All M.Sc./M.Tech1ˢᵗ Division pass students and Post-doctoral fellows with fellowship from any source and have keen interest in pursuing research under the PhD/postdoctoral program on the following aspects may submit their application along with detail CV to the Director, BSIP, Lucknow.

A. BSIP Mega Lacustrine Project (BMLaP)

Core Monsoon Zone (CMZ) and Gangetic Plain (GP), in spite of a significant number of research findings published,continue to be enigmatic as they leave lacunae in developing a consistent picture of their palaeo-climate and hydroclimate variability in the past. To address this issue, Birbal Sahni Institute of Palaeosciences (BSIP) is having a flagship programme named BSIP Mega Lacustrine Project (BMLaP) and its goal is to reconstruct the palaeo climate and hydroclimate variability in these regions during Late Quaternary using multi-proxy (both biotic and abiotic) with temporally highly resolved sampling. These will be carried out on the well dated cores (both radiocarbon and luminescence), and with uniform methodologies. Long cores from the selected lake sites will be procured.

We would like motivated and talented students to take up one of the following research topics for their Doctoral and post-Doctoral studies.

1. The Quantification Of Palaeo-Monsoon Variability And Their Impact In Human Culture In The CMZ During Late Quaternary Using Multiproxy Records
2. Intricacies of vegetation vis-à-vis monsoon propagation during present and past in the Indian Peninsula based on high resolution biotic and abiotic proxy records.
3. Species distribution modelling for quantitativepalaeo-vegetation reconstruction
4. Validating the multi-proxy inferences using palaeoclimatic modelling
5. Extreme climatic events and their impact on the ecology
6. Stitching historical, instrumental and palae- proxy data for a complete time series data
7. Establishing the global tele-connections with Indian Monsoon system using time series analyses
8. Can palaeoclimatic variability alone be the cause for displacement of human settlements?
9. When did "Indian" Anthropocene start?Establishing the bidirectional relationships between human – environment interaction
10. Reconciling age discrepancies by employing radiocarbon and luminescence methods
11. Quantifying the uncertainty in the palaeo-ecological inferences using the uncertainties in both the proxies and chronology.
12. Spatio-temporal big data analysis using artificial intelligence (AI)

    For more details contact: **Drs. Anupam Sharma &BinitaPhartiyal**

B. The Kutch Basin is in the State of Gujarat, on the western margin of India. It is a late Triassic to Cretaceous rift basin that evolved into a passive margin basin during the Cenozoic. Evolution of the basin was related to the rifting of the India and African plate in the late Triassic to early Jurassic. Sediment deposition commenced after subsidence and consists of continental, fluvio-lacustrine, paralic, shallow marine sequences. Thus the Kutch Basin is an ideal basin to apply **SporomorphEcogroup conceptual model** which allows the reconstruction of palaeoenvironmental changes, **in particular sea-level fluctuations** and climate changes. For the Mesozoic of Kutch, based on actualistic principles including plant strategies, one may assume the presence of distinctive habitat-bounded palaeocommunity types, each of which is characterized by taxa with broadly similar ecological preferences. These palaeocommunity types can serve as palaeoecological framework for a conceptual SporomorphEcogroup model of co-existing sources. In this way, the SEG model can be used for the recognition of sea-level fluctuations and reconstruction of climate changes in the Jurassic -Early Cretaceous successions of the Kutch Basin.

1. Recognition of sea level fluctuations (Transgression-Regression) during the deposition of the Jurassic-Lower Cretaceous rift sequences of the western Indian Kutch Basin applying SporomorphEcogroup Model - (**Dr. Pauline Sabina Kavali**)

C. Present scenario of climate change has led to the requirement of detail knowledge of the climate system, long-term variability of its components and their interactions. One of the primary sources of climatic information in recent past are the tree ring cellulose isotope datasets due to their stable temporal resolution. However, the statistical reconstructions produced from such data are problematic due to their dependence on site, species, time range etc. [Crowley, 2000]. Cellulose [(C6H10O5)n] formation in all trees is the same basic physiochemical process i.e. C3 metabolism during which carbon atoms are sourced from pCO2 in air and hydrogen & oxygen from soil water. Hence, reconstructions using this method stay persistently dependable in time and space.

1. To produce temperature and relative humidity reconstructions using process-based modelling of $\delta^{18}O$ and $\delta^{2}H$ values of tree ring cellulose from central Indian monsoon region **(Dr. Trina Bose)**