

## Understanding the Life of Bygone Eras: Emerging Trends – Sandhya Misra and Krishna Gopal Misra (*Email: sandhyabsip@gmail.com*)

On Founders Day, 14<sup>th</sup> November 2013, of the Birbal Sahni Institute of Palaeobotany, a conclave on “Understanding the Life of Bygone Eras: Emerging Trends” was organised. In this conclave 13 speakers from diversified fields of earth and allied sciences from different parts of the country were invited for lectures along with the poster presentation on various themes of research carried out at BSIP.

The programme started with the floral offerings on the Samadhi of Prof. Birbal Sahni. In the graceful presence of chief guest Dr. S.W.A. Naqvi (Director, National Institute of Oceanography, Goa), Prof. G.J. Retzlack (University of Oregon, USA) and several other dignitaries from GSI, Lucknow University, KGMU, NBRI, IISc Bangalore, the programme was formally inaugurated on 14<sup>th</sup> Nov. Prof. Sunil Bajpai (Director, BSIP) in his welcome speech extended warm and hearty wishes to everyone for gracing the occasion. He emphasised on how the integration of the fossil data with sequence stratigraphy, sedimentology, tectonics, molecular phylogenetics and divergence timings, isotope and organic geochemistry, clay mineralogy, evolutionary developmental biology, and even biomechanics play an important role in addressing scientific hypotheses to our understanding of evolution of life and ecosystems through time. In his presidential address Mr. Naqvi reminded the efforts made by the founder and his family's endeavours to enrich and nourish institute and earth sciences in India. This was followed by the release of 62<sup>nd</sup> volume of *The Palaeobotanist* (journal) along with the institutes' Newsletter.

The 43<sup>rd</sup> Birbal Sahni memorial lecture was delivered by G.J. Retzlack on “Precambrian life on land”. He discussed aspects related to inspection of fossil soil (palaeosols) in comparative study of fossils documented in palaeosols of different geological time frame. He also outlined the positive feedback for soil stabilization by formation of clay and organic matter, and the metered supply of water and nutrients in soils, making

soils attractive sites for theories concerning the origin of life. Vandana Prasad introduced the theme of the conclave.

The first talk presented by Praveen Karanth (Assistant Professor, Centre for Ecological Sciences, IISc, Bangalore) was on “Phylogenetic Biogeography of India”. He discussed how the molecular phylogenies in conjunction with molecular dating and biogeographical analysis have provided a new window to better understanding of the origin and evolution of Indian biota. Nelloy Khare (MoES, New Delhi) discussed about the MoES initiatives towards the use of multi-proxy in understanding palaeoclimates and the potential course of future climatic changes and their impacts. He also highlighted the interactions among elements of the ocean-atmosphere-land surface system, and the rates and amplitudes of natural climatic variability. Third lecture by Debajyoti Paul (IIT, Kanpur) was on Inferences on Late Quaternary Palaeoclimate using geochemistry of alluvial sediments from Ghaggar plains, NW India and discussed utilizing geochemical proxies to interpret source characteristics, weathering and climate variations during late Quaternary giving an example from his work from two 45 m deep drill-sediment cores. B.P. Singh (CAS in Geology, BHU) put light on the necessity to exploit sedimentary record and palaeosols to infer palaeoclimate. With examples he briefed how palaeosols indicate sub-aerial emergence and largely develop on the fluvial and estuarine flood-plains. At the end of the day poster session started on themes of research at BSIP.

On the second day, during forenoon, Sanjay Mishra (DST) presented his talk on the importance of biomechanical tools in Understanding Life of the Bygone Eras; where he introduced biomechanics as relatively newer tool in the area of palaeontology. He also introduced participants to how biomechanical investigations, in general, can be used to study the relationship between environmental demand and the physical or mechanical design of an

organism. Thamban Meloth (NCAOR, Goa) gave a talk on Recent climate change in Antarctica and associated changes in atmospheric circulation and sea ice conditions reconstructed using an ice core from coastal Antarctica. He discussed the importance of Antarctic ice cores as an excellent natural archive to provide reliable proxy records of atmospheric circulation, temperature, precipitation and sea-ice conditions. By providing examples from his own work he showed how shifting climatic regime in Antarctic region and its regional/global linkages were reconstructed through a high-resolution study of dust fluxes, stable isotope and glaciochemical composition.

The afternoon session started with the talk by Rajeev Saraswat (Micropaleontology Laboratory, Geological Oceanography Division, NIO) on Quantifying past climate change: Present status and future prospects. The use of stable isotopic and trace metal composition of both biogenic (corals, trees, microfossils) and abiogenic (ice-cores, speleothem) climate archives was highlighted. Manoj Prasad (National Institute of Plant Genome Research) presented his talk on Role of molecular phylogeny in estimating the archaeobotany of foxtail millet. The Microbial mat vis-à-vis Precambrian sedimentary record was briefly discussed by Subir Sarkar (Jadavpur University). Suryendu Dutta (IIT Bombay) lectured on molecular composition of Cenozoic ambers of India: Insights into evolution of Asian dipterocarps. Jayashree Ratnam (National Center for Biological Sciences) outlined her talk on Towards a functional understanding of the occurrence and ecology of mixed tree-grass systems in the Indian sub-continent. A talk on Lichens, a potential tool to study climate change in alpine regions of India was presented by Dalip Kumar Upreti (Lichenology laboratory, CSIR-National Botanical Research Institute, Lucknow). Shailesh Agarwal (BSIP, Lucknow) discussed Variability of Indian summer monsoon over the past 100 ka: implications for climate forcing on C3-C4 vegetation.