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A Brief Study of Climate Change, Environment Pollution and Its Management

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Abstract **- There are too much problems with environment pollution. Now-a-days Delhi (capital of India) was the most pollution effected city. And this pollution is increasing day by day on a large scale. For environment protection there are many agency came into the force to create a sustainable environment condition. Although Environmental stressors have an enormous impact on human health. Almost one-fourth of the global burden of disease may be attributed to environmental factor, so improving our nation's understanding of the effects of the environment on health and well-being is critical. Through environmental research, the health effects of lead in gasoline were discovered, and policies were then developed to prohibit its use as an additive. Environmental research has identified susceptible groups within populations by distinguishing vulnerable life stages and genetic factors. Environmental engineers have developed technologies to monitor and improve water quality in lakes and streams, spurred improvements in energy-use efficiency , and encouraged reuse of waste. If there is too much evaporation outside of toxic river, lakes and streams. And the monsoon will come earlier in summer days .then the rainy season will have four months to stand. So that the farmers will serve water to their harvesting to grown it perfectly. So the food problems will vanish from the country and there are many positive results comes out from this process. If we are able to blow air in desirable direction then the interested results taken out from that.**

And so many technologies are working to improve environmental sustainability but the fact is that the Earth losing its balance such as enhancing the number of natural disaster from past to present e.g. flood, drought, stroms cyclone, hurricanes, tsunami, earthquakes etc.

In this ecosystem, the driving force of all activities is the sun's light. The big source of energy is the sun and driving force for the air motion.

Pollution is directly correlate with the uncertainties to the ecosystem and also to the geophysical condition of the earth. Presently, despite all these pollution, the water pollution is the fundamental major, leads us to catastrophic disaster or the countdown to apocalypse. Here we must know the fundamentals of these disaster, "what causes the disaster incidents" that makes by deep and thorough study of geophysical condition of the earth to make a advance research platform for environment.

Keyword- Controlling Environmental Activities by using Lances and Mirrors to Create Sustainable Environment.

1. SUMMARY

Science has made enormous inroads in understanding climate change and its causes, and is beginning to help develop a strong understanding of current and potential impacts that will affect people today and in coming decades. This understanding is crucial because it allows decision makers to place climate change in the context of other large challenges facing the nation and the world. There are still some uncertainties, and there always will be in understanding a complex system like Earth's climate. Nevertheless, there is a strong, credible body of evidence, based on multiple lines of research, documenting that climate is changing and that these changes are in large part caused by human activities. While much remains to be learned, the core phenomenon, scientific questions, and hypotheses have been examined thoroughly and have stood firm in the face of serious scientific debate and careful evaluation of alternative explanations. As a result of the growing recognition that climate change is under way and poses serious risks for both human societies and natural systems, the question that decision makers are asking has expanded from "What is happening?" to "What is happening and what can we do about it?". Scientific research can help answer both of these important questions. In addition to the extensive body of research on the causes and consequences of climate change, there is a growing body of knowledge about technologies and policies that can be used to limit the magnitude of future climate change, a smaller but expanding understanding of the steps that can be taken to adapt to climate change, and a growing recognition that climate change will need to be considered in actions and decisions across a wide range of sectors and interests. Advice on prudent short-term actions and long-term strategies in these three areas can be found in the companion reports Limiting the Magnitude of Future Climate Change (NRC, 2010c), Adapting to the Impacts of Climate Change (NRC, 2010a), and Informing an Effective Response to Climate Change (NRC, 2010b).

The report explores seven crosscutting research themes that should be included in the nation's climate change research enterprise and recommends a number of actions to advance the science of climate change—a science that includes and increasingly integrates across the physical, biological, social, health, and engineering sciences. Overall, the report concludes that

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1. Climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems; and
2. The nation needs a comprehensive and integrated climate change science enterprise, one that not only contributes to our fundamental understanding of climate change but also informs and expands America's climate choices.

What is climate change?
Conclusion 1: Climate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural systems.

This conclusion is based on a substantial array of scientific evidence, including recent work, and is consistent with the conclusions of recent assessments by the U.S. Global Change Research Program (e.g., USGCRP, 2009a), the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC, 2007a-d), and other assessments of the state of scientific knowledge on climate change. these previous assessments place high or very high confidence in the following findings:

- Earth is warming. Detailed observations of surface temperature assembled and analyzed by several different research groups show that the planet's average surface temperature was 1.4ºF (0.8ºC) warmer during the first decade of the 21st century than during the first decade of the 20th century, with the most pronounced warming over the past three decades. These data are corroborated by a variety of independent observations that indicate warming in other parts of the Earth system, including the cryosphere (snow- and ice covered regions), the lower atmosphere, and the oceans.
- Most of the warming over the last several decades can be attributed to human activities that release carbon dioxide (CO2) and other heat-trapping greenhouse gases (GHGs) into the atmosphere. The burning of fossil fuels—coal, oil, and natural gas—for energy is the single largest human driver of climate change, but agriculture, forest clearing, and certain industrial activities also make significant contributions.
- Natural climate variability leads to year-to-year and decade-to-decade fluctuations in temperature and other climate variables, as well as substantial regional differences, but cannot explain or offset the long-term warming trend.
- Global warming is closely associated with a broad spectrum of other changes, such as increases in the frequency of intense rainfall, decreases in Northern Hemisphere snow cover and Arctic sea ice, warmer and more frequent hot days and nights, rising sea levels, and widespread ocean acidification.
- Human-induced climate change and its impacts will continue for many decades, and in some cases for many centuries. Individually and collectively, these changes pose risks for a wide range of human and environmental systems, including freshwater resources, the coastal environment, ecosystems, agriculture, fisheries, human health, and national security, among others.
- The ultimate magnitude of climate change and the severity of its impacts depend strongly on the actions that human societies take to respond to these risks.

Despite an international agreement to stabilize GHG concentrations "at levels that would avoid dangerous anthropogenic interference with the climate system" (UNFCCC, 1992), global emissions of CO2 and several other GHGs continue to increase. Projections of future climate change, which are based on computer models of how the
climate system would respond to different scenarios of future human activities, anticipate an additional warming of 2.0ºF to 11.5ºF (1.1ºC to 6.4ºC) over the 21st century. A separate National Research Council (NRC) report, Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia (NRC, 2010i), provides an analysis of expected impacts at different magnitudes of future warming. In general, it is reasonable to expect that the magnitude of future climate change and the severity of its impacts will be larger if actions are not taken to reduce GHG emissions and adapt to its impacts. However, as with all projections of the future, there will
always be some uncertainty regarding the details of future climate change. Several factors contribute to this uncertainty:

- Projections of future climate change depend strongly on how human societies decide to produce and use energy and other resources in the decades ahead.
- Human-caused changes in climate overlap with natural climate variability, especially at regional scales.
  Certain Earth system processes—including the carbon cycle, ice sheet dynamics, and cloud and aerosol processes—are not yet completely understood or fully represented in climate models but could potentially have a strong influence on future climate changes.
- Climate change impacts typically play out at local to regional scales, but processes at these scales are not as well represented by models as continental- to global-scale changes.
- The impacts of climate change depend on how climate change interacts with other global and regional environmental changes, including changes in land use, management of natural resources, and emissions of other pollutants.
- The impacts of climate change also depend critically on the vulnerability and adaptive capacity of human and natural systems, which can vary widely inspace and time and generally are not as well understood as changes in the physical climate system.

Climate change also poses challenges that set it apart from other risks with which people normally deal. For example, many climate change processes have considerable inertia and long time lags, so it is mainly future generations that will have to deal with the consequences (both positive and negative) of decisions made today. Also, rather than smooth and gradual climate shifts, there is the potential that the

Earth system could cross tipping points or thresholds that result in abrupt changes. Some of the greatest risks posed by climate change are associated with these abrupt changes and other climate "surprises" (unexpected changes or impacts), yet the likelihood of such events is not well known. Moreover, there has been comparatively little research on the impacts that might be associated with "extreme" climate change—for example, the impacts that could be expected if global temperatures rise by 10°F (6°C) or more over the next century. Thus, while it seems clear that the Earth's future climate will be unlike the climate that ecosystems and human societies have become accustomed to during the last 10,000 years, the exact magnitude of future climate change and the nature of its impacts will always remain somewhat uncertain.

Decision makers of all types, including businesses, governments, and individual citizens, are beginning to take actions to reduce the risks posed by climate change—including actions to limit its magnitude and actions to adapt to its impacts. Effective management of climate risks will require decision makers to take actions that are flexible and robust, to learn from new knowledge and experience, and to adjust future actions accordingly. The long time lags associated with climate change and the presence of differential vulnerabilities and capacities to respond to climate change likewise represent formidable management challenges. These challenges also have significant implications for the nation's climate science enterprise.

New generation research program on climate change

Conclusion 2: The nation needs a comprehensive and integrative climate change science enterprise, one that not only contributes to our fundamental understanding of climate change but also informs and expands America's climate choices.

Research efforts over the past several decades have provided a wealth of information to decision makers about the known and potential risks posed by climate change.

Experts from a diverse range of disciplines have also identified and developed a variety of actions that could be taken to limit the magnitude of future climate change or adapt to its impacts. However, much remains to be learned. Continued investments in scientific research can be expected to improve our understanding of the causes and consequences of climate change. In addition, the nation's research enterprise could potentially play a much larger role in addressing questions of interest to decision makers as they develop, evaluate, and execute plans to respond to climate change. Because decisions always involve value judgments, science cannot prescribe the decisions that should be made. However, scientific research can play a key role by informing decisions and by expanding and improving the portfolio of available options.

Research to Improve Understanding of Human-Environment Systems

1. Climate Forcings, Responses, Feedbacks and Thresholds in the Earth System. Some examples of research needs that fall under this theme include improved understanding of climate sensitivity, ice sheet dynamics, climate-carbon interactions, crop and ecosystems responses to climate changes (in interaction with other stresses), and changes in extreme events.
2. Climate-Related Human Behaviors and Institutions. Some examples include improved understanding of human behavior and decision making in the climate context, institutional impediments to limiting or adaptation responses, determinants of consumption, and drivers of climate change.

Research to Support Effective Responses to Climate Change

Vulnerability and Adaptation Analyses of Coupled Human-Environment Systems. Some examples include developing methods and indicators for assessing vulnerability and developing and assessing integrative management approaches to respond effectively to the impacts of climate change on coasts, freshwater resources, food production systems, human health, and other sectors.

1. Research to Support Strategies for Limiting Climate Change. Some examples include developing new and improved technologies for reducing GHG emissions (such as enhanced energy efficiency technologies and wind, solar, geothermal- based, and other energy sources that emit few or no GHGs), assessing alternative methods to limit the magnitude of future climate change (such as modifying land use practices to increase carbon storage or geo-engineering approaches), and developing improved analytical frameworks and participatory approaches to evaluate trade-offs and synergies among actions taken to limit climate change.
2. Effective Information and Decision-Support Systems. Some examples include research on risk communication and risk-management processes; improved understanding of individual, societal, and institutional factors that facilitate or impede decision making; analysis of information needs and existing decision-support activities, and research to improve decision-support products, processes, and systems.

Tools and Approaches to Improve Both Understanding and Responses

1. Integrated Climate Observing Systems. Some examples include efforts to ensure continuity of existing observations; develop new observational capacity for critical physical, ecological, and social variables; ensure that current and planned observations are sufficient both to continue building scientific understanding of and support more effective responses to climate change (including monitoring to assess the effectiveness of responses); and ensure adequate emphasis and support for data assimilation, analysis, and management.
2. Improved Projections, Analyses, and Assessments. Some examples include advanced models for analysis and projections of climate forcing, responses, and impacts, especially at regional scales; and integrated

assessment models and approaches—both quantitative and non quantitative—for evaluating the advantages and disadvantages of, and the trade-offs and co-benefits among, various options for responding to climate change.

2. INTRODUCTION

Human have always been influenced by climate. Despite the wealth and technology of modern industrial societies, climate still affects human well-being in fundamental ways. Climate influences, for example where people live, what they eat, how they earn their livings, how they move around, and what they do for recreation. Climate regulates food production and water resources and influences energy use, disease transmission, and other aspects of human health and well-being. It also influences the health of ecosystems that provide goods and services for humans and for the other species with which we share the planet.

Environment protection is needed now-a-days to our next generation. Many believe that the nature of environmental policy is changing. In much of the world during the last third of the 20th century environmental policy was dominated by "command and control" approaches.
The climate warming problem also arises since 1900 by 0.8°c every year it is so inappropriate. The clearest evidence for surface warming comes from widespread thermometer records. In some places, these records extend back to the late 19th century. Today, temperatures are monitored at many thousands of locations, over both the land and ocean surface. Indirect estimates of temperature change from such sources as tree rings and ice cores help to place recent temperature changes in the context of the past. In terms of the average surface temperature of Earth, these indirect estimates show that 1983 to 2012 was probably the warmest 30-year period in more than 800 years. Recent climate change is largely caused by human activities from an understanding of basic physics, comparing observations with models, and fingerprinting the detailed patterns of climate change caused by different human and natural influences.

Since the mid-1800s, scientists have known that CO_2 is one of the main greenhouse gases of importance to Earth's energy balance. Direct measurements of CO_2 in the atmosphere and in air trapped in ice show that atmospheric CO_2 increased by about 40% from 1800 to 2012. Measurements of different forms of carbon reveal that this increase is due to human activities. Other greenhouse gases (notably methane and nitrous oxide) are also increasing as a consequence of human activities. The observed global surface temperature rise since 1900 is consistent with detailed calculations of the impacts of the observed increase in atmospheric CO_2 (and other human-induced changes) on Earth's energy balance. Different influences on climate have different signatures in climate records. These unique fingerprints are easier to see by probing beyond a single number (such as the average temperature of Earth's surface), and looking instead at the geographical and seasonal patterns of climate change. The observed patterns of surface warming, temperature changes through the atmosphere, increases in ocean heat content, increases in atmospheric moisture, sea level rise, and increased melting of land and sea ice also match the patterns scientists expect to see due to rising levels of CO_2 and other human-induced changes.

The Sun provides the primary source of energy driving Earth's climate system, but its variations have played very little role in the climate changes observed in recent decades. Direct satellite measurements since the late 1970s show no net increase in the Sun's output, while at the same time global surface temperatures have increased.

For earlier periods, solar changes are less certain because they are inferred from indirect sources — including the number of sunspots and the abundance of certain forms (isotopes) of carbon or beryllium atoms, whose production rates in Earth's atmosphere are influenced by variations in the Sun. There is evidence that the 11 year solar cycle, during which the Sun's energy output varies by roughly 0.1%, can influence ozone concentrations, temperatures, and winds in the stratosphere (the layer in the atmosphere above the troposphere, typically from 12 to 50 km, depending on latitude and season). These stratospheric changes may have a small effect on surface climate over the 11 year cycle. However, the available evidence does not indicate pronounced long-term changes in the Sun's output over the past century, during which time human-induced increases in CO_2 concentrations have been the dominant influence on the long-term global surface temperature increase. Further evidence that current warming is not a result of solar changes can be found in the temperature trends at different altitudes in the atmosphere.

A New Era of Climate change Science: Research for
Understanding and Responding to Climate Change
In the process of scientific learning about climate change, it has become evident that climate change holds significant risks for people and the natural resources and ecosystems on which they depend. In some ways, climate change risks are different from many other risks with which people normally deal. Climate change processes have considerable inertia and long time lags. The actions of today, therefore, will be reflected in climate system changes several decades to centuries from now. Future generations will be exposed to risks, some potentially severe, because of today's actions, and in some cases these changes will be irreversible. Likewise, climate changes can be abrupt—they have the potential to cross tipping points or thresholds that result in large changes or impacts. The likelihood of such abrupt changes is not well known, however, which makes it difficult to quantify the risks posed by such changes. Climate change also interacts in complex ways with other ongoing changes in human and environmental systems. Society's decisions about land use and food production, for

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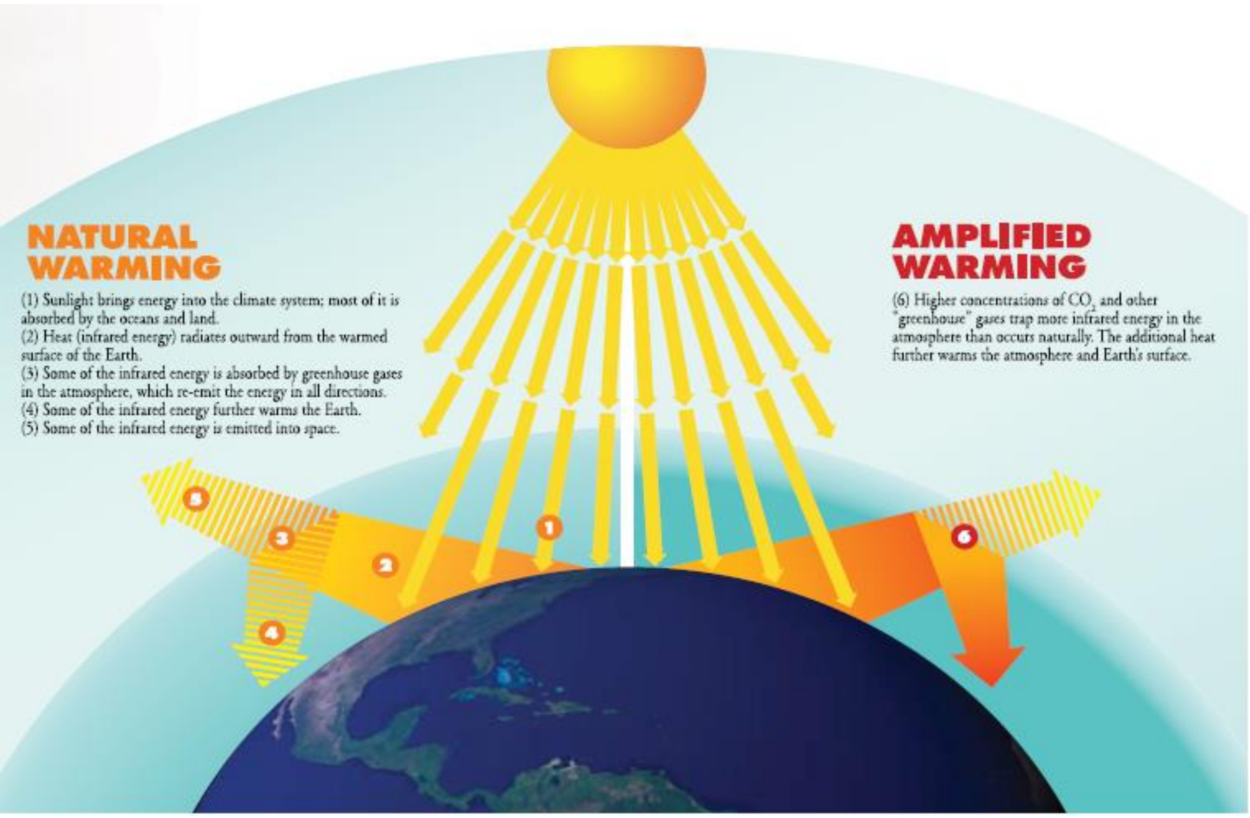
example, both affect and are affected by climate change. On the basis of decades of scientific progress in understanding changes in the physical
climate system and the growing evidence of the risks posed by climate change, many decision makers—including individuals, businesses, and governments at all levels—are either taking actions to respond to climate change or asking what actions they might take to respond effectively. Many of these questions center on what
specific actions might to be taken to limit climate change by reducing emissions of GHGs: what gases, from what sources, when and where, through what specific technology investments or changes in management practices, motivated and coordinated by what policies, with what co-benefits or unintended consequences, and monitored and verified through what means? Other questions focus on the specific impacts that are expected and the actions that can be taken to prepare for and adapt to them, such as reducing vulnerabilities or improving society's coping and adaptive capacity. This report explores what these emerging questions and decision needs imply for future scientific learning about climate change and for the scientific research enterprise. As the need for science expands to include both improving understanding and informing and supporting decision making, the production, synthesis, and translation of scientific knowledge into forms that are useful to decision makers becomes increasingly important. It may also imply a need to change scientific practices, with scientists working more closely with decision makers to improve the scientific decision support that researchers can offer. However, even with this decision focus, scientific knowledge cannot by itself specify or determine any choice. It cannot tell decision makers what they should do; their responsibilities, preferences, and values also influence their decisions. Science can inform decisions by describing the potential consequences of different choices, and it can contribute by improving or expanding available options, but it cannot say what actions are required or preferred.

The Greenhouse Effect is a Natural Phenomenon That Is Critical for Life as We Know It

GHGs—which include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several others—are present in relatively low concentrations in the atmosphere, but, because of their ability to absorb and re-radiate infrared energy, they trap heat near the Earth's surface, keeping it much warmer than it would otherwise be (Figure a). The atmospheric concentrations of GHGs have increased over the past two centuries as a result of human activities, especially the burning of the fossil fuels—coal, oil, and natural gas—for energy. The increasing concentrations of GHGs are amplifying the natural greenhouse effect, causing Earth's surface temperature to rise. Human activities have also increased the number of aerosols (small liquid droplets or particles suspended in the atmosphere). Aerosols have a wide range of environmental effects, but on average they increase the amount of sunlight that is reflected back to space, a cooling effect that offsets some, but not all, of the warming induced by increasing GHG concentrations.



(Figure A) The Green House Effect Source

Earth Is Warming

There are many indications—both direct and indirect—that the climate system is warming. The most fundamental of these are thermometer measurements, enough of which have been collected over both land and sea to estimate changes in global average surface temperature since the mid- to late 19th century. A number of independent research teams collect, analyze, and correct for errors and biases in these data (for example, accounting for the "urban heat island" effect and changes in the instruments and methods used to measure ocean surface temperatures). Each group uses slightly different analysis techniques and data sources, yet the temperature estimates published by these groups are highly consistent with one another.

Surface thermometer measurements show the first decade of the 21st century was 1.4°F (0.8°C) warmer than the first decade of the 20th century (Figure a). This warming has not been uniform, but rather it is superimposed on natural year-to-year and even decade-to-decade variations. Because of this natural variability, it is important to focus on trends over several decades or longer when assessing changes in the heat balance of the Earth. Physical factors also give rise to substantial spatial variations in the pattern of observed warming, with much stronger warming over the Arctic than over tropical latitudes and over land areas than over the ocean.

Other measurements of global temperature changes come from satellites, weather balloons, and ships, buoys, and floats in the ocean. Like surface thermometer measurements, these data have been analyzed by a number of different research teams around the world, corrected to remove errors and biases, and calibrated using independent observations. Ocean heat content measurements, which are taken from the top several hundred meters of the world's oceans, scientists were puzzled by the fact that the satellite-based record of atmospheric temperature trends seemed to disagree slightly with the data obtained from weather balloon-based measurements, and both seemed to be slightly inconsistent with surface temperature observations. Recently, researchers identified several small errors in both the satellite and weather balloon-based data sets, including errors caused by instrument replacements, changes in satellite orbits, and the effect of sunlight on the instruments carried by weather balloons. After correcting these errors, temperature records based on satellite, weather balloon, and ground-based measurements now agree within the estimated range of uncertainty associated with each type of observation.

The long-term trends in many other types of observations also provide evidence that
Earth is warming. For example:

• Hot days and nights have become warmer and more frequent;
• Cold snaps have become milder and less frequent;
• Northern Hemisphere snow cover is decreasing;
• Northern Hemisphere sea ice is declining in both extent and average thickness;
• Rivers and lakes are freezing later and thawing earlier;
• Glaciers and ice caps are melting in many parts of the world.
• Precipitation, ecosystems, and other environmental systems are changing in ways that are consistent with global warming.

Based on this diverse, carefully examined, and well-understood body of evidence, scientists are virtually certain that the climate system is warming. In addition, scientists have collected a wide array of "proxy" evidence that indicates how temperatures and other climate properties varied before direct measurements were available. These proxy data come from ice cores, tree rings, corals, lake sediments, boreholes, and even historical documents and paintings. A recent assessment of these data and the techniques used to analyze them concluded that the past few decades have been warmer than any other comparable period for at least the last 400 years, and possibly for the last 1,000 years or longer (NRC, 2006b).

GHG Emissions and Concentrations Are Increasing

Human activities have increased the concentration of CO2 and certain other GHGs in the atmosphere. Detailed worldwide records of fossil fuel consumption indicate that fossil fuel burning currently releases over 30 billion tons of CO2 into the atmosphere every year (Figure b, blue curve). Tropical deforestation and other land use changes release an additional 3 to 5 billion tons every year.

Precise measurements of atmospheric composition at many sites around the world indicate that CO2 levels are increasing, currently at a pace of almost 2 parts per million (ppm) per year. We know that this increase is largely the result of human activities because the chemical signature of the excess CO2 in the atmosphere can be linked to the composition of the CO2 in emissions from fossil fuel burning. Moreover, analyses of bubbles trapped in ice cores from Greenland and Antarctica reveal that atmospheric
CO2 levels have been rising steadily since the start of the Industrial Revolution (usually taken as 1750; see Figure b, red curve). The current CO2 level (388 ppm as of the end of 2009) is higher than it has been in at least 800,000 years.

Only 45 percent of the CO2 emitted by human activities remains in the atmosphere; the remainder is absorbed by the oceans and land surface. Current estimates, which are based on a combination of direct measurements and models that simulate ecosystem processes and biogeochemical cycles, indicate that roughly twice as much CO2 is taken up annually by ecosystems on the land surface as is released by deforestation; thus, the land surface is a net "carbon sink." The oceans are also a net carbon sink, but only some of the CO2 absorbed by the oceans is taken up and used by marine plants; most of it combines with water to form carbonic acid, which is harmful to many kinds of ocean life.

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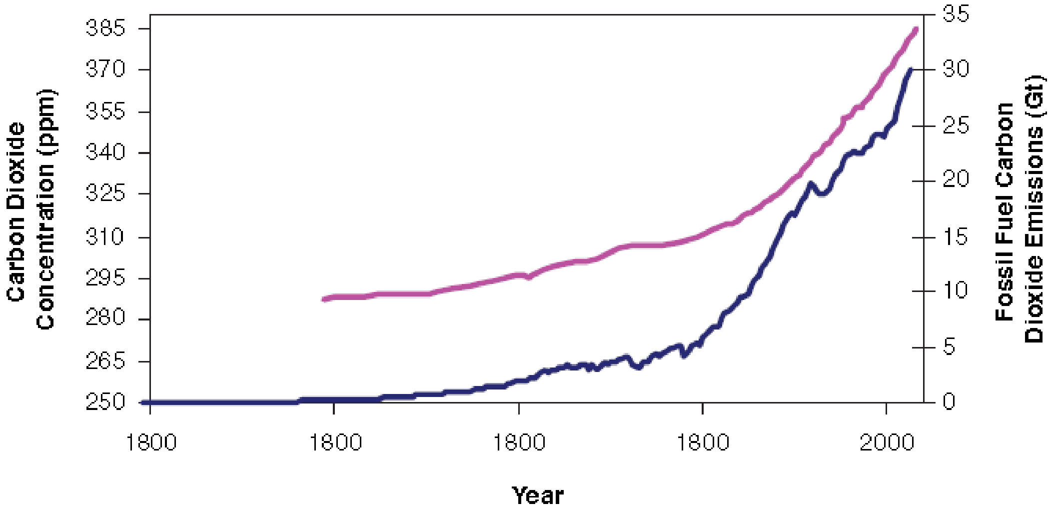

3. DIVISONS AFFECTED BY THE CLIMATE CHANGE

1. Water : The cycle of life is intricately joined with the cycle of water.

—

Jacques-Yves Cousteau
Climate Change Impacts on the Water Cycle
Water cycles constantly from the atmosphere to the land and the oceans (through precipitation and runoff) and back to the atmosphere (through evaporation and the release of water from plant leaves), setting the stage for all life to exist. The water cycle is dynamic and naturally variable, and societies and ecosystems are accustomed to functioning within this variability. However, climate change is altering the water cycle in multiple ways over different time scales and geographic areas, presenting unfamiliar risks and opportunities.
(Further detailed in reference book chapter 3)
Chapter -3, 6, 7, 8, 12.

4. FUNDAMENTALS OF RISE IN TEMPERATURE

- Oceans uncertainties :- most of the sun energy is absorbed by the ocean . presently, induced waste water from the various industries is being through into the sea water it includes solid waste (polythene) and other types of contaminates. These contaminate effects the evaporation process and create disturbance.

UNCERTAINITY – *Doesn't allow proper evaporation from the oceans. Doesn't allow to absorb infrared energy comes from the sun and it remained in the environment causing temperature rise continuously.*

- Waste water bodies:- waste water bodies on to the ground surface of the earth is mostly covered with the polythene and other types of solid waste effect the recyclation of water. Thus the accumulation of water on the ground face of the earth and also it will not go down to the ground due to having heavy contaminate that block the pores of the ground. Therefore the quantity of ground water decreasing continuously.
- GHGs are the major aspects leading us to the global warming.

5. FLOW CHART OF THE PRESENT ECOSYSTEM

Emission of CO_2 by burning of fossil fuels
↓
Air pollution
↓
Increasing in earth temperature continuously
↓
Melting of polar ice-sheets

Human-induced water pollution
↓
contaminants in water bodies
↓
decreasing the rate of water evaporation
↓
consequences (droughts, intensive rainfall)

*KEY MASSAGE

CLIMATE RISK INFORMATION AND ITS SERVICE METHODOLOGIES

How hurricanes form in oceans?
What makes hurricanes form? (NASA"s report)
Scientist don't know exactly why or how a hurricane forms. But they do know that two main ingredients are needed. One is the warm water. Warm ocean waters provide the energy a storm needs to become a hurricane. Usually, the surface water temperature must be 26°c (79° Fahrenheit) or higher or a hurricane to form. The other ingredient is wind that don't change much in speed or direction as thy go up in the sky. A tropical cyclone is a storm system with a low-pressure centre. However, while typical Canadian lows and storm systems are fueled by a battle between cold and warm air, tropical cyclones are fueled by a different process. This process involves water being converted to water vapour, which is then converted back to liquid water.

Steps Showing How a Hurricane Forms (Table 1)

S. no.	Description of event
1.	Warm, moist air moves over the ocean.
2.	Water vapour rises into the atmosphere.
3.	As the water vapour rises, it cools and condenses into liquid droplets.
4.	Condensation releases heat into the atmosphere, making the air lighter.
5.	The warmed air continues to rise, with moist air from the ocean taking its place and creating more wind.

Most people know that heat is required to evaporate water. For example, a pot of water is put on a stove and heated. The heat is what evaporates the water, turning it into water vapour (steam) that gets trapped in the air. The water vapour just above the water in the pot is now hotter than the surrounding air, and it rises. The warm tropical atmosphere is like the stove: it heats up the water at the ocean surface and begins to evaporate it. And like the trapped water vapour in the air in the pot, the water from the ocean surface rises up through the atmosphere. An atmospheric disturbance has begun! The rising air then meets lower pressures and temperatures at higher altitudes, and water vapour begins to condense back into liquid water. We see this as clouds. This is when the interesting physics of tropical cyclone formation really begins.
While most people know that it takes heat to evaporate water and turn it into water vapour, many don't realize that when water vapour is cooled back into liquid water, the heat is released. Even more heat is given back if the process is continued to the point of freezing. The condensation process essentially extracts heat from the air as water vapour is condensed back into liquid water. This is referred to as the latent heat of condensation, where latent heat literally means "stored heat."
The heat that was "stored" in the air at the ocean surface is released back into the atmosphere at higher altitudes when the rising air cools and the water vapour condenses into liquid water. This warming effect at higher altitudes causes the air to accelerate upward because it is now hotter than its surroundings. This then draws air up from below and speeds up the rate of rising air near the surface. Surface air around the growing disturbance rushes in to replace it. This motion of surface air is the wind we feel in a tropical cyclone. Rising columns of air quickly form tropical thunderstorms, and the result is a potential "seed" for a tropical cyclone. The eventual tropical cyclone that forms will be referred to as a warm-air or warm-core storm because of the process just described.
The term "cyclone" is a meteorological term and generally refers to any low-pressure area. In the Northern Hemisphere, cyclones rotate counterclockwise; in the Southern Hemisphere, they rotate clockwise. There are different kinds of cyclones, such as extra-tropical cyclones (referring more to the process of formation rather than geographic origin); mesocyclones (the large and intense thunderstorms that spawn tornadoes); and tropical cyclones.

*Key point
Mainly, Temperature difference is the one aspect which is responsible for hurricanes, cyclones, typhoon, tornado etc.
temperature concept, is applied in the context of wind flow.

SOLUTIONS FOR THIS PRESENT ENVIRONMENT PROTOCOL OR CONTROLLING THE WIND FLOW ACTIVITIES INTER-RELATED WITH THE ENERGY OF SUN.?

*Keyword – Controlling Environmental Activities By Using Mirrors And Lances

To create a sustainable ecosystem for future environmental research program , mirrors are well reflectors of light as we all know . the uses of mirrors to reflect sunlight to create control on environment activities like rainfall, wind flow , cyclones, mitigation of GHGs, etc.
Functioning of mirrors to reflect sunlight energy and focus its reflection on a waste water body causing the evaporation rate high of the water and it evaporated and help to precipitate in general we called this term is artificial raining.`

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Controlling the wind flow : Basically, wind flows from the high pressure zone to low pressure zone and the driving force is the one and only one THE SUN. the sun light warming the air and hot air is light weighted and it go to upper zone and hence there develop a low pressure zone and the air comes here from the high pressure zone . And the intensity of wind flow depends on how much low pressure zone created there (in the context of hurricanes cyclone).

Cyclone and hurricanes also strikes to the coastal regions (low pressure zone).

It can prevent environmental disasters like flood, intensive rainfall, drought etc.

This process can help to the formation of ozone layer, forestation, and increase in ground water level.

Helpful to reduce air pollution very instantly.

Further presentation of this model illustrate in coming edition ☺.

6. REFERENCE

2014 national climate assessment U.S. global change research program http://nca2014.globalchange.gov/system/files_force/downloads/low/NCA3_Climate_Change_Impacts_in_the_United%20States_LowRes.pdf