

CURRICULUM VITAE



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EDUCATION

- 2010 - 2018 **Indian Institute of Technology, Kharagpur, West Bengal, India.**
Doctor of Philosophy in Geology
Thesis work on: “**Indian monsoon variability during the late Quaternary as seen in the northeastern Arabian Sea**”.
Mentors: Prof. Anil K. Gupta and Prof. Mruganka K. Panigrahi
- 2007-2009 **Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.**
Master of Technology in Geo-Hydroinformatics using GIS
Thesis work on “A Case Study on Flood Mapping of south Chennai Division Tamilnadu”, Mentor: Prof. M. Ramalingam
- 2005 - 2007 **Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.**
Masters in Applied Geology
Thesis work on “Ground Water Exploration through Electrical Resistivity Method”,
Mentor: Mr. S. Sivakumar
- 2002 - 2005 **Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.**
Bachelors in Geology

SCHOLARSHIPS AND AWARDS

- 2012 - 2015 Senior Research Fellowship, Indian Institute of Technology, Kharagpur, West Bengal, India.
- 2010 - 2012 Junior Research Fellowship, Indian Institute of Technology, Kharagpur, West Bengal, India
- 2007 - 2009 Indian Government “**University Grand Commission (UGC)**” for M.Tech., in Geohydroinformatics using GIS, Bharathidasan University, Tiruchirappalli.
- 2005-2007 Tamil Nadu “**State Level Merit Scholarship**” for Masters in Applied Geology, Bharathidasan University, Tiruchirappalli.

SPECILIZATION

- Stable Isotope Ratio Mass Spectrometer analysis of foram (IRMS)
- Scanning Electron Micrographs (SEM)
- SAS/STAT, Package

RESEARCH SUMMARY

Collaborative Project 1: Climate variability and evolution of the Indus civilization. **Summary:**

Climate variability has played a major role in the expansion and collapse of human civilizations across the World since the ancient times. The Indus Valley Civilization in southern Asia has been the focus of investigations to archeologists, historians, and anthropologists. But little attention has been given to the role of climate variability in shaping the course of this well-established civilization. We suggest that the climate change in the region was the major controlling factor in determining the fate of Indus Valley settlements. The transformation of hunter-gatherers into pastoral community between 7,000 and 3,200 B.C.E., the establishment of village culture along the Indus River in Early Harappan Phase, urbanization and shifting towards Ghaggar-Hakra Rivers in Mature Harappan Phase, and final displacement towards Ganga-Yamuna doab (interfluve) region as village culture were all modulated by the changing strength of the Indian summer monsoon and precipitation conditions in the region.

Project 1: Indian summer monsoon variability during the late Quaternary as recorded in sediments of the northeastern Arabian Sea (Core ABP-25/05).

Summary: Benthic foraminifera samples were analyzed in $>125\mu\text{m}$ size fraction from Core ABP/25-05, to understand paleoceanographic changes in the northeastern Arabian Sea over the past 18 Kyr BP. Twenty-two dominant species from one hundred samples were selected for factor and cluster analyses. Six biofacies were observed by statistical analysis, these biofacies characterize distinct deep-sea environmental settings. The faunal assemblages show a major shift at ~ 9.7 to 5 Kyr BP, marked by a major increase in the relative abundances of dominant species. The time interval ~ 9.7 to 5 Kyr BP the benthic foraminifer such as *Bolivinita* sp., *Sigmavirgulina tortuosa*, *Reussella simplex*, *Epistominella exigua*, *Cibicides bradyi*, *Astrononion umbilicatum*, *Oridorsalis umbonatus* and *Cibicides kullenbergi* (Biofacies *Bs-St* and *Bs-Au*), shows high abundance. In the multi-proxy record, low-oxygen and high productivity species like *Bolivinita* sp., *Sigmavirgulina tortuosa*, *Cibicides wuellerstorfi*, *Bulimina aculeata*, *Melonis barleeanum*, *Uvigerina peregrina*, *Hoeglundina elegans*, *Epistominella exigua* percentage, $\delta^{13}\text{C}$ and TOC percentage also increased whereas $\delta^{18}\text{O}$ and Pteropods population decreased during the Bolling-Allerod (B-A) interstadials (14.6 to 12.9 Kyr BP) and the Early Holocene Climate Optimum (10 to 5 Kyr BP). The present study conforms to earlier studies establishing the Bolling-Allerod period and the Early Holocene Climate Optimum to be the periods of intense SW monsoon, high productivity and sustained organic carbon flux.

Collaborative Project 2: Benthic foraminiferal species diversity and variations in the southeastern Arabian Sea over the last 14430 Cal years BP.

Summary:

This project deals with the diversity of benthic foraminifera as well as high resolution of temporal changes in the dominant species in a radiocarbon dated sediment core SK-313/GC-01, collected from the southeastern Arabian Sea to understand their linkages with the Indian summer monsoon variability for the last ~14,430 cal years BP. The southeastern Arabian Sea benthic foraminifera (Core SK-313/GC-01) is a good proxy for the Indian summer monsoon variability to understand the productivity changes during the Holocene. This observations in the southeastern Arabian Sea sediment core indicate an increased paleoproductivity due to increased strength of Indian (summer) monsoon since the early Holocene to the current period in the Southeastern Arabian Sea.

RESEARCH PUBLICATIONS

1. Dutt, S., Gupta, A.K., Singh, M., Jaglan, S., Saravanan, P., **Balachandiran, P.**, Climate variability and evolution of the Indus civilization, Quaternary International (2018), doi: <https://doi.org/10.1016/j.quaint.2018.11.012>.
2. **Balachandiran. P¹** , Anil K. Gupta^{1*}, Mruganka K. Panigrahi¹ , M. Prakasam² , M. Indian summer monsoon variability during the late Quaternary as recorded in sediments of the northeastern Arabian Sea (submitted to Palaeogeography, Paleoclimatology, Palaeoecology).
3. A. Sivachandiran¹ , V. Yoganandan^{*1} K. Selvaraj² , **P. Balachandiran³** and M. Ravichandran³ . Benthic foraminifera species diversity and abundance variation records from a core offshore southwest coast of India (submitted to Paleoworld).

SEMINARS/WORKSHOPS ATTENDED

- Faculty Development Programme “**Exploring Innovation in Personal and Institutional Development**” held during 5th to 12th June 2023, Organized by Internal Quality Assurance Cell (IQAC), National College (Autonomous), Tiruchirappalli.
- National Conference on **XII Indian Colloquium on Micropaleontology and Stratigraphy** held during 9th - 11th December 2011, organized by the Department of Geology, Bangalore University, Karnataka, India.

PERSONAL DETAILS

Father's Name : Prakasam
Date of Birth : 02 April, 1985
Sex : Male
Nationality : Indian
Languages known : English, Tamil and Hindi

Permanent address:
No: 6/152 AD street Ladapuram
Perambalur District – 621101
Tamil Nadu, India

REFERENCES

1. Prof. Anil K. Gupta

(Ph.D. Supervisor)

Department of Geology and Geophysics
Indian Institute of Technology, Kharagpur
West Bengal, India
E-mail: anilg@gg.iitkgp.ac.in
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2. Prof. Mruganka K. Panigrahi

(Ph.D Co-supervisor)

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West Bengal, India
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DECLARATION

I do hereby confirm that the information given in this form is true to the best of my knowledge and belief.

Signature

(Dr. P. BALACHANDIRAN)