

Birbal Sahni Institute of Palaeosciences

Monthly summary on Research Activities (June, 2023)

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:

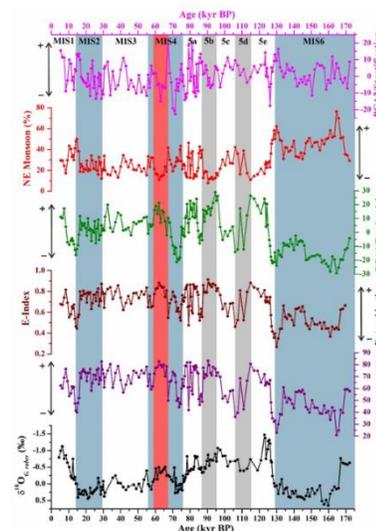
- Understanding origin and evolution of life through time and space.
- Understanding climate change in recent and deep geological times.
- Understanding past civilization and human history.
- Application of Palaeosciences in exploration of fossil fuel and coal industry.

2. Important Highlights of Major Research Programmes

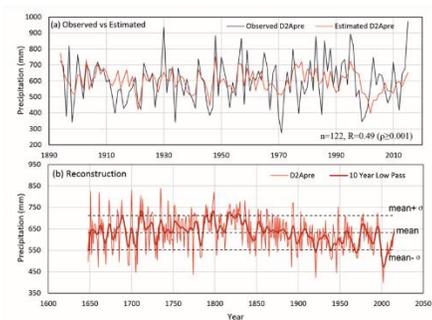
a. Key Scientific Findings of the Month (June 2023)

- i) The surface warming signal and poor ventilation of intermediate water masses (AAIW/SAMW) towards upper thermocline have been recorded in the western Arabian Sea during mid-MIS4 (glacial period). This suggests that heat dissipates from the upper thermocline to the mixed layer, and thus, the warming signal documented during mid-MIS4, is reflected by stable oxygen isotopes and planktonic foraminiferal assemblages. The warming also enhanced upwelling in the study area at the same interval. (*Khan et al.*)

Figure Caption: Environmental factors controlling planktonic foraminifera distribution from PCA and stable oxygen isotope analyses.



- ii) A study was carried out based on tree-ring oxygen and hydrogen isotope ratios ($\delta^{18}O$ and δ^2H) of Himalayan silver fir (*Abies pindrow*) from the south-eastern region of Kashmir valley. Based on these isotope datasets, precipitation of the previous year December through the current year August was reconstructed for the time period 1671-2015. The precipitation variability of this time period was supported by historical and other proxy-based hydroclimatic records. The most important features of the



reconstruction show the recent drying trend in the region. (*Pandey et al.*)

Fig. (a) The observed and estimated December-August precipitation (b) Reconstructed December-August precipitation

b. 3-day International Conference on "Decoding the population histories of South Asia using Archaeogenetics" June 7-9, 2023

BSIP and University of Kashmir, Srinagar jointly organized a 3-day International Conference on "Decoding the population histories of South Asia using Archaeogenetics" held at the University of Kashmir, Srinagar from June 7-9, 2023. Scientists from BSIP attended and delivered talks in the conference.

c. हिंदी कार्यशाला के अंतर्गत व्याख्यान (19 जून, 2023)

हिंदी कार्यशालाके अंतर्गत डॉ. पूनम वर्मा, वैज्ञानिक बी.सा.पु.सं.ने 'सीनोजोइक पुरापरागाणुविज्ञान: परिचय एवं अनुप्रयोगके विषय पर व्याख्यानदिया।संस्थान के वैज्ञानिक सदस्य और परियोजना स्टाफ सदस्य, अनुसंधान सहयोगी औरविद्वानों ने वार्ता में भाग लिया।

d. 9th International Day of Yoga celebration on June 21, 2023

International Yoga Day 2023 was celebrated in BSIP by conducting a gentle yoga flow session under the guidance of Dr. Jyoti Srivastava, Scientist BSIP followed by a Pranayama sequence guided by Dr. Prem Raj Uddandam, Scientist BSIP. Institute staff including Scientists, Research associates and Research scholars participated in the yoga practice session. The program was kept as a zero-waste event to motivate reduction of carbon footprint to the environment following one earth, one family, one future theme of International Day of Yoga 2023.

e. माननीय संसदीय राजभाषा समिति का भौतिक निरीक्षण 21 से 24 जून 2023

संसदीय राजभाषा समिति ने 22जून 2023लखनऊ में बीरबल साहनी पुराविज्ञान संस्थान के साथ निरीक्षण बैठक की। इस दौरान समिति ने मंत्रालय एवं विभाग के वरिष्ठ अधिकारियों की उपस्थिति में हो रहे राज्यभाषा हिंदी के कार्यों का अवलोकन किया।

f. Campus visit outreach activity

S. No.	University/College/School	Standard/Grade/Post-Grad	No. of Students	Details of Visit & Date
1.	Sri Ramswaroop Memorial University, Lucknow	B.Sc.	110	Visit to Museum, SEM lab, Central Geochemical Facility (31-05-2023)

g. Outstation Scientific outreach Program

- BSIP Team successfully concluded their visit to the Field Headquarters of Oil India Ltd. in Duliajan, Assam from 22-26 May 2023 with fruitful meetings and discussions on exciting upcoming projects.
- Dr. Binita Phartiyal, Scientist BSIP delivered a talk entitled “The fragile cryosphere in the present climate scenario: consequences to global pollution and human health” on June 5, 2023 on the occasion of World Environment Day at Centre of BioMedical Research, Lucknow. She discussed the impact of plastic pollution on human and environmental health in the Arctic, Antarctica, & hilly areas.
- Dr. Shilpa Pandey Scientist, BSIP celebrated World Environment Day on June 5, 2023 with School Students of Maharana Pratap Inter College, Asti & Bimla International Public School, Lucknow by planting trees & motivating reduction of single-use plastic.

List of research publications (June 2023):

1. **Pandey, U., Nakatsuka, T., Mehrotra, N., Zhen, L., Kato, Y., Sano, M., Shah, S.K.** (2023). Tree-rings stable isotope ($\delta^{18}\text{O}$ and $\delta^2\text{H}$) based 368 years long term precipitation reconstruction of South Eastern Kashmir Himalaya. *Science of the Total Environment* 892. DOI: 10.1016/j.scitotenv.2023.164640 (**Impact factor: 10.754**).
2. **Khan, H., Govil, P., Panchang, R., Agarwal, S., Kumar, P., Kumar, B., Verma, D.** (2023). Surface and thermocline ocean circulation intensity changes in the western Arabian Sea during ~172 kyr. *Quaternary Science Reviews* 311, 108133. DOI: 10.1016/j.quascirev.2023.108133 (**Impact factor: 4.456**).
3. **Murthy, S., Jasper, A., Uhl, D.** (2023). Macro-charcoal as evidence for wildfire events during the Valanginian – Hauterivian and Barremian? (Rajmahal Formation, Lower Cretaceous) in the Raniganj Coalfield, West Bengal. *Cretaceous Research* 105625, DOI: 10.1016/j.cretres.2023.105625 (**Impact factor: 2.432**).
4. Kumar, O.P., Gopinathan, P., Naik, A.S., Subramani, T., Singh, P.K., **Sharma, A., Maity, S., Saha, S.** (2023). Characterization of lignite deposits of Barmer Basin, Rajasthan: insights from mineralogical and elemental analysis. *Environmental Geochemistry and Health*. DOI: 10.1007/s10653-023-01649-x (**Impact factor: 4.898**).

5. **Uddandam, P.R., Kapur, V.V., Parmar, S., Bansal, M., Manoj, M.C., Sharma, A., Prasad, V.** (2023). Danian-Ypresian dinocyst biostratigraphy, fish fauna and depositional environment of the Akli Formation, Barmer Basin, western India. *Historical Biology*. DOI: 10.1080/08912963.2023.2214585(**Impact factor: 1.942**).
6. **Roy, L., McCartney, K., Ghosh, A.K., Bhaumik, A.K., Sensarma, S.** (2023). Tortonian silicoflagellates from the offshore of northeast Indian Ocean. *Deep-Sea Research Part II: Topical Studies in Oceanography* 210. 105297. DOI: 10.1016/j.dsr2.2023.105297(**Impact factor: 2.887**).

Photographs showing important highlights of major programs/research activities organized during June, 2023:

