DIVECHA CENTRE FOR CLIMATE CHANGE

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Indian Institute of Science
Bengaluru
www.iisc.ernet.in

Divecha Centre for Climate Change

The Divecha Centre for Climate Change was established at the Indian Institute of Science in January 2009 with a generous financial contribution from Arjun and Diana Divecha and the Grantham Foundation for Protection of the Environment. The centre is involved in research, training and outreach on issues related to climate variability and climate change. The centre advocates methods to mitigate climate change and promote environment sustainability and hence provide a link between science and policy.

The Centre has collaborative programmes with the Grantham Institute at the Imperial College, London on the impact of aerosols on climate and the impact of climate change on water. The Centre has many outreach activities to create awareness among students, general public and policy makers about climate change and its consequences. These are carried out through workshops, lectures and quiz contests. An annual invited public lecture, called the 'Jeremy Grantham Lecture on Climate Change', has been held for the past eight years. The centre organizes lectures and training programs to promote capacity building in the area of climate variability, climate change, adaptation and sustainability. The Centre provides advice to ministries and departments of the Government of India to formulate national and international policies related to climate change.

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Faculty and Staff

Prof. S.K.Satheesh, Chair, Divecha Centre for Climate Change

Associate Faculty

- Prof. S.K. Satheesh, Professor and Chair
- Prof. J. Srinivasan, Hon. Professor
- Prof. N.H. Ravindranath, Professor
- Prof. R. Sukumar, Professor
- Prof. G.S. Bhat, Professor
- Prof. P.P. Mujumdar, Professor
- Prof. D. Nagesh Kumar, Professor
- Prof. D. Sengupta, Professor and Chair, CAOS
- Prof. R.S. Nanjundiah, Professor (In lien, IITM, Pune)
- Prof. P.N. Vinayachandran, Professor
- Prof. Bala Govindasamy, Professor
- Prof. V.Venugopal, Associate Professor
- Prof. Prosenjit Ghosh, Associate Professor
- Prof. A. Chakraborty, Associate Professor
- Prof. Jai Sukhatme, Associate Professor

Scientific Staff

- Dr. Anil V. Kulkarni, Distinguished Visiting Scientist
- Dr. Ashwin Seshadri, Visiting Scientist
- Dr. Rajiv Kumar Chaturvedi, Visiting Scientist
- Mr. M.K. Nagaraj, Consultant Technologist

Administrative Staff

- Mrs. Mamatha G.
- Mrs. Lakshmi T.R.

MAJOR PROGRAMS

FUTURE EARTH

Future Earth is an international research initiative supported by International Council for Scientific Unions (ICSU), United Nations Educational Scientific and Cultural Organisation (UNESCO), United Nations Environmental Programme (UNEP), United Nations University (UNU) and the Belmont Forum among many others. The main goals of Future Earth are to develop the knowledge required for societies worldwide, to face challenges posed by global environmental change and to identify and implement solutions and opportunities for a transition to global sustainability.

The South Asia regional office of Future Earth was inaugurated at the Divecha Centre for Climate Change (DCCC), Indian Institute for Science (IISc), Bengaluru on 09th July 2016. The mandate of this office is to integrate the available information and develop strategic knowledge and region-specific strategies to tackle and face consequences of climate change. In order to achieve Future Earth's vision, the regional office will promote scientific co-operation between India and its neighbouring countries in Future Earth related activities. The centre will identify outstanding grand challenges specific to this region on issues related to climate change.

Shri. A.S. Kiran Kumar, Secretary, Department of Space (DoS) and Chairman, ISRO, Prof. Anurag Kumar, Director IISc and Dr. M. Rajeevan, Secretary, Ministry of Earth Sciences (MoES) during the inaugural session of *Future Earth* South Asia regional office at DCCC.

SUSTAINABLE WATER FUTURE

The Sustainable Water Future Programme is a core activity of Future Earth and will address the water-related science, policy and societal questions regarding global environmental change. Divecha Centre for climate change will make a foray into water security by becoming a part of 'Water Solutions Laboratory' network of Sustainable Water Future Programme. The aim of this laboratory will be to influence policymaking at a regional scale by initiating active dialogue between scientists, policy-makers and the general public. The laboratory will also provide advanced training to students and young water professionals to build their capacities for successful science-policy interactions and to address the water-related science, policy and societal questions in the light of the global environmental change.

MONSOON ASIA INTEGRATED RESEARCH ON SUSTAINABILITY (MAIRS)

Monsoon Asia Integrated Research on Sustainability (MAIRS) is a regional consortium for the integrated study of the earth system processes in the Asian Monsoon Region. The vision of MAIRS is to significantly advance understanding of the interactions between the human-natural components of the overall environment in the monsoon Asian region in order to support the strategies for sustainable development. The Scientific Steering Committee (SSC) of MAIRS, during its recent meeting held at the Research Institute for Humanity and Nature (RIHN), Kyoto, Japan, accepted our proposal to host the MAIRS Regional Project Office (RPO) at the Divecha Centre for Climate Change. The Regional Project Office (RPO) was established at the Divecha Centre for Climate Change in April 2017.

HIMALAYAN GLACIERS

The glaciers in the Himalayas are highly sensitive to minor variations in climate. Therefore, the monitoring of the Himalayan glaciers is important to assess future changes in discharge of the rivers in north India. The centre has developed techniques to estimate snow and glacier extent in the Himalayas using remote sensing methods. This is essential since most of the glaciers in the Himalayas are not easily accessible. New methods have been developed to predict the retreat of the glaciers through glacier mass balance models. The centre has developed methods to estimate the fragmentation of glaciers, loss in glacial area and the impact of climate change on Himalayan cryosphere. A new technique has been developed to estimate the future volume glacial lakes that form due to retreat of Himalayan glaciers. The centre proposed the use of a siphon system to reduce the volume of south Lohnak glacial lake in Sikkim and hence reduce the threat of glacial lake outburst flood (GLOF). This proposal was implemented by the government of Sikkim.

RENEWABLE ENERGY

The performance of solar photovoltaic systems has not been documented adequately in India. We installed a 20 kW solar photovoltaic system at the Indian Institute of Science in 2013 to gather valuable data on performance of these plants in India. This data indicates that cloudiness and dust have a large impact on the performance of these plants. In addition, we are examining the performance of wind power plants in Chitradurga area of Karnataka. The temporal characteristics of solar and wind energy are complementary in India. During the monsoon season the solar radiation near the ground is small but the wind speed is high. Solar power plants cannot provide energy at night while wind energy is high during the night. Hence a hybrid solar-wind power system will reduce the amount of energy storage required. We plan to study the characteristics of hybrid solar-wind power system at the climate research laboratory located in the Challakere campus of the Indian Institute of Science.

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