

16th May, 2023

C.W

Tuesday

Chp # 2

Climate

Questions

Q: Define terms weather and climate/
Differentiate between weather and climate.

Ans: Weather: Weather is an atmospheric condition that can prevail at a particular place for a particular time in a particular area. It may vary from place to place. Weather is temporary i.e. for some hours, day or days.

Climate: Climate is a generalisation of all atmospheric conditions which occur regularly in a vast region at least for last 30 years. Climate is a permanent feature.

Q: What are important atmospheric conditions? Enlist.

Ans: Atmospheric Conditions.

i) Temperature: Mean minimum - Mean maximum / daily / diurnal / monthly temperature. Temperature is measured in °C and °F. Isotherm connect areas with same temperature.

ii) Precipitation: Dew, Mist, frost, fog, ice, snow, clouds, moisture in air, rainfall.
Rainfall is measured in mm. Isohyte connects areas with same amount of rainfall.

iii) Winds: High air pressure, low air pressure, dust storms, heavy winds etc.
Air pressure is measured in milibars.
Isobars connects areas with same air pressure.

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19th May, 2023

C.W

Friday

Questions

Q: Enlist the elements of climate.

Ans: Elements of climate are:

1. Temperature.
2. Rainfall
3. Wind and air pressure.

All elements are dependent on temperature.

Q: Explain factors which affect the temperature of Pakistan.

Ans: Latitudinal Effect: Areas closer to the equator receive direct rays of the sun resulting in high temperature. Southern Pakistan is closer to the Equator than Northern Pakistan.

Continental effect: a general term covering the climate of areas protected from or unaffected by maritime influence (the influence of sea on temperatures). Along coasts, ocean currents and prevailing winds usually have a moderating effect on temperature. This is why extreme winter and summer temperatures are recorded in the

interior of large landmasses, away from moderating influence of sea.

Altitude and temperature:

There is a relationship between altitude, air density and temperature. The air is densest at sea level because that is where it absorbs most water vapour, dust particles, and solar radiation. Air is least dense at high altitude because less solar radiation is absorbed at that level. With less air to absorb heat at higher altitude, there is an average drop of 6.5°C in temperature for each 1000-metre increase in altitude.

Cloud cover and temperature:

Cloud cover affects temperature to some extent. In the daytime, it reduces the amount of incoming solar radiation by reflecting it back to space, resulting in a drop in day temperatures. At night, the cloud cover traps the outgoing heat. As a result, temperature on a cloudy night does not drop as low as temperature on a clear night.

Latitude and the angle of the Sun:

'Angle of the Sun' refers to Earth's position in relation to the sun. The diagram shows that, the sun's rays do not fall at the same angle everywhere on the earth's surface. Latitudinal position determines the amount of heat received by the earth. For example, compared with the rays that fall closer or at the Equator (C-D), the sun rays falling near the North and South Poles have to heat a larger surface area (A-B) and have less heating effect. Similarly, the difference in the heat received in summer and winter is due to the difference in the angle of the sun.

In summer, the northern hemisphere (Pakistan is in the Northern hemisphere, North of the Tropic of Cancer) is tilted towards the sun; therefore this land absorbs more heat because:

- a) of the high angle of sun.
- b) it faces the sun for longer duration (longer days and shorter nights).

In winter, the northern hemisphere is tilted away from the sun (i.e. a low angle from the sun) so Earth absorbs less heat and faces the

in for less time (shorter days and
longer nights)

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Monday

22nd May, 2023
Questions

O.H.W

Q: What is temperature?

Ans: The degree of hotness or coldness of object or specific place is called its temperature.

Q: Why diverse temperatures are experienced in different parts of Pakistan? Explain.

Ans: Diverse temperatures are experienced in Pakistan due to following factors.

- Large spread of latitude from 24°N to 37°N.
- Difference in relief with very high mountains and also coastal areas at sea level.

Due to such a wide spread of latitude, temperature decrease when going from South to North. Altitude also affects temperatures so mountain areas are cool while lower areas such as upper Indus plain experience very hot temperatures. Coastal areas are not that hot due to Maritime influence which makes their climate mild.

Q: Using fig 25. Explain the mean maximum / mean minimum and amount of rainfall in Pakistan.

Ans. Mean maximum monthly temperature is 43°C and mean minimum monthly is 9°C . Rainfall is high in July and August averaging around 30mm per month while in all months except December, January, March, rainfall is very low.

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6-6-2023

6th May, 23

Questions

Q: What are the main sources of rainfall in Pakistan?

Ans: There are five main sources of rainfall.

- Monsoon Winds
- Western Depression
- Convectional currents causing thunderstorms.
- Relief rainfall.
- Tropical cyclones.

Q: Explain the rising air phenomena that causes rainfall?

Ans: Rising air:

The surface of the earth absorbs heat of the sun. Earth emits the heat that creates low air pressure. On the land the air gets dry, therefore there appears a vacuum. On the contrary, the sea has high air pressure. So, winds laden with moisture flow towards low air pressure area. This process is called rising air phenomena. Rising air may cause rainfall in summer and winter at any place.

Q: What is monsoon?

Ans: The word monsoon means (season). They it are the name given to the rainy season ~~to~~ in July till August.

Q: How do monsoon rains come into existence?

Ans: The monsoon rains come into existence due to rising air. When the ~~high~~ pressure winds come to the land where there is low air pressure. They high pressure winds are called monsoon winds. The monsoon winds hit the Northern Mountains and turn back and then rain starts.

Q: What are main types of winds?

Ans: Two types of monsoon winds are winter monsoon winds and summer monsoon winds.

Q: Why summer monsoon winds bring more rainfall than winter monsoons?

Ans: Summer monsoon winds come from the sea to land and moisture is high while winter monsoon winds go from land to sea and moisture is much less on air on land rather than sea.

Q: What are directions of summer and winter monsoons?

Ans: The winds in summer are from South west to North East and in winter monsoons the winds go opposite from North - East to South - East.

Q: Why monsoon rain does not happen in Balochistan?

Ans: Monsoon rain does not happen in Balochistan because Balochistan is not on the route of the monsoon winds.

Q: The nature of monsoon winds are pulsating in Pakistan. Explain why the amount of monsoon rainfall varies from year to year.

Ans: Sometimes more humid winds blow while sometime, less humid winds blow which result in different amounts of rainfall each year. Sometimes, the winter monsoon brings more rain than expected which changes the monsoon pattern.

Therefore, the amount of monsoon rainfall is pulsating and changes each year.

Excellent.

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6-6-2023

Thursday

1st June, 23

Q: What are Western Depressions?

Ans: They get created in the Mediterranean sea due to fluctuation of the sea. Although it is winter season when they enter Pakistan. It continues from January to March. They enter Pakistan through south-west crossing the Gulf states. It brings low amount of rainfall due to very long route. The showers on the way and the tail-winds enter the south-west mountains till Western Mountains. Amount of rainfall varies from 100 - 300 mm year to year. It is the main source of rainfall and supply of water to river in Balochistan.

2nd June, 2023

H.W

Friday

Q: Info how many climatic zones Pakistan is divided? Explain each zone.

Ans: Pakistan is divided into 4 climatic zones:

A. Highland Climate: They include the Northern and Western Mountains. Due to their high altitude, climate is usually cold.

In the North winters are extremely cold and summers are mild and short. Rainfall prevails most of the year because of altitudinal effect, convectional currents and Relief rainfall. The Western mountains have cold winters but the summers are dry and warm and rainfall is not sufficient. It is caused by the Western depressions.

B. Lowland Climate (semi arid-arid):

It covers the Potwar Plateau and the whole Indus plain except the coastal areas. It has cold winters and hot summers.

It receives rainfall from monsoon winds and convectional currents. The amount of rainfall varies

from north to south. Rainfall is highest in July - August.

C Coastal Climate:

This region includes the coastal areas of Pakistan. The climate there is mild winters and warm summers. Maritime influence keeps the temperature low. It experiences rainfall in summers due to monsoon and in winters due to Western Depressions.

D Arid Climate:

These include the deserts of Pakistan and the Balochistan Plateau. The climate is hot and dry. Winters are mild and summers are hot. Balochistan experiences little rainfall in winters and the south-western eastern river deserts experiences a little monsoon rainfall in summers. The average rainfall is low and dryness and duststorms are common.

5th June, 2023

H.W

Monday

Q: Define a thunderstorm.

Ans: It is a weather condition with rainfall, high speed winds and lightening or thunder.

Q: Enlist areas where thunderstorms occur and also when do they occur.

Ans: It occurs in Northern and North-Western areas mostly in the Northern mountains. They occur before summer and before winter.

Q: Write effects of a thunderstorm.

Ans: Thunderstorms are very destructive. They cause hailstorms sometime which causes destruction of apples, pears and other crops grown. In Balochistan, they cause dust storms, dust storms and strong winds. These dust storms hit the upper Indus plain which damages crops and orchards. Electricity, transportation, and communication are also disrupted.

Q: What is drought?

Ans: Drought is a hazard of nature and one that can present a very big threat to those who live off the land. Lack of rainfall for long time periods result in severe water shortage due to all water sources above and underground drying up which can destroy crops. In poor countries, drought brings famine, disease and death on a massive scale.

Q: What are types of drought?

Ans: There are four types of droughts:

1. Permanent drought: It exists when crop cultivation is not possible without irrigation e.g. Thall, Cholistan, Chagai (Western Balochistan).

2. Seasonal drought: It occurs in areas with well defined rainy and dry seasons e.g. Potwar Plateau & Southern Punjab.

3. Invisible drought: It is the result of abnormally water deficiency that reduces crop yields but is not severe enough to destroy them.

Q: Unpredictable drought: It is the result of abnormally low rainfall and occurs in areas which have humid climates.

Q: ~~Ex~~ what are the causes of droughts?

Ans: Factors that lead to drought are:

- Unreliability of rainfall or monsoon winds.
- Hot dry winds create reduce moisture in air.
- Increase in temperature due to global warming.
- Deforestation which leads to soil erosion and reduced rainfall.
- Mismanagement of water sources.
- Overgrazing
- Global warming leads to climate change.

Q: What are effects of drought?

Ans: Effects of drought:

1. Desertification.
2. Drying up of rivers, lakes and streams.
3. Drop in water table.
4. Loss of lives.
5. Loss of crops. 6. Death of livestock.

2. Devastation of economy.

Q: How can we manage droughts?

Ans: Droughts can be managed by:

1. Tree plantation.
2. Cautious use of underground water.
3. Use of new technology such as desalination of sea water and filtration.
4. Lining canals so water table doesn't decrease.
5. Irrigation canals to grow crops.
6. Construction of dams, barrages to store as much water as possible.

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