



Online One Month Certificate Course

on

***“Basics of Remote Sensing Application in Climate
Change Modelling”***

18th August – 19th September 2022

Organized by

Amity University
in collaboration with

India Meteorological Department



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Inaugural Session: The Online One Month Certificate Course on *Basics of Remote Sensing Application in Climate Change Modelling* organised by Amity University in collaboration with India Meteorological Department during 18th August – 19th September 2022.

Welcome Address: Presiding the inaugural of the Online One Month Certificate Course, Dr. Richa Dave Nagar, Assistant Professor, Amity Institute of Environmental Sciences, AUUP on behalf of Hon'ble Founder President Sir, Hon'ble Chancellor Sir and Hon'ble Vice Chancellor, welcomed all the respected dignitaries and the participants of the Faculty Development Programme. She gave a brief introduction of all resource persons and about Amity University. The event started with the curtain raiser followed the lighting of the lamp of knowledge in virtual mode.



Online One Month Certificate Course on Basics of Remote Sensing Application in Climate | 18th Aug 22

Dr.D.R.Pattanaik, Scientist F & Head, NWP, IMD, New Delhi

Dr. Pattanaik presented a brief presentation on “*climate history and climatology*” and explained about weather Vs climate, earth energy balance, climate change and green house effect. He highlighted the climate variation during to orbital forcing and seasonal reversals of monsoon winds. He also enlightened the importance of civil engineering in the changing global climate.



Dr. Sudhir kumar Chaturvedi, Associate Professor, UPES

Dr. Sudheer address on presented a key note address on “*Remote sensing and its applications*”.

In his lecture, he described basics of remote sensing, basics of BIT, remote sensing raster data, maps generation from remote sensing data. He mainly emphasis on remote sensing scanning system and remote sensing applications in agriculture and allied sectors.

Dr. Maya Kumari, Assistant Professor, ASNRSD





Dr. Maya provided “Hands on training” for softwares viz., open source software and paid/licensed software. She explained the features of Q GIS software with latest version and also demonstrated that how the software can be downloaded and installed in the personal computer system. In her lecture, along with the software training she also explained about the satellite data and its procurement from websites. She also provided the informations regarding LANDSAT Mission, LANDSAT series, Meta data, DEM data and USGS Explorer.

At the end of the session, a thorough discussion took place on the “Climate history and climatology” followed by the customary duty of presenting a vote of thanks by Dr. Ambrina Sardar Khan, Assistant Professor, AIES. The day was very fruitful, and the participants have thoroughly enjoyed the sessions. The sessions were very interactive and knowledge gaining.

The Online Assessment for Day –I was done at the end. The google form was pasted in the chat box and the participants were supposed to attempt all the questions. The aim of the assessment was to know that how actively and sincerely the participants have attended the Online One Month Certificate Course.

On behalf of the AUUP, Dr. Anamika Srivastava welcomed all the participants and speakers on the online platform of Day-II “Online one month certificate course”. The theme of the day was “**Basics of remote sensing and its applications**”. Dr. Ambrina Sardar Khan, brief about the previous day training program and described about all the sessions.



Dr. Rajendra Thapa, Chief Scientific Officer, Remote Sensing Centre Science Technology & Environment, Shimla, H.P

Dr. Thapa delivered a talk on **“Basics of Remote Sensing and its applications”**. He emphasised on radiation source and sensors, electromagnetic spectrum, GPS and also explained very well about the Space technology & its application and defined “National Space System”. He has greatly described remote sensing, IRS satellite and why to choose remote sensing for natural resource management. He concluded with role of remote sensing approach in climate change studies.



Dr. Atul Kumar Srivastava, Scientist E, Indian Institute of Tropical Meteorology, Ministry of Earth Sciences

Dr. Srivastava explained about **“Unravelling the characteristics of atmospheric aerosols over the Indian summer monsoon region using different remote sensing approach”**. In his lecture he talked about mainly on “Aerosols” its direct and indirect impact, scavenging process and its role in climate studies, hydrological cycle, etc. He also described the severe air pollution episode (SAPE) November 2016. He ended his talk with the remark that “study to understand the possible impact of various air pollutants on human health is also essentials over the region like IGP as high population is under the impact of hazardous pollutants.



Dr.V.K.Verma, Head & Scientist, Natural Resources & Environment (NR&E) Division, Punjab, Remote Sensing Centre, Ludhiana

Dr. Verma delivered a presentation on “**Remote Sensing for Land and Water Resources (LWR)**”. In the presentation he mentioned interaction of human and natural resources. He explained the importance of remote sensing platform and geo-informatics for land and water assessment. He presented a case study of Punjab wherein he mentioned about soil resource in Punjab, watershed characterisation and management and soil erosion modelling. He concluded with the role of remote sensing in forestry management.



Prof. (Dr.) P.C.S. Devara, Director and Head, Amity Centre for Ocean-Atmospheric Science and Technology (ACOAST) & Amity Centre for Environmental Science and Health (ACESH)Amity University Haryana (AUH)

Dr. Devara presented a keynote lecture on "**LIRAD Probing of the Atmosphere and Oceans: Ground-based through Spaceborne Platforms for Climate Studies**". In which he provided the information of active and passive remote sensing, atmospheric aerosols monitoring technique, role of LIDAR for atmospheric and oceanic studies. He concluded with the LIDAR plays important role in the identification of sources/sinks and modelling of the impacts of aerosols and gases on air pollution, hydrological cycle, weather and climate.



At the end of the session, a vote of thanks by Dr. Anamika Srivastava, Assistant Professor, AIES and also announced to the participants for “The Online Assessment for Day –II was at the end.

Dr. Harshita Jain, organizing Committee, Amity Institute of Environmental Sciences (AIES), Noida, on behalf of the AUUP welcomed all the participants and speakers on the online platform of Day-III “Online one month certificate course”. The session lectures were based on the theme of “**Synoptic and dynamic meteorology**” Dr. A. S. Khan, brief about the previous day training program and described about the sessions.



Dr. Koyel Sur, Scientist, Natural Resources & Environment (NR&E) Division, Punjab Remote Sensing Centre, Ludhiana

Dr. Koyel addressed on “**Remote Sensing based Meteorology**”. She put great emphasis on meteorology, weather and climate, importance of spectrum. She highlighted that how can satellite remote sensing can be connect with meteorology and how much it is supportive to meteorological observations.

Dr. Gaurav Govardhan, Scientist C, IITM Pune

Dr. G. Govardhan delivered a talk on “**Governing system of equations for atmospheric motion**”. The key component of his talk were atmospheric motion, stastical model and dynamic models.He also described that how can we solve the models and what can we do with the role of the help of model output. He also explained the models in disaster management.



Dr. Maya Kumari, Assistant Professor, ASNRSD

Dr. Maya provided “**training on software**” for Q GIS software learning and its process to run the software.

She also described that how the vector data can be added and use of various tool to prepare the maps.



At the end of the session, a thorough discussion has been done for all lectures followed by the customary duty of presenting a vote of thanks by Dr. Harshita Jain, organising Committee, Amity Institute of Environmental Sciences (AIES), Noida, has been completed. And the online

Assessment for Day –III was done for the participants to know that how actively and sincerely the participants have attended the Online One Month Certificate Course.

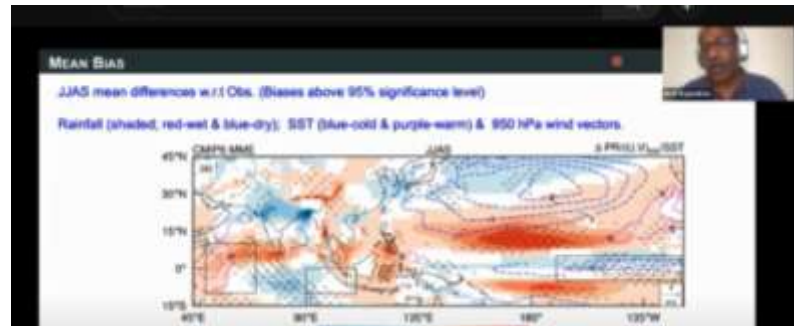
On the Day IV Ms. Charu, Organising Committee, Amity Institute of Environmental Sciences (AIES), Noida, welcomed all the participants in the session. The session was based on the theme “**Climate change prediction and modelling**”.



Dr. Kavi Rajan Rajendran, Senior Principal Scientist, CSIR-4PI

Dr. Rajendran presented a lecture on "State of the art Climate models and the reliability of Climate Change Projections". He told about various global climate models and how they have been evolved in last 40 years and described the percent status of these models to circulate

the tropical climates variability. Then he discussed about global warming and changes in global regional climates and extremes. And about climate change projections at regional level by high resolution climate change model projections. At the end of the session he mentioned the solutions to overcome its limitations and applications of these high resolution projections in agriculture and land use /land changes.



Pyarimohan Maharana, Taching faculty, Nalanda Univertsity

He delivered a wonderful talk on “**Indian monsoon under changing climate**”. He emphasized that almost 80% of the scientists are working on Indian monsoon. He told about the importance of monsoon and how it is impacted by climate change through modelling studies.

He told about how the increase in carbon dioxide over the years changing the monsoon dynamics. He also discussed on Paris climate agreement, climate models and their projections in mid-century and end of century.



On behalf of the AUUP, Ms. Charu, Organising Committee, Amity Institute of Environmental Sciences (AIES), Noida, presented a sincere vote of thanks to all the speakers and participants followed by online assessment for Day-IV has been completed.

On behalf of the AUUP, Dr. Anamika Srivastva, Assistant Professor (AIES), welcomed to all the members presented in the virtual mode of one month online training program.

Dr Madhuri Kumari processor department of civil engineering Amity school of engineering and technology Noida.

Dr. M. Kumari delivered an informative lecture on “**Integration of machine intelligence and Geo special technology for improved mapping and monitoring of river ecosystem: A way forward**”. She discussed about the spatial decision support system (SDSS) and web based support system using geospay technology. She taught why and how do we integrate machine learning and geospatial technology. She discussed that remote sensing analysis is integrated with data science to delivered Geospatial artificial intelligence and using machine learning driven statistical processing of satellite imagery and selected data inputs we can provide proactive risk management as a data service.



Dr Varun Narayan Mishra assistant professor Amity institute of jio informatics and remote sensing Amity University

Dr. V.N Mishra delivered a presentation on “**Geo-spectral technology in natural resource management**”. He mentioned that Geo special technology provide the means to integrate diverse data sets based on their Geo special attributes thus allowing for holistic analysis. He discussed about effects of excess use of groundwater, about disaster management and mitigation techniques and discussed these techniques are used for urban sprawl analysis cadastral mapping and land use land cover mapping.



Sh. Akash Goyal, Scientist engineer regional remote sensing centre- North NRSC ISRO Government of India New Delhi

Sh. Goyal addressed on “**Basics of remote sensing and its applications**”.

He discussed about history of civilian remote sensing and the basics of remote sensing and its advantages. Later he discussed about various applications of remote sensing. He told that we have disaster management support center in NRC where they are monitoring 6 disasters and doing there inundation mapping and hazarduation and early warning systems. Also explained about “Nyaay Vikas, a mobile app and web GIS portal developed for department of justice to monitor the central sponsored scheme for developmentt of judicial infrastructure of country.



Sh. Ashish Mani PhD scholar ASNRSD Amity University Noida

Sh. Mani provided “Hands on training” and provided the information on “Role of watershed management for climate change. He demonstrated hands on training for daily motion of watershed using Arc GIS software.

He told about sustainable development and codification system and watershed delineation processes followed by SLUSI, govt. of India. Then he showed the GIS layer overlay with the real world.



At the end Dr. Anamika Srivastava,Assistant Professor, Amity Institute of Environmental Sciences (AIES), Noida, presented a sincere vote of thanks to all the speakers and participants followed by online assessment for Day-VII has been completed.

Ms. Jagriti, Organising Committee, Amity Institute of Environmental Sciences (AIES), Noida, welcomed all the participants in the session on the VIth day of training. The theme of the session was **“Role of machine learning in disasters and extreme events”**.



Dr. Alok B. Mukherjee, Chief Remote Sensing - GIS Analyst, R&D Head-NE India Operations at Leads Connect Services Pvt.Ltd., New Delhi

Dr. Mukherjee, spoken on “**Climate change and extreme events**”. In his lecture, he emphasised on machine learning and its classification. He highlighted the climate resilient agriculture analytics framework. He also mentioned the process for disaster risk reduction analytics using space technology and artificial intelligence frameworks in the context of Natural Disasters and sustainable agriculture.

He ended his talk with crop health monitoring aspects.



Dr. Vinod K.Sharma, Scientist/Engineer 'SF', Regional Remote Sensing Centre – North, National Remote Sensing Centre, Indian Space Research Organization (ISRO), Department of Space, Government of India, New Delhi

Dr. V.K. Sharma, discussed on - “**Role of Machine learning in flood management**”. In his presentation he mentioned for space and ground assets. He described the traditional flood monitoring and mapping procedures. He told ML in NLP is to improve, accelerate and automate the underlying text analytics functions and NLP features that run this unstructured text into useable data and insights. At the last he told about Natural Language Tool Kit (NLTK) which is a open source suite of Python's libraries.



Dr. Maya Kumari, Assistant Professor, ASNRSD

Dr. M kumari demonstrated “Hands on Training” on GIS software. She taught about how can we segregate the countries features by different different colours. She also explained how the attributes can be joined together by location.

In the end she also explained the mapping of climatic factors through GIS software.



Ms. Jagriti, Organising Committee, Amity Institute of Environmental Sciences (AIES), Noida, played the duty of presenting the vote of thanks to all members presented in the virtual mode of training program and the Day VI assessment has been completed.

On behalf of the AUUP, Dr. Anamika Srivastava welcomed all the participants and speakers on the online platform of Day-VII “Online one month certificate course”. The theme of the day was “**Impacts of climate change, its mitigation, and adaptation**”.

Bhupender Singh division of environmental science ICAR- IARI, New Delhi



Dr. Singh delivered lecture on “Impact of climate change on agriculture and way ahead for mitigation”. He talked about sustaining agriculture productivity under changing environment and told about various environmental challenges. He also discussed about the future climate estimates of carbon dioxide and temperature and told that it is likely to be warmer as all climate models indicator rising temperature and about various resource conservation technologies. He told about greenhouse gas monitoring and mitigation and modelling research at IARI. He mentioned that emissions factors developed for greenhouse gas emissions and inventory for Indian agriculture soils prepared.



Doctor D.S. Pai, Scientist 'G' Head ,climate research and services Indian metrological department Shivaji Nagar Pune

Dr. Pai presented a lecture on “Changing climate: mitigation and adaptation”. He discussed about India's risk from climate change, general concepts of mitigation and adaptation. He emphasised on various technologies for climate change mitigation and adaptation. He discussed that mitigation and adaptation measures should be balanced to meet the challenges of climate change in decades to come. He described that climate change vulnerability studies should also be translated effectively into concrete guidance on adaptive responses.



Dr. D.R. Pattanaik , IMD, New Delhi

Dr. Pattanaik talked on “climate change and its impact on natural disasters”. He elaborated about cation and normal movement of weather systems in India and neighbourhood. He also discussed that there is formation of low pressure area and increase in rain storms over Central and North India. He showed that there are enhance cyclonic activity during recent years over the North Indian oceans and also the increase of very intense cyclonic stone over Arabian sea in recent time. At the last he discussed about challenges in predictability of localised events and various solutions to improve predictability of mesoscale events.



At the end Dr. Anamika Srivastava, Assistant Professor, Amity Institute of Environmental Sciences (AIES), Noida, presented a sincere vote of thanks to all the speakers and participants followed by online assessment for Day-VII has been completed.

On behalf of the AUUP, Dr. Anamika Srivastava welcomed all the participants and speakers on the online platform of Day-VII “Online one month certificate course”. The theme of the day was “Impacts of climate change, its mitigation, and adaptation”.

Dr. Maya Kumari, Assistant Professor, ASNRSD

Dr. M. Kumari demonstrated a “software training for Climate monitoring and Modelling”. She told about the downloading process from online sources. She described land surface temperature mapping. Land use land cover mapping.

She also explained NDVI which highlights the information about the vegetation and also highlighted the procedure of thematic maps preparation.



Dr. Vinnarasi, R., Assistant Professor, Multivariate Hydrological Analysis & Hydrological Hazard, Department of Civil Engineering, Indian Institute of Technology Roorkee

Dr. Vinarasi, presented an outstanding lecture on “**Drought quantification and forecasting under changing climate**”. In her lecture, she put emphasis on drought, its type, characterization and indices. She also explained the standardized index computation for drought. She also told the method of identification of drought prone areas and drought propagation.



In the end, Dr. Anamika Srivastava presented vote of thanks to all the participants of Day-VIII “Online one month certificate course”. The theme related “Impacts of climate change, its mitigation, and adaptation” assessment for Day-VIII has been done.

Valedictory Session Ceremony on 19.09.2022

Dr. Ambrina Sardar Khan, AIES, AUUP welcomed all the guests and participants in the valedictory ceremony of “online one month certificate course” on dated 19.09.2022. The valedictory session has been started with Lighting of Lamp & Saraswati Vandana. Dr. Sushil Kumar Dash, IIT the Delhi was the Guest of Honour and Dr. Chintalapati was the Chief Guest of the programme. Dr. Renu Dhupper, Joint coordinator, AIES, AUUP introduced about the “online one month certificate course”. Followed by Prof. S P Singh, Domain Head, Amity School of Natural resources, and Sustainable Development elaborate the importance of this course. Prof. **D. K. Bandyopadhyay**, Chief Advisor FPO / Chairman, Amity Law School, Mentor, AIES, AUUP addressed the gathering about the various global climate change and other environmental issues. Dr. Balvinder Shukla, Vice Chancellor, Amity University, Noida also address about the above said course and appreciated the team of faculty members of AIES, AUUP. Dr. Sushil Kumar Dash, IIT the Delhi also highlighted the significance of this training programme and Dr. Chintalapati, Joint Director, Impact Assessment Division, Government of India, Ministry of Environment, Forest and Climate Change also addressed to participants. All the panellists and participants have expressed their thankfulness to AIES, AUUP for organising such a wonderful and extremely beneficial “one month certificate course”. All the eminent speakers and guest of honour have expressed their gratitude for giving them an opportunity and a platform to

share their knowledge, experience and ideas to the academicians, people from corporate and research scholars. The response of the participants was overwhelming and encourages the organising team to come up with many more such type of events soon. At the last Dr. Anamika Srivastava, Assistant Professor, AIES, AUUP presented a sincere vote of thanks to all the dignitaries and participants.

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