ASSOCIATION OF QUATERNARY RESEARCHERS

Quaternary Chronicles

Happenings in the Sub-continent

Vol.7 No.3 December 2025

FROM THE AOQR DESK

Dear Quaternary enthusiasts,

We are delighted to announce that Quaternary Chronicles Newsletter, Volume 7(3), December issue, is now out. We extend our sincere thanks to the ECR team for their meticulous efforts in compiling this edition on time. This issue highlights key developments in Quaternary Sciences from August to November 2025. We apologize for any inadvertent omissions.

As you know, IQC 2026 is scheduled for January at IITM, Pune. We look forward to insightful discussions on the theme "Tracing Earth System Dynamics and Human–Environment Interactions through the Quaternary." We recently concluded a highly successful Pre-INQUA National Workshop on Recent Developments in Quaternary Studies: Focus on NE India, along with the National Hands-on Training on Quaternary Microfossils, organized by the Department of Geological Sciences, Gauhati University, from 24–28 November 2025 as a part of the preparatory activities leading up to INQUA India 2027.

We are grateful for the continued support from organizers, the Quaternary fraternity of India, and the INQUA Executive. Our pre-INQUA activities - expert talks, podcasts, and outreach covering various aspects of Indian Quaternary geology - are progressing consistently through the enthusiasm of our young team. INQUA's success is a collective effort, and we look forward to your continued support.

We are also pleased to see the growing interest and engagement of young researchers with AOQR. Reaching out to all Quaternary researchers across the country remains one of our core objectives, and your participation is vital to this mission.

The next issue of QuatChron is scheduled for release in April 2026. We welcome updates, event reports, and news related to Quaternary Sciences. Please share them with the team for inclusion.

We encourage you to join AOQR and become part of the AOQR family.

With best wishes,

- Dr. Vandana Prasad
President AOQR

Quaternary Chronicles
Happenings in the Sub-continent

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To join QuatChron_AOQR Google Group:
Open https:// groups.google.com, login (using Gmail account), search for "QuatChron_AOQR" and ask to join.]

DISCLAIMER

As this is a community-driven newsletter, the role of the ECR team is limited to copy editing and reporting only. It will be the sole responsibility of the author/ contributor to ensure the accuracy and authenticity of the contributions. The ECR team is pro-active in collecting as much useful information as possible; however, we rely on community inputs and will not be responsible for any omissions.

AOQR MEMBERSHIP CALL

Researchers of Quaternary Science of Indian sub-continent are welcome to submit your application. Be a part of a multidisciplinary team of researchers, and practitioners of Quaternary Science and represent Indian Quaternary Science at an international level. Members can get priorities at our annual e-conferences, publish in the edited books/ journal volumes by the members of the AOQR, access to webinars, e-conferences and specialized thematic workshops etc.

Write to us at **aoqr2019@gmail.com** *for membership application form.*

The membership of the AOQR is open to all individual of academia and industry subject to verification.

Welcome!

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Organization of INQUA Congress 2027: *Where We Stand*

Pradeep Srivastava
President- INQUA 2027

Initial Steps: *We, as a nation, pursued the dream of bringing the INQUA Congress to India, a journey that began in 2018. BSIP, WIHG, and NIO and supported by the Department of Science and Technology, Ministry of Earth Sciences, and the Indian National Science Academy. INSA submitted a bid at the Dublin Congress in 2019, where we lost to Italy, who were competing for the third time. That setback, however, proved constructive and kindled a resolve to take Quaternary Science forward. The first step was the formation of the Association of Quaternary Research (AOQR), the Indian counterpart of INQUA. Thanks to the hard work of senior colleagues and a team of early career researchers, AOQR is now thriving and is amongst the vibrant associations of geosciences in India. It brings out comprehensive quarterly news-letters (13th issue is in your hand), holds biannual congresses that attracts most quaternary science workers and conducts monthly web lectures by International experts (27 held so far). Working collectively under AOQR made our efforts more cohesive, informed, and strategically aligned.*

The second bid during INQUA congress 2023, in Rome was successful. This was a joint bid, led by Association for Quaternary Research and the Birbal Sahni Institute of Palaeosciences (BSIP) and the National Centre for Polar Research (NCPOR), besides unwavering support from DST, MoES and INSA. The bid was duly endorsed by the INSA's National Committee for IUGS and INQUA.

Organization Firmament: *To ensure effective organization in a timely manner, several working groups were created to deal with scientific program,*

field trips, organizational and logistical, and outreach activities. Governing body of BSIP constituted a national coordination committee. A brief status of progress in each domain is given below.

Scientific Program Committee issued the announcement in March 2025, a record extraordinary 212 technical session proposals, 29 workshops, were proposed. These have since been examined by various sub-groups of the Science Program Committee, the shortlisted proposals will be placed on the website. A set of names for plenary speakers have been received and soon a final decision will be made keynote speakers. A focus will be on new and emerging areas working in areas aligning with the theme of the congress Geoscience as Societal Service.

The Field trip call attracted 29 proposals for varied field trips. After due discussions 27 proposals were finalized and these showcase various facets of Indian Quaternary ranging from Desertic terrain, foreland sedimentation processes to mangrove and deltaic record besides the quaternary deposit of Himalaya. A detailed list of approved field trips awaits creation of the websites. The progress of field trip work is now slower than anticipated due to funding constraints and with the good offices and personal interest of the Secretary DST and MoES this will be resolved soon. We would like to use this occasion to improve the science of designated field trips.

The organization and logistics aspects where BSIP, who is looking after it, has booked the congress venue, the Indira Gandhi Pratisthan at Lucknow. Efforts are underway to appoint a Professional Congress Organizer as a process that was delayed due to reasons beyond our control. We have been assured by BSIP that this process will be completed soon. It is expected that with formalization of the appointment of a PCO, the formal working of the conference in terms of abstract submission and other details will soon be available.

A significant bottleneck has been the availability of adequate funds. A presentation to DST and MoES now assures us that the funds will be released in a timely manner by BSIP. Owing to these factors:

(i) The deadlines for acceptance of technical sessions and abstract submissions had to be extended which is not received well by the international community.

(ii) It compromised the organization of training workshops and schools intended for capacity building across the developing world and global south. We hope this can begin soon. The INQUA webinar however were held at regularly and so far and their recorded versions are available on INQUA India website (https://www.inquaindia2027.in/) and on INQUA.org;

(iii) The leadership programs for the Global South could not be initiated.

On the outreach front, regular podcasts are released that provide lucid information on Indian Quaternary (visit Spotify channel:

https://open.spotify.com/show/7fg9ARR9oleQJNCpZpThjp?si=538cc9b3ab484275). The 3rd Indian Quaternary Congress (IQC) is being organized by AOQR and IITM Pune between January 19-23, 2026. The congress is themed at "Tracing Earth System Dynamics and Human–Environment Interactions through the Quaternary". AOQR has already organized a few training programs and schools as part of the Pre-INQUA activities, most recent concluded at Gauhati University on 26th November 2025, and we will continue to expand these efforts. The speakers and organizers have done all of these through voluntary help.

In summary, the progress has been reasonable in areas where the funds were not a real need but we have lagged behind in areas where funds are needed. These have implied delays that have compromised our international standing in terms of efficiency. But we have to catch up too. Several efforts have been made and are underway and we are optimistic that with the continued support from Secretaries of DST and MOES and the support of Director BSIP, the process will get the requisite acceleration. I seek support from all, in any way one can to make this event a success, such that our science and our societal delivery gets enriched and effective.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Pre INQUA activities in the last Quarter (August to November)

INQUA India Talk Series: Lecture 25/16: Role of Foraminifera in Tackling Marine Pollution, Dr. Rajiv Nigam, *Former Scientist, National Institute of Oceanography (NIO), Goa*

Abstract: The sea, particularly nearshore areas, is the ultimate resting ground for domestic and industrial wastes, causing a fall in live products of the sea (like fish) and thus negatively compensates for some of the benefits of industrialization. This required the development of techniques for the detection/mitigation of marine pollution. As demonstrated by examples from India, foraminifera (microscopic marine protists) with their rapid life cycles, good preservation potential, and sensitivity to environmental stress, make them an ideal tool for detecting and mitigating coastal pollution, offering an edge over other techniques. The peculiar foraminiferal features observed in polluted areas include variations in assemblages, species diversity, and abnormal tests (such as stunted growth, abraded margins, and dissolved ornamentations). Prolonged pollution in relatively large areas can also be assessed through a quantitative comparison of faunal data collected with a sufficient time gap. These studies receive further support from laboratory culture experiments, where foraminifera were subjected to specific pollutants (e.g., mercury). Understanding of foraminifera is also useful in mitigation efforts.

Lecture 25/17: The Shaping Hand of Tectonics: Decoding Earthquake Hazard from Landscape Archives, Pierfrancesco Burrato, *Istituto Nazionale di Geofisica e Vulcanologia, Italy*

Abstract: Tectonic activity is a major driver of Earth's surface dynamics, continuously shaping landscapes across different spatial and temporal scales. Landscape evolution reflects the interplay of tectonic forces with surface processes, providing critical information on the sources of crustal deformation. In earthquake-prone regions, such analyses help constrain the location, geometry, and kinematics of active faults, contributing directly to seismic hazard assessment. Active faults, especially those with dip-slip motion, generate characteristic patterns of uplift and subsidence. Advances in geodetic monitoring, particularly through Interferometric Synthetic Aperture Radar (InSAR), have revealed these deformation fields with unprecedented detail in both crustal and subduction zone settings. Over longer timescales, geological and geomorphological markers - such as sedimentary strata, marine terraces, and drainage networks - act as paleogeodetic archives of vertical land movements. Integrating geodetic observations with landscape records allows us to bridge earthquake cycles and long-term tectonic evolution, advancing both scientific understanding and societal resilience.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Podcast - Season 3 & 4

INQUA INDIA 2027

SEASON 3

Episode 7: Tree ring: Nature's time machine, August 15, 2025, **Dr. Santosh K. Shah & Veraa Singh**

Episode 8: Evolutionary and Genetic History of Indians, August 28, 2025, **Niraj Rai & Veraa Singh**

SEASON 4:

Episode 1: The Quaternary Story from the Third Pole: The Ladakh Chapter, September 18, 2025, **Dr. Binita Phartiyal & Veraa Singh**

Episode 2: Echoes Beneath the Valley: The Story of Karewa Sediments, September 28, 2025, **Dr. Rakesh Chandra, Dr. Binita Phartiyal & Veraa Singh**

Episode 3: Environmental Magnetism in the Quaternary Deposits of India, October 15, 2025, **Dr. Satish Sangode & Veraa Singh**

Episode 4: Diatom - A Primer, October 28, 2025, **Dr. Biswajeet Thakur & Veraa Singh**

Episode 5: Indian Polar Programme, November 15, 2025, **Dr. Rahul Mohan & Veraa Singh**

Episode 6: IElephants, hippos and ostriches: Appreciating the Quaternary fossils of India, November 28, 2025, **Dr. Parth R. Chauhan & Veraa Singh**

Content Creators...

Sneak-Peek & Discussions:

Democratising palaeosciences for effective bidirectional communication.

Morthekai, P, BSIP

There is a significant mistrust among the public regarding science-based policies, especially as science populism is on the rise globally - this is one concern. Geosciences - including palaeosciences - is the least diverse science field, as the representation of black, indigenous and people of colour (BIPOC) is very minimal (< 10 %) in the USA just a few years ago. A similar observation was also reported by the British Society for Geomorphology (BSG). In India, the deteriorating situation can only be inferred if we consider caste, an additional factor of discrimination. This is another concern that we need to address. Both of these concerns can be addressed if the public is involved in our paleo-scientific activities not merely as service providers and site identifiers, but as co-producers of knowledge.

Can the public be co-producers of knowledge? Can lay persons be experts to contribute to scientific activities? These questions are addressed with the help of philosophical discourses such as standpoint epistemology and epistemic privilege of marginalized communities, and relevant case studies. Additionally, the very nature of palaeosciences demands not only a cross-, inter-, and trans-disciplinary approach but also input from people from various walks of life (situated knowledge). So there is an advantage to palaeosciences (methodological requirement) by including the public, which is win-1. As insiders, the public watch how science is being done with a scientific temper, the public gains trust in the scientists, and assumes stewardship and responsibility towards the landscape/environment they live. This, if I can call, is win-2 in this win-win game.

For more details: Morthekai, P., 2025. Democratising palaeosciences for effective bidirectional communication. Quaternary Newsletter 165, pp. 21-29. https://www.qra.org.uk/mp-files/qn-165_4_effective-bidirectional-communication.pdf/

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

New Findings...

Reading the Himalayan climate in shades of blue: a new approach to tracing past climate using tree-ring blue intensity

Shah SK, Rahman TW, Mehrotra N, Thomte L, Pandey U, Saikia A, Wiles GC. 2025. Blue is the new colour of Indian Himalayan tree rings: A pilot study on blue intensity of Abies pindrow, a new climate proxy from Kashmir Valley, western Himalaya. Dendrochronologia 94, 126438. https://doi.org/10.1016/j.dendro.2025.126438

The Indian Himalayas rank among the world's most climate-sensitive regions, where rising temperatures and retreating glaciers are rapidly transforming mountain ecosystems. Reconstructing past climate variations is crucial for understanding climate dynamics, identifying the factors that drive them, and predicting future trends. In our pioneering effort, we introduced a new and cost-effective technique called Blue Intensity (BI) analysis to decode past temperature changes from tree rings. The study, titled "Blue is the New Colour of Indian Himalayan Tree Rings: A Pilot Study on Blue Intensity of Abies pindrow", published in Dendrochronologia, marks India's first application of the BI technique in dendroclimatology. The research focused on the West Himalayan fir (Abies pindrow) from the Hirpora Wildlife Sanctuary in the Kashmir Valley. Traditional tree-ring studies in India have primarily relied on measuring ring width, which reflects early-season rainfall and moisture conditions. However, these measurements often exhibit unstable relationships with temperature, which limits their usefulness for temperature reconstruction. In contrast, the BI method measures reflected blue light from the wood's latewood cells, which directly correlates with wood density and thus with temperature during the late growing season.

The results showed that while tree-ring widths recorded early-summer moisture stress (May-June), BI parameters, particularly Latewood Blue Intensity (LWBI) and Delta Blue Intensity (deltaBI), captured strong and consistent signals of late-summer temperature (August-September). The BI data also reflected winter-spring minimum temperatures, providing a more comprehensive view of seasonal climate variations. This study demonstrates that BI-based tree-ring records provide a reliable and cost-effective alternative to expensive X-ray-based maximum-density analyses. Establishing this method in the western (Indian) Himalaya for the first time opens new possibilities for developing long-term, high-resolution temperature reconstructions. Such data are vital for improving regional climate models and understanding the pace and pattern of recent warming across the Himalaya.

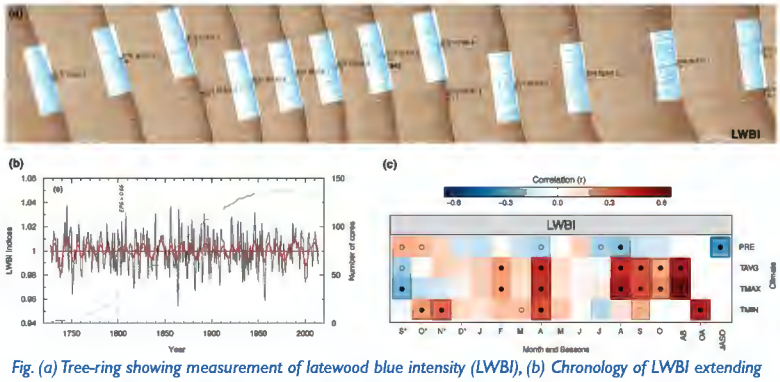


Fig. (a) Tree-ring showing measurement of latewood blue intensity (LWBI), (b) Chronology of LWBI extending from 1728 to 2014 CE and (c) Correlation of LWBI with climate (Figure is modified from Shah et al., 2025).

Ancient DNA from the oldest Neolithic site in Kashmir reveals an endogenous population

Aparna Dwivedi, BSIP Lucknow

Dwivedi, A., Kumar, L., Konar, S. et al. 2025. Ancient mitogenomes from Neolithic, megalithic and medieval burials suggest complex genetic history of Kashmir valley, India. Scientific Report 15, 35247. doi.org/10.1038/s41598-025-00568-4

The role of South Asia in shaping the genetic architecture of the present-day world population is evident in numerous prehistoric sites, as well as the region's contemporary high genetic diversity. The Kashmir Valley, situated at the convergence of Eurasia, the Gangetic Plain, the Swat Valley, and the Himalayas, holds a significant spot in human migration studies. The Neolithic site of Burzahom exhibits continuous habitation for over three millennia, dating back to 3000 BCE, in four distinct cultural sequences: Neolithic I (Aceramic), Neolithic II (Ceramic), Megalithic, and Early Historic. The Northern Neolithic culture of Burzahom is similar to contemporary cultures of the Indus Valley, Swat Valley, Ghalghai, Sarai Kola and Karua (Tibet), indicating cultural exchange. The site features ten pit burials, a rarity in South Asia, where animals are often buried alongside humans. The recent study from BSIP analyses these human individuals from Burzahom and two Medieval individuals from Kashmir. Four samples, one Neolithic, one Megalithic and two medieval, with good coverage, were taken for downstream analysis. The Neolithic individual is dated to ~2009–2002 cal BCE, the Megalithic to ~547–580 cal CE, while both Medieval individuals date to the 15th century CE. The mitochondrial haplogroups assigned to Neolithic and Megalithic individuals are M65a and

Fig.1. Skeletons in Burial: photo from the Burzahom excavation report

U2b, respectively, while the haplogroups assigned to Medieval samples are M30 and W4. Haplogroup M65a is prevalent in Kashmir, Pakistan, and Tajikistan, indicating a deep-rooted maternal ancestry in South Asia. In the phylogenetic tree, this individual clustered with the Brokpa tribe and local Kashmir groups, sharing ancestry with Iron Age Swat Valley individuals (SPGT), indicating local continuity over a long period. Haplogroup U2b2 is widespread in Kashmir, Tajikistan, Pakistan, and Tibet, and is also present in Rakhigarhi, providing evidence of cultural connections. This Megalithic individual, grouped with Swat Valley Iron Age (SPGT) individuals, North Indian Brahmins, and Uyghurs, indicate regional ancestry. The Medieval haplogroup M30 is widespread in Pakistan and northwestern India. The haplotype clusters closely with Roopkund Medieval, Swat Valley, and Central Asian samples, suggesting past mobility along the Himalayan route. The W4 haplogroup is predominantly found in European and Central Asian populations, with occurrences in the BMAC (Bactria-Margiana Archaeological Complex). This other medieval individual haplotype, W4, shares a clade with Tepe Hissar C, Gonur1 BA, and BMAC, distinct from modern South Asian populations, indicating a west-Eurasian migration.

The haplogroups assigned to ancient samples demonstrate local ancestry linked to adjacent contemporary regions of Swat and consistent with an earlier study from Rakhigarhi. The medieval samples provide evidence of genetic flow from Central Asia. The M30 haplogroup assigned to one medieval individual indicates South Asian lineage. The W4 haplogroup is assigned to another medieval individual associated with Central Asian migration or, more likely, Mughal expansion in medieval times.

This is the first complete mitogenome of Neolithic, Megalithic and Medieval burials from South Asia. The study illuminates, for the first time, genetically continuous samples from a South Asian archaeological site spanning over 2,000 years. Thus, the ancient genetic landscape of the Kashmir Valley was characterised by a thriving local population, with cultural exchange likely facilitated through trade. Later, the genetic influx from Central Asia led to the admixture and evolution of the local population. This marks the commencement of broader ancient genomic investigations in South Asia, highlighting the potential of ancient DNA and genomic reconstruction in the region, where archaeological records are rich, but DNA preservation is limited.

Decoding the sedimentary responses to the monsoon seasonality and ocean circulation in the southeast Arabian Sea during the last 50 ka.

Renny, A., Kawsar, M., Manoj, M.C., Bikkina, S., Phartiyal, B., Kurian, P.J., Mistra, R., Thakur, B. 2025. *Decoding the sedimentary responses to the monsoon seasonality and ocean circulation in the southeast Arabian Sea during the last 50 ka. Palaeogeogr., Palaeoclimatol., Palaeoecol. 113384.* https://doi.org/10.1016/j.palaeo.2025.113384.

The Indian Summer Monsoon (ISM), a crucial component of the Asian Monsoon System, has a strong influence on the hydrography, sedimentation, and biogeochemical processes of the Arabian Sea. The Southeastern Arabian Sea (SEAS), situated at the intersection of major atmospheric and oceanic systems, provides an ideal setting to reconstruct past monsoon variability and its global linkages. This study integrates high-resolution environmental magnetic and end-member analyses from well-dated core SK-257/02 to unravel variations in the ISM, monsoon-controlled sedimentation, and deep-water circulation over the past ~50 ka.

The finest fraction (EM1, mean size ~3.46 μm) corresponds to fluvial inputs from intensified ISM precipitation during interglacial periods (MIS 3 and 1). These periods, characterized by higher solar insolation and Dansgaard–Oeschger (D–O) warm events, resulted in enhanced terrestrial runoff and increased magnetic mineral concentrations, reflecting strong monsoon-driven sediment delivery. In contrast, the silt-sized aeolian fraction (EM2, ~5.59 μm) dominates during glacial stages, notably the Last Glacial Maximum (LGM) and Heinrich Stadials, indicating strengthened northeast monsoon winds and arid conditions that transported dust from surrounding deserts to the Arabian Sea. The coarser fraction (EM3, ~15.92 μm) records sediment resuspension linked to intensified southern-sourced deep and intermediate water masses (Antarctic Bottom Water and Pacific Deep Water). Enhanced EM3 abundance during glacials and stadials suggests stronger deep-water circulation, driven by a weakened Atlantic Meridional Overturning Circulation (AMOC) and greater Southern Component Water advection. Magnetic parameters corroborate the fluvial–aeolian alternation, revealing enhanced fine-grained magnetic inputs during wet phases and coarser, low-susceptibility minerals during dry, dusty periods. The study highlights the SEAS as a sensitive recorder of monsoon–ocean interactions, revealing how shifts in solar forcing and global thermohaline circulation jointly modulated ISM, sedimentation, and ocean circulation through the late Quaternary.

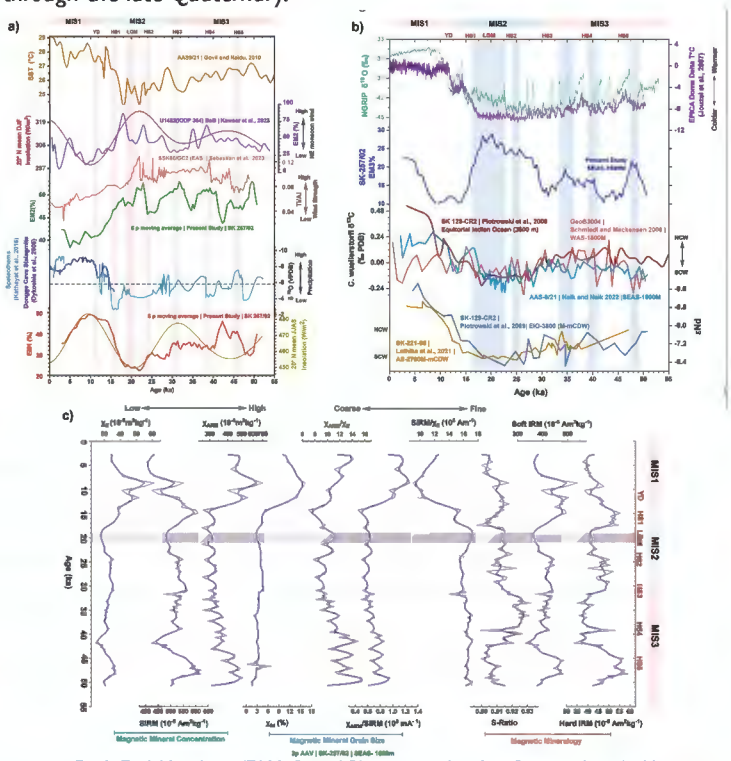


Fig. 1. End Members (EM1, 2, and 3) compared with reference data (a, b) and enviromagnetic data (c) of SK-257/02.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Did Globigerinoides ruber (pink) disappear entirely from the Indian Ocean after 120 kyr BP?

Ammoose K. Jayan, A.V. Sijinkumar, Kaustubh Thirumalai, Lael Vetter, P. John Kurian, A. Prajith, Rajveer Sharma. *2025. Did Globigerinoides ruber (pink) disappear entirely from the Indian Ocean after 120 kyr BP? Marine Geology 490, 107656, https://doi.org/10.1016/j.margeo.2025.107656.*

A new study published in Marine Geology challenges a long-standing belief about the biogeographic history of the planktic foraminifera Globigerinoides ruber (pink) in the Indian Ocean. For decades, scientists assumed that this pink-pigmented variant vanished from the Indo-Pacific region around 120,000 years ago, surviving today only in the Atlantic Ocean. However, research led by Ms Ammoose K. Jayan, Prof. Sijinkumar A.V. (Central University of Kerala), and colleagues documents, for the first time, the reappearance of G. ruber (pink) in downcore sediments from the eastern Bay of Bengal between ~30,000 and 8,000 years BP. The team analysed the gravity core MGS30/GC-03 recovered from a water depth of 1883 m, supported by eight AMS radiocarbon ages, to reconstruct the species' past distribution. Remarkably, the study reveals that G. ruber (pink) attained peak abundances during the Last Glacial Maximum and Heinrich Events 1 and 2, periods characterised by strong northeast monsoon-driven vertical mixing. Such enhanced mixing likely transported nutrient-rich waters upward, creating favourable conditions for mixed-layer and thermocline dwellers—including G. ruber (pink), Neogloboquadrina dutertrei, and Globorotalia menardii. The recovered specimens exhibit an orangish-pink tint rather than the bright colouration known from the Atlantic, suggesting partial pigment fading over time. Following the glacial period, the species exhibits a gradual decline before completely disappearing ~8,000 years before present (8 kyr BP). The study attributes this disappearance to increased salinity-driven stratification and reduced nutrient availability associated with the intensified Indian Summer Monsoon during the mid-Holocene. These findings overturn earlier assumptions of a complete regional extinction after 120 kyr BP and highlight how shifting hydrographic conditions controlled the species' survival in the Indian Ocean.

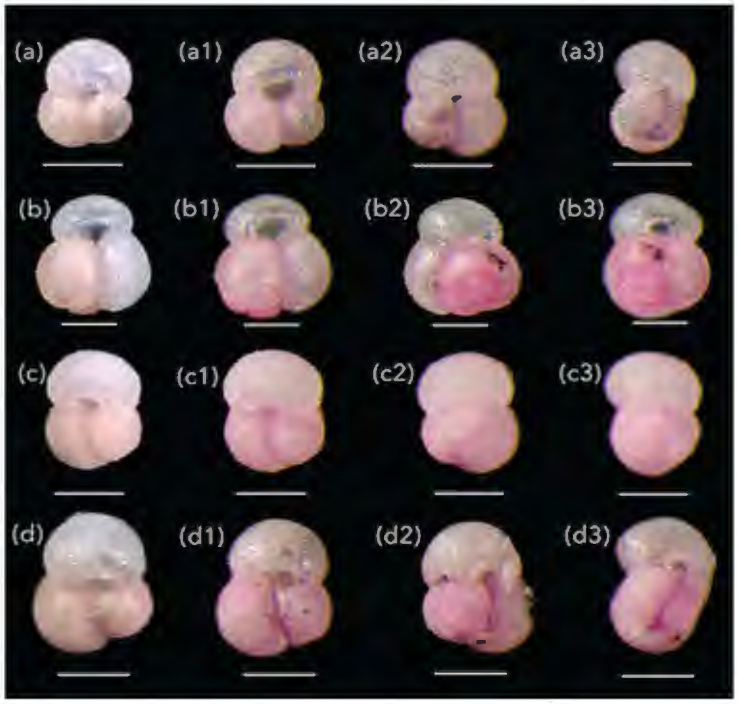


Fig. Plate illustrating light microscope (a-d), high-resolution (a1-a3, b1-b3, c1-c3, and d1-d3), images of G. ruber (pink)

Glacial landforms as palaeo-environmental archives in the Eastern Himalaya: A case study of Changme Khangpu glacial valley in Sikkim Himalaya, India" (Progress in Physical Geography)

Debnath, M., Sharma, M. C., Syiemlieh, H. J., Kumar, P., Rai, S., Azam, M. M., Kumar, P., & Deswal, S. *(2025). Glacial landforms as palaeo-environmental archives in the Eastern Himalaya: A case study of Changme Khangpu glacial valley in Sikkim Himalaya, India. Progress in Physical Geography: Earth and Environment, https://doi.org/10.1177/03091333251401*

The Eastern Himalaya remains one of the most understudied regions concerning glacial geomorphology and long-term climatic evolution. Glacial landforms preserve critical evidence of past glacier advances, retreats, and associated environmental shifts. This study systematically investigates the Changme Khangpu glacial valley in the Sikkim Himalaya and demonstrates how moraines, outwash deposits, terraces, and proglacial features function as robust archives of past climatic conditions. By interpreting these landforms, the research reconstructs glacial histories and establishes a vital baseline for assessing Holocene and Late Pleistocene climate variability in the Eastern Himalaya.

Understanding past glacier dynamics is crucial for interpreting present-day cryospheric change. The study places contemporary glacier retreat within a broader temporal framework, helping to distinguish natural climatic fluctuations from accelerated, warming-driven changes observed today. The geomorphic insights also hold direct implications for present hazard assessments, as inherited landforms influence current slope stability, sediment transport, and glacial lake development—key concerns in a rapidly warming Himalayan environment prone to GLOFs and debris-flow hazards.

In order to reconstruct the past glacier fluctuations and associated palaeoclimatic conditions, this study has employed a multi-proxy approach, integrating geomorphic feature mapping, sedimentological analysis, Accelerator Mass Spectrometry (AMS) 14C dating, alongside the Schmidt Hammer rebound data for relative age determination. The results have yielded a well-defined glacial chronology for the Late Quaternary in the CKB, identifying four distinct glacial advances of varying magnitudes. The extensive glacial phase (Phase-II) resulted in the blockage of the ablation valley, forming an approx. 700 m-long proglacial lake. Subsequent glacial recession seems to have intensified the paraglacial processes which

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

progressively reshaped and modified the earlier landforms. A new dataset of 14C ages (3.5 ka to 31.4 ka cal BP) indicates climatic oscillations during the intervening period. Post-glacial climatic shifts, particularly between 14.29 ka and 3.5 ka cal BP, show a regional correlation with climatic patterns observed in the Eastern Himalayas.

This work marks a significant scientific milestone for the Glacier and Mountain Research (GLAMOR) Lab, led by Dr. Manasi Debnath, Department of Geography, Nagaland University. In collaboration with Jawaharlal Nehru University (JNU), Inter-University Accelerator Centre (IUAC), and other national partners, the team published this study in the prestigious SAGE journal Progress in Physical Geography: Earth and Environment. The publication highlights the growing national relevance of Eastern Himalayan cryosphere research and strengthens India's contribution to global mountain geomorphology and climate-change scholarship.

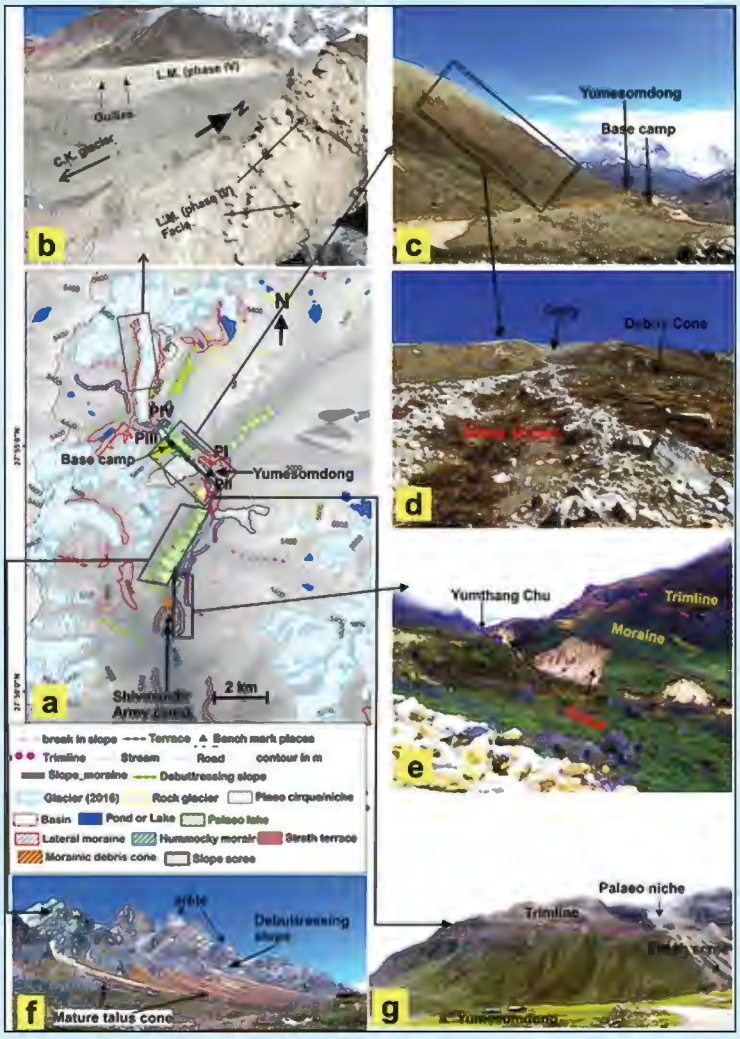


Fig. (a) Geomorphology of the CK valley; (b) Field photo of CK glacier and its surrounding latero-frontal moraine; (c) Field photo looking down valley; (d) Field photo of mature debris cone; (e) Field photo of chain of landslides below Phase-II moraine; (f) Debuttressed slope downvalley from the Yumesomdong hut; (g) Field photo of trimline of the Phase-I at Yumesomdong.

PhD Awarded

Dr. Shirish Verma

Present address: Birbal Sahni Institute of Palaeosciences (BSIP), Lucknow, Uttar Pradesh.

Thesis title: Sediment Characterization and Palaeoclimatic reconstruction of the Karewas, Kashmir Valley, India.

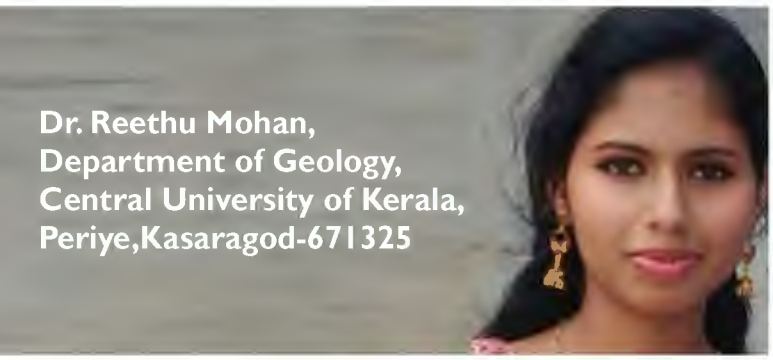
Supervisor: Dr, Binita Phartiyal, Birbal Sahni Institute of Palaeosciences (BSIP), Lucknow, Uttar Pradesh; Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India.

Co-supervisor- Dr. Rakesh Chandra, University of Kashmir, Kashmir.

The Karewa Group sediments of the Kashmir Valley provide a rare, continuous record of Quaternary climate change and tectonic evolution in the Indian subcontinent. This study examines two key stratigraphic sections—Dubjan (Lower Karewa) and Pampore (Upper Karewa)—to interpret sedimentary processes and reconstruct past climatic conditions. A multi-proxy approach was applied to the Pampore section, incorporating magnetic susceptibility, grain-size distribution, stable isotopes ($\delta^{13}C$ and $\delta^{18}O$) from ostracod shells, total organic carbon (TOC), and chronological tools such as

Quaternary Chronicles
Happenings in the Sub-continent

Optically Stimulated Luminescence (OSL) and AMS radiocarbon dating. The resulting 41.8 ka palaeoclimate record reveals 13 distinct climatic zones, reflecting alternating influences of the Westerlies and the Indian Summer Monsoon (ISM). These fluctuations align with major global climatic events including Heinrich Events, the Last Glacial Maximum (LGM), the Younger Dryas, and the Holocene Climate Optimum. Isotopic data point to generally cooler, wetter conditions dominated by C_3 vegetation, along with shifting patterns of lake evaporation. To investigate sediment provenance and depositional dynamics, magnetic mineralogy and particle-size analyses were carried out on both the Dubjan and Pampore sections. Magnetic signatures indicate differing sediment sources: Dubjan shows mixed inputs from the Greater Himalaya and the Pir Panjal Range, suggesting complex depositional controls, whereas Pampore reflects a more uniform contribution from the Pir Panjal. Particle-size results, including End Member Analysis, indicate a shift from deltaic to central lacustrine settings driven by climatic variability and tectonic forces. Given the scientific significance of the Karewa deposits, there is an urgent need for conservation measures—such as creating geo-parks and implementing protective regulations—to safeguard these vulnerable geological archives. Beyond their palaeoenvironmental value, the Karewa sediments also provide essential insights for climate adaptation strategies and land-use planning in the Himalayan region.



Dr. Reethu Mohan,
Department of Geology,
Central University of Kerala,
Periye,Kasaragod-671325

Present address: Assistant Geologist, District Office, Dept. of Mining and Geology, Pathanamthitta, Kerala.

Thesis title: Environmental Magnetic, Mineralogical and Pollution characteristics of Lateritic Soils from northern Kerala

Supervisor: Dr. Sandeep K, Department of Geology, Central University of Kerala, Periye, Kasaragod-671325, Kerala.

Lateritic soils are key archives of tropical weathering and pedogenesis, providing valuable proxies for interpreting Quaternary climatic variations. This study examines the mineral magnetic, mineralogical, and textural characteristics of lateritic ultisols developed over diverse parent rocks in northern Kerala, southwest India, an area characterised by strong monsoonal influence. An integrated analytical approach involving environmental magnetism, diffuse reflectance spectroscopy (DRS), Fourier Transform Infrared Spectroscopy (FTIR), X-Ray Diffraction (XRD), and SEM-EDS techniques was employed to elucidate the processes governing soil development under tropical conditions. The results reveal that total annual rainfall exhibits a substantial positive correlation with magnetic parameters, such as χlf, χfd, and χARM, indicating that pedogenic magnetite forms rapidly and its concentration fluctuates annually in response to rainfall variability. The upper horizons are enriched in ultra-fine superparamagnetic (SP) grains produced through neoformation of SP magnetite under alternating wetting–drying cycles, oxidation, and redox changes. These findings suggest that soil magnetic parameters serve as sensitive indicators of monsoonal intensity and can be effectively utilised as proxies for paleorainfall reconstruction in tropical southern India. Moreover, unlike temperate soils where rainfall–magnetism relationships show threshold behavior, the tropical lateritic soils display no such limiting value, reflecting their dynamic response to intense weathering and hydrological variability. Overall, this study enhances the understanding of tropical soil formation processes and highlights the potential of rock magnetic parameters for Quaternary monsoon variability and pedogenic evolution.

Dr. Arun Kaushik,
Centre for Ocean, River, Atmosphere and Land Sciences, IIT Kharagpur.

Thesis title: Study of northern Indian lake deposits inferring paleoclimatic history of the Indian subcontinent and its global teleconnection.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Supervisor: Prof. Anil K. Gupta, Geology and Geophysics, IIT Kharagpur.

The northwestern Himalayan region, with its complex orography and diverse climatic influences, exhibits strong spatial and temporal hydroclimatic variability. Understanding the mechanisms behind this variability is crucial for decoding past monsoon dynamics and their global teleconnections. My research integrates two high-resolution multi-proxy lake sediment records—Tadag Taal Lake (Kumaun Lesser Himalaya) and Sherla Lake (Lower Siwalik foothills)—to reconstruct hydroclimatic changes over the last ~1500 and ~600 years, respectively. Lake sediments serve as continuous and highly sensitive archives, preserving biological and geochemical proxies that reflect variations in monsoon intensity, catchment processes, and regional moisture sources.

The TDL record captures distinct hydroclimatic oscillations corresponding to the Medieval Climate Anomaly (MCA; ~900–1300 CE) and the Little Ice Age (LIA; ~1350–1850 CE). Proxy data indicate alternating phases of intensified and weakened Indian Summer Monsoon (ISM) activity. The MCA was broadly warm and humid, with intermittent dry intervals, whereas the LIA displayed contrasting climatic phases—relatively wet conditions during its early part (~1350–1600 CE), linked to stronger winter westerlies, and drier conditions in its later phase (~1600–1850 CE), associated with a weakened ISM. A subsequent shift to wetter conditions marks the onset of the Current Warm Period (CWP; 1850–2018 CE). The SRL record similarly reveals alternating wet and dry intervals but with regional distinctions. The early LIA (~1360–1500 CE) was marked by reduced precipitation, while the late LIA (~1600–1780 CE) experienced enhanced winter rainfall, likely influenced by a positive North Atlantic Oscillation (NAO). A wet phase at the onset of the CWP (~1850–1900 CE) was followed by a decline in monsoon strength after ~1950 CE, attributed to increased ENSO activity.

The records reveal distinct hydroclimatic oscillations corresponding to major climate intervals, such as the Medieval Climate Anomaly, the Little Ice Age, and the Current Warm Period, driven by the interplay between the Indian Summer Monsoon, winter westerlies, ENSO, and NAO phases. Importantly, this study bridges a critical research gap by providing well-dated, high-resolution lacustrine evidence that complements existing speleothem-based monsoon reconstructions. By integrating these datasets, my work enhances the spatial coherence of past monsoon variability across the northwestern Himalaya and contributes to a more comprehensive understanding of regional paleoclimate evolution, which is vital for improving future monsoon predictability under ongoing climate change.

Dr. Malika Singhal,
Present Address: Post-Doctoral Fellow, Atomic, Molecular and Optical Physics Division, Physical Research Laboratory, Ahmedabad, India

Thesis title: High Radiation Dosimetry: Methodology Development

Supervisor: Dr. Naveen Chauhan, Associate Professor, Atomic, Molecular and Optical Physics Division, Physical Research Laboratory, Ahmedabad, India

Radiation dosimetry involves measurement of the absorbed radiation dose (Gy = J/kg). It is an integral part of luminescence dating, in which the dose accumulated in natural minerals is measured through corresponding luminescence and then divided by the environmental dose rate to determine the burial or formation age of sediments/rocks. The upper limit of luminescence dating (~0.5 Ma) arises from luminescence saturation, which depends on the trap capacity within the mineral crystal lattice. The quest to extend this limit has been ongoing, and numerous efforts have been undertaken to measure higher radiation doses (HRDs; >1 kGy) by exploring new signals. However, these efforts have met with limited success.

This thesis develops methods to estimate HRDs by investigating luminescence mechanisms in conventional minerals (quartz and feldspar) and exploring new minerals, particularly jarosite—an Fe-sulfate mineral significant for paleo-aridity studies and Martian geology. Jarosite exhibits stable and reproducible luminescence responses to both thermal and optical stimulation (blue and infrared). Its multiple thermoluminescence (TL) glow peaks (100–350°C) show < 6% variability for TL and & <14% for BSL/IRSL. The thermal stability suggests that it is suitable for cold-region or Martian dating, with lifetimes of approximately 0.3 million years (Ma) at 27°C and around 3 Ma at 10°C. Dose-response curves saturate between 590 and 1600 Gy for TL, BSL, IRSL, and pIRIR225 signals. The negligible fading and high stability suggest that Jarosite can date back up to approximately 800 ka on Earth (dose rate ~2 mGy/yr) and approximately 25 ka on Mars (dose rate ~65 mGy/yr).

Multi-spectral investigations of quartz and feldspar reveal that TL saturation occurs around 10–18 kGy for quartz and 1–5 kGy for feldspar, hence suggesting that quartz holds potential for HRD estimation. Further studies carried out to understand the luminescence mechanism in quartz suggest that on application of HRD, no permanent changes occur in crystals. Saturation is governed by the electron trapping centre and bleachability, both of which are influenced by the electron and hole centres. The conventional sensitivity normalisation methods fail beyond ~1 kGy. Instead, mass-based normalisation provides consistent results. Blue Stimulated Luminescence (BSL), traditionally thought to saturate at around 250 Gy, does not saturate as early when measured using multiple aliquots and mass normalisation, suggesting limitations in the SAR protocol. Charge carry-over effects during SAR regeneration cause premature saturation, while Multiple Aliquot Additive Dose (MAAD) methods yield more accurate high-dose estimates, with DRCs saturating near ~5800 Gy. Dose recovery ratios range from 0.9 to 1.2, although with ~50% error for a given laboratory dose of 1000 Gy.

Applying these methods to natural samples from the Upper Shivaliks (~0.2–5 Ma) and the Charavathur Formation (>2.5 Ma) demonstrates that the MAAD holds potential for estimating higher doses where SAR fails. In low-dose-rate contexts, MAAD provides a more accurate representation of the natural equilibrium between trapping and detrapping. Despite some uncertainties, these findings advance high-dose luminescence dosimetry, providing a foundation for extending the dating range of terrestrial and extraterrestrial materials.

Yezad Pardiwalla, Department of Humanities and Social Sciences at IISER, Mohali

Supervisor: Dr Parth R. Chauhan

Thesis title: What seems to be the matter in the central Indian Palaeolithic?: Investigating the influence of Vindhyan rocks on dynamic levels of lithic variability

Despite being primary in reduction sequences, the stone used to manufacture Palaeolithic artefacts is not given its due in prehistoric research of the Indian subcontinent. Compounding the issue is the replication of analytical approaches developed for flint artefacts to assemblages made from materials like sandstone or quartzite, which are widely used in South Asia. This thesis aimed to understand the different levels of variability (techno-typological, morphological, assemblage, etc.) in the earlier Palaeolithic basis rocks sourced from the Vindhyan formations of central India. Surveys and excavations between 2018 and 2022, mainly in the adjoining districts of Damoh and Narsinghpur (in Madhya Pradesh), yielded several previously unreported, rich Palaeolithic artefact concentrations.

These artefacts were collected from a total of 28 localities, with in-depth lithic analysis being conducted on five. The qualitative and quantitative attributes recorded covered all elements of the assemblage, including cores, flakes, tools and debris. Combining macroscopic (morphological), microscopic (petrographic) and experimental (replication) approaches, the research then compared the stone artefacts through the lens of raw materials used. Differences observed between assemblages produced from varying clast morphologies or raw material types, compared to those manufactured from sub-rounded quartzite clasts, highlight the key role played by local lithic resources. A comprehensive examination of regional chronological (OSL dating) and environmental (fossil analysis) proxies offers additional insights into cultural adaptations, as reflected in variability in lithic technology.

This nuanced appreciation of local resources can thus hopefully move Palaeolithic research beyond the limiting dichotomy that often consigns hominin behavioural plasticity to simple (expedient) and complex (curated) categories.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Dr. Brijesh Kumar, Birbal Sahni Institute of Palaeosciences, Lucknow, India, and Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India)

Thesis title: Late Quaternary oceanographic variations from the equatorial Indian Ocean: emphasis on ocean circulations and calcareous productivity

Supervisor: Dr Pawan Govil, Birbal Sahni Institute of Palaeosciences, Lucknow, India, and Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India.

The tropical Indian Ocean (TIO) plays a pivotal role in regulating regional and global climate through complex ocean-atmosphere interactions, particularly via Indian Ocean Dipole (IOD) events, equatorial westerlies (IEW), and the Indian Ocean Walker Circulation (IWC). The present study reconstructs long-term mixed-layer and thermocline variability in the western and eastern equatorial Indian Ocean (WEIO and EEIO) over the past ~412 ka, using planktonic foraminiferal assemblages and stable isotope records ($\delta^{18}O$, $\delta^{13}C$) from Sites VM29-045 and RC14-037PC. Our results reveal significant glacial-interglacial and suborbital fluctuations linked to monsoon dynamics and ocean circulation. The site VM29-045 shows lower $\delta^{18}O$ G.ruber values during MIS 11, MIS 5, and MIS 1, indicating strong Indian Summer Monsoon (ISM) and high precipitation, while higher values during MIS 10, MIS 8, MIS 6, MIS 4, and MIS 2 reflect cooler, drier conditions with intensified winter monsoons. Comparison with terrestrial records supports this ISM variability. Notably, MIS 10 and MIS 2 were relatively drier and cooler than MIS 6 and MIS 8, likely due to regional influences. $\delta^{18}O$ and $\delta^{13}C$ G.ruber records show good coherence with global ocean records. Strong zonal circulation (IEW and IWC)-induced thermocline shoaling occurred between 347-329 ka and 250-82 ka, characterized by large $\Delta\delta^{18}O$ gradients and increased thermocline species abundance. Short-term thermocline shoaling was also evident during glacial terminations TIV, TIII, TII, and TI. In contrast, periods of weaker zonal circulation (~410-367 ka, ~329-250 ka, and ~82-12 ka) show reduced $\Delta\delta^{18}O$ gradients and deeper mixed layers. The site RC14-037 exhibits elevated $\Delta\delta18O$ m-r values and higher thermocline species abundance during MIS 7e, Termination III (TIII), early MIS 6, MIS 5e, MIS 5a, and the MIS 4-3 transition, indicating a shallower thermocline during these periods. Conversely, the lower $\Delta\delta18O$ m-r values and higher mixed layer species abundance during mid-MIS 6, early MIS 4, MIS 2, and the glacial termination periods (TII and TI) suggest a deeper thermocline, indicative of reduced upwelling and warmer subsurface waters. Variations in the abundance of mixed-layer and thermocline-dwelling foraminifera reveal changes in hydrography and productivity tied to monsoon variability and ocean circulation.

Dr Chandan Kumar Sahu
Present Address: CSIR-National Botanical Research Institute, Prem Nagar, Hazratganj, Lucknow, Uttar Pradesh 226001

Thesis title: Taxonomic revision of the genus Desmodium Desv. and its allied genera in India

Supervisor: Dr Soumit Kumar Behera, Sr. Principal Scientist, Plant Ecology and Climate Change Science Division, CSIR- NBRI, Lucknow
Co-Supervisor: Dr L.B. Chaudhary, Former Senior Principal Scientist, Plant Diversity, Systematics and Herbarium, CSIR- NBRI, Lucknow

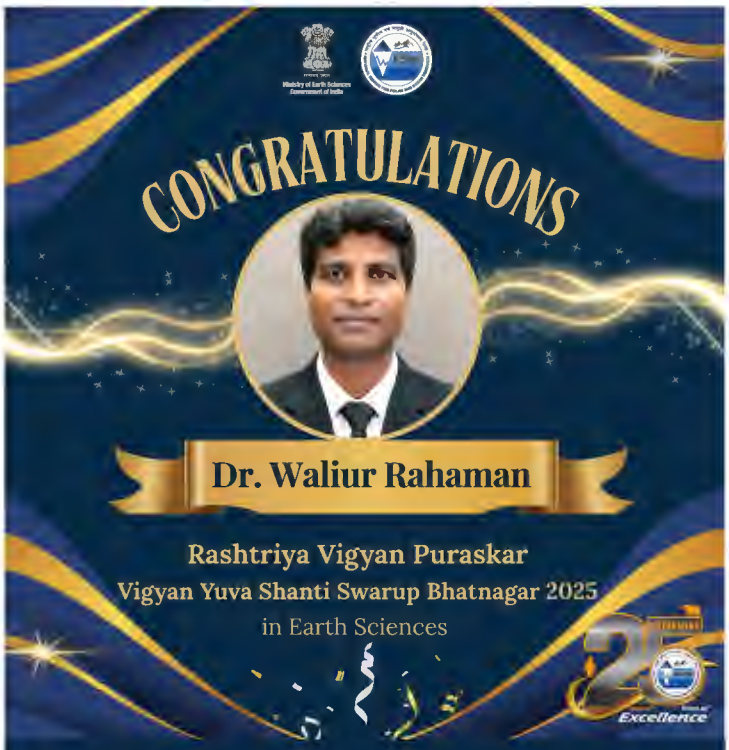
The present research provides the first comprehensive, nationwide taxonomic reassessment of Desmodium Desv. and 14 of its allied genera belonging to the Desmodium group of tribe Desmodieae (Fabaceae) in India. Members of this group are distributed globally, predominantly in tropical to temperate regions, with major diversity centres in Mexico and South America. This study documents 54 taxa occurring in India, including their updated nomenclature, distribution, habitat preferences, and phenology, derived from extensive field and herbarium investigations. The work also integrates micromorphological observations of some selected taxa and IUCN-based conservation assessments of six endemic species. Since Baker's (1876) classical treatment of Desmodium in Flora of British India, which described 49 species under 8 subgenera, no comprehensive revision of this group has been attempted in India. Many subsequent regional studies added valuable but fragmented insights. The present work fills this long-standing gap by providing a consolidated revision that resolves taxonomic ambiguities related to identification, synonymy, and species boundaries.

In total, 54 taxa belonging to Desmodium and its allied genera were critically examined, resulting in updated nomenclatural and distributional data. The study highlights the remarkable morphological diversity of the group, encompassing herbs, shrubs, and subshrubs, and spanning nearly all Indian biogeographic zones. Of the 23 genera of the Desmodium group known from India, 15 were included in this revision, while distinct and independently recognized genera such as Alysicarpus, Christia, and Uraria were excluded. Extensive herbarium and fieldwork formed the backbone of this study. Over 5,200 herbarium specimens housed in Indian and international herbaria were examined, alongside digital images of type specimens. Field surveys across ten states provided fresh collections for morphological and micromorphological analyses. Observations under a Leica stereozooming dissecting microscope facilitated detailed examination of floral and vegetative structures, and all newly collected materials were deposited at the LWG herbarium. The revision recognizes 46 species and 8 infraspecific taxa of Desmodium and its allies, each accompanied by complete morphological descriptions, phenology, distribution data, and diagnostic illustrations. Dichotomous keys were developed to assist in the identification of genera, species, subspecies, and varieties. Among the allied genera, Grona emerged

as the largest with 10 species, followed by Desmodium with 6 and Ototropis and Sohmaea with 5 species each. Pleurolobus pryonii is newly recorded from Assam, extending its range from southern India. Micromorphological analyses revealed considerable variation in trichome types and seed-coat ornamentation, which proved taxonomically informative. Features such as hair orientation and seed-coat sculpturing contribute to clarifying generic limits and evolutionary relationships within Fabaceae. GeoCAT-assisted IUCN evaluations of 6 endemic species demonstrated varying degrees of threat, ranging from Endangered to Least Concern. Although Grona brachystachya and G. wynaadensis are currently assessed as Least Concern, species distribution models predict significant habitat loss under future climate scenarios, underscoring the need for proactive conservation measures. Moreover, this study provides an authoritative and up-to-date account of the Indian Desmodium group, integrating classical taxonomy with modern conservation tools.

Hearty congratulations to Dr. Sajinkumar, *who received the Geological Society of India's Sesquicentennial Commemorative Award for his outstanding contributions to Engineering Geology at the GSI annual general body meeting, Kumaun University, Nainital, on 7th Oct 2025.*

Hearty congratulations to Dr. Rajani Panchang, *UGC Assistant Professor in the Department of Environmental Science at Savitribai Phule Pune University (SPPU), who has been awarded the prestigious Fulbright-Kalam Climate Fellowship for Academic and Professional Excellence 2025. As part of the fellowship, she will collaborate with Professor Pamela Hallock and will be hosted by Dr. Michael Martinez-Colon at Florida A&M University, Tallahassee, for a nine-month research stay beginning in mid-Nov 2025.*



Congratulations to Dr. Waliyur Rehman, NCPOR, Goa -recipient of the Vigyan Yuva Award 2025 in the Earth Science category. He was recognized for his outstanding contributions to Polar and Ocean Sciences and the field of Earth Sciences generally.

The award, officially known as the Vigyan Yuva–Shanti Swarup Bhatnagar (VY-SSB) Award, is part of the larger Rashtriya Vigyan Puraskar (RVP) instituted by the Government of India.

Congratulations to Ms. Rinu Fathima, *PhD Scholar, CSIR - National Institute of Oceanography, fo securing the Fulbright Kalam Doctoral Research Fellowship.*
Supervisor - Dr. Rajeev Saraswat.
Host Institute - Rutgers, The State University of New Jersey, New Brunswick, USA.
Host Supervisor - Dr.Yair Rosenthal.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Short-Term Research Grant @ Bar-Ilan University (Israel)

Ms. Alana Mariya Koshy and Mr. Harinarayanan of 5th Year MSc. Integrated Geology, Christ College (Autonomous), Irinjalakuda, Thrissur, Kerala was awarded shart term research grant by Bar-Ilan University, Israel. The grant facilitated a two-month research internship, which was completed at the Sedimentology & Portable Luminescence laboratory, Bar-Ilan University.

Hearty Congratulations!

Awards at the Platinum Jubilee Conference of the Palaeontological Society of India

Heartiest congratulations to Drs. Swati Tripathi and Pooja Nitin Saraf for receiving awards in different categories at the Platinum Jubilee Conference of the Palaeontological Society of India, held under the theme "Fossils as Earth's Timekeepers" from October 29–31, 2025, at the National Institute of Oceanography, Goa.

Congratulations to all the Researchers on receiving various travel grants!

AGU Student Travel Grant 2025 to BSIP, Lucknow Scholars

Ms. Arya Pandey
DST-INSPIRE SRF

Ms. Mitra Rajak,
UGC-SRF

Dr. Divya Singh, CSIR-RA

TMS AGM Travel Grant - To attend The Micropaleontological Society's (TMS) Annual Conference 2025, University of Pisa, Italy.

Mr. Rakhil Dev Pananghat,
Cochin University of Science & Technology.

Mr. Siddhant Vaish (BSRS)

Quaternary Chronicles
Happenings in the Sub-continent

Report of the Pre-INQUA 2027: National Workshop on Recent Developments in Quaternary Studies, Focus on NE India & National Hands-on Training on Quaternary Microfossils, Organised by the Department of Geological Sciences, Gauhati University, 24-27 November 2025.

As a part of the pre-INQUA activity, the workshop and training were organised by Dr Bikash Gogoi, Head, Department of Geology, Gauhati University, with support from AOQR, ANRF (DST), MoES, New Delhi, OIL, and ONGC. The inaugural programme was graced by Prof. Nani Gopal Mahanta (Vice Chancellor, Gauhati University), Dr. Binita Phartiyal (Organising Secretary, INQUA 2027), Shri Trailukya Borgohain (Director, OIL), Shri Bhaskar Morang (CGM, ONGC) and Vandana Prasad (President, AOQR). 32 participants from different universities and institutes attended the workshop. Dr. Binita Phartiyal introduced the aims and upcoming preparations for INQUA 2027, to be hosted in Lucknow. She also screened a documentary highlighting India's role and vision for the international event. A virtual address was given by Dr. Jagvir Singh (Ministry of Earth Sciences), who expressed the Ministry's support for scientific initiatives and collaborative platforms such as the Earth Science Olympiad. The keynote talks were given by Dr. Parag Phokon, Dr. Vandana Prasad, Prof. Chuan-Chou Shen (online), Dr. Ilaria Mazzini (online), Prof. B. N Goswami, Dr. Anjum Farooqui, Dr. Santosh K Shah,

Dr. S. B Ota, Dr. Sadhan K. Basumatary and Dr Karthick Balasubramaniam. Hands-on training on the lab techniques of diatom and pollen analysis was provided to students in the department laboratories, along with a field trip to Deepor Beel, also known as Dipor Bil, a freshwater lake southwest of Guwahati, which is a RAMSAR site.

Report on the Advanced Training of Trainers Program on "Glaciers and Glacial Lakes Observations for Sustainable Water Resource Management" at The Centre for Cryosphere & Climate Change Studies at the National Institute of Hydrology, Roorkee.

Ms. Arushi Kumar, PhD Scholar, BSIP, Lucknow

The Centre for Cryosphere & Climate Change Studies at the National Institute of Hydrology, Roorkee,

recently hosted the Advanced Training of Trainers (ToT) Program on "Glaciers and Glacial Lakes Observations for Sustainable Water Resource Management." Held from September 29 to October 11, 2025, this two-week workshop brought together scholars from diverse disciplines, including glaciology, geomorphology, remote sensing, and soil sciences.

The Program provided a unique opportunity for participants to engage with experts in the field and gain hands-on experience in glaciology and glacial lake modelling. The training consisted of lectures, tutorials, and a field visit to the Gangotri glacier, where participants learned about glacier mass balance analysis and visited an Automatic Weather Station set up by the National Institute of Hydrology, Roorkee.

The field visit to Gangotri Glacier was a highlight of the Program, with participants receiving practical demonstrations of instruments used in glacier research. The experience was further enhanced by the breathtaking scenery of the Bhagirathi valley, which was capped off by a snowfall in Bhojwasa. The workshop successfully achieved its objectives, equipping participants with a comprehensive understanding of glacier geomorphology, associated climate risks, and mitigation strategies. The knowledge gained during the Program will undoubtedly benefit the scholars in their PhD research and future endeavours.

Report on "Young Scientists' Meeting on Earth's Changing Contours: The Interplay of Forces & Time" Organized by: TWAS Central and South Asia Regional Partner (TWAS-CASAREP), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru, India, from 27–29 August 2025 (Hybrid Mode)

Rina Rani Palei, PhD Scholar, IIT Kharagpur

The Young Scientists' Meeting on Earth's Changing Contours: The Interplay of Forces & Time, organized by TWAS-CASAREP Partner JNCASR, Bengaluru, was held from 27–29 August 2025 in hybrid mode to explore the dynamic forces shaping our planet. The three-day event brought together around 70 participants from diverse disciplines. Thirteen distinguished speakers enriched the meeting by sharing their groundbreaking research, experiences, and perspectives on future directions in Tectonics, Seismotectonics, Climate, and Polar Studies. Additionally, early-career scientists from India, Uzbekistan, Nepal, and Kazakhstan presented their advanced research, fostering a truly international exchange of scientific ideas.

I was privileged to participate in this prestigious and insightful international meeting and to present my research titled "Surface Hydrographic Changes in the Southeastern Indian Ocean Driven by the Evolution of the Leeuwin Current since the Latest Miocene." Employing a suite of multi-proxies such as planktic foraminifera, stable isotope data, and bulk sediment XRF analyse. Our study reveals the following key findings: (1) a thick mixed layer and a strengthened Leeuwin Current in the southeastern Indian Ocean coincided with humid conditions over Northwest Australia during 6.1–5.4 and 5–3.6 Ma; (2) intervals of diminished Leeuwin Current intensity corresponded with arid conditions over Northwest Australia (5.4–5.0, 3.6–3.2, 2.6–2.0, and 1.2–0.6 Ma); and (3) a pronounced influence of the West Australian Current, associated with the expansion of the East Antarctic Ice Sheet, likely contributed to substantial cooling in the Indian Ocean during the Mid-Pleistocene Transition (1.2–0.6 Ma).

I sincerely thank TWAS-CASAREP Partner JNCASR for organizing this enriching platform and express my heartfelt gratitude to Dr. Jaishri Mam for her exceptional efforts in coordinating and leading the event. I also extend my sincere thanks to my supervisor, Prof. Anil K. Gupta, for his continuous support and guidance.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Obituary

Dr. Sisinthy Shivaji

It is with a heavy heart that I pen down this obituary note. I met him for the first time in 2009 at NCPOR, where he was an expert for the Arctic project evaluation. He grilled me with a lot of very relevant scientific questions, which helped me refine my research objectives and work plan in the Arctic. I experienced his science acumen and sharp questions a few more times while defending my research proposals for the Arctic expedition. In the last couple of meetings, I was sitting with him on the expert panel. It was, in fact, the in-depth scientific knowledge and suggestions of renowned experts such as Dr. Shivaji, helped me achieve a certain level of success in Arctic research. Eventually, this helped me to become a member of the Research Advisory Committee of the National Centre for Polar and Ocean Research (NCPOR), Goa.

I knew him as a great scientist, and I was always a bit afraid to get closer to him; however watched him with great respect from a distance. Later, I conducted a search on Google Scholar and was surprised by the range of subjects on which he published high-standard research articles. My great friend at NCPOR, Dr. K.P. Krishnan (Late), also told me that Dr. Shivaji is a prolific author of science articles. Referring to the biodata of Dr. Shivaji, I could find his contributions to science in general and polar research in particular. He is the first biologist from India to visit the Arctic and Antarctic for scientific research. He was awarded the Antarctic Award of Excellence in the field of biological sciences in 2002 and the National Award in Polar Sciences and Cryosphere in 2016.

As a person with a keen interest in biology, it was surprising to me that Dr. Shivaji was instrumental in setting up the Laboratory for the Conservation of Endangered Species (LaCONES) in Hyderabad, along with the then Director of Centre for Cell and Molecular Biology (CCMB), Dr. Lalji Singh. They have done pioneering research on the cloning of the Indian Cheetah and on the decline of the vulture population. In a very impressive scientific career spanning four decades, Dr. Shivaji rose to become a Director-grade scientist at CCMB. Dr. Shivaji has authored more than 350 research articles and 2 books. He has an exemplary h-index of 71, with 17,145 Google Scholar citations. The i10 index is very impressive, 293. These figures speak volumes about the significant impact he made in the field of science, which has motivated a great number of aspiring students and scientists, including myself. He was a visiting scientist at the Max-Planck Institute, Germany; the National Institute of Basic Biology, Japan; the Institute for Medicine, Germany; the Observatoire Oceanologique de Banyuls, France; and several other institutes in India. Post retirement, Dr. Shivaji joined the L.V. Prasad Eye Institute as Microbiology mentor and later on became the Director Emeritus and Senior Scientist at the Prof. Brien Holden Eye Research Institute.

The untimely death of Dr. Shivaji has indeed left a void in the field of science, which is not going to be filled by anyone. LaCONES is just a reflection of his love for fellow beings. Dr. Shivaji will be deeply missed by the scientific community in India and abroad. His immense contributions to science will remain as a source of inspiration for all those who wish to excel in their chosen career. May his soul rest in peace.

by
Dr. A.A. Mohamed Hatha,
Senior Professor, Dept. of Marine Biology, Microbiology & Biochemistry
Director, CUSAT-NCPOR Centre for Polar Sciences
Country Ambassador, American Society of Microbiology
Cochin University of Science and Technology, Cochin - 682 016, Kerala, INDIA.

Quaternary Chronicles
Happenings in the Sub-continent
ASSOCIATION OF QUATERNARY RESEARCHERS

Summary/List of some recently published papers

Aravind et al (2025) analyse a lake-sediment record in southern India to track changes in microplastic (MP) deposition over the last ~40 years, showing increasing MP inputs in a lacustrine environment. The research links MP accumulation with sedimentary and environmental changes in the lake basin, providing a temporal context for MP pollution in freshwater systems in India. Journal of Sedimentary Environments 10(4): 1185 - 1201. DOI: 10.1007/s43217-025-00258-1

Phartiyal et al (2025), through multi-proxy analyses (mineral magnetism, diatoms, pollen, C/N, etc.) of a sediment core from Bandhavgarh National Park (Central India), reconstruct environmental and climatic changes from ~525 BCE to present, identifying five distinct climatic phases. They link changes in the Indian Summer Monsoon, vegetation and human land-use (e.g., cave construction, temple building) over millennia, showing how socio-cultural evolution and climate were intertwined in the region. "Phartiyal, B., Balasubramanian, K., Lahiri, N., Tiwari, A., Prasanna, K., Trivedi, A., Manoj, M C., Kawsar, M., Renny, A., Thacker, M., Das, P. and Srinivas, A. (2025). Climate-Driven History of last 2600 years: Insights from Bandhavgarh National Park and Tiger Reserve, Central India. The Holocene. doi.org/10.1177/09596836251358 7"

Reshma et al (2025) investigate a sediment core from the continental margin off the eastern Indian coast to infer riverine detrital input, chemical weathering, and monsoon dynamics over ~23,000 years (since the Last Glacial Maximum). They identify shifts in magnetic, geochemical, and isotopic proxies that link increased terrigenous input to the intensification of the monsoon and uplift of the Palar River basin around 4,900 cal. years BP, demonstrating the coupling of fluvial-sedimentary processes and climate on long timescales.

Aravind, G.H., Mahidev, R.S., Rafaz, A.K., Sandeep, K., Sijinkumar, A.V. and Warrier, A.K. (2025). Spatio-temporal variation of microplastics during the past four decades in a lacustrine sedimentary environment in southern India. Journal of Sedimentary Environments. https://doi.org/ 10. 1007 /s43217-025-00258-1.

Das, A., Band, S., Tiwari, S., Vedpathak, C., Makwana, N., and Prizomwala, S. (2025). Holocene climate variability and Indian summer monsoon dynamics in the Kachchh Region, Western India: Insights from fluvial, coastal, and Rann Sediment Archives. Palaeogeography, Palaeoclimatology, Palaeoecology, 113390. https://doi.org/10.1016/j.palaeo.2025.113390

Das, S. K., Datta, S., Mahanta, N., & Singh, R. K. (2025). Five-million-year deep-ocean paleoceanographic variability at the Central South Pacific: Insights from agglutinated foraminiferal assemblages. Palaeogeography, Palaeoclimatology, Palaeoecology, 113356. https://doi.org/10.1016/j.palaeo.2025.113356

Kumar, B., Govil, P., Verma, D., & Khan, H. (2025). An Appraisal of Indian Ocean Dipole variability and its linkage with ENSO: Future perspective. Perspective, 46, 625-634. http://doi.org/10.22438/jeb/46/5/MRN-5600

Kumar, M., Agrawal, S., Sarangi, V., Farooqui, A., Singh, P., Ali, S. N., ... & Singh, D. S. (2025). Plant phenotypic adjustments in response to changes in atmospheric pCO2: insights from δ13C values and stomatal index in C3 plant leaves. Isotopes in Environmental and Health Studies, 1-17. https://doi.org/10.1080/10256016.2025.2536606

Mahanta, N., Sahoo, B., Das, S. K., Datta, S., Rath, S., & Singh, R. K. (2025). Bottom water characteristics and paleoceanographic evolution of Central Southern Pacific Ocean across the Mid-Brunhes Transition. Global and Planetary Change, 105087. https://doi.org/10.1016/j.gloplacha.2025.105087

Palei, R. R., Gupta, A. K., Sanyal, P., & Jaiswal, M. K. (2025). Geochemical and microtextural properties of pyritized foraminiferal tests: results from ODP hole 763A, Southeastern Indian Ocean. Geological Magazine, 162, e44. doi:10.1017/S0016756825100307

Rajoriya, A., Tiwari, P., Pandey, S., Farooqui, A., Gahlaud, S. K. S., Thakur, B., ... & Agnihotri, R. (2025). Late Holocene geochemical and environmental changes inferred from a multiproxy investigation in sediments from Kondagai Lake Tamil Nadu, India. The Holocene, 09596836251378011. https://doi.org/10.1177/09596836251378011

Reshma, K.V., Ammoose K. Jayan, Srinivas Bikkina, Sijinkumar, A.V., Venkateshwarlu, M., Jithin Jose, Rafaz, A.K., Kurian, P.J., Rajveer Sharma and Sandeep, K. (2025). Terrigenous influx from Peninsular Indian Rivers in response to climatic variability since the Last Glacial Maximum. Palaeogeography, Palaeoclimatology, Palaeoecology, 678, 113233. https://doi.org/10.1016/j.palaeo.2025.113233.

Sahoo, B., Samal, S., Murmu, B., Das, M., Das, S. K., Datta, S., ... & Singh, R. K. (2025). Japan sea surface paleoceanography and productivity variations through the Middle Pleistocene Transition. Quaternary International, 750, 110032. https://doi.org/10.1016/j.quaint.2025.110032

Verma, D., Govil, P., Agrawal, S., Morthekai, P., Kumar, B., & Khan, H. (2025). Late Quaternary productivity and hydrographic variability in the upper water column of the Agulhas Return Current region as inferred from planktic foraminifera. Quaternary International, 740, 109894. https://doi.org/10.1016/j.quaint.2025.109894

Debnath, M., Sharma, M. C., Syiemlieh, H. J., Kumar, P., Rai, S., Azam, M. M., Kumar, P., & Deswal, S. (2025). Glacial landforms as palaeo-environmental archives in the Eastern Himalaya: A case study of Changme Khangpu glacial valley in Sikkim Himalaya, India. Progress in Physical Geography: Earth and Environment, 0(0). https://doi.org/10.1177/03091333251401113

Quaternary Chronicles
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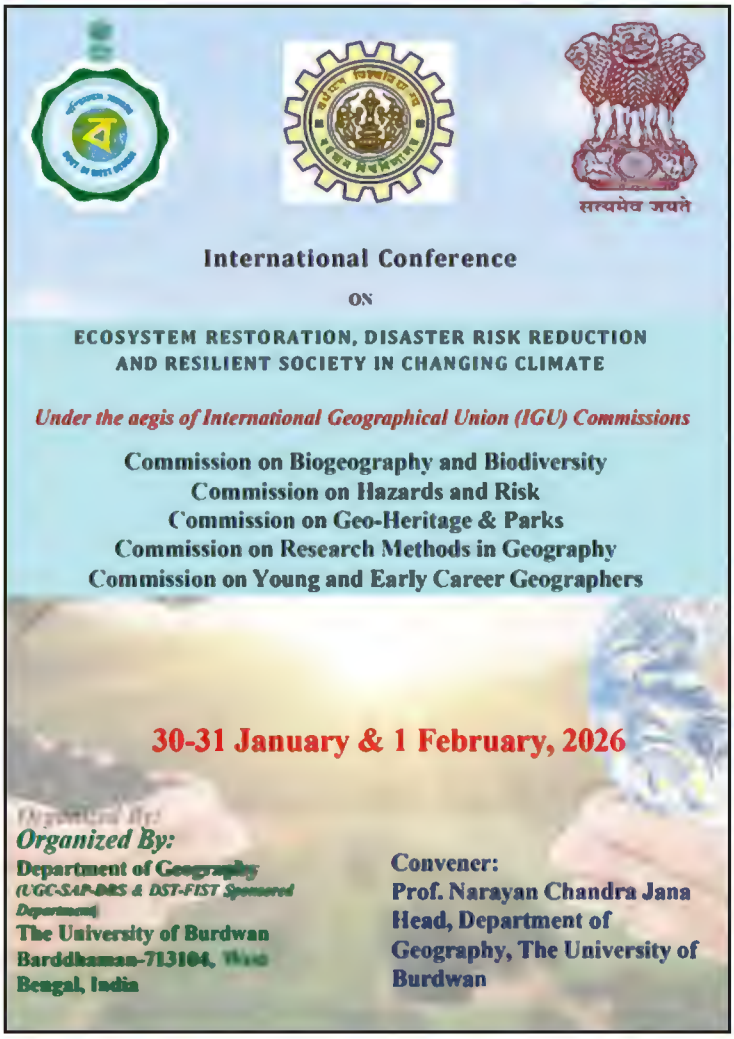
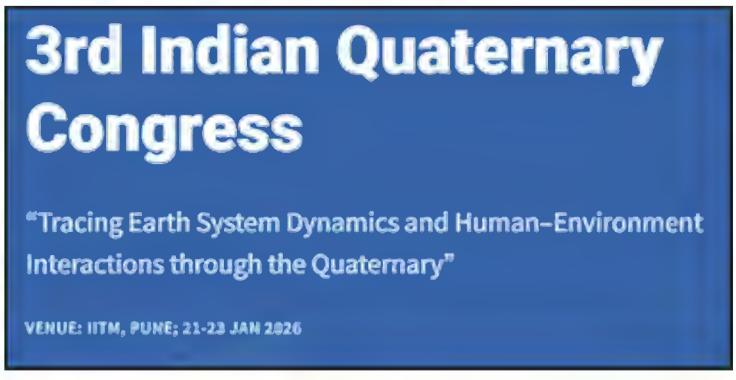
UPCOMING EVENTS





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Happenings in the Sub-continent
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QC CALL FOR CONTRIBUTIONS

Quaternary Chronicle (QC) publishes three issues a year seeks to publish perspectives, recently published peer-reviewed papers in Quaternary science, new developments in Quaternary science methods/ techniques, past events, awards, abstracts of recently awarded Ph.D./MS thesis; Quaternary publications, obituaries and details on forthcoming conferences/opportunities/fellowships the world over. Each issue of the newsletter will therefore, comprise news on on/from the Indian sub-continent;. It will also have a platform for discussion on emerging questions and ideas in Quaternary science and details on new books/ monographs/ reviews. QC seeks to share original results, new ideas and innovative development for the common good and a possibility to serve as a catalyst for the initiations of major and coordinated initiatives in the country.

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3.Significant new manuscripts/ books/ monographs/ reviews: *Corresponding authors of recently published peer-reviewed papers are invited to submit a brief summary of their work (not published abstract) with complete reference, web-link, and corresponding email address (200-300 words). Also, include a PDF copy of the paper in the email (for reference only).*

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ISSUES	Deadlines (Last date for submission)
Issue -1 (April)	**March 10**
Issue -2 (August)	**July 10**
Issue -3 (December)	**November 10**