

Prediction process of the phenomenon environmental sciences essay



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Corse : Environmanetal Issues

- El Niño - <http://www.iraq-live.com/up/uploads/13362087051.gif>

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Introduction

Temperature is the most important element of the climate because of its significant impact on the rest of the other climate elements which impact the environment of the human, plant and animal. A lot of estimates have indicated that there has been a change in the upward direction of global temperatures as a result of the non-balanced use for the environment data by humans which in turn create some natural phenomena as the presented issue during that research " El Nino". Therefore, the study of such phenomena in order to know its causes and consequences provide data and contributions in the field of predicting it accurately in order to reduces its effects, enhances the human capabilities of social and economic development, and protect the environment. The shown phenomenon in the research is El Nino, which result from temporarily change in the climate of the Tropical Pacific Ocean which in turn causes a different effects on many areas around the world from; drought, fires of forests, heavy rains, flooding, etc... That phenomenon occurs every three years as a result of heating the northern part of the Pacific Ocean which causes massive climate changes in the whole plant. In order to in-depth explanation of that phenomenon, which is considered the largest phenomenon taking place in the planet during the last years of the twentieth century, especially in the Pacific, the web site

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<http://misc.docuwat.ch/videos/planet/el-nino> presented a documentary film consisting of three parts about the phenomenon depending on scientific and historical information from different places of the world that suffered before from that phenomenon. The film was a high-quality source of information aside from being a form of entertainment as it begins with a short narrative description about what happened with two persons who suffered from severe flooding and landslides as a result of El Niño upon hitting South California, USA. Also, the film presented the opposite effect of the phenomenon inside Queensland, Australia which represented in severe drought and loss of animals. The film used an attractive method to attract the audience then and during the second and the third part of the film there was a scientific illustration about the history of the phenomena and the efforts to avoid its destructive effects using a comprehensive discussion for the causes and effects on both the environment and humanity in order to avoid the worst consequences by controlling the overall human activities that causes it.

The presented film's data

The first person who arrived at an initial interpretation for that phenomenon is the English Scientist, Gilbert Walker when he was in India as he noted that there is a correlation between the data of the barometer in some areas in the East and those in the West, when pressure rises in the east it falls in the West and vice versa. He gave that action the Southern Oscillation or "ENSO"; also he has noted a tripartite relationship linking Monsoon in Asia and drought in all of Australia, Indonesia, India and some areas in Africa, with the relatively warmth of the winter in western Canada. El Niño is Spanish term for "Boy" that refers to the Christ Child, because periodic warming in the

Pacific near South America is usually noticed around Christmas and associated with floods, droughts and other weather disturbances in many regions of the world. Walker was attacked much as he links between these phenomena that occur in various parts of the earth due to the vast distances from each other, but fifty years after the Norwegian Jacob Gerkins came to prove the existence of such a relationship with those atmospheric changes and called it EL Nino Southern Oscillation. By this level it became clear what was happening from disorder in the atmospheric pressure system over the ocean during El Nino; where the trouble starts from the equatorial region of the Pacific Ocean, and then spreads to affect the state of the atmosphere above the earth in general. The strongest El Nino periods was in the past century that was in the 1982 as it caused a disaster on most continents represented in drought and fires suffered by each of Australia, Africa and Indonesia in addition to the heavy rains in Peru, which has not seen the likes of before in the region. Also some diseases spread, such as encephalitis that has spread sharply in the east coast of the United States. Also, that atmosphere helped on the spread of mosquitoes, rats, snakes and even sharks that assault on the coast of Oregon in the United States of America. Perhaps the strangest effects caused by El Nino that stunned scientists was the discovered by a team of scientists at the University of Kambredej Massachusetts of the change in the angle of land torque and increase in the length of day by 0. 2 milliseconds. As a direct result of these severe climate changes by El Nino, several fungi, bacteria and viruses spread which thrive the infectious diseases such as: hepatitis, typhoid, cholera, and malaria in addition to the speared of the abound agricultural pests such as rodents and insects; for that reason scientists interested to predict El Nino as they <https://assignbuster.com/prediction-process-of-the-phenomenon-environmental-sciences-essay/>

developed monitoring devices to monitor the start of the high temperature for the surface water of the Pacific Ocean which enabled them to predict El Nino in 1998 before it occurs with six months which was considered as one of the strongest attacks that have occurred and resulted in losses estimated at \$ 2. 4 billion in the United States alone and caused the deaths of 189 people beside the injures.

Definition

The beginning of the film gave a short sentence that described the phenomena as it is the most deadly weather event on earth; indeed it is. El Nino is a warm water current that moving unusually eastward in the Tropical Pacific Ocean and takes three months to arrive the coast of Ecuador and Peru handicapping the cold water stream and the vertical prevailing volatility movements in this place. El Nino is an anomalies climatic phenomenon accompanied by abnormal heating for the layer of surface water in the eastern region of the Pacific Ocean. El Nino has been called with the name of the Chris Child because it occurs commonly in winter which coincides with Christmas; it represents the flip side of swing in the air pressure system in the southern region of the Pacific Ocean that illustrated in the thermal anomaly and the extent of the change in temperature between the place and its latitude. El Nino occurs every three years as a result of heating the northern part of the Pacific Ocean which cause climate alterations in each hemisphere. From that basis, the urgent need has emerged to study the anomalies natural phenomena in the atmosphere like El Nino to see its impact and what is happening from a change in temperature which began to appear significantly on climate elements; this make the researchers start to

expand research in this phenomenon since the beginning of the nineties of the past century to include geographical latitude since because the extended and intensive studies linked the Tele-connection to the El Niño. El Niño is a periodic change in the atmosphere and ocean of the tropical Pacific region. It is defined in the atmosphere by the sign of the pressure difference between Tahiti and Darwin, Australia, and in the ocean by warming or cooling of surface waters of the tropical central and eastern Pacific Ocean.

Global effects

The turbulence caused by the phenomenon continues for more than a year which cause; droughts, heavy rainfall, clear changes in the heat or cold, and storms or cyclones to various parts of the East Coasts of the Pacific.

Humboldt Current flows north routinely from the coast of South America, and when approaching the equator it turns west across the Pacific and form the tropical current. The Humboldt Current is fed with the cold deep water raising that loaded with food for the marine organisms. With the launch of El Niño the rise of water stops and the cold water will be replaced with heated water that is free of food for the marine organisms that comes from the west and lead to the disappearance of most marine organisms in those areas. The atmospheric pressure drops in the eastern parts of the Pacific Ocean within the equator which causes it to strengthen the low atmospheric pressure of the equator and increased rainfall in the new low-pressure range. However, the wind and surface currents are also changing with the change in pressure since the prevailing strong trade winds in normal circumstances comes westward which move the warm ocean water to the western Pacific which leads to accumulation west low areas equator. Causing this movement

toward the west rose a natural deep-water masses continue towards the top mount along the coast of South America. During El Niño the trade winds fade eastward through a change in atmospheric pressure which may sometimes generate a weak winds blowing toward the west-bound run counter to the direction of fully normal wind direction. If there is no sufficient pressure caused by the trade winds to stop this flow of weak winds, the warm water will flow eastward; then temperatures will rise at the sea surface in addition to high levels of real sea away from the tropical shores of the two continents of the Americas. Sweeping El Niño world many different influences and disparate; While cause increased rainfall in the southern regions of the United States, Peru and Central Europe; which cause devastating floods, be behind the occurrence of drought in the western regions of the Atlantic Ocean, sometimes accompanied by fires devastating in Australia and SouthEast Asia and hurricanes in the central United States. Based on many of the studies and research scholars agree that El Niño is a violent change in the temperature of the eastern part of the Pacific Ocean along the equator, which routinely occur every four to ten years.

Prediction process of the phenomenon

According to what scientists say, El Niño can be expected with but it is impossible to predict exact developments of the El Niño phenomenon for a long period of time because the weather over the oceans, especially the Atlantic Ocean controlled by several indicators, which are constantly changing. The long-terms for climate fluctuations suggest that the issue is more than random weather events, though it can be found on the volatile aspects of the potential air, but the scientists believe that it is not enough. It

can simply understand the process of heat exchange that occurs deep in the Atlantic Ocean, it is well known that water dives down when it is cold and thick, and the wind blowing it always leads to lower temperature, and when the activity is in high rises westerly winds above the surface of the Atlantic Ocean south. The same thing happens over the North Atlantic Ocean becomes warm waters off Greenland Island and less salty and less dense and this reduces the heat exchange process. El Niño continues to happen these days, it reached the height of the full swing in the southern parts from the Pacific Ocean and the Atlantic Ocean and is the largest frequent climatic phenomenon taking place in the globe during the last years of this century as the effects spread in various parts of the world

Conclusion

The aim of the film, which was adopted by the presented research, was to study the El Niño phenomenon regarding its causes, and its environmental impacts upon the general life. This phenomenon is very old as there are some studies which showed that it had existed for thousands of years ago, but the first recorded documentation was in the 15th century. El Niño phenomenon happens where the trade winds are weak and there are less emerging ocean currents in the summer of the southern hemisphere. Now the term of El Niño is used to describe a larger phenomenon works on heating Eastern Pacific. There are various opinions about the causes of this phenomenon, but the most views suggest a relationship between El Niño and the south-east trade winds upon blowing strongly for more than a year that cause accumulation of water in the Western Pacific, so there will be a decline in the water level from West to East, and once these winds will be weak, the

aggregated water in the Western Pacific will begin to move eastward leading to large amounts of warm water to the coasts of Ecuador and Peru, and thus create El Nino with its attendant changes in; temperature, atmospheric pressure, wind, great disparity in the amounts of precipitation, rising rate of co2 and ozone, change in the frequency and paths of tropical storms, influence on the movements of the supreme waves of the atmosphere, in addition to the distractive physical impacts through; fires, floods, and torrential rains that destroyed agriculture, roads, homes and infrastructure as well as the health damage due to climate change and the spread of many fungi, bacteria, viruses and infectious diseases.

http://images.intellicast.com/App_Images/Article/139_3.jpg

Illustrative Charts <http://www.sciencemediacentre.co.nz/wp-content/upload/2009/09/El-Nino-modoki1.jpg>

[http://t3.gstatic.com/images? q= tbn: ANd9GcRGriTd1FDOyamf_CHabBEu-0xNJ3wJzCZEJoEKuI6TnzZh2amU](http://t3.gstatic.com/images?q=tbn:ANd9GcRGriTd1FDOyamf_CHabBEu-0xNJ3wJzCZEJoEKuI6TnzZh2amU)

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http://2.bp.blogspot.com/_8OaZRcNWEq8/S5WCPS2dPsI/AAAAAAAAAhM/4xF5s6cIfik/s400/el_nino.jpg

http://apollo.lsc.vsc.edu/classes/met130/notes/chapter10/graphics/el_nino_year.jpg

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