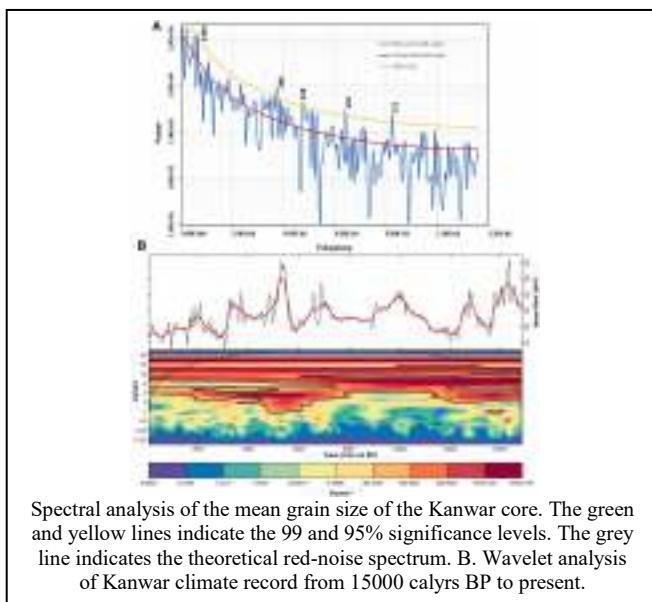


Birbal Sahni Institute of Palaeosciences
Monthly Summary of Research Activities (June 2024)

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 (June 2024)



Millennial-scale climate cycles have been meagerly discussed in the terrestrial records from the Indian subcontinent, particularly the wetlands of the Ganga Plain. The mineral magnetic and textural analyses, along with chronology, distinctly record variation in the monsoon intensity since 15000 calyrs BP in the sediment core collected from the Kanwar Lake in the Central Ganga Plain (CGP) of India. This unique high-resolution data allowed us to analyse monsoon fluctuation in the CGP with respect to changes in the North Atlantic process (internal) and external (solar cycles) forcing. During this period, several palaeoclimatic events, such as the Bølling-Allerød (B/A), Older and Younger Dryas, and the high-frequency fluctuations in the Holocene viz., Greenlandian, Northgrippian, and Meghalayan stages, were observed. The B/A event is correlated with the Indian Summer

Monsoon (ISM) intensification period of the CGP. Eleven dry events are recorded at 13600–13200, 13000–11700, 11000, 10600, 9800–9000, 8200, 6100–5300, 4300–4200, 3800, 1800–900 and 300 cal yrs BP. During the Holocene, the sustained episodes of weaker monsoon centered around 10600, 9600, 8200, 6000, 4200, 2800, 1400 and 600 cal yrs BP, where the variability of the proxy data is mostly synchronous with the reduced upwelling intensity in the western Arabian Sea as well as roughly align with ~1500 years cyclic signals in the drifted ice proxy recorded Bond Events indicating weakened ISM circulation during colder North Atlantic. Two distinct short cycles, spanning 172–344 and 172–688 years, are evident around 12,000 and 14,000 cal yrs BP with an additional occurrence from 86 to 344 years during 2000 and 6000 cal yrs BP, affirming the significance of external forcing, particularly solar activity. For the 1492 years cycle in ISM fluctuation, we postulate it may represent a combined forcing of external (solar) and internal (Atlantic Meridional Overturning Circulation (AMOC)) factors during the Holocene. This is the first high-resolution record available in the CGP, which brings out crucial monsoon reconstruction during the last 15000 years. (Phartiyal et al. 2024).

- b. Brain storming on BSIP-Oil India collaborative project (27th – 31st May 2024)**
- c. World Environment Day Celebrations (05th June 2024)**
- d. Student Interaction Forum (SIF) Lecture (09th May 2024)**
- e. 10th International Yoga Day (21st June 2024)**
- f. हिन्दी कार्यशाला (24 June 2024)**
- g. Manpower trained: Total 12 students from different Universities and organizations were imparted Internship / Dissertation**
- h. Two research scholars and two scientists participated in "XV International Palynological Congress (IPC) and XI International organization of Palaeobotany Congress" and "Indian Wildlife Ecology Conference-2024 at the National Centre for Biological Research**

Total 7 Research Papers were published in renowned high impact factor Journals.

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

