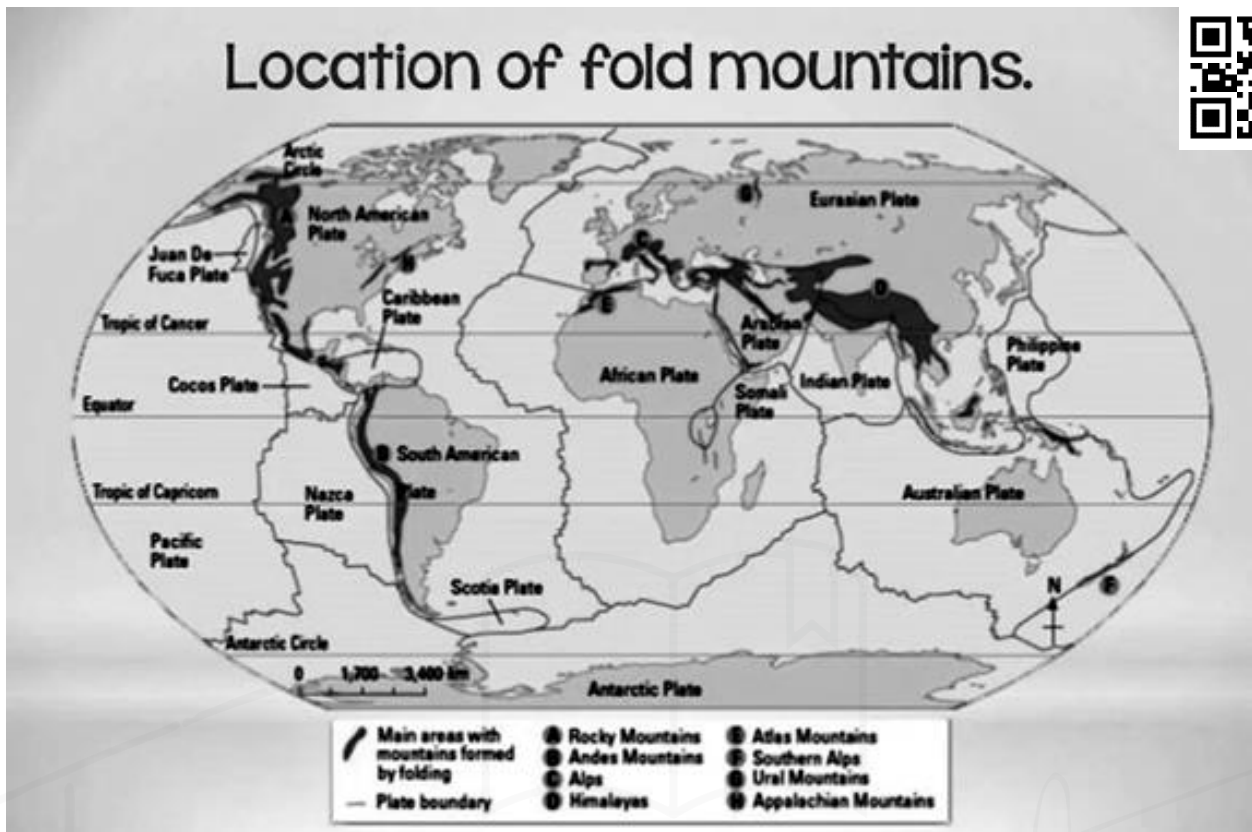


Fig: location of fold mountains

S.No.	Mountain Range	Important/ Highest Peaks	Location	Description
1.	Rocky Mountain	Mt. Elbert (highest peak in the Rockies)	North America	It is one of the longest fold mountains in the world and extends from Canada to western US (New Mexico State)
2.	Appalachian Mountains	Mt. Aitchell, North Carolina, US (highest peak of Appalachian Mountains)	North America	It is fold mountain with rich in mineral resources.
3.	Alps	Mont Blanc (French – Italian Border)	Europe	It is a folded mountain and source for river like Danube, Rhine etc.
4.	Sierra Nevada	Mt. Whitney	California, USA	Habitat for many Red Indian tribes
5.	Alaska Range	Mt. McKinley	North America	Mt. McKinley highest peak in North America
6.	Altai Mountains	Belukha mountain	Central Asia	Young folded mountain which extends from Kazakhstan to northern China.
7.	Andes Mountains	Mt. Aconcagua	South America	Longest Mountain chain in the world
8.	Atlas Mountains	Mt. Toubkal	Northwestern Africa	Young fold mountain spreading over Morocco and Tunisia.
9.	Drakensberg Mountains	Mt. Lesotho	South Africa	Young folded mountain

10.	Caucasus Mountain	Mt. Elbrus	Europe	Located between the Black sea and the Caspian sea
11.	Ural Mountains	Mt. Narodnaya	Russia	This mountain range act as a boundary between Europe and Asia.
12.	Hindukush Mountains	Mt. Trich Mir	Pakistan and Afganistan	Folded mountain with rugged topography which makes it difficult for transportation.
13.	Himalyas	Mt. Everest	Asia	Young fold mountains in Asia which separates.
14.	Arakhan Yoma	Mt. Kennedy peak	Myanmar	It extends from north to south direction. Shifting cultivation is practiced.
15.	Kunlun Mountains	Mt. Muztag	North of Tibetan plateau and western China	It is one of the young folded mountains.
16.	Vosges	Mt. Grand Ballon	Eastern, France, Europe	Famous for the cultivation of grapes and manufacture of wines
17.	Great Dividing Range	Mt. Kosciuszko	Australia	This range is the source for the rivers Darling and Murray.

Plateaus

- A **raised area** with terrain that is **levelled on top**.
- Features a **big top surface area** and a **steep side slope**.
- aka **High plains or tablelands**
- Cover ~ **18% of land**
- Found on **every continent** and cover **1/3rd of the Earth's surface**.
- **Young or old- Deccan plateau - old**
- **Tibet Plateau- highest**
- Have **abundance** of **mineral** resources.
- **Formation:**
 - **Form over millions of years** as fragments of the Earth's crust collide, melt, and gurgle back to the surface.
 - **Some** were created **by a single process**
 - **Others- several processes** over the course of Earth's history.

Major Process of Plateaus Formation:

- **Volcanism:** from eruptions that occurred during the Cenozoic or Mesozoic.
 - **Eg: Deccan Plateau, Columbia Plateau(US), Laurentian plateau or The Canadian Shield** and the Siberian Traps of Russia.
- **Crustal shortening : Thrusting of one block of crust over another** and occurrence of **folding**.
 - **Eg: Tibet Plateau, plateaus in North Africa, Turkey, Iran.**
- **Thermal expansion: Replacement of cold mantle lithosphere by hot asthenosphere.**
 - **Eg: Ethiopian Highlands (Africa), Yellowstone Plateau(US), Massif Central (France)**

Classification of Plateaus

1. Intermontane Plateaus

- **Intermontane:** Area between two mountains.
- **Occurrence:** Majorly **bordered by mountain ranges** (usually fold mountains) or are partially or completely **enclosed inside** them.
- **Highest** Plateaus on the planet.
- **Features:** Almost **horizontal rock layers** that are uplifted to **great heights by the earth's vertical movements**.
- **Eg:** Tibetan Plateau , Bolivian plateau etc.

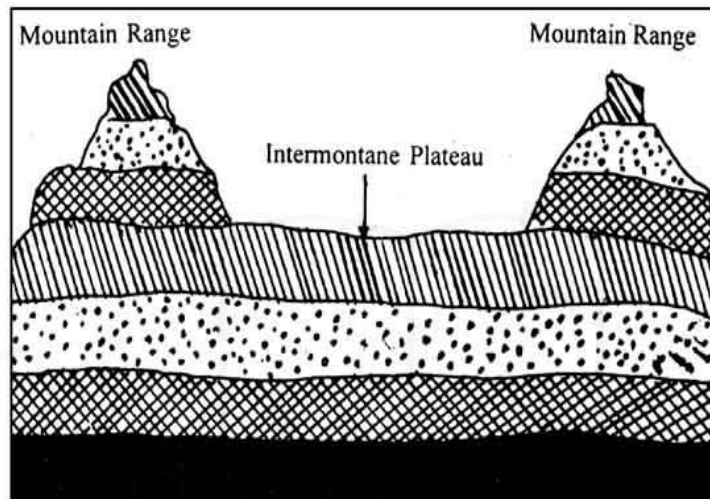


Fig: intermontane plateau

2. Piedmont Plateaus

- **Piedmont:** Mountain foot.
- **Occurrence:** Foot of a mountain and are **bordered by a plain on one side or a sea/ocean**.
- aka **Plateaus of denudation** as places **formerly high to the level of mountains** but have now been **reduced to the mountain's foot level** due to numerous agents of **erosion**.
- **Examples:** The **Malwa Plateau** (India), **Patagonian plateau** (Argentina) etc.

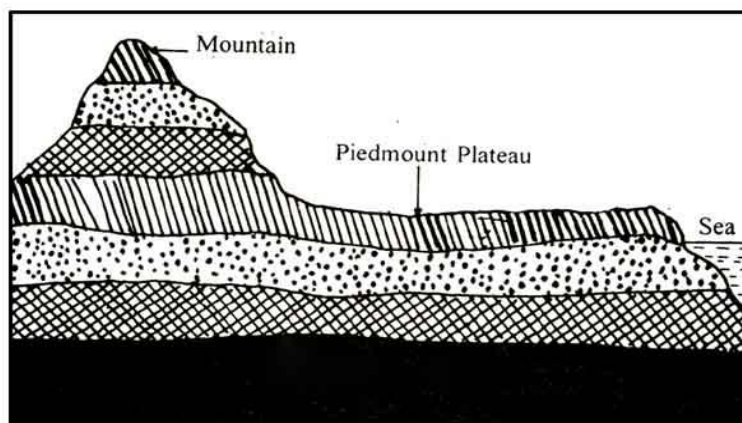


Fig: Piedmont plateau

3. Continental Plateaus

- aka **Plateaus of Accumulation**.
- **Occurrence:** **Bordered on all sides by the plains or seas, forming away from mountains**.
- **Formation:** Due to either a large-scale **continental uplift** or the **spread** of horizontal **basic lava sheets** (less viscous) that entirely cover the old landscape.

- **Feature:** In contrast to the neighbouring plain or sea, these plateaus have a **sharp elevation** (i.e. more steepness on sides).
- **Eg:** The **Maharashtra Plateau**, **Antarctic Plateau** or **Polar Plateau** in East Antarctica

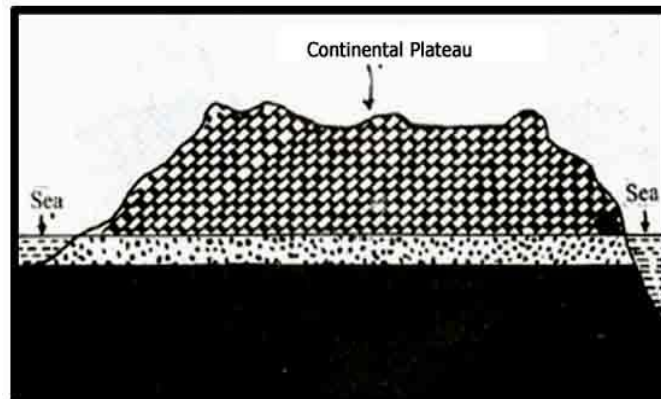


Fig: The Continental Plateaus

4. Volcanic Plateaus

- **Formation:** by volcanic activity.
- **Types:**
 - **Lava plateaus:** Generated by extremely fluid basaltic lava flowing through a series of vents without causing violent explosions.
 - **Pyroclastic plateaus:** Formed by massive pyroclastic flows and are underlain by pyroclastic rocks.
- **Eg:** Antrim plateau (Ireland), The Deccan Plateau (India), The Columbia Plateau (US) etc.

Pyroclastic flow: A fast-moving river of hot gas and volcanic materials that flows out from a volcano at rates of up to 700 km/h on average.

5. Dissected Plateaus

- **Dissected :** Area that has been severely eroded such that the relief is sharp.
- **Formation:** Due to upward movement in the Earth's crust caused by the slow collision of tectonic plates.
- **Feature:** The region will appear to be mountainous.
- **Examples:** Ozark Plateau (US), Hornsby Plateau (Australia), The Deccan Plateau (India) etc.

Major Plateaus of the world



Fig: Distribution of Plateaus across the world.

- **Tibetan Plateau**
 - **Highest and largest plateau** in the world
 - aka '**roof of the world**'.
 - Formed due to **collision of the Indo-Australian and Eurasian tectonic plates**.
 - **Sufficiently high enough to reverse the Hadley cell convection cycles**.
 - **Covers-** Autonomous **Tibetan Region, Qinghai Province** of Western China, and a part of **Ladakh in Jammu and Kashmir**.
 - **Surrounded by mountains to the south** by the **Himalayan Range**, to the **northeast by the Kunlun Range**, and to the **west by the Karakoram Range**.
 - **Columbia – Snake Plateau**
 - **River Columbia** and tributary **Snake meet** in this plateau.
 - **Bordered** by the **Cascade Range and Rocky Mountains** and divided by the Columbia River.
 - **Formed as the result of volcanic eruptions** with a consequent coating of basalt lava (**Flood Basalt Plateau**).
 - **Colorado Plateau**
 - **Western part of U.S.A.**
 - **Largest plateau in America**.
 - Divided by the **Colorado River and the Grand Canyon**.
 - Example of **intermontane plateau**. **Mesas and buttes are found here** at many places [Arid Landforms].
 - **Known for the groundwater** which is under positive pressure and causes the **emergence of springs called Artesian wells**.
 - **Deccan Plateau**
 - Forms most of the **southern part of India**.
 - Bordered by **two mountain ranges, the Western Ghats and the Eastern Ghats**.
 - **Includes the Deccan Traps - largest volcanic feature on Earth**.
 - **Made of multiple basalt layers or lava flows**, the Deccan Traps covers 500,000 square kilometers in area.
 - Known for containing some **unique fossils**.
 - **Rich in minerals-** **mica and iron ore** in the Chotanagpur region, and **diamonds, gold and other metals** in the Golconda region.
 - **Kimberley Plateau**
 - Lies in the **northern part of Australia**.
 - Made of **volcanic eruption**.
 - Minerals- **iron, gold, lead, zinc, silver and diamond** are found here.
 - **Katanga Plateau**
 - In **Congo**.
 - Famous for **copper production**.
 - **Minerals - Cobalt, Uranium, Zinc, Silver, Gold and Tin**.
 - **Mascarene Plateau**
 - Plateaus also **form in the ocean**, such as the Mascarene Plateau in the Indian Ocean.
 - Extends **between the Seychelles and Mauritius Islands**.
 - **Laurentian Plateau**
 - Lying in the **eastern part of Canada**, it is a **part of Canadian Shield**.
 - Fine quality of **iron-ore** is found here.
 - **Mexican Plateau**
 - aka '**Mineral Store**'.
 - **Metallic minerals - silver, copper** etc..
 - **World's biggest silver mine Chihuahua** is situated in the plateau.
-

- **Patagonian Plateau**
 - **Piedmont plateau** (Arid Landforms) lying in **southern part of Argentina**.
 - **Rain shadow desert plateau**.
 - Important region for **sheep rearing**.
- **Altiplano Plateau or Bolivian Plateau**
 - **Intermontane plateau** which is located between **two ranges of Andes Mountain**.
 - Major area of **Tin reserves**.
- **Massif Central**
 - This plateau lies in **central France**.
 - Famous for **Grapes cultivation**.
- **Anatolian Plateau**
 - **aka Asia Minor**, most of Turkey lies on this plateau.
 - **Intermontane plateau** lying between **Pontiac and Taurus Mountain ranges**.
 - **Tigris – Euphrates Rivers** flow through this plateau.
 - Precious wool producing **Angora goats are found here**.
- **Others**
 - **Spanish Plateau / Iberian Plateau: middle of Spain**. It is a **lava plateau**. It is **rich in minerals like Iron**.
 - **Loess Plateau**: It is in **China**. The soil here is made of fine particles brought by the wind. This **fine loamy soil is extremely productive**. Crops grown in this soil along the Yellow River give great yields.

Plains

- A **low-lying**, relatively **flat** land surface with a **low local relief** and a **very mild slope**.
- Most **common** landforms on the surface of the planet.
- **Occurrence**: On **every continent**.
- **Area**: > **55 % of the earth's land surface**.
- **Formation**: By the **deposition of sediments** carried down by rivers.
- **Factors in Formation**: Aside from **rivers, wind, shifting ice, and tectonic activity** have all contributed to the formation of plains.
- **Examples**: **Indo Gangetic Plains, Mississippi Plains & Yang-Tze plain**



Classification of Plains

- On the basis of their mode of formation:
 - A. Structural plains**
 - **Undisturbed plain landforms** on the Earth's surface.
 - **Structurally depressed areas** which make up some of the most expanse **natural lowlands on Earth**.
 - Formed from **horizontally bedded rocks** relatively **undisturbed by crust movements of the Earth**.
 - **Created by an uplifting diastrophic movement** of a large landmass.
 - **Eg: Russian Platforms, Great plains (USA) & Central lowlands (Australia)**.
 - B. Erosional Plains (Peneplains)**
 - Plain landforms **produced from action of various agents of denudation** (River, running water, glacier and wind) on an existing landform.
 - **Agents wear out the rugged surface on an existing landform and smoothens them** - low undulating plain landforms.
 - **Major types** :
 - **Peneplains (Almost plain)**: Results from the action of the various agents of denudation mentioned above, exempting wind.



- **Pediaplays or Pediments:** Mountain **slopes** are **worn** away by mechanical weathering in **dry and semi-arid locations**, leaving a **gentle slope**.
- **Desert Plains:** Produced by **wind Erosion**. Eg: **Reg**, serir and hamada in sahara.
- **Karst Plains:** **Massive limestone plateaux** are **vulnerable to chemical weathering and erosion** by groundwater, eventually transforming into a depressed topographic surface with low relief. Eg: **The Canadian shield** and the West Siberian plain.

C. Depositional Plains

- **Formation:** Due to **depositional action** of numerous **geomorphic processes**.
 - **Riverine or alluvial plains:** Plains formed by **river deposits**.
 - **Lacustrine Plains or Lake Plains:** By sediment **deposition in a lake**. Eg: Kashmir Valley.
 - **Glacial or Drift Plains:** Produced by **glacial deposits**.
 - **Loess Plains:** when the **wind is the primary deposition mechanism**.
- **Feature:** **Most productive agricultural plains** of the world.
- **Examples:** **Gangetic plain** (for rice & jute), Nile delta of Egypt (for rice & cotton) & Hwang ho plain in China
- **Types:**
 1. **Alluvial plains:**
 - **Vast, sweeping stretches of plain land** that are formed by the **deposition of sediments called alluvium**.
 - **Represents the pattern of floodplain shift** over geological time.
 - **River flows down mountains or hills- carries sediments** resulting from erosion and transports the sediments to the lower plain.
 - **Sediments build up over time- elevation** of the floodplain **increases** and **width** of the river channel **decreases**.
 2. **Flood plain**
 - **Plain that stretches from the banks of a river or stream to the enclosing valley walls**.
 - **Usually subjected to flooding** when the adjacent water body overflows.
 - **Fertile and are made of deposits of silts, sands, levees, etc.,** deposited by floodwaters.
 - **Usually support a rich ecosystem**.
 - **Most devastating floods** in history have taken place here.
 - Eg. **Yellow River's floodplains**.
 3. **Scroll plain**
 - **Formed where a river meanders across a low gradient**.
 - **Deposition of sediments at such locations - Plains** formed.
 - **Oxbow lakes are common** occurrences in such areas.
 - Eg. **Taieri River**
 4. **Lacustrine plain**
 - Formed in **areas previously occupied by lakes**.
 - When a **lake drains out completely, sediments remain behind on the lakebed to form a plain**.
 - **Might be highly fertile** and support agriculture or **might form a wetland** or even a **desert** depending on the composition of the sediments.
 - Common in Southern Indiana of the US .
 - Eg. **Kashmir Valley** of India
 5. **Lava plain/ Lava field**
 - Formed by the **accumulation of layers of lava**.
 - **Can stretch for miles** and are easily visible from the air or in satellite images - **appear darker in color than the surrounding landscape**.

D. Glacial plains

- Formed by the **movement of glaciers under the force of gravity.**
- **Categorized as:**
 - **Outwash plains/ Sandur :**
 - ✓ Formed **when a glacier deposits sediments at its terminus.**
 - ✓ As a glacier moves, it **erodes the bedrock and carries the eroded sediments downstream.**
 - ✓ These sediments are **deposited by the meltwater of the glacier at the snout.**
 - ✓ **Common landform in Iceland.**
 - ✓ **World's largest outwash plain- Skeiðarársandur in Iceland - 1,300 square km.**
 - **Till plain**
 - ✓ Formed **by the deposition of glacial till** (unsorted glacial sediment).
 - ✓ When a sheet of glacial ice gets detached from the main glacier and melts in place, the sediments are deposited on the ground to result in the formation of a till plain.
 - ✓ **Can be seen in northern Ohio** where they were created by the **Wisconsin glaciation.**

E. Abyssal plain

- Located at great **depths - between 9,800 ft and 20,000 ft.**
- **Comprise- ~ 50%** of the earth's surface of our planet.
- **World's least explored areas** as well as the **flattest and smoothest ones.**
- **Massive in size.**
- **Eg. Sohm Plain** of the North Atlantic Ocean - 900,000 square km. Most common in the Atlantic Ocean but quite rare in the Pacific Ocean.
- **Considered to be formed by the deposition of sediments,** derived from land, in the abyssal depressions.

Major plains of the world

1. Indo-Gangetic plain of India

- Lies in the south of the Himalayas stretching **from the Sulaiman mountains to the Gargo and Lushai Hills.**
- **~ 100 to 300 miles wide.**
- Flat and alluvial plain with **deep and fertile soil.**
- One of the **most thickly populated parts of the world.**

2. Llanos (S.America)

- The vast plains of the **Orinoco basin.**
- **Dry season - desert**
- **Rainy season - abundance of grass.**

3. Lombardy Plains

- **Most fertile parts of Italy** watered by the **River Po.**
- **Major activities- Corns, fruits and mulberry** plants over which silkworm is reared.

4. Pampas (S. America)

- **Wide, treeless, grass-covered plains** of the **La Plata river system.**
- **Most extensive pasture lands** in the world.

5. Selvas

- **Vast impenetrable forests** of the **Amazon Valley.**
- **Region of great heat and heavy rainfall.**
- Has the **largest forest in the world?**

6. Steppes

- **Vast treeless plains** of **Russia** extending from the Caspian Sea eastwards.
- Very **hot in summer** and very **cold in winter** and have no rainfall.



7. Tundras

- Swampy plains **near the Poles** in the extreme north of America, Asia and Europe.
- **Remain frozen for about nine months.**
- **Major activities- Fishing and hunting.**

Other important plains- **Veldt** in South Africa, **Downs** in Australia, **Prairies** in North America, **Savannah** in Northern Africa and **Parklands** in East Africa.

Deserts

Types of Deserts

Subtropical Deserts

- Subtropical deserts are caused by the circulation patterns of air masses.
- They are found along the Tropic of Cancer, between 15 and 30 degrees north of the Equator, or along the Tropic of Capricorn, between 15 and 30 degrees south of the Equator.
- Hot, moist air rises into the atmosphere near the Equator. As the air rises, it cools and drops its moisture as heavy tropical rains. The resulting cooler, drier air mass moves away from the Equator. As it approaches the tropics, the air descends and warms up again. The descending air hinders the formation of clouds, so very little rain falls on the land below.
- For example: Sahara Desert (Africa), Kalahari Desert (Africa) and the Tanami Desert (Australia)

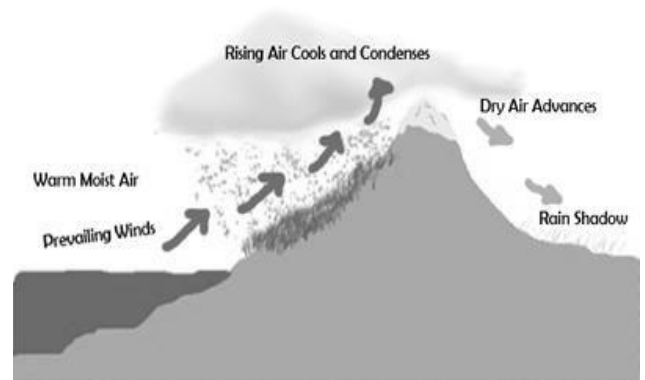


Coastal Deserts

- Cold ocean currents contribute to the formation of coastal deserts.
- Air blowing toward shore, chilled by contact with cold water, produces a layer of fog.
- This heavy fog drifts onto land.
- Although humidity is high, the atmospheric changes that normally cause rainfall are not present.
- A coastal desert may be almost totally rainless, yet damp with fog.
 - For example: the Atacama Desert, on the Pacific shores of Chile, is a coastal desert. It is the Atacama Desert is the driest place on Earth.

Rain Shadow Deserts

- Rain shadow deserts exist near the leeward slopes of some mountain ranges.
- Leeward slopes face away from prevailing winds.
- When moisture-laden air hits a mountain range, it is forced to rise.
- The air then cools and forms clouds that drop moisture on the windward (wind-facing) slopes.
- When the air moves over the mountaintop and begins to descend the leeward slopes, there is little moisture left.
- The descending air warms up, making it difficult for clouds to form.
 - For example: Death Valley, in the U.S. states of California and Nevada, is a rain shadow desert.
 - Death Valley, the lowest and driest place in North America, is in the rain shadow of the Sierra Nevada mountains.



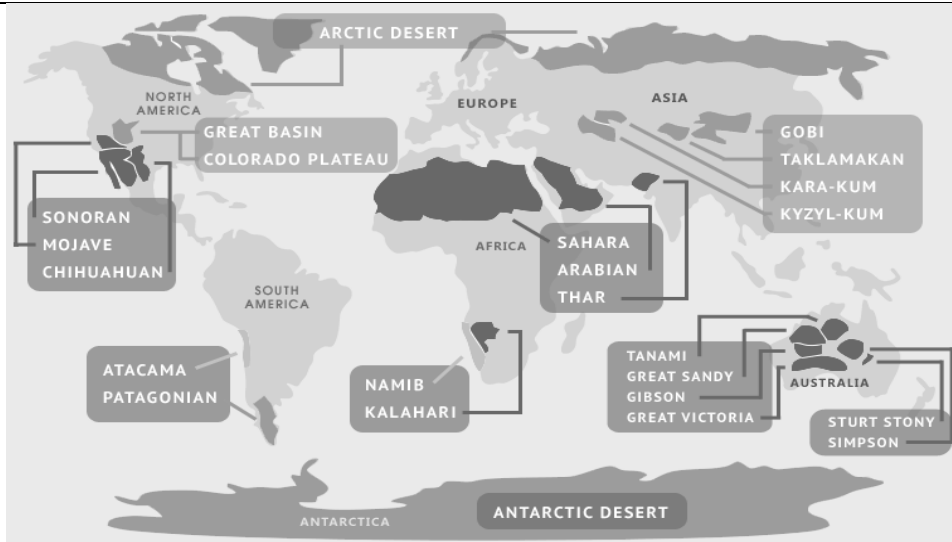
Interior Deserts

- Interior deserts, which are found in the heart of continents, exist because no moisture-laden winds reach them.
- By the time air masses from coastal areas reach the interior, they have lost all their moisture.
- Interior deserts are sometimes called inland deserts.
 - For example: the Gobi Desert, in China and Mongolia

Polar Deserts

- Parts of the Arctic and the Antarctic are classified as deserts.
- These polar deserts contain great quantities of water, but most of it is locked in glaciers and ice sheets year-round.
 - So, despite the presence of millions of liters of water, there is actually little available for plants and animals.
- The largest desert in the world is also the coldest.
- Almost the entire continent of Antarctica is a polar desert, experiencing little precipitation.
- Few organisms can withstand the freezing, dry climate of Antarctica.

Important Deserts of the World

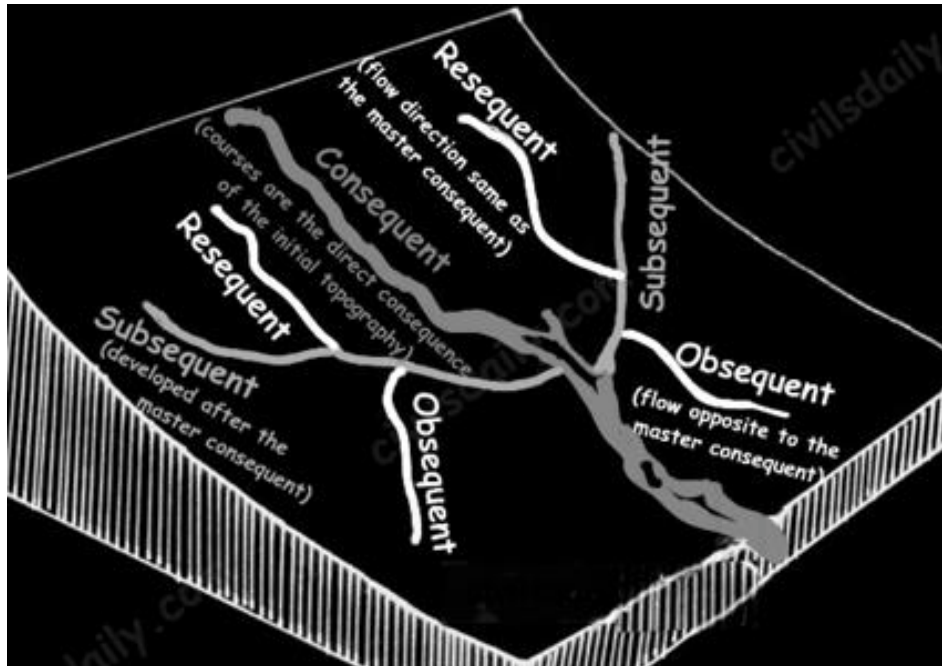


Important Deserts	Type of desert	Location
Antarctica	Polar ice and tundra	Antarctica
Arctic	Polar ice and tundra	Northern America (Alaska, Canada and Greenland) Northern Europe (Finland, Iceland, Norway and Sweden) Eastern Europe (European Russia) North Asia (Siberia)
Sahara	Subtropical	North Africa (Algeria, Egypt, Libya, Morocco, Sudan and Tunisia) West Africa (Mali, Mauritania and Niger) Middle Africa (Chad) East Africa (Eritrea)
Australian Desert	Subtropical	Australia
Arabian Desert	Subtropical	Western Asia (Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates and Yemen)
Gobi Desert	Cold	East Asia (China and Mongolia)
Kalahari Desert	Subtropical	Southern Africa (Botswana, Namibia and South Africa) Middle Africa (Angola)
Patagonian Desert	Cold	South America (Argentina and Chile)
Syrian Desert	Subtropical	Western Asia (Iraq, Jordan, and Syria)
Great Basin	Cold	United States
Chihuahuan Desert	Subtropical	Central America (Mexico) Northern America (United States)
Karakum Desert	Cold	Turkmenistan
Colorado Plateau	Cold	United States
Sonoran Desert	Subtropical	Central America (Mexico) Northern America (United States)
Kyzylkum Desert	Cold	Central Asia (Kazakhstan, Turkmenistan and Uzbekistan)
Taklamakan Desert	Cold	China
Thar Desert	Subtropical	Indian Subcontinent (India and Pakistan)
Dasht-e Margo	Subtropical	Afghanistan
Registan Desert	Subtropical	Afghanistan
Atacama Desert	Mild Coastal	South America (Chile and Peru)
Mojave Desert	Subtropical	United States
Columbia Basin	Cold	United States
Namib Desert	Cool Coastal	Southern Africa (Namibia) Middle Africa (Angola)
Dasht-e Kavir	Subtropical	Iran
Dasht-e Loot	Subtropical	Iran

Rivers

Types of Drainage patterns

Concordant drainage patterns



- Concordant if drainage pattern correlates to topology and geology of area.
- Path of river is highly dependent on slope of river and topography.
- Most commonly found drainage patterns.
- Classified into:
 - Consequent Rivers:
 - Follow general direction of the slope.
 - Most of peninsular rivers.
 - Eg, Godavari, Krishna and Cauvery, descending from the Western Ghats and flowing into the Bay of Bengal.
 - Subsequent Rivers:
 - A tributary stream formed by headward erosion along an underlying rock after the main drainage pattern has been established.
 - Eg. Chambal, Sind, Ken, Betwa, Tons and Son meet Yamuna and Ganga at right angles.
 - So, subsequent drainage of the Ganga drainage system.
 - Obsequent Rivers:
 - May form at right angles to the subsequent rivers and flow opposite to the direction of flow of the original consequent river after the valley development of consequent and subsequent rivers.
 - Resequent Rivers
 - Flows in same direction of initial consequent drainage.
 - Originate at a much later stage wrt master consequent rivers.

Discordant or Insequent drainage patterns

- Discordant if it does not correlate to topology and geology of the area.
- River follows its initial path irrespective of the changes in topography.
- Classified into antecedent and superimposed.
- Rivers in both drainage types flow through a highly sloping surface.
 - Antecedent Drainage or Inconsequent Drainage:

