

Birbal Sahni Institute of Palaeosciences
Monthly summary on Research Activities
(December, 2022)

1. Areas of Focus:

The institute carries out research on fundamental as well as applied aspects of Palaeosciences that includes Evolutionary history of biota, Paleoclimate, studies of past civilization, Human history and contemporary Climate Change issues, following an integrated and multi-disciplinary approach.

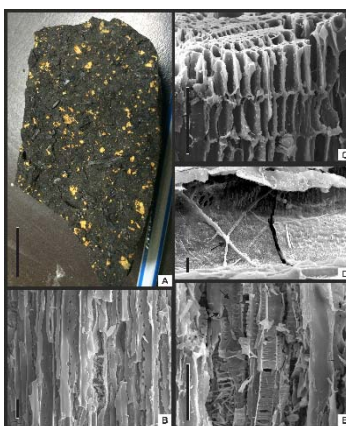
Key research activities under following objectives:

- Understanding origin and evolution of life through time and space.
- Understanding climate change in recent and deep geological times.
- Understanding past civilization and human history.
- Application of Palaeosciences in exploration of fossil fuel and coal industry.

2. Important Highlights of Major Research Programmes

a. Key Scientific Findings of the Month (December 2022)

A study has been conducted to analyze the lignite material of early Paleogene age using various methods in order to unravel the constituents of the paleovegetation of western Rajasthan, which was previously believed to be dominated by angiosperms. The study clearly demonstrates the significant role of gymnosperms, together with angiosperms, in the formation of peat on the basis of incidences of tracheidal pits and mega-spores (sporinite), along with recognisable biomarker compounds in the samples. Some analysis viz., un-substituted PAH, along with charcoal fragments and semifusinite, fusinite and inertodetrinite macerals have also speculated the occurrence of wild fires in the depositional setting itself. This early Paleogene wildfire scenario is relatable to the monsoonal climate (with pronounced wet/dry seasonality) of that time, which was probably favorable for the ignition and spread of wildfires.



- (A) Various size of suspended charcoals in a piece of lignite sample from Gurha, Rajasthan. (B) Tracheids in radial view showing details of cross-field-pitting from the tracheid side. (C) Radial view of parenchymatous cells showing storied arrangement of cells. (D) Vessel element of charred wood with fungal hyphae (black arrow). (E) Tracheid pitting in radial walls, mostly uniseriate (black arrow).

b. Awareness program for Women empowerment and security (November 25-December 10, 2022)

In context with the directives received by the Ministry of Women and Child Development, 16 days period from 25th November 2022 to 10th December 2022 was observed in the institute for raising awareness about the elimination of all forms of violence and discrimination against women to ensure safety, security and holistic empowerment of women and to ensure that the basic human rights of women and girls are respected by all.

In this regard, two events were organized: 1) Debate Competition and 2) Poster competition. 1) The topic of the debate competition was “Gender Equality in STEM fields in India” and was held on 30.11.2022 in the institute’s auditorium. Contestants presented their views “for or against” the topic. 2) Topic for the poster competition was “Women Empowerment in the Digital Era”. All staff members of BSIP including Research Associates, Research Scholars and Project Staff attended the programme.

c. High End Workshop (KARYASHALA) on “Disaster and Climate-Resilient Pathways: Adaptation, Mitigation and Sustainable Development” (SERB-Accelerate Vigyan Scheme) December 07-13, 2022.

HighEnd Workshop (KARYASHALA) on “Disaster and Climate-Resilient Pathways: Adaptation, Mitigation and Sustainable Development” (SERB-Accelerate Vigyan Scheme) was conducted during December 07-13, 2022 at BSIP campus. The main

objective for the workshop was to foster advance research and education programs focusing on building climate resilience and disaster risk reduction, to bring together young researchers, students as well as disaster risk and climate change experts jointly to strengthen cooperation, links and synergies to address current and future impacts of climate change and disasters on human life, livelihood and to address underlying causes of vulnerability, to sensitize the participants in the potential and scope of nature-based solutions, remote sensing, GIS for holistic disaster risk reduction and climate resilience, to assess the new perspectives and challenges that climate change brings to the disaster risk management field. “Karyashala” was attended by postgraduate students and research scholars from various Institutes, Colleges and Universities. Eminent researchers from all parts of the country visited the institute and delivered the talks on disaster risk management, extreme weather events: consequences and monitoring etc. Participants of the workshop also visited the BSIP's research laboratories and museum.

d. 3rd Foundation Day Function of Association of Quaternary Researchers (AOQR) December 12, 2022

Association of Quaternary researchers (AOQR) celebrated its third foundation day on December 12th, 2022. Prof. A. P. Dimri, Director IIG, Mumbai graced the occasion as a chief guest, who also delivered a talk on “Monsoon with changing time” and Dr. Doris Barboni, Department of Ecology, French Institute of Pondicherry was the Guest of Honor and delivered a talk on “Characteristics of early hominin habitats: data from micro-plant remains and niche modelling”. The event was attended by professors, scientists and research scholars from various institutes across India such as Wadia Institute, BSIP, Department of Geology, Lucknow University, Kumaon University, French Institute of Pondicherry etc.

e. हिंदी कार्यशाला- Hindi Workshop, December 15, 2022

डॉ. एस. सुरेश कुमार पिल्लई, वैज्ञानिक 'ई' ने 'पाली शैल समूह, जोहिल्लाकोयला क्षेत्र, उमरिया जिला, मध्य प्रदेश से प्राप्त ग्लोसोप्टेरिसवनस्पति:

अंतिम पर्मियन आयु निर्धारण हेतु परागाणविक निहितार्थ' विषय पर हिन्दी कार्यशाला के अंतर्गत दिनांक 15 दिसम्बर, 2022 को एक व्याख्यान प्रस्तुत किया। भारतीय भू-विरासत एवं संरक्षण जैसे महत्वपूर्ण विषय पर भी इन्होंने प्रकाश डाला।

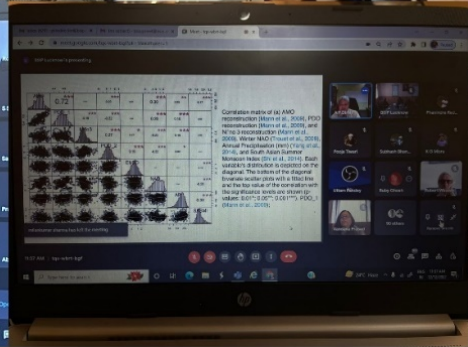
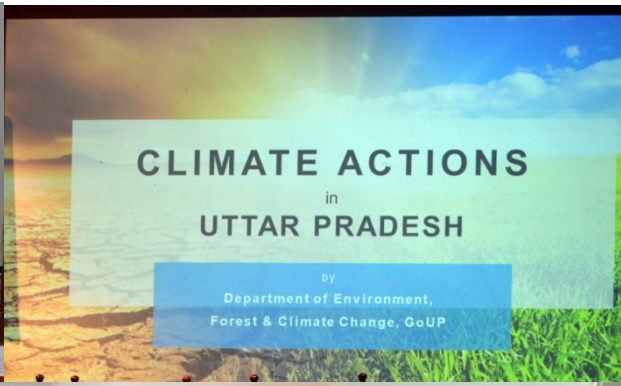
f. Outreach Activity by BSIP (Dec 2022)

S. No.	University/College/School	Standard/Grad/Post-Grad	No. of Students	Details of Visit& Date
01	Maharaja BijliPassiGovt PG college, Lucknow	M.Sc. Botany	30-40	Visit to Museum, SEM lab, Central Geochemical Facility (14-12-22)
02	Banda University of Agriculture & Technology, Banda, UP	M.Sc. Agriculture	30-35	Visit to Museum, SEM lab, Central Geochemical Facility and Radiocarbon lab (16-12-22)
03	Feroze Gandhi Post Graduate College, Rae Baraeli, UP	M.Sc. Botany	35-45	Visit to Museum, SEM lab, Central Geochemical Facility and Radiocarbon lab (22-12-22)

List of research publications (December, 2022):

- Shukla, A., Jasper, A., Uhl, D., Mathews, R.P., Singh, V.P., Chandra, K., Chetia, R., Shukla, S., Mehrotra, R.C. (2022).** Palaeo-wildfire signatures revealing co-occurrence of angiosperm-gymnosperm in the early Paleogene: Evidences from woody charcoal and biomarker analysis from the Gurha lignite mine, Rajasthan, India. *International Journal of Coal Geology*. DOI: 10.1016/j.coal.2022.104164(**Impact factor: 6.3**).
- Fernando, A.S., Wanninayaka, A., Dewage, D., Karunanayake, E.H., Rai, N., Somadeva, R., Tennekoon, K.H., Ranasinghe, R. (2022).** The mitochondrial genomes of two Pre-historic Hunter Gatherers in Sri Lanka. *Journal of Human Genetics*. DOI: 10.1038/s10038-022-01099-w. (**Impact factor: 3.767**).
- Li, G., Koutsoukos, E.A.M., Hasegawa, T., Cheong, D.K., Schnabl, P., Prasad, V. (2022).** Cretaceous in Asia: Palaeontology, Stratigraphy and Palaeoclimate – Preface. *Cretaceous Research*. DOI: 10.1016/j.cretres.2022.105426(**Impact factor: 2.432**).
- Mondal, I., Koner, A., Choudhuri, A., Sarkar S., 2022.** Paleoenvironmental Dynamics in a Mesoproterozoic Epicontinental Sea, Faded Shale, Son Valley, India (In) J. S. Armstrong-Altrin et al. (eds.), *Geochemical Treasures and Petrogenetic Processes*, Springer Nature Singapore Pte Ltd. DOI: 10.1007/978-981-19-4782-7_11: 279-313.

Photographs showing important highlights of major programs/research activities organized during December, 2022:



AOQR ASSOCIATION OF QUATERNARY RESEARCHERS

President and Governing Body of AOQR
 Invite you to the
3rd Foundation Day Function
 on
Monday, December 12, 2022

Chief Guest
Prof. A. P. Dimri
 Director IIG, Mumbai, India

&
 Guest of Honor
Dr. Doris Barben
 Head, Department of Ecology
 French Institute of Pondicherry, India

Will deliver the Foundation Day Talks

PROGRAMME

11:00:07	Welcome Address	Dr. Venkatesh Prasad, President, AOQR
11:10:07	About AOQR	Dr. Pradeep Srivastava, Vice President, AOQR
11:15:07	Foundation Day Talk 1	Prof. A. P. Dimri The Mesozoic and Cenozoic India
11:45:07	Foundation Day Talk 2	Dr. Doris Barben The Characteristics of early hominins habitats: are they mesozoic animals and why?
02:15:07	Vote of Thanks	Dr. Binika Prasad, Secretary, AOQR

Function will be carried out on virtual platform
 Meeting link: <https://www.zoom.us/j/92262328833?pwd=>