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Report

28TH INDIAN COLLOQUIUM ON MICRO-PALAEONTOLOGY AND STRATIGRAPHY

May 4–6, 2022, Pune, Maharashtra, India

THE 28th Indian Colloquium on Micropalaeontology and Stratigraphy (ICMS), one of the prestigious meetings in the field of Indian palaeontology, palaeobotany and stratigraphy organized every alternate year, was held at University of Pune, from 4th to 6th May, 2022. The colloquium was convened by Dr. Rajani Panchang and organized jointly by the Department of Environmental Science, Savitribai Phule Pune University (SPPU), Pune. The colloquium was sponsored by the Oil and Natural Gas Corporation (ONGC); Ministry of Earth Sciences, Government of India; ONGC Videsh Ltd; Association of Petroleum Geologists India; Council of Scientific and Industrial Research (CSIR); Bank of Maharashtra; Birbal Sahni Institute of Palaeosciences (BSIP) and Cushman Foundation for Foraminiferal Research. The theme of the conference highlights 'Proxy development for decoding past and modern environments. The ICMS aim to showcase disciplinary diversity in palaeontological and stratigraphical research field through themed and open sessions. The inaugural session of the conference was presided by the Chief Guest, Shri Priya Ranjan Mishra, GGM, ONGC; Dr. Rajiv Nigam, National Institute of Oceanography (NIO); Prof. M.P. Singh, Lucknow University; Prof. Nitin R. Karmalkar, Vice Chancellor, SPPU, Pune; Prof. Suresh Gosavi, HOD, Department of Environmental Science; SPPU, Pune; Dr. Anand Kale, President, 28th ICMS and Dr. Rajani Panchang, Convener, 28th ICMS, SPPU, Pune.

Scientific programs comprised of key-notes, oral and poster sessions. About 150 participants from different corners of the India presented and discussed their research findings in the form of oral as well as poster presentations.

Three days oral sessions intermittent by key-note addresses by the eminent scientists, followed by the poster presentation were grouped. A tour was organised in the mid of the conference to the famous heritage building of the SPPU, Pune which displays the glimpse of the colonial rule of British their culture and association with Indian people.

The outset of the 28th ICMS conference was illuminated by the outstanding Presidential Address delivered by Dr. Anand Kale entitled 'Henry F. Blanford 1862: Revisited after 160 years. He explained that the Blanford mapped the Cretaceous deposits in the Madras Presidency from 1857-60 and his relevant paper 'On the Cretaceous and other rocks of the South Arcot and Trichinopoly districts' is the outcome of his endeavours. Blanford establishment of the stratigraphy of these deposits have withstood the test of time on one hand, while on the other, his observation and interpretations of depositional characters, palaeogeography, palaeoenvironments are far beyond his time. Dr. Kale further pointed that the present review of the Blanford paper delves into these aspects and attempts to reinterpret his observation with modern concepts and new data generated by later workers.

On the first day of conference the lectures were arranged in three technical sessions and one poster session, in which the first session was based on the theme of 'Industrial Applications of Micropalaeontology and Stratigraphy' and comprised of two key-note lectures first one was elucidated by the Chief Guest of the conference, Shri Priya Ranjan Mishra who described about the expanding exploration of the natural resources with scientific approach and how we can use all those resources commercially with sustainable method without exploitation. Some major basins like Kaveri Basin, Kutch Basin, Vindhyan Basin and Bengal Basin have been taken for the exploration of natural gas, limestone and oil and have been divided into 3 categories in which CAT II and CAT III are important and included in the proposal for the government to take beneficial initiatives in the field of science and innovation. Later on, the second key-note lecture was elucidated by Dr. Sudhir Shukla (Former CGM-Head) who hypothesized that how micropalaeontology is important in hydrocarbon exploration, sequence stratigraphy and structure modelling; the objective of his talk was to achieve better reservoir description, dating of source, and better geochemical integration. The key-note session was followed by two oral sessions in which research scholars presented their finding pertinent to the topic palynostratigraphy and sequence stratigraphy in Arakan Basin, Assam and Ariyalur area, Tamil Nadu, India, respectively.

The next technical session was themed on 'Proxy development/Taphonomy and Diagenetic effects on preservation' in which one key-note lecture and six oral presentations were arranged and the key-note lecture was elucidated by Dr. Vandana Prasad (Director, BSIP) who explained the role of plate tectonics and global climate in the diversification of tropical angiosperms based on the fossil pollen records.

The last and third session of the day has two key-note lectures delivered by Sushant Naik (CSIR, NIO) and Sujata Kurtarkar (Micropalaeontology Laboratory, NIO) respectively who put forth several scientific concerns with the help of foraminifera study, their live development in the laboratories and significance in the field of palaeontology.

Dr. Swati Tripathi from BSIP presented an oral talk entitled 'Climatic alterations during the Medieval Climatic Anomaly (MCA) from the Indo-Burma region: a quantitative biotic assessment from the Barak Valley, Assam, northeast India'. She propounded that the impact of MCA has been well documented from the pollen and diatom records. In many parts of the world, regional data coverage is pertinent to the MCA warming has now reached a point which allows compiling palaeoclimate maps for well-defined time intervals. In this direction, future studies need to address the major climatic data gaps from the Indian sub-continent especially during the last millennia. Mr. Deveshwar Prakash Mishra, research scholar from BSIP presented his research topic entitled 'Palaeobotanical evidence for Artinskian wildfire in the Talchir Coalfield, Mahanadi Basin, India'.

Dr. Neelam Das of BSIP presented a poster entitled 'Recovery of fossil beetle elytron from the Early Cretaceous beds of Jhala Village, Bansa Formation, South Rewa Gondwana Basin, India', where she focussed on the first record of beetle elytra as an impression from the Indian subcontinent and based on present day instance she suggests that in the past these beetle frequently attacked dead or living trees and might have caused region-specific economic loss that can reach epidemic proportions in the invaded forest.

After successful completion of the oral session, the poster session had been started and got scrutinized thoroughly by the judges and delegates. Mr. Sarvendra Pratap Singh from BSIP presented a poster entitled 'Palaeomagnetic results from Deccan Intertrappean Section, Sagar, Madhya Pradesh', where he presented the magneto-stratigraphic data from the intertrappean section exposed along the Sagar-Bhopal Highway, Sagar, Madhya Pradesh. The palaeomagnetic data revealed the reversed polarity for the lower and transitional polarity for the upper lava flows, respectively.

Ms. Arya Pandey, an INSPIRE Fellow from BSIP, presented a poster entitled 'Non-pollen palynomorphs preservation from the sediments of Majuli Island Assam (Indo-Burma region) India: Implications to palaeoenvironmental studies' hypothesized that the encountered non-pollen palynomorphs showing holistic information of mixed settlement of domestic living, anthropogenic activities, and

environmental elements prevailing during the late Holocene in the Majuli Island (world's largest river Island).

Dr. Ansuya Bhandari of BSIP presented a poster entitled 'Miocene Rodents from Kutch, western India'. She has shown the assemblage of rodents which is very significant in the context of palaeogeography and biostratigraphy and supports an age of early Late Miocene (>10 Ma). Beside that she talked about large mammals from Kutch area and the palaeoclimate during Late Miocene. Ms. Priya Agnihotri, Research Scholar from BSIP presented a poster entitled 'Diverse record of spider fossils in Cambay amber from the Valialignites of western India'. Her research work deals with an extensive fossil record of Araneae (spiders) in amber that has been recovered from the Early Eocene lignite-bearing sediments of Valia Mine, Cambay Basin, Gujarat.

After the enlightening technical sessions, a cultural evening had been organized for the delegates where all the popular traditional dances of India were performed by the students of Lalit Kala Kendra of the SPPU, Pune including the Maharashtra famous folk dance, 'Lavani'. At the very last, ICMS welcome reception was organized on the evening of May 4th for the Vice-Chancellor dinner meet at the University Guest House Lawns.

The second day of the conference commenced with the interesting theme 'Palaeoclimate, Palaeoceanography and Biogeochemistry' and includes four technical sessions and one poster session. The technical session started with two key-note lectures; the first one was elucidated by Dr. Devesh Sinha (Delhi University) who postulated about the Ocean gateways of the Cenozoic as drivers of changing ocean circulation and climate. He further propounded that the global temperature is increasing, the glaciers are melting, and nevertheless, ocean gateways play an important role in climate change. The second key-note lecture was elucidated by Dr. Rajeev Saraswat (CSIR-NIO) who put forward his views that whether the Indian Ocean is a passive responder or an active modulator of the global climate. Both the key-note sessions were eye opening and highly informative for the young scientists and research scholars.

Dr. Ipsita Roy from BSIP presented an oral talk entitled 'Late Quaternary tree-line dynamics in the Dokriani Glacier Valley, western Himalaya'. Her study interpreted the tree-line shifts since 16.6 ka BP from Dokriani Glacier Valley by analyzing the pollen frequency of the tree-line taxa in a subsurface sedimentary sequence.

The second day of the technical session comprised two key-note lectures and five oral presentations. The key-note lectures were elucidated by Dr. Raj Kumar Singh (Indian Institute of Technology, Bhubaneswar) and Dr. A.V. Sijin Kumar (Central University of Kerala) who described the application of benthic foraminiferal proxies to assess the palaeoceanographic and palaeoclimatic variability and Spatial variability in Holocene Indian Summer Monsoon in the Bay of Bengal respectively. Dr. Sijin Kumar has also discussed the recent monsoon-related catastrophic events that have stressed the importance of understanding the centennial-millennial-scale ISM variabilities in the immediate past and thereby developing reliable predictions for future variations.

The third technical session of the second day was themed on the topic 'Forgotten/Lesser-known groups/ Micropalaeontology in Archaeology & Geochronology'. This session had started with two key-note lectures and one oral presentation. The key-note lectures were delivered by Dr. K.M. Wanjarwadkar (Government Institute of Science, Aurangabad), and Dr. Mohan Sonar (Dr. BAM University, Aurangabad) in which they described thoroughly about 'Calcareous fossil algae in India: Present status and future prospects', and 'Fossil Thalamoporellid and Microporid Bryozoans from the Neogene sediments of western Kachchh, Gujarat India', respectively. In the above technical session, an oral presentation was also delivered by Ms. Priyanka Joshi, a Research Scholar from BSIP, who presented a part of her Ph.D. thesis work entitled 'Biotic indicators of climate change in a nutrient-starved cold desert ecosystem from the Ladakh Range NW Trans Himalaya' that aims to trace the correlation of biotic diversity through varied aquatic micro-environments in the Ladakh Range providing an analogue for a better understanding of climate change.

The last and fourth technical session of the second day comprised of an oral presentation by Dr. Balasubramanian Karthick (Agharkar Research Institute, Pune) in which he described that the role of diatoms is more significant in Archaeology for reconstructing the local environment.

In the evening a fascinating lecture had been queued by the most distinguished scientist in the field of micropalaeontology; Dr. Rajiv Nigam, who was the Guest of Honour during the 28th ICMS, 2022. He delivered a popular lecture entitled 'Dwarka, Ramsetu, Mahabalipuram - Indian Mythology or History?' The lecture was based on the role of marine archaeology in tracing the human history.

Dr. Bandana Samant (Rashtrasant Tukdoji Maharaj Nagpur University) delivered a key-note lecture at the beginning of the third-day technical session and emphasized the impact of volcanic eruptions on the floral biodiversity and related challenges to find the K-Pg boundary in the Indian subcontinent. She discussed about the relationship of Deccan volcanic eruptions found adjacent to Late Cretaceous- Early Palaeocene Lameta and Intertrappean sediments with the floral biodiversity, palaeoclimate and palaeoecology during volcanism. Dr. Jahnavi Punekar (IIT Bombay) delivered her talk on the K-Pg boundary mass extinction's major catastrophic events: Deccan volcanism (India) and the Chicxulub impact (Gulf of Mexico).

Dr. Anju Saxena (BSIP, Lucknow) presented the first reported palynoassemblages from Ganmachidam Formation, exposed near Lingti Village, Spiti Valley, India. In her research work, she attempted to assess its age and palynostratigraphic status. Also, her study (Late Carboniferous) in correspondence

to previous studies from Early Carboniferous formations strengthened upon the evidence of glossopterid occurrence during the Carboniferous time period.

The Valedictory session began with the Prize Distribution for the oral and poster presentations presented by the research scholars. The research scholars from the BSIP, Lucknow received awards in both the oral and poster presentation categories. Ms. Arya Pandey received the second-best poster presentation award. Dr. Ipsita Roy received the third-best oral presentation award and Mr. Deveshwar Prakash Mishra got the consolation oral presentation award.

The Colloquium concluded with an emotional and gratitude-serving vote of thanks given by Prof. Suresh Gosavi (HOD, Department of Environmental Sciences, SPPU, Pune) and Dr. Rajani Panchang (Convener, 28th ICMS). Dr. Rajani Panchang highlighted the importance of developing and improvising various proxies in the field of Micropalaeontology.

After the catastrophic impact of Covid-19, 28th ICMS proved to be a successful physical event and served as a golden opportunity for the young researchers in the field of palaeontology to showcase their research development and interact with eminent scientists and various researchers working across India which will definitely encourage them to succeed and build an outstanding research career with a bunch of new and innovative ideas.

Swati Tripathi, Arya Pandey, Anju Saxena, Neelam Das, Ansuya Bhandari, Ipsita Roy, Priyanka Joshi, Sarvendra Pratap Singh, Gursewak Singh, Nidhi Tomar, Priya Agnihotri & Deveshwar Prakash Mishra

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