

Climate Change, Man and Trees

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Introduction

Climate change is the unusual weather rhythm over a protracted period of time. It is unusual because, the change is a departure from the usual cycle of weather pattern. The unusual development rather than being for a while for a return to the normal pattern appears irreversible and hence a new threshold of weather factors. Such new threshold elicits reaction of both organic and inorganic forms and functions. Man at the peak of creation must react, adapt and respond consciously or otherwise, calculated or otherwise. This reaction, adaptation and response of man will determine the quality of life and continued existence of man on the earth.

Inducing factors

Events leading to climate change can be summarized as follows:

1. **Inorganic versus inorganic interaction:** This may be responsible for events in the geological timescale before advent of organic molecules. It may also account for events in the hearth of the earth which manifest on the surface as catastrophe such as land slide, mud slide, earth tremor, earth quake, hurricane, tsunami etc.
2. **Organic versus inorganic:** Since the advent of organic molecules, there is constant impact of organic structures on the inorganic. This also played important role in organic evolution as well as ecological succession. It became pronounced with the age of man often referred to as the anthropogene.
3. **Organic versus organic:** Which is one of the bases of organic evolution that apparently achieved stability with Homo sapiens. Current incidence of this interaction includes activities of may be seen from the perspective of carnivores, diseases and pests, but these interactions have been accepted as factors ensuring stability of bio-populations on the earth. The threat of man to other biotic components of the earth is an example of continuous organic competition in the biosphere.
4. **Inorganic versus organic:** This is the reaction of the inorganic to the activities of the organic of which man is a major culprit.

Other inducing factors are shift in earth axis [1] and changes in energy levels of the sun [2,3]. These supplementary factors appear isolated in determination of events of the Time Scale and may be discussed in subsequent reports. Even

so, there is evidence that change in earth axis and energy level of the sun was not spontaneous but induced by factors of the earth.

Origin

Climate change is as old as creation. The events in the geological time scale suggest interaction between the gaseous, liquid and solid components of the earth. The concern of climate change is with focus on the change in the composition of gasses in the atmosphere, but the cause and effect of climate change is holistic involving the three states of matter namely solid, liquid and gas. The earth is estimated to be more than 4.54 billion years old [4] and the subsequent events of the geological time scale involved changes in composition of the earth crust, atmospheric gasses and weather factors. These changes occurred over the face of the earth until a little over eleven thousand, seven hundred years ago in the present epoch is called Holocene [5]. Even within the Holocene, often considered as stable, there is evidence of minor climate change such as that which translated the erstwhile Savannah to present day Sahara Desert [1]. The inducing/interacting factors earlier mentioned are in constant state of flux and their intensity and direction will determine the continued existence of man on the earth.

The way forward

The current wave of climate change is mainly due to the activities of man. It is therefore the conscious effort of man that will check further degradation of the environment leading to climate change. Two challenges are before man viz how to arrest, check or minimize further degradation and how to reverse the current trend of climate change, i.e. absorption of greenhouse gasses from the atmosphere. In the present circumstance, the major factor of degradation is the release of greenhouse gasses mainly Carbon dioxide, Nitrogen, Methane, Flourine and Watervapour. These gasses have formed a blanket over the atmosphere preventing the return of light/heat waves to space and hence global warming. There is evidence that though the first noticeable factor of climate change was temperature, there are attendant changes in other weather factors such as relative humidity, rainfall and evaporation [6,7]. Climate change is affecting agricultural practices especially in third world countries, where agriculture is mainly weather dependent. Attempts at checking or minimizing further release of greenhouse gasses include application of energy related technology and provision of sinks such as trees. The application of energy related technology can check further release of greenhouse gasses but cannot mop up the greenhouse gasses from the atmosphere. Meanwhile, it is postulated that even without additional release of a molecule of greenhouse gas into the atmosphere, the multiplier effect of the current levels of greenhouse gasses portends disaster for the earth [3]. This makes the option of greenhouse sinks an imperative.

Possible sinks are water, soil, plants and animals. Among these four factors, the components that have the ability to grow are plants and animals. Any attempt to force soil or water to absorb gasses may rebound into catastrophe, but plants and animals have the capacity to multiply *ad infinitum*, and interestingly plants and animals complement each other as they are interdependent. This interdependence can be managed for sustainable human civilization. Plants have higher multiplication rate and longer life span than animals, to trap greenhouse gasses. In this regard, tree crops have advantage over annual crops.

It is noteworthy that apart from loss of forests due human activities, there is gradual loss of trees in forests as response to climate change [8,9]. This calls for concerted effort to maintain tree population. In this regard, there are trees that have combined attributes of reforestation, afforestation and socio-economic benefits. Such trees can be promoted for dual purpose of sinks for greenhouse gasses and economic empowerment of the natives. This dual advantage is also assurance of

sustainability. It is relevant as economic deprivation is a factor that can cause social dislocation and anti-social behavior such as migration, prostitution, high profile crimes including terrorism. There are agroforestry models using tree crops for intercropping of trees with food crops and mixed farming for animal protein [10].

Conclusion

Sustainability of current life and civilization requires local, national, regional and international effort. Much as the application of energy related technology is commended, mop up of greenhouse gasses is an imperative calling for attention.

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