

Birbal Sahni Institute of Palaeosciences

Monthly Summary of Research Activities (April 2024)

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.

2. Important Highlights of Major Research Activity

a. Key Scientific Findings of the Month (April 2024)

The equatorial evergreen forests nourish the world's biodiversity hotspots and are considered the lungs of the Earth. However, their future survival is uncertain, due to anthropogenically increased carbon emissions and changes in the hydrological cycle. Understanding the changes in the hydrological cycle in the equatorial region due to an increase in carbon emission is of prime importance. The early Paleogene hyperthermal events are potential analogs to

understand the consequences of high carbon emission on the hydrological cycle. In this communication, we quantify the terrestrial seasonal climate using the plant proxy and infer that during the Eocene Thermal Maximum 2 when atmospheric carbon dioxide concentration was > 1000 ppmv near the palaeo-equator ($\sim 0.6^\circ\text{N}$), the rainfall decreased significantly, leading to the expansion of deciduous forests. This study raises important questions about the future survival of equatorial rainforests and biodiversity hotspots under increased carbon emissions (Srivastava et al 2024).

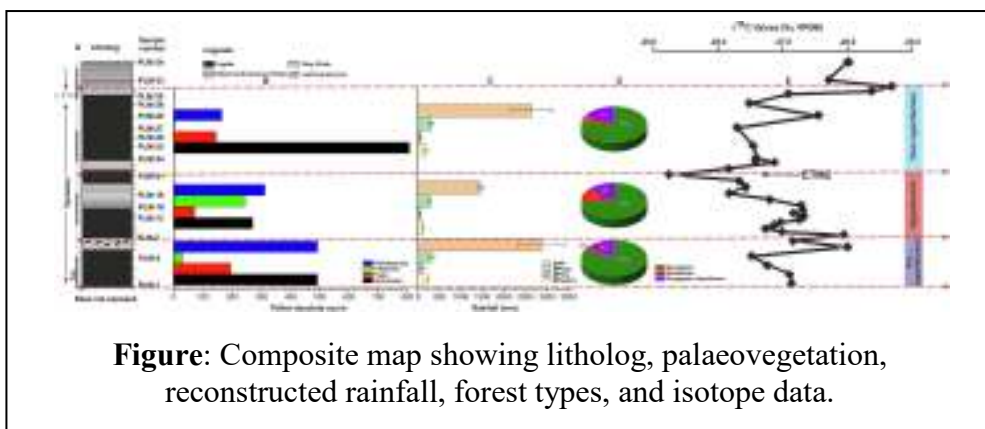


Figure: Composite map showing litholog, palaeovegetation, reconstructed rainfall, forest types, and isotope data.

- b. **Invited Scientific Talk (04th April 2024)** by Prof. Sourendra Kumar Bhattacharyya (Retired Senior Professor and Dean, PRL) delivered a lecture on “Mass-dependent and mass-independent isotopic fractionation - basic theory and model”.
- c. **Student Interaction Forum (SIF) Lecture (05th and 25th April 2024):** Lectures were delivered by **Dr. Biswajeet Thakur**, Scientist-E and **Dr. Neraj Rai**, Scientist-D, BSIP.
- d. **09th M. N. Bose Memorial Lecture (10th April 2024)** was delivered by **Prof. Sourendra Kumar Bhattacharyya** (Retired Senior Professor and Dean, PRL).
- e. **A MoU was signed** for facilitating coordinated and collaborated research and PhD enrolment of new students between **BSIP and KSKV Kachchh University (12th April 2024)**.
- f. **Brainstorming workshop** was conducted on “**Patenting your Innovations**” (12th April 2024)
- g. **Scientific Outreach Program at BSIP:** A number of students visited **Institute Museum and Scientific laboratories** from **Dr. Rajendra Prasad Memorial Degree College, Rajajipuram** and **Maharishi University of Information Technology Lucknow** on 3rd and 8th April 2024 respectively.

Total 09 (Nine) research papers were published during the month in high impact factor journals.

Photographs showing important highlights of major programs/research activities organized during April 2024:

