

Present Situation and Developing Tendency of Global Climate

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Abstract: due to the influence of human beings' activities, the density of carbon dioxide, methane and nitrous oxide in the air has noticeably increased. The amount has been head and shoulders above that kept in the Ice-core records of climatic change over thousands of years before the industrialization. Greenhouse gas leads to the increasing rise of global air temperature, and such influence is especially more serious in Polar Regions. The tendency of global climate change tremendously threatens the whole human beings.

Key words: global climate, present situation, tendency, strategies

1. Introduction

The American movie “ The Day After Tomorrow” narrates an unprecedented calamity caused by global warming. Although it is just a presumption, global warming is not alarmism. If we human beings didn't take measures to control the greenhouse effect, such supposition would come true some day. According to the Observer on February 22, 2004, American Defense Department, in a top-secret report submitted to US president George W. Bush, warned that in the following 20 years, global climate change would threaten the whole human beings more seriously than terror attack does. At that time, with the aggravation of global warming, the global mean sea level would rise, the land resources and others as well for human's survival would be sharply declined and a series of large-scale calamities would happen. If so, according to a recent report submitted by the Environment and Metropolitanization from the US, globally approximately 634 million people living in the areas 10 meters below altitude are faced with the danger of being submersed by flood and storm. It is the first time that environmental specialists have unambiguously predicted such an anxiety to our future for global warming. Many megalopolises from New York to Tokyo have paid more attention to this issue.

2. Analysis about present situation of climate change in Polar Regions

Since 1750, due to the influence of human beings' activities, the density of carbon dioxide, methane and nitrous oxide in the air has noticeably increased. This figure has been head and shoulders above that kept in the Ice-core records of climatic change over thousands of years before the industrialization. Greenhouse gas leads to the increasing rise of global air temperature, and such influence seems especially more serious in Polar Regions.

Everyone knows the story of “Titanic”, which sank in 1912 after hitting an iceberg in the Atlantic Ocean, and around 1500 people died in that accident. In order to avoid such tragedy, 16 countries engaging marine business in the Atlantic Ocean founded International Ice Patrol in 1914, which is responsible to monitor the activity route of icebergs near the North Polar circle and guarantee the pass unblocked and with security.

However, although the number of the accidents of ships hitting icebergs is decreased, the Patrol has also found a dramatically decreasing number of icebergs near the North Polar Circle in the past two years. In 2003, the missionary recorded 927 icebergs; in 2004, 262 and last year this figure is decreased to 11. To people's surprise, so far the missionary has not found any iceberg in the above areas.

The statistics collected by the International Ice Patrol naturally arouses the uneasiness of many oceanographers all over the world. In the United States, a group of oceanographers analyze that in the past tens of thousands of years ice cover in Polar Regions is currently melting and disappearing in a biggest scale, to which we cannot attach too much importance. They further point out that the change of polar climate and our environment has become the reality rather than the theoretical presumption. Compared with that 10 years ago, the average ice thickness in North Pole has reduced by 6% and in summer, this figure has dropped by 40% during the past century. Although there is a research indicating that the ice thickness in Greenland and Antarctica keeps around 2000 to 4000 meters, with global warming, this figure will drop with an accelerated speed.

The rise of atmospheric temperature mainly results in the ice cover disappearance and that the temperature of the earth's surface has rapidly increased especially in the past over ten years is completely the "masterpiece" of greenhouse effect. Why is our climate getting warmer and warmer? Some scientists believe that the earth temperature is changing periodically and this natural system has its own law. For instance, the rotation and revolution of the earth and the changes of the Earth's Orbit will directly influence the earth's absorbing heat from the sun. Such changes are periodical. According to the researches on the South Polar glacier, the tableland of Tibet and the Loess Plateau, scientists have found that the law of climate change on the Earth is constant in the magnitude of ten thousand years. That is to say, on the Earth, each period covers about a hundred thousand years, among which ten thousand years is the warm period and the rest ninety thousand years is cold. Theatrically the Earth now should have been at the end of the warm period and on the way to the cold one. The rapid rise of global temperature however indicates a total abnormal phenomenon.

Li Chongyin (academician of Chinese Academy of Sciences and researcher in Institute of Atmospheric Physics) points out that the recent one hundred years' global warming is mainly caused by human activities, which increases the emission of greenhouse gas. Moreover, according to a science report given by IPCC In 2001, there is new evidence that the global warming in the past 50 years is caused by human's activities. Qing Dahe (academician of Chinese Academy of Sciences, director general of China Meteorological Bureau, and director of Joint Key Laboratory of Cryosphere and Environment) further summarizes that the major changes have taken place in the global climate and environment mainly featuring global warming: degeneration of water resource and ecosystem; soil erosion, decline of biological diversity, loss of ozonosphere, changes of chemical elements in atmosphere, output decrease of fishery and so on. The range of such changes has been far beyond that of the natural change of the Earth itself, which seriously threatens human's survival and the development of social economy.

3. Predict of Developing Tendency of Global Climate

This year, on World Meteorological Day, Meteorological specialists from Cuba called on people to attach importance to the change of the polar climate and its influence, warning that if we were not to take certain measures, most glacier in the polar region would disappear by 2060. By then, just as the disasters narrated in the American movie “the Day After Tomorrow”, because of the rise of global temperature, ice in Arctic would totally thaw; seawater would flood into the New York City because of the rise of sea level; then calamities like hurricane appear; with the temperature sharply down, the whole North Hemisphere would be covered by ice, and the Earth would enter an ice age.

It is not deliberately exaggerate. At present, approximately 634 million people are living in the area of lowlands, which is just 10 meters above the sea level, and this number is continuously increasing. Scientists predicate that by the end of the 21st century, the sea level will have risen by 18 to 53 cm, which would cause fiercer hurricanes and typhoons. Besides, with the rising temperature, ice covers in Greenland and the west part of Arctic would be thawing with accelerated speed, which makes the sea level rises more and more quickly. 12,000 years ago, the change of global average temperature reached 7°. As a result, Glacier in Antarctica processes 10 latitudes northward. Transversal Mountain range separates Antarctic into east and west part, among which, west part is below the sea level. With the constant rise of temperature and gravity action, the base of icecap would partly become lower, and then the whole icecap would slide into the ocean, for which the sea level would rise by 7 meters. 1000 years from now on, global average temperature would be 13° higher than that of today and then the sea level would rise by about 11 meters. At that time, a good many countries littoral would be dipping in water. For example, the seawater would cover majority blocks in London, the capital of England. Finally, people would have to newly draw the map of the world; seen from space, the Earth would look more like a “water world”. Without doubt, such a water world would refrain from the development of economy, because in China and many other countries, the most vigorous areas are located just along the coast. No one can imagine what would happen, if these cities were submerged.

What’s more, with the current speed, global temperature will have been much higher by the middle of the 21st century. Except in Antarctic, the increasingly serious man-made warming in other continents will trigger various changes of the global climate system in the 21st century far beyond the previous century.

In addition, iceberg thawing will directly threaten the survival of the polar animals. For example, not long ago, there was a report that 4 polar bears drowned in the sea, for they were trapped on the ice floating far away from the coast and couldn’t return to the land in time, although they could swim. With the rise of global temperature, the ability for the biosphere of the land and sea to absorb carbon dioxide would noticeably weaken, which would aggravate the global weather and hydrogeology calamity

Meanwhile, desertification, vegetation destruction, serious pollution of air, water and land, the decline of ozone, and noise and light pollution aggravate the global environment. The numerical simulation analysis shows that if the forests in Zaire area

in Africa were replaced by meadow, the amount of rainfall would decline by 30%; if it happened in Amazon River valley, this figure would reach up to 70%. In the past one century, the global average sea level has risen by 10 to 25 cm. It is estimated that by 2100 the figure would be 50 cm. Rise of sea level, shrink of glacier, decline of biological diversity etc. would happen one by one; we human beings are swallowing bitter pill produced by ourselves.

4. Current measures and strategies

South and North Pole, especially South Pole, is the area on the Earth, where human being's activities and environmental pollution have the least influence. It is also the ideal place for science research and plays an important role in understanding the relationship between human activities and the change of global environment. Moreover, Polar Regions are the most important part of the global climate, contributing to the change of global climate. As the cold source of global atmosphere, Polar Regions are also doing great contribution to the form of global atmospheric circumfluence and diverse climates, and the exchange of heat, momentum and moisture above the North and South hemispheres. Therefore, the theme of this World Meteorological Day is "polar meteorology: understanding its global influence" Fabrice Fernandes from Cuba Institute of Meteorology and geographer Peres, both of whom had attended the exploration of South Pole several times, expressed their concern about the rapid thawing of ice layer at this area. They consider that the emission of a great deal of greenhouse gas through human beings' various activities seriously influence the Polar Climate.

Fortunately, people have fully realized the potential threat caused by the global warming to Polar Regions. Quite a few countries have signed "Kyoto Protocol" to control the emission of greenhouse gas. However, as far as I am concerned, to decline the emission of greenhouse gas like carbon dioxide, we should use less or even stop using fuels with much carbon or sulfur element. In addition to, we can develop new and unpolluted energy sources, such as solar energy, hydrogen energy, and tide energy to replace them. Besides, we need to strengthen the awareness of environmental protection, planting more trees instead of cutting casually. As we all know trees can not only purify the air, but absorb carbon dioxide to weaken greenhouse effect as well. What's more, there are still uncultivated fields for the research on Polar Meteorology and the change of global climate. To know the influence of Polar Regions on the change of global climate, we need to deepen all kinds of science researches and observations related to the areas of Polar Meteorology, oceanography, and glacier and hydrology, overcoming diverse challenges of atrocious natural environment and further developing international science cooperation. I believe with our endless endeavor, we are sure to make our motherland more beautiful, return a happy homestead to living beings in Polar Regions and give our Earth Mother back a "Big Smile"