



Ministry of Human Resource Development
Government of India



GLOBAL INITIATIVE OF ACADEMIC NETWORKS
(GIAN)



PALEOCLIMATE EDUCATION USING GEO-SPATIAL METHODS: GEOLOGICAL PAST TO ANTHROPOCENE

CENTRE FOR REMOTE SENSING

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI-620 023

3rd to 7th DECEMBER 2018

Overview

Instrumental records of the last century associate the global warming with abrupt increase in the concentration of greenhouse gases. Climate models forecast an increase in the hurricane activity as well as dramatic reduction in water resources for the semi-arid and subtropical regions. In such a scenario, it is necessary to understand the dynamics of precipitation and desertification during other intervals of global climate change occurred over the most recent period of earth's history (i.e. Late Quaternary). Paleoclimate data of the last ~400,000 years suggest that conditions changed from cold glacial to warm interglacial as the concentration of atmospheric CO₂ increased. Oxygen isotope composition of ice cores from the Greenland provides quantitative information about temperature in the high latitudes and physical, chemical and biological characteristics of geological deposits from different parts of the world provide evidences about the responses of different ecosystems to the global climate change. The objective of this course is to prepare the students and researchers in the field of paleoclimate research and train them in the use of different geological, geochemical and remote sensing tools with informative lectures, illustrations and demonstrations of practical exercises involving case studies and procedures applied in site from the North America, Central America and many other regions around the world. Students will get hands-on experience with real research data and will participate in discussions to understand the natural forcings behind the global climate change and the need to manage essential natural resources in future. Proxy information from sedimentary archives will be used as case studies to differentiate between climate signals and other signals associated with perturbations by

anthropogenic activity. This GIAN course aims to provide a sound base to existing academic resources of the Bharathidasan University with new knowledge and case studies.

The prime objectives of this course:

- 1) Exposure to fundamentals and concepts of climate change and associated forcings (geological and atmospheric).
- 2) Understand the effects of abrupt warming (e.g. Bølling-Allerød and early Holocene) and cooling (e.g. LGM, Heinrich events and Younger Dryas) during the Late Quaternary.
- 3) Cultivate interest in paleoclimate research through tutorials and research data.
- 4) Enhancement of skill in application of multi-disciplinary geological and remote sensing tools. Discussion of multi-disciplinary methods with global examples and case studies

Course details

Date: December 3rd –7th, 2018 (5 days):40 hours total; 8 hours daily

Venue: Centre for Remote Sensing, BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI-620 023

Syllabus of course:

No.	concept	Hours
1.	Climate change: concepts and forcings	3.0
2.	Remote Sensing and image interpretation methods	3.0
3.	Geological register and proxy: theory and exercise	3.0
4.	GIS and GPS mapping/surveying techniques	6.0
5.	Physical and biological indicators: theory and exercise	3.0
6.	Chemical (isotope) indicators: theory and exercise	5.0
7.	Land forms and landuse dynamics mapping methods	3.0
8.	Chronology: theory and exercise	4.0
9.	Satellite data processing and temporal analysis	2.0
10.	Interpreting proxy data: case studies from North and Central America	4.0
11.	Discussion on limitation/advantage of multi-proxy records with case studies	4.0
	Total	40.0

Who can attend?

- Students, Research scholars and Post Doctoral fellows from the University/college and nearby Govt. organizations including R&D laboratories.
- Engineers, students at all levels (B.Tech/M.Sc/M.Tech/Ph.D) and Faculty from nearby academic institutions and technical institutions.

Registration Fees

- Foreign Participant : 500 USD
- Faculty/ Academician :Rs.2000
- Research Scholar/Post Doctoral Fellow :Rs.1000
- Student : Rs.500
- Industry/Research organization : Rs.5000

The participants will be provided accommodation subject to the availability on payment basis

Contact details:

Course Coordinator: Dr. D.RAMESH Associate Professor, Centre for Remote Sensing, Bharathidasan University, Khajamalai campus, Triruchirappalli-620024 Mobile: 9443609042 Email: djramesh17@rediffmail.com

Course Co-coordinator: Dr. C .LAKSHUMANAN, Assistant Professor, Centre for Remote Sensing, Bharathidasan University, Khajamalai campus, Triruchirappalli-620024,

Mobile: 9442287084, Email:drlaks@gmail.com

FACULTY



Dr. Priyadarsi Debajyoti Roy is a Professor at **Institute of Geology, Universidad Nacional Autónoma de México (Mexico)** with interest in geochemistry of sediments and sedimentary rocks to decipher paleoclimate, provenance, depositional environment and anthropogenic influence. His research projects deal with climate of tropical and subtropical Mexico, especially the dynamics of North American Monsoon and tropical cyclones, over the late Quaternary.

FACULTY



Dr. C.Lakshumanan is an Assistant Professor at Centre for Remote Sensing, Bharathidasan University, Tiruchirappalli, Tamilnadu India. His area of research deals with Remote Sensing, GIS for Coastal and Marine Applications, Disaster Mitigation and Management, Sediment Geochemistry, Carbon sequestration, EIA and Climate change studies.

COORDINATOR



Dr.D.Ramesh is an Associate Professor at the Centre for Remote Sensing, Bharathidasan University. He has nearly 20 years of research and teaching experience in Remote sensing and GIS for Coastal zone studies. As part of his doctoral research, he brought out the Morphodynamics / morphotectonic processes operative along Tamil Nadu coast and the related environmental constraints. Currently, his research interests include coastal vulnerability due to accelerated sea