

User Friendly Weather And Climate Information For Social Needs

Dr.S.C.Sahu

Director, Meteorological Centre, Bhubaneswa

Introduction

During 1840s, evidence of former ice ages was understood and thereafter, it was realized about the climate change. Most parts of the world have felt about alteration of climate even within the last few decades which all affect the possibilities for agriculture and settlement. Authentic weather records have been traced for last hundred years but paleoclimatic data from tree rings, pollen in bog and lake sediments, ice core records of physical and chemical parameters and ocean sediments provide a wealth of paleoclimatic data. The meteorological parameters of standard interval adopted by the World Meteorological Organization for climatic statistics is thirty years: 1901-30, 1931-60, 1961-90 for example. Hence, short-term changes and the true rates of change may or may not be identifiable. The present climatic state is usually described in terms of an average value (arithmetic mean, or the median value in a frequency distribution), a measure of variation about the mean (the standard deviation, or interquartile range), the extreme values, and often the shape of the frequency distribution. The variability may be periodic, quasi-periodic or non-periodic, or alternatively it may show a progressive trend. First, it is important to determine whether such changes are real or whether they are an artifact of changes in instrumentation, observational practices, station location, or the surroundings of the instrumental site, or due to errors in the transcribed data. Even when changes are real, it may be difficult to ascribe them to unique causes because of the complexity of the climate system. Natural variability operates over a wide range of time scales, and superimposed on these natural variations in climate are the effects of human activities. Jan. 2009 to Dec. 2009 is the warmest decade.

Cause of Climate Change

The average state of the climate system is controlled by a combination of external forcing (solar variability, astronomical effects, tectonic processes and volcanic eruptions), internal radiative forcing (atmospheric composition, cloud cover), anthropogenically induced changes (in atmospheric composition, surface land cover) and feedback effects (such as changes in atmospheric water vapour content or cloudiness caused by global temperature changes). It is useful to try and assess the magnitude of such effects, globally and regionally and the time scales over which they operate.

Effects

The impact of global warming on climate will be significant. As temperature warms, more moisture can be evaporated into the air. Semi-arid areas are becoming deserts because of increase in temperature which in turn evaporates critical moisture that is needed for the land. Dry climates are becoming drier and wet

climates are becoming wetter. With more moisture evaporating into the air, the rain is more intense. This creates extreme flooding in areas the moisture advects into and rains out. General circulation along with Jet-stream position may be changed and more over, sea level rise, rise or fall in temperature, vanish of arctic sea ice and intense severe weather may occur. Climate change may cause the collapse of Indus Valley civilization around 4000 years ago. The study, combining the latest archaeological data along with state-of-the-art geosciences technologies, suggested that decline in monsoon rains led to weakened river dynamics and played a critical role both in the development and the fall of the Harappan culture which relied on river floods to fuel their agricultural surpluses. Due to excess emission of methane gas in the process of breaking of food by Dinosaurs, Climate Change was so catastrophic that eventually caused demise of Dinosaurs. Due to climate change, natural disasters are in increasing trend.

Society Awareness

In view of the global environmental changes, it is likely that the frequency and impact of disasters will increase over the world. The population pressure is causing degradation of environment by interrupting the water flow, hydrological cycles, causing either landslides, floods, soil erosion etc. Steps should be taken in reducing emission of green house gases and increasing sinks of green house gases especially carbon dioxide. To reduce the emission of green house gases, precautions should be taken for increasing in growth of Renewable Energy Industries such as Wind, Hydroelectric, Solar, use of Natural Gas (Methane) as it produces less green house gas as compared to oil which in turn less than Coal because coal has large ratio of carbon to hydrogen, provision of Natural skylights, use of CFL, bulb for lighting and shift from AIR & track transport to Electric Rail Transport. To meet the challenges of global warming and climate change, we would follow adaptation processes such as now casting for severe weather events, public transport instead of individual vehicle etc. to reduce the impact of global warming.

Conclusion

As a welfare state, the Government will have to take the lead in disaster prevention and reduction and mitigating their impact, enhancing the awareness of the coping mechanisms among the people and to prevent loss of lives and property. The public awareness will have to be also created through the NGOs apart from the local administration. It should be the combined effort of the Government at Centre, the State, the District and the Panchayats. NGOs and people are to pool their resources, capability and put in their best efforts to face the situation and to mitigate the losses.