Theme 11: Climate change and natural disasters

T11_Poster_04

SCENARIOS OF ARABIAN SEA CLIMATE CHANGE UNDER INCREASED RADIOACTIVE ACTIVE GAS CONCENTRATION AND THE ROLE OF AEROSOLS IN CLIMATE CHANGE

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OBJECTIVE:

1. Review observational and modeling studies of greenhouse gas.
2. Induced Climate Change over Arabian Sea for 20th and 21st century.
3. Along with the role of Natural and Anthropogenic aerosols in affecting the climate of region.

INTRODUCTION:

Origin of research problem: Global Warming and climate change

Interdisciplinary Relevance: Environmental science, Electronics, Physics, and Geography related work to be done.

Research and Development:

International Status: KYOTO protocol in 1995.

Protocol is signed by almost all countries in the world has made the list of all industrially developed. Countries as Annexe 1 and underdeveloped countries as Annexe 2. The protocol states that the countries which are developed should reduce carbon emission to 1990 level by 2000. However all the industrially developed countries failed to observe the protocol. Therefore it was decided to have a financial instrument called as carbon credit for the purpose of reducing carbon emission at global level. 80% of carbon emission is from the developed countries. The carbon emission means the word used for greenhouse gases like CO2, CO, CFCS, Methane, Water Vapours etc. It is the responsibility of industries in the developed countries to promote reduction in carbon emissions.

Significance of the study:

Arabian Sea is one of the most sensitive regions of the world. Modeling studies have shown that greenhouse gas induced warming over the basin is expected to be much higher than the global average and that the region will experience much drier conditions that at present, especially during the warm season. Some of these trends have been already observed during recent decades. These changes can have

dramatic effects on wide range of sectors in Arabian countries including water management, agriculture, energy production, tourisms, fisheries etc. Despite the fact that this warming /drying signal has been observed for various generations of model projections. There are still substantial uncertainties on the magnitude of this signal on the effects of Arabian air sea feedbacks and on effects of natural (e. g.) dust and anthropogenic aerosols. This last issue is especially critical in view of the fact that Mediterranean receives aerosol fluxes from different sources including desert dust from Sahara ,soot from forest fires , agricultural practices and urban and industrial pollution from central and Eastern Europe The large optical depths associate with these aerosols loads can indeed effect the energy budget of the basin Although global climate models are the primary tools to produce climate change projections.

Their resolution is still to course to represent the complexity of morphology and processes of the Arabian Sea. To address this shortcoming a new generation of high resolution regional coupled climate system. Models have been developed for the basin including atmosphere, ocean, biosphere and chemistry aerosol components. They provide powerful tools to investigate the issues of mentioned above. The issue of 20th and 21st century climate change over the Arabian sea under increased greenhouse gas forcing with Particular attention to air sea interaction Changes in Arabian sea circulation atmosphere and oceanic interactions between the Arabian and other regions uncertainty estimates and impact of Natural and anthropogenic aerosols Results from newest regional coupled model simulations will receive special attention in particular with the context of the newly developing international project CORDEX Coordinated regional climate downscaling experiment that will have the Arabian sea as one of its focus regions (MED-CORDEX).

Observations of trends and forcing (e.g.) aerosols both in the atmosphere and oceans will also be reviewed with particular attention to their use for a better understanding of the models and processes for Arabian Sea.

Following things will be studied:

Changes in Arabian Sea circulation of water masses

Regional coupled climate system Models for Arabian Sea

Consensus uncertainties of regional climate projections

Impacts of natural / anthropogenic aerosols on regional climate

Interactions between Arabian Sea and other regions

Major work is done on preparing CO2 sensors using Lithium chloride. CO2 concentration is measured by sending these sensors in atmosphere. At Aerodrome these experiments are done These sensors can be send in air to get up to 1ppm and 0.001ppm sensitivity Generally CO2 concentration become less as you go at more and more heighted level Some humidity sensors and temperature sensors are used to measure humidity and temperature up to 3 yrs.