

CLIMATE CHANGE

INTRODUCTION

- ▶ Climate is the average weather at a particular place, incorporating temperature, precipitation, humidity, and windiness
- ▶ More specifically, climate is the mean state and variability of these factors over some extended time period
- ▶ Both these definitions indicate that weather is always changing due to instabilities in the atmosphere
- ▶ As weather varies from day to day so too does the climate vary
- ▶ (Weather- short term changes; climate- long term changes in weather)
- ▶ Earth's average temperature has increased about 1 degree Fahrenheit during the 20th century

CAUSES OF CLIMATE CHANGE

- ▶ Greenhouse gases - Greenhouse gases like methane, carbon dioxide etc. are efficient in trapping heat in the atmosphere. Therefore, it results in global warming.
- ▶ Natural Causes- On an average, volcanos emit 130-230 million tones of carbon dioxide per year
- ▶ Human contribution- The world depends on fossil fuels such as oil, coal, natural gas for 80% of its energy needs. Burning fossil fuels increases gases such as carbon dioxide, methane among other greenhouse gases into the atmosphere
- ▶ All these factors can cause changes in Earth's energy balance including: (a) variations in sun's energy reaching earth (b) changes in reflectivity of earth's atmosphere & surface (c) changes in greenhouse effect

EFFECTS OF CLIMATE CHANGE

- ▶ Melting of ice-sheets
- ▶ Sea level rise
- ▶ Ocean Acidification - Increased level of carbon dioxide in the atmosphere lead to ocean acidification, causing irreparable damage to the marine ecosystem.
E.g. Great Barrier Reef
- ▶ Desertification - Heat waves and desertification will expand to areas including Mediterranean countries
- ▶ Forest Fire
- ▶ Biodiversity loss - plant species and wildlife

EL NINO & LA NINA

- ▶ El nino is a weather phenomenon caused when warm water from Western Pacific Ocean flows eastward
- ▶ El nino is the “warm phase”
- ▶ It causes significant weather changes including hurricanes, storms, flooding in Central America
- ▶ La nina is the direct opposite of Elnino, occurs when sea surface temperature in the Central Pacific ocean drops to lower than normal levels
- ▶ In some regions, it causes extreme rainfall while in some other regions it causes extreme dry conditions
- ▶ La nina is the “cold phase”

SOLUTIONS TO CLIMATE CHANGE

- ▶ Reducing combustion of fossil fuels and shifting to clean energy sources e.g. wind energy
- ▶ Energy saving practices- reducing the number of private vehicles on the road, using electric vehicles
- ▶ Make our energy production more efficient
- ▶ Green building - using light bulbs that use less energy and more efficient heating and cooling systems helps in reducing carbon dioxide that is being emitted from buildings
- ▶ Trees and forests should be protected and more plantations should be done
- ▶ Reduce methane leaks