

History of climate change

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This research paper investigates the available literature on history of climate change over the last several years. Besides, it elucidates the current meteorological patterns and their implications for the global economy. In addition, it attempts to project possible changes in these patterns in future based on current geographical analysis.

According to the literature, global climate has persistently changed throughout history. This has seen the world move through the glacial age whereby a significant portion of the world was under ice cover to the interglacial periods that saw ice retreat to the polar region. Currently, this trend threatens to take a new twist with global warming becoming a serious issue (Kenneth O & Gloria K 2008). The “ Medieval Climate Anomaly” of around 1000 AD marked a radical departure from the cool climatic conditions that had prevailed on earth for a long time. During this period, the regions around Greenland, Asia and Europe experienced relative warmth. Besides, western regions of the Americas experienced what has gone down in history books as the worst dry spell.

Although the magnitude or geographical extent of this climatic changes remains uncertain, meteorologist have associated it with a change in the earth’s orbit, sun’s intensity and volcanic eruptions. For instance, it is postulated that the shape of the earth considerably changed during this period thereby exposing a wider surface of the earth to radiations from the sun. This coupled with a relative tilt of the earth on its orbit contributed to the eventual climatic warming (Susskind L E 1994). Although there is raging uncertainty about the geographical characteristics prior to 1600, the

warmest period in the history of the earth seems to have been around 1000. According to geographical records, the temperatures ranged from 0.

1 to 0.2 degrees centigrade below the 1990 levels. The heterogeneity of earth's climatic patterns during this time is best illustrated by the existence of varying individual records. For instance, the amount of heat in some regions must have exceeded or at least matched recent levels. However, the overall position is that the world was cooler during the Medieval Warm Period than it has been currently. These revelations come from a research study carried out by Hubert Lamb who was among the earliest paleo-climatologists.

According to him, historical records from botany and meteorology indicated that the prevailing temperatures in England around 1250 supported his assertions of warmer climatic conditions. Ideally, this provided the evidence that warmer climate existed in most parts of the world around this time. However, the evidence suggests that this period was followed closely by a steady decline in temperatures until the late 1500s when coldest climatic conditions were experienced. This came to be known as the “ Little Ice Age” (Kenneth O & Gloria K 2008). The warming patterns seem to have differed from one geographical region to another. For instance, the warming effects on North Atlantic were more profound as compared to other regions.

This is particularly true considering that the Vikings actually took advantage of the melting ice at sea to colonize most parts of Greenland. In America, there were long periods of drought especially in western parts of California. This led to the destruction of farmlands as well as settlements. The

knowledge of the Medieval Warm Period has enabled a comprehensive characterization of Native American settlement patterns in the ancient times. According to most of archeological research, there were significant cultural changes especially those related to violence over limited resources.

In addition, the historical evidence suggests that there was a major disruption in the population movements. Ideally, these eventualities must have been due to the changing climatic patterns that necessitated the movements as people attempted to hold on to their cultural ways of life (Suskind L. E. 1994). There was also “ The Little Ice Age” that saw the world become colder by up to 2 degrees centigrade.

According to research done by NASA, this was caused by a differential change in the intensity of the sun. This period experienced marked reduction in solar activity causing a slight cooling of the earth, especially in the regions around Europe and North America. During this period, life almost became unbearable, especially for the people living around the poles because they had no techniques to keep themselves warm. As such, many animals and humans succumbed, thereby considerably reducing the earth’s population. However, this only existed briefly before the earth got back on a warming trend (Kenneth O & Gloria K 2008). According to geographical records, there is sufficient historical evidence that glaciations increased considerably around 1850.

Although much of this occurred in Europe, mountains in other areas outside Europe like Alaska, Patagonia and New Zealand had similar glaciations. However, the relative differences in maximal glaciations for different regions

suggest that the climatic trends were not synchronized globally. For instance, “ The Little Ice Age” caused the emergence of colder winters in North America and some parts of Europe. This led to the destruction of farms and villages by the rapid glaciers. In fact, there is evidence in the Swiss Alps that the “ Little Ice Age” actually destroyed the ancient settlement patterns as glacial erosions became marked. In Great Britain and some parts of Netherlands, rivers and canals were frozen to the extent that they supported ice skating and other winter activities.

In some regions, the frozen ice made it easy to walk through areas that were previously untraveled. For example, the Swedish Army is said to have marched all the way to Denmark from the Greenbelt to invade Copenhagen in 1622. These are historical facts that leave no doubt as to the extent to which the “ Little Ice Age” re-defined the earth’s geography albeit for a short time (Rosen Gail E. & Katherine F. S 2011). In Mauritania and Ethiopia, this period was marked with permanent snows at the mountain peaks at much lower levels than they presently occur.

Further, important cities like Timbuktu that were popular centers for the trans- Saharan caravan route experienced continued floods during this period. This had not taken place before the Ice Age and indeed has not been experienced again since its disappearance. The climatic effects that the Ice Age brought in Asia led to the abandonment of certain crops as the prevailing weather no longer supported them. For instance, farmers in the Jiangxi Province of China completely abandoned orange farming that had existed for several centuries. Such are the stories that early inhabitants of North America continue to tell about the exceptionally severe winters around <https://assignbuster.com/history-of-climate-change/>

1600. In fact, geographical records about North America indicate that ice persisted on most parts of Lake Superior up to June 1607.

According to the journal of early travelers to James Bay in 1608, the region was so littered with floating ice that they could hide their canoes behind the floating ice for days. In some instances, their voyages would be stuck between snows for several hours causing them serious delays (Kenneth O & Gloria K 2008). Although the effect of the Little Ice Age was more evident in the Northern Hemisphere, scientific works continue to point a possible effect in the Southern Hemisphere. For instance, sediment cores obtained from Lake Malawi in Southern Africa suggest that the lake experienced colder conditions around 1820. Further, similar results were obtained from analysis of Antarctic ice cores.

This is due to the fact that they show relatively lower levels of carbon dioxide mixing ratios suggesting that climatic conditions during this time were much colder than any other time in history. There is generally little evidence about the “ Little Ice Age” in Australia. However, lake records obtained from Victoria indicate that at least there was a period in history when conditions were unusually cold. In addition, the existing data about sea levels in the Pacific Islands suggest a rapid fall during this time in history. This is basically due to the record fall in global temperatures by up to 1.

5 degrees centigrade. Furthermore, the reconstructions of boreholes in Australia indicate that the 17th century was the coldest in the history of Australia. This further supports the existence of colder temperature during the “ Little Ice Age” before the global climate got back on a warming trend

(Susskind L. E. 1994). The re-emergence of warmer climatic conditions only became significant with a new wave of volcanic eruptions.

This is basically due to the fact that volcanoes emitted large volumes of aerosols as well as carbon dioxide into the earth's atmosphere. For instance, aerosol emissions from volcanoes significantly blocked the sun's rays from reaching the surface of the earth, thereby causing a cooling effect. However, the effects of these aerosols are always short-lived because they disappear from the atmosphere as soon as they are emitted. According to the records of the " United States Geological Survey", the volcanic eruption of Tambora Mount in Indonesia caused a general reduction of global temperatures by up to 4 degrees centigrade. In fact, the history of New England recognizes this period as " the year without summer" (Hansen, J.

2000) On the other hand, volcanic emissions that were mainly composed of carbon dioxide caused a warming effect. This constitutes what is popularly known in geography as the greenhouse gas. This gas has the effect of raising temperatures and ultimately destroying the ozone layer which is responsible for protecting the earth's surface from the harmful radiations from the sun. For a very long time in the history of geology, it has been suggested that carbon dioxide levels were much higher 400 million years ago than they presently are. However, dissenting opinions have maintained that it was volcanic eruptions containing carbon dioxide that considerably raised the levels of greenhouse gases, thereby causing global warming. Nonetheless, the fundamental idea is that volcanoes significantly contributed to the high pre-historic levels of carbon dioxide and global warming (Susskind L E 1994).

The threat of global warming has become a real concern during the last hundred years with the emergence of industrialization coinciding with greenhouse emissions from human activities. According to meteorological experts, human activities have raised greenhouse emissions by up to 150 times the levels of the earlier years. This is mainly due to the complex vicious cycle that comes with emission of greenhouse gases. For example, when the atmosphere warms up, the oceans and seas release significant amounts of carbon dioxide. The resulting climatic warming is worsened by the new position of the earth in its orbit that exposes it to the sun's rays.

This has caused the worrying trend of climatic warming that has recently become a global concern as it threatens the very sustainability of the earth. Meteorologists maintain that ocean currents also considerably contribute to global warming. This is particularly due to the fact that ocean currents serve to distribute heat to various regions of the earth. As such, the new patterns of ocean currents have aggravated the effects of global warming in most regions of the world (Kenneth O & Gloria K 2008). Ideally, the " Medieval Climate Anomaly" and the " Little Ice Age" had defined the bounds of environmental temperatures before industrialization.

However, the emergence of industrialization and the increasing adverse human activities have given it a completely new twist in the last 100 years. According to the National Academy of Sciences, there is sufficient evidence that global temperatures have significantly increased in the industrial age. Although alarm had been sounded about potential dangers of climate warming way back in the late 19th century, the real effects began to be felt around 1950s when meteorological approximations became more

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convincing. It was this concern about sustainability of future generations that pushed the world into facing climate change from a common front.

Subsequently, international organizations were formed to promote environmental conservation with a view of mitigating the effects of global warming. For instance, the United Nations Environment Program came into effect as a result of these concerns.

Besides, small regional environmental organizations were also formed in various places of the world. These efforts were basically meant to support sustainability of the human race and the earth in general (Hansen, J. 2000).