

Climate and Major Climate Zones

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Climate, Weather, and the Basis of Climatic Classification

Climate is a major discipline that plays a vital role in our day-to-day, year-to-year life. It is therefore paramount to understand in depth what climate is because it plays a significant role in various activities of our lives ranging from agriculture, travelling programs, sea and air travel, and the arrangement of different calendar events, among others. Besides, we are currently experiencing ever-increasing global warming. According to the research carried out, greenhouse gases emitted into the atmosphere cause global warming, hence bringing about climatic change. The change in climate may have serious implications, such as consequences for food security as it also changes food production, reduced water sources, retarded health conditions for both humans and wildlife and change in weather patterns and biodiversity. Moreover, it involves branches in climatology, the various types of weather experienced from all over the world and their distribution, the causes of climatic change, how to control these agents that cause or fuel climatic change, and so much more.

Climate refers to the prevailing weather conditions of an area over a very long period of, say, ten years and above. What is the difference between weather and climate, then? While climate is the atmospheric condition of a place over an extended period, it is the daily weather condition of a given area for a short period. The main difference is that weather is a day-to-day affair while climate is reached after a very long time of ten years or more. Therefore, climatology is now the study of climate: the study of atmospheric conditions (Ashkanasy Doris, 2017). The atmosphere here is the thin gaseous layer that borders the earth's surface. Even though the definition of climatology is acceptable, it does not fully define the scope of climatology. Climatology is a characterized science that incorporates data analysis, ideas from various scientists and theories from all over the earth regarding the earth-atmosphere-ocean system, including those that are caused by man. Therefore, climatology is a science that is in the hunt for the explanation and description of the nature of the climate, the reasons why it changes from place to place, and how it is attached to other natural elements of the surroundings and the activities of man.

Major Climate Zones and Their Defining Characteristics

There are various systems used in climate classification. They involve the Aridity index, Koppen climatic classification, Holdridge life zone classification, Trewartha climate classification, and Vaht

climate classification, among others. According to Koppen's climate classification, five significant categories of climatic zones exist that are experienced all over the world. These climatic zones include tropical rainy climatic zones, dry climatic zones, warm temperate wet climatic zones, polar climatic zones, and snow-forest climates. The tropical rainy climatic zones experience an average temperature of the coldest month, which is eighteen degrees Celsius (18°C). And enough rainfall over the year. In dry climatic regions, the rate of evaporation is higher than the rate at which precipitation occurs.

This renders the region dry, either a desert or semi-desert (Von Sperling & Lemos Chernicharo, 2017). The area has little or entirely lacks vegetation since the quantity of rain that falls on the part is insufficient in providing moisture for the plants. Since aridity is not solely based on the small amount of rainfall experienced but also the rate of evaporation experienced, a combination of data on temperature and precipitation is used in the classification of the dry climatic region. The warm temperate climatic zones experience temperatures of not less than eighteen degrees centigrade (18°C) and below in the coldest months but more than or equal to -30°C. This climatic region is distinguished from the tropical rainy climatic regions by the existence of a cold season over which there exists at least one month that has an average mean temperature below 18°C. The warm temperate climatic zone experiences more rainfall as compared to dry climatic zones (Von Sperling & Lemos Chernicharo, 2017).

Last but not least, the cold snow-forest climatic zones have their average temperatures of the month being not less than -30°C, while the average temperature of the warmest month is not exceeding 10°C. This shows how cold these regions are. The zones have severe winter seasons as compared to other areas. Apart from that, they are also experienced with hot summers, though on most occasions, they are characterized by snow cover. Lastly, the polar climatic zones experience temperatures below 10°C during the warmest months. This type of climate mostly affects the regions that lie above and below the tropics: northerly and southerly parts of the earth. It is also experienced in some mountainous areas. Polar Tundra climate and Polar Frost climate are the recognized subdivisions of the polar environment. In Polar Tundra climatic zones, the mean temperature of the warmest month is below 10°C and above 0°C. The significant vegetation cover in the tundra climates is lichens, mosses, grasses, and dwarf trees. It covers most regions of the north coast of Canada, Alaska, Eurasia and a small part of the northern area of the Antarctic continent (Ashkanasy & Doris, 2017).

Climatic Controls, Surface Conditions, and Natural Variation

There exist various climatic controls. These are the factors that affect and influence the climate of a particular place. The most important control for both climate and weather is the unequal heating and cooling of the surroundings in different parts of the earth. The more specific controls are retrieved from the geographic conditions. One of the controls of climate is latitudinal variations in solar

radiation. This is the most basic control that we have. In areas of low latitudes, the sun is high in the sky, making the radiation intense and causing the climate to be warm and tropical. In regions of high latitudes, the sun is lower in the sky, making solar radiation weaker and leading to a cold climate.

The nature of the surface also affects the intensity and effectiveness of solar radiation heating. Altitude is the other control. Regions that have higher elevations are likely to experience shallow temperatures as compared to areas of lower elevations. This is because heat is affected by altitude, and therefore, temperature usually decreases with an increase in altitude and increases with a decrease in altitude. The distribution of the ocean current also acts as a control of climate. Noncoastal areas will experience intense heating during the summer season compared to oceanic and coastal regions because the land heats and cools rapidly at a faster rate than the ocean (Von Sperling & Lemos Chernicharo, 2017).

Climate naturally varies, and it changes on many time scales, with different regions experiencing different climatic zones discussed earlier. Some variances encountered include a situation whereby a hot and dry month without precipitation may be followed by months of mild rainfall or heavy precipitations and cold months. The time scales may also be for more prolonged periods of, say, decades, centuries and above. When such longer time scales are experienced, data is retrieved from geological records. Although many of these variations in climate may be naturally induced by the processes that occur in the atmosphere and changes in the behaviour of the ocean currents, some of the climatic differences arise due to the actions of human beings who are the occupants of the earth. Some of the human behaviours that cause climatic variations include industrialization and poor cultivation practices, among others. The knowledge of understanding how and why climatic variations exist enables us to identify how human conduct has affected climate change and to look for ways of minimizing climatic change.

References

Ashkanasy, N. M., & Dorris, A. B. (2017). Organizational culture and climate.

Intergovernmental Panel on Climate Change. (2015). Climate change 2014: mitigation of climate change (Vol. 3). Cambridge University Press.

Von Sperling, M., & de Lemos Chernicharo, C. A. (2017). Biological wastewater treatment in warm climate regions (p. 857). IWA Publishing.