



Day 25

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Physical Geography: Climatology

Following topics of physical geography and important geo-physical phenomena have been at the forefront of the news headlines, and as UPSC always attempts to test the basics, a basic awareness is required. Questions from this topic are largely asked from static as well as current affairs portions. According to the trend observed, the facts, their contexts, basic background information can be asked by the UPSC from these topics.

Geo-Physical Physical Phenomena Affecting Climate

- Sunspots
- Assessment of Climate Change over the Indian Region: MoES
- Expansion of the Amery Ice Shelf
- Ozone Layer Hole Over Arctic Closed
- Year End Review: Ministry of Earth Sciences
- Grounding of Aircraft Affects Weather Forecasting
- Effects of Changing Groundwater Levels on Himalayas
- Rising CO2 Levels may Double Floods
- 2019: Second Hottest Year
- World Heritage Glaciers
- Surge-type Glaciers

Previous Year Question

Q. Which of the following statements is/are correct about the deposits of 'methane hydrate'?

1. Global warming might trigger the release of methane gas from these deposits.
2. Large deposits of 'methane hydrate' are found in Arctic Tundra and under the sea floor.
3. Methane in the atmosphere oxidizes to carbon dioxide after a decade or two.

Select the correct answer using the code given below.

- (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 1 and 3 only
 - (d) 1, 2 and 3**
-

Q. Consider the following pairs

Glacier	River
1. Bandarpunch	: Yamuna
2. Bara Shigri	: Chenab
3. Milam	: Mandakini
4. Siachen	: Nubra
5. Zemu	: Manas

Which of the pairs given above are correctly matched?

- (a) 1, 2 and 4**
 - (b) 1, 3 and 4
 - (c) 2 and 5
 - (d) 3 and 5
-

Q. On the planet earth, most of the freshwater exists as ice caps and glaciers. Out of the remaining freshwater, the largest proportion (2013)

- (a) is found in the atmosphere as moisture and clouds
 - (b) is found in freshwater lakes and rivers
 - (c) exists as groundwater**
 - (d) exists as soil moisture.
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Q. Consider the following statements: (2010)

1. On the planet Earth, the fresh water available for use amounts to about less than 1% of the total water found.
2. Of the total fresh water found on the planet Earth 95% is bound up in polar ice caps and glaciers.

Which of the statements given above is/are correct?

- (a) **1 only**
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
-

Q. The formation of ozone holes in the Antarctic region has been a cause of concern. What could be the reason for the formation of this hole? (2011)

- (a) Presence of prominent tropospheric turbulence; and inflow of chlorofluorocarbons
- (b) **Presence of prominent polar front and stratospheric clouds; and inflow of chlorofluorocarbons**
- (c) Absence of polar front and stratospheric clouds; and inflow of methane and chlorofluorocarbons
- (d) Increased temperature at polar region due to global warming

Air Circulation & Jetstreams

- **Jet Streams**
- **Cosmic Rays Impacting Earth's Climate**
- **Rare Easterly Winds over the Indian Ocean**
- **Heat Wave Warning**
- **Heat Waves**
- **In Depth – Western Disturbance**
- **Polar Vortex**

Previous Year Question

Q. Consider the following statements: (2015)

1. The winds which blow between 30° N and 60° S latitudes throughout the year are known as westerlies.

2. The moist air masses that cause winter rains in North-Western region of India are part of westerlies.

Which of the statements given above is/are correct?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
-

Q. The annual range of temperature in the interior of the continents is high as compared to coastal areas. What is/are the reason/reasons? (2013)

1. Thermal difference between land and water
2. Variation in altitude between continents and oceans
3. Presence of strong winds in the interior
4. Heavy rains in the interior as compared to coasts

Select the correct answer using the codes given below:

- (a) 1 only**
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4
-

Q. The jet aircrafts fly very easily and smoothly in the lower stratosphere. What could be the appropriate explanation? (2011)

1. There are no clouds or water vapour in the lower stratosphere
2. There are no vertical winds in the lower stratosphere.

Which of the statements given above is/are correct in this context?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Q. Westerlies in the southern hemisphere are stronger and persistent than in the northern hemisphere. Why? (2011)

1. Southern hemisphere has less landmass as compared to the northern hemisphere.
2. Coriolis force is higher in the southern hemisphere as compared to northern hemisphere

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q. What causes wind to deflect toward the left in the Southern hemisphere? (2010)

(a) Temperature

(b) Magnetic field

(c) Rotation of the earth

(d) Pressure

Q. Consider the following statements: (2009)

1. In the world, the tropical deserts occur along the western margins of continents within the trade wind belt.
2. In India, the East Himalayan region gets high rainfall from north-east winds.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q. If there were no Himalayan ranges, what would have been the most likely geographical impact on India? (2010)

1. Much of the country would experience the cold waves from Siberia.
2. The Indo-gangetic plain would be devoid of such extensive alluvial soils.
3. The pattern of monsoon would be different from what it is at present.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3**

Monsoon

- [Statement on Climate of India during 2019: IMD](#)
- [Landslide near Eravikulam National Park](#)
- [In Depth — Monsoon: Respite For Agriculture](#)
- [A New Way of Predicting Monsoon](#)
- [Monsoon](#)
- [North-East Monsoon Ends with 30% Surplus Rain](#)
- [IMD Forecasts Surplus Rains](#)
- [India to Receive Normal Monsoon: IMD](#)
- [New List of Names of Tropical Cyclones](#)

Q. The seasonal reversal of winds is the typical characteristic of (2014)

- (a) Equatorial climate
- (b) Mediterranean climate
- (c) Monsoon climate**
- (d) All of the above climates

Q. Consider the following statements: (2012)

1. The duration of the monsoon decreases from southern India to northern India.
2. The amount of annual rainfall in the northern plains of India decreases from east to west

Which of the statements given above is/are correct?

- (a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q. With reference to 'Indian Ocean Dipole (IOD)' sometimes mentioned in the news while forecasting Indian monsoon, which of the following statements is/are correct? (2017)

1. IOD phenomenon is characterised by a difference in sea surface temperature between tropical Western Indian Ocean and tropical Eastern Pacific Ocean.
2. An IOD phenomenon can influence an El Nino's impact on the monsoon.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Cyclones

- **Cyclone**
- **Cyclone Vayu**
- **Cyclone Bulbul**
- **Cyclone Kyarr**
- **Cyclone Maha**
- **Cyclone Fani**
- **Typhoon Phanfone**
- **Tropical Cyclone: Cristobal**
- **RIMES Terms Titli Cyclone 'Rarest of Rare'**
- **Hotter Oceans and Supercyclones**

Q. In the South Atlantic and South-Eastern Pacific regions in tropical latitudes, cyclones does not originate. What is the reason? (2015)

(a) Sea surface temperatures are low

(b) Inter-Tropical Convergence Zone seldom occurs

(c) Coriolis force is too weak

(d) Absence of land in those regions

Q. The 2004 Tsunami made people realize that mangroves can serve as a reliable safety hedge against coastal calamities. How do mangroves function as a safety hedge? (2011)

- (a) The mangrove swamps separate the human settlements from the sea by a wide zone in which people neither live nor venture out
- (b) The mangroves provide both food and medicines which people are in need of after any natural disaster
- (c) The mangrove trees are tall with dense canopies and serve as an excellent shelter during a cyclone or tsunami
- (d) The mangrove trees do not get uprooted by storms and tides because of their extensive roots**