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Report

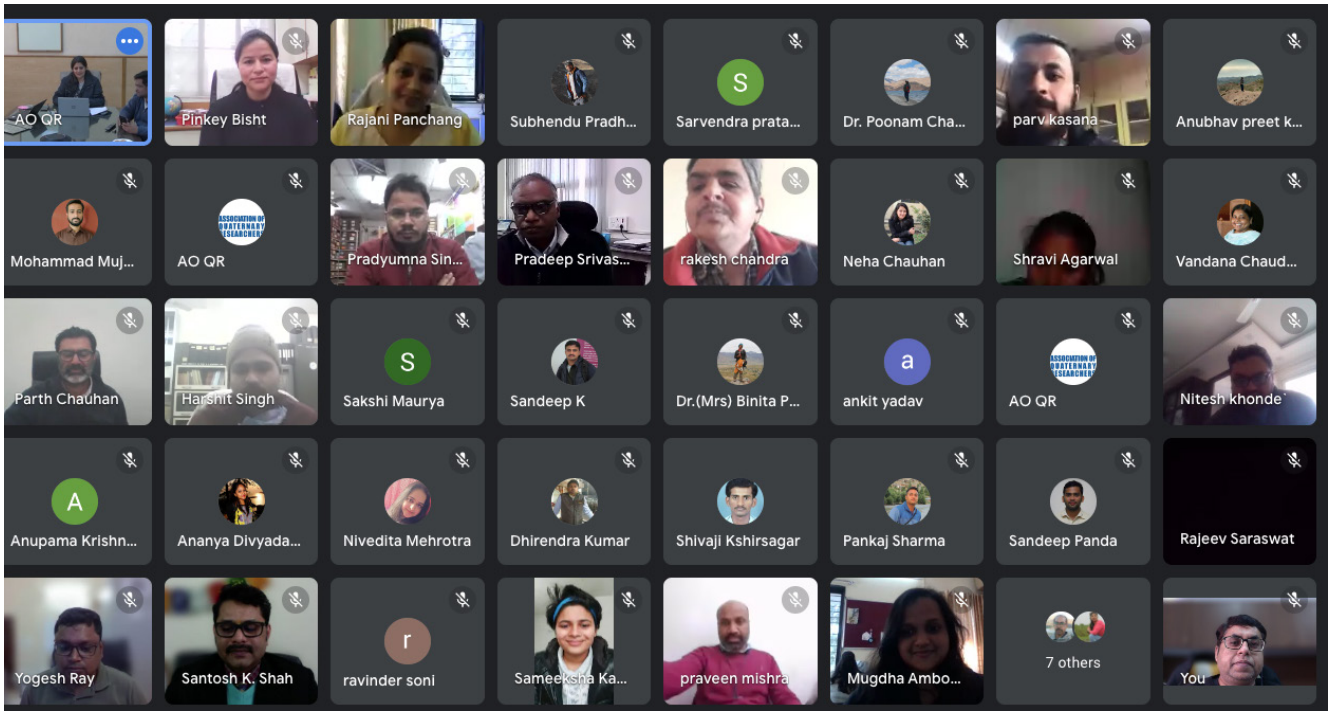
1ST INDIAN QUATERNARY CONGRESS (IQC)–2022 ORGANIZED BY THE ASSOCIATION OF QUATERNARY RESEARCHERS (AOQR)

January 19–21, 2022

ASSOCIATION of Quaternary Researchers (AOQR) is a newly formed (December, 2019) National association committed to the overall ascent of the Quaternary research in the Indian subcontinent. The Quaternary is a period that started around 2.6 million years ago until today, and the study of this period is vital because the records are well preserved in the sediments compared to the other geologic time, which can answer a lot of burning problems and issues of this dynamic period of the earth's history. The Indian Quaternary scientific community has made a first–order synthesis on palaeoclimatic variability, variability of ocean currents, the geochemical budget of the oceans, geodynamic and anthropogenic history over the Indian subcontinent.

To strengthen the understanding and expand the interdisciplinary collaborations, a three days Indian Quaternary Congress (IQC) under the Association of Quaternary Researchers (AOQR) with its Headquarter at Birbal Sahni Institute of Palaeosciences (BSIP), Lucknow, U.P., India, was organized between 19th and 21st January, 2022 with a unique theme of "Integrative Quaternary Sciences for societal services." The main objective of this congress is to gather and interact with the researchers working in the Quaternary landforms under one umbrella. This was the first IQC designed and successfully organized. The congress comprised of five themes: Terrestrial processes through Quaternary, Ocean realms in Quaternary, Human–Climate interaction, High Altitudinal zone in Quaternary (Third Pole), and Indian sub–continent–Last two thousand years and subdivided into six sessions (1) Climate: Past, Present and Future, (2) Earth Surface Processes, (3) Oceans in the Quaternary, (4) Humans in Quaternary, (5) Fossil records in the Quaternary, and (6) Quaternary landscape evolution. A special session on Quaternary geology: Science, Philosophy, Management & Policy was also conducted to discuss various funding opportunities for the Quaternary researchers.

The overall sessions included three key–note talks with 42 oral presentations and 49 poster presentations. On 19 January 2022, the congress was inaugurated by the



Presidential Address by Dr. Vandana Prasad, President AOQR, followed by the key–note talk by Professor Robert Wasson, Australian National University, Australia.

In the presidential address, Dr. Prasad, President AOQR, welcomed all the participants and dignitaries and discussed the importance of the Quaternary Period as it is the most recent and ongoing period of the earth's history that witnessed the expansion and contraction of the ice sheets, rise and fall of the sea level, migration, and extinction of flora and fauna, etc. She mentioned the physiographic landscapes and the variety of the Quaternary succession available in the Indian sub–continent. She also discussed how the organizers were encouraged to form an association of Quaternary researchers in the Country to provide a platform for the budding scientists and the research scholars to interact under the same roof.

Professor Wasson delivered his thought on the importance of the Quaternary research for the natural resource and environmental disaster policy. He argued on long climatic records to understand the environmental hazards, trends, frequency, causes and risk reduction in his talk.

In the first session, (1) Climate: Past, Present, and Future, 13 oral and 18 posters were presented and discussed the climate variability over the Last Glacial Maxima (LGM). The corals, cave deposits, tree rings, lake sediments, etc. were utilized as a proxy record to decipher the monsoon and its variability. The boron isotopes–based pH variability from the Arabian Sea, the lake–level fluctuation of Pangong Tso from the sclerochronology of gastropod shells, artificial lakes, and the multi–modelling approach to predict the past and future climate suitability for two mangrove species along the coastal wetlands of India. The poster session discussed the impact of atmospheric CO_2 on $\delta^{13}C$ on industry and non–industry plants, climatic records from the cave, tree rings, and coastal dunes. Organo–molecular records of warm periods from Late Quaternary loess–palaeosols from Dilpur Formation, Kashmir, diatoms records based water table fluctuation, pollen, and phytoliths from modern and palaeo–lake deposits have attracted the listeners.

On the second day, the key–note lecture was delivered by Professor Peter D. Clift, Louisiana State University, USA, on "Monsoon influences on Quaternary erosion and sediment transport in the Indus River Catchment, SW Asia". His lecture discussed the sedimentation and incision pattern in the Indus River Catchment System from the source region to the sink (Arabian Sea) using terraces mapping and seismic data from the Indus Delta. He correlated the sedimentation and erosional events with the monsoon fluctuations during the Holocene and suggested a sizeable erosional pulse lie in the early Holocene and was associated with the intense weathering; however, after ~ 6 ka, the erosion was associated with the recycling of the sediments.

On the second day, there were two sessions: (2) Earth Surface Processes and (3) Oceans in the Quaternary of 15 oral and 17 poster presentations. Sedimentology, biomarkers, stable isotopes, end–member models on grain size data, debris flow susceptibility, and landslides on various landscapes were discussed in the Earth Surface Processes. Presenters discussed the geomorphologic, geochemical, and remote sensing approaches to understand the flood dynamics, weathering rates, debris flows, landslides and sediment depositional patterns. A discussion on the long–term climatic records using palaeo–productivity, foraminifera abundance, changes in deep water circulations, the intensity of denitrification, and identification of oxygen minimum zones from the Arabian Sea and Bay of Bengal sediments core was done. During the last deglaciation, the penetration of Intermediate Antarctic water into the Eastern Arabian Sea was also discussed in detail.

Day–3 comprises three sessions, session–4, 5 and 6 on "Humans in Quaternary," "Fossil records in the Quaternary," and "Quaternary landscape evolution," respectively. All three sessions comprised a total of 15 oral and 13 poster presentations. The key–note lecture was delivered by Professor Rajeev Patnaik, Panjab University, Chandigarh on the influence of climate change on the diet of fossil proboscideans.

In session–4, the researchers discussed the various proxies to reconstruct human activities in the Quaternary time. Trenches of Math Pimpi from Bhima Basin, Ahmednagar, Maharashtra discussed the cultural attributes. Long–term natural and anthropogenic forces from the sediments of Ahansar Lake and Kashmir Himalaya were discussed. The work related to the potential of slow accumulating palimpsests for the characterizing pediment surface Palaeolithic sites of south Asia was also presented. The preliminary study of the stable isotope study of Pleistocene mammalian teeth from western and central India was also presented.

Session–5 dealt with the Fossil records in the Quaternary and exposed various findings from the cranium of *Palaeoloxodon turkmenicus* (Proboscidea, Elephantidae) from Kashmir; analysis of phytolith from Agaram, Tamil Nadu; multidisciplinary scientific analysis of the first known fossil Ratite Eggshells from the Siwalik frontal range near Chandigarh; the understanding of the palaeodietary and habitat of the herbivorous mammals from marginal Ganga plain. Invertebrate fossil assemblages of central Kerala, south India, infer Late Quaternary coastal changes.

Session–6 of the Conference was on "Quaternary landscape evolution". Various presenters showed their research on landscape evolutionary processes, i.e. assessment of the erosional and depositional environment at Majuli Island, Assam; late Quaternary sedimentation and tectonic history of the Chitwan Intermontane Valley, central Himalaya; landscape evolution and climatic variability of Ladakh; Influence of sea level variation on the fluvial architecture of Brahmaputra foreland basin; palaeo–tsunami and palaeo–storm events along the Gujarat Coast during Holocene Period; multi–proxy sedimentary record of last 2.6 ka climate and vegetation from the Mahanadi River Delta; characterization of tectonically

active zones in the Island belt uplift region, Kuchchh Basin using GIS and geodetic techniques; lithologic and tectonic controls on the flexural bulge of the Indian Plate; and the study from the East Coast of India showing the beach rating and coastal values: tourist's perspective and socio–economic development. The researchers also presented the study related to the response of the glacio–fluvial in the Dhauli Ganga Valley, NW Himalaya; spatial analysis of the cirque glaciers in NW Himalaya, and reconstructed the palaeo–environment.

The last session of the Conference was on Quaternary Geology: Science, Philosophy, Management & Policy. In this session, there was a discussion regarding the funding opportunities for the INQUA Congress, which is to be held in Rome (Italy) on July 2023. A talk on the topic, "Science Management," was given by Professor A.K. Singhvi, Honorary Fellow, AOQR.

The Congress was closed by the vote of thanks given by Dr. Binita Phartiyal, Secretary, AOQR. The IQC–2022 was a big success.

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