



FGRC-2023: Program Summary:

Day 1 (Wednesday, 1 Feb 2023)	
Conference Registration	08:00 – 09:30
Opening ceremony: In K.R. Ramanathan Auditorium	09:30 – 10:00
Plenary lecture <i>by</i> V.K. Gahalaut, CSIR-NGRI In K.R. Ramanathan Auditorium	10:00 – 10:45
Tea and conference photograph	10:45 - 11:15
<u>Session 1: In K.R. Ramanathan Auditorium</u> Solid Earth Geochemistry and Geochronology	11:15 – 13:15
Lunch: In Nursery	13:15 – 14:15
<u>Session 2: In K.R. Ramanathan Auditorium</u> Climate of the past, present and future	14:15 – 15:45
Poster session + Tea break: In Library Lawn	15:45 – 16:15
<u>Session 3: In K.R. Ramanathan Auditorium</u> Hydrogeology and Hydrometeorology	16:15 – 17:15
Sponsors' session: K.R. Ramanathan Auditorium	17:15 – 18:15
Director's Dinner: In Nursery	19:30 onwards
End of program (Day 1)	
Day 2 (Thursday, 2 Feb 2023)	
Invited Talk <i>by</i> Sunil K. Singh, CSIR-NIO	09:00 – 09:30
<u>Session 4A: In K.R. Ramanathan Auditorium; Parallel Session</u> Marine and Terrestrial Biogeochemistry + Oceanographic Processes	09:30 – 10:30
<u>Session 4B: In NanoSIMS Lecture Hall; Parallel Session</u> Solid Earth Geochemistry and Geochronology	09:30 – 10:30
Poster session + Tea break: In Library Lawn	10:30 – 11:00
<u>Session 4A (continued): In K.R. Ramanathan Auditorium; Parallel Session</u> Marine and Terrestrial Biogeochemistry + Oceanographic Processes	11:00 – 13:00
<u>Session 4B (continued): In NanoSIMS Lecture Hall; Parallel Session</u> Solid Earth Geochemistry and Geochronology	11:00 – 13:00
Lunch: In Nursery	13:00 – 14:00
Poster session + Tea break: In Library Lawn	14:00 – 15:30
End of program (Day 2)	



Day 3 (Friday, 3 Feb 2023)	
Invited Talk by J.S. Ray, NCESS	09:00 – 09:30
<u>Session 5: In K.R. Ramanathan Auditorium</u>	09:30 – 10:30
Land, Ocean, Atmosphere Interactions	
Poster session + Tea break: In Library Lawn	10:30 – 11:00
<u>Session 6A: In K.R. Ramanathan Auditorium; Parallel Session</u>	11:00 – 13:15
Climate of the past, present and future	
<u>Session 6B: In NanoSIMS Lecture Hall; Parallel Session</u>	11:00 – 13:15
Hydrogeology and Hydrometeorology	
Lunch: In Nursery	13:15 – 14:15
<u>Session 7: In K.R. Ramanathan Auditorium</u>	14:15 – 15:45
Land, Ocean, Atmosphere Interactions	
Poster session + Tea break: In Library Lawn	15:45 – 16:15
Session on career guidance for PhD students and Postdocs: In K.R. Ramanathan Auditorium	16:15 – 16:45
Concluding Session + Award Ceremony: In K.R. Ramanathan Auditorium	16:45 – 17:15
High Tea: In Admin Lawn	17:15 – 17:45
End of program (Day 3) and FGRC-2023	

Format of Oral presentations in Scientific Sessions:

Presenters will have 10 minutes to do their presentation and 2 minutes for discussion. The length of your presentation may not exceed 12 minutes.

Details of Poster Presentations:

The poster boards are large enough to fit a size A0 poster in portrait orientation (that is 33.1" wide x 46.8" tall or 841mm wide x 1189mm tall).

Please see the detailed conference program from the next page



Day 1 (Wednesday, 01 February 2023)

Opening Ceremony 09:30 – 10:00

Plenary Talk 10:00 – 10:45
V.K. Gahalaut, CSIR-NGRI
“India plate motion and seismogenesis”
In Ramanathan Auditorium

Tea and conference photograph 10:45 - 11:15

Session 1: Solid Earth Geochemistry and Geochronology 11:15 – 13:15

In K.R. Ramanathan Auditorium

Session Chairs: J.S. Ray (NCESS), V.K. Gahalaut (CSIR-NGRI),

O1 Tale of Eastern Himalayan river captures and upper Assam uplift: The paleo Brahmaputra conundrum and migration

George Mathew (IIT Bombay)

O2 U–Pb and Hf isotope study of detrital zircon and Cr-spinel in the Banavara quartzite and implications for the evolution of Dharwar Craton, south India

Bidyananda Maibam (Manipur Univ.)

O3 Thermo Scientific™ Neoma™ MS/MS revolutionizing in-situ ⁸⁷Rb/⁸⁷Sr analysis of geological materials

Niel Williams (ThermoFisher Scientific)

O4 Ore Microscopy, Geochemistry and Genesis of Phokpur Magnetite Associated with Naga Ophiolite Belt in Kiphire District of Nagaland

Santosh Kumar Singh (Nagaland Univ.)

O5 Melt loss in anatectic system and its influence on protolith composition: insights from phase equilibrium modeling of migmatites

Purbajyoti Phukon (Assam Univ.)

O6 Effect of iron on the equilibrium Li-isotopic fractionation in olivine

Rabindranath Mondal (IISER Kolkata)

O7 Tracing the Tsunami generated Ionospheric Signatures: an Early Warning System on the anvil

Mala S. Bagiya (IIG)

O8 Geochemical study of mafic rocks of the Nagaland Ophiolite Complex, northeast India: Implication for heterogeneous magma source



Monica Wangjam (Manipur Univ.)

O9 Inferences on early geodynamic processes using short-lived isotope systematics in an open system evolutionary model of the Earth

Seema Kumari (IISc)

O10 Carbonatite generation through carbonate-silicate melt immiscibility: An example from Sarnu-Dandali-Kamthai alkaline complex, India

Milankumar Mahala (PRL)

O11 Estimates of the ages of the Dhala impact crater and a post-impact alteration event at Dhala based on K-Ca, Rb-Sr, and Sm-Nd radiogenic isotope systematics

Rahul Das Gupta (IISc)

O12 Pb-Pb dating of dolomitic limestones from Vanivilas Formation of the Chitradurga greenstone belt, Dharwar Craton, India: Significance to oxygenation of Archean oceans

Ushasi Daripa (Pondicherry Univ.)

Lunch 13:15 – 14:15

In Nursery

Session 2: Climate of the past, present and future 14:15 – 15:45

Session Chairs: M.G. Yadava (PRL), Gyana Ranjan Tripathy (IISER Pune)

In Ramanathan Auditorium

O13 Holocene Relative Sea Level Fluctuations Across Indian Peninsula

Pankaj Khanna (IIT Gandhinagar)

O14 Indian Summer Monsoon variability during mid-Holocene: Inferences from stalagmite $\delta^{18}\text{O}$ record

A.C. Narayana (Univ. Hyderabad)

O15 West Antarctic ice-sheet stability in near future climate using Pliocene records

Waliur Rahaman (NCPOR)

O16 Evidence of sub-polar front migration during mid- Pleistocene Transition: Records from mid cape basin, Southeast Atlantic

Ankush Shrivastava (MLSU)

O17 Planktic Foraminiferal Evidence of Migration of the Subtropical Front and its Impact on the Agulhas Current during the last 1 My

Vikram Pratap Singh (IGNTU)

O18 Flooding patterns in the late Holocene climate change context: examples from the rivers of semi-arid region of western India



Alpa Sridhar (MSU Baroda)

O19 Heterogeneous climatic response of *Abies pindrow* in adjacent valleys of the north-western Kashmir

Uttam Pandey (IITM Pune)

Poster session + Tea break
In Library Lawn

15:45 – 16:15

Session 3: Hydrogeology and Hydrometeorology

16:15 – 17:15

Session Chairs: R.D. Deshpande (PRL), Supriyo Chakrabarty (Pune Univ.)

In K.R. Ramanathan Auditorium

O20 Frontiers in Hydrology Research

R.D. Deshpande (PRL)

O21 First report of fresh and recirculated submarine groundwater discharge from coastal Karnataka, India

K. Balakrishna (Manipal Univ.)

O22 Precipitation isotopic variability over the Bay of Bengal from intra-seasonal to interannual time scale

Supriyo Chakrabarty (Pune Univ.)

O23 Hydrochemistry and Hydrogeology of Cold and Thermal Springs over the South-western part of Kerala and Karnataka, India

K. Maya (NCESS)

O24 Genesis of Unexplored Thermal Springs of Arunachal Pradesh, North-Eastern Himalayas, India using Hydrogeochemistry and Stable Isotopic Tracers

Archisman Dutta (GSI)

Sponsors' Session
In Ramanathan Auditorium

17:15 -18:15

Director's Dinner
In Nursery

19:30 onwards



Day 2 (Thursday, 02 February 2023)

Invited Talk:

Sunil K. Singh (CSIR-NIO) 09:00 – 09:30
“Impact of Climate Change on the biogeochemistry of the Indian Ocean”
In Ramanathan Auditorium

Session 4A: Marine and Terrestrial Biogeochemistry 09:30 – 10:30
+ Oceanographic Processes

Session Chairs: Sunil K. Singh (CSIR-NIO), Arun Deo Singh (BHU)
In Ramanathan Auditorium (Parallel session)

O25 A multiproxy approach to understand the thermocline circulation and ventilation changes of the Oxygen Minimum Zone in the Arabian Sea.

Arun Deo Singh (BHU)

O26 Sulfide oxidation in the western Himalaya: Constraints based on dissolved sulfur isotopes

Gyana Ranjan Tripathy (IISER Pune)

O27 Biogeochemistry of dissolved manganese in the Arabian Sea: Implications to trace metal redox cycling and redistribution

Naman Deep Singh (CSIR-NIO)

O28 Anthropogenic impacts on a Ramsar convention protected freshwater lake in Central India

Satinder Pal Singh (IISER Bhopal)

Session 4B: Solid Earth Geochemistry and Geochronology 09:30 – 10:30

Session Chairs: George Mathew (IIT Bombay), Rajneesh Bhutani (Pondicherry Univ.)

In NanoSIMS Lecture Hall (Parallel Session)

O29 Geochemical and isotopic study of Tertiary sedimentary deposits in North-Eastern India and its implication in understanding past tectonism in the Himalaya

Neeraj Awasthi (VBS Purvanchal Univ.)

O30 A critical evaluation for petrogenesis and mineralization aspects of Neoproterozoic Tusham Ring Complex, SW Haryana, India

Naresh Kumar (Kurukshetra Univ.)

O31 An intracontinental origin for the Mesoarchean Western Iron Ore Group supracrustals, Singhbhum Craton, Eastern India

Ajay Dev Asokan (CSIR-NGRI)



O32 Melt metasomatism at sub-arc depths: insights from hornblendite dykes within ultramafic terrains

Amrita Dutt (PRL)

O33 Petrography and geochemistry of the massif-type anorthosite complex from the Bavali Shear Zone, Southern Granulite Terrane, south India

Saumyaranjan Nanda (NIT Rourkela)

Poster session + Tea break
In Library Lawn

10:30 – 11:00

Session 4A (continued): Marine and Terrestrial Biogeochemistry + Oceanographic Processes

11:00 – 13:00

Session Chairs: Ashutosh Singh (Univ. Delhi), Sanjeev Kumar (PRL)

In K.R. Ramanathan Auditorium (Parallel session)

O34 Metagenomics of carbonate rocks from limestone cave, Guchupani, Dehradun, India: insight into the lithobiontic microbial community and biogeochemical cycling.

Jyoti Singh (Pondicherry Univ.)

O35 Diagenetic analysis of shallow gas hydrate system from the Cauvery-Manar basin

Firoz Badesab (CSIR-NIO)

O36 Stable isotope technique to identify carbon sequestration efficiency in different strains of ureolytic bacteria

Arya C.F. (IISc)

O37 Oceanic redox state and sulfate concentration during the early Cambrian period: A sulfur isotopic study of Himalayan shales

Achyuth Venugopal (IISER Pune)

O38 North Atlantic Oscillation-like variability modulated the NE Atlantic Ocean surface dynamics during the MIS 7: planktic foraminiferal evidences

Harshit Singh (BHU)

O39 Possible links of the Fe-S species on the Mo sequestration and isotope ratios in the cold seep environments.

Pillutla Sai Pavan Kumar (CSIR-NIO)

O40 Early Palaeogene vegetation from the tropics : Insights from molecular fossils

Tanu Priya (IIT Bombay)

O41 Constraining the Seawater Mass and Isotope Budget of Lithium: Diagenetic Processes in Marine Porewater



Juzer Shaikh (IISc)

O42 Pore fluid chemistry and sulfidization trends in the sediments underlying seasonal oxygen minimum zone (OMZ) of the Eastern Arabian Sea

Kalyani Sivan (CSIR-NIO)

O43 Pore water geochemistry of cold seep sediments from Cauvery Mannar basin, offshore India

Mohd. Sadique (Goa Univ.)

Session 4B (continued): Solid Earth Geochemistry and Geochronology

11:00 – 13:00

Session Chairs: Rajneesh Bhutani (Pondicherry Univ.), A.D. Shukla (PRL)

In NanoSIMS Lecture Hall (Parallel Session)

O44 Enrichment of heavy calcium isotopes in saprolites due to secondary mineral formation

Utpalendu Haldar (IISc)

O45 Geochemical, zircon U-Pb and Lu-Hf isotopic study of Pre-Himalayan granitoids from the Lesser Himalayan Sequence of Arunachal Pradesh

Waikhom Nongdon (Manipur Univ.)

O46 Geochemical variations within the ca. 2.08 Ga dyke swarm, eastern Dharwar craton: Implications for multiple magma pulses from a single magma chamber

Srinjoy Datta (BHU)

O47 Carbon and Oxygen isotope systematics of carbonatites, Kollegal, Karnataka

Mohammad Saif (IIT ISM)

O48 Origin and Evolution of the Sittampundi Anorthosite Complex: Perspectives from MELTS modelling and Silicate Mineral Chemistry

Naga Santosh Sree Bhuvan Gandrapu (Pondicherry Univ.)

O49 Petrology and geochemistry of granulite-facies rocks along the Karur- Kambam-Painavu-Trichur (KKPT) shear zone, southern India

Parvathy M.S. (Univ. Calicut)

O50 Geochemical constraints on the origin and depositional setting of the Kabirdham Banded Iron Formations, Chilpi Group, India

Prasanta Kumar Mishra (Dharanidhar College)

O51 A Preliminary assessment on in-situ EPMA U-Th-Pb dating from islands of Larsemann Hills, East Antarctica

Rosan Kumar Malik (GSI)

Lunch

13:00 – 14:00





In Nursery

Poster session
In Library Lawn

14:00 – 15:30

Day 3 (Friday, 03 February 2023)

Invited Talk

09:00 – 09:30

J.S. Ray (NCESS)

“Sedimentary Volcanism: Story of Andaman Mud Volcanoes”

In Ramanathan Auditorium

Session 5: Land, Ocean, Atmosphere Interactions

09:30 – 10:30

Session Chairs: Neeraj Rastogi (PRL), Waliur Rahaman (NCESS)

In Ramanathan Auditorium

O52 Vapor isotope variation caused by typhoons invading the Taiwan region in 2016

Sourendra Kumar Bhattacharya (Academia Sinica, Taiwan)

O53 Variability of the Indonesian throughflow and its effect on the Oceanographic and Climatic Changes in the Indo-Pacific region during late Quaternary

Ashutosh Kumar Singh (Univ. Delhi)

O54 Nutrient supply to the surface waters of the North Indian Ocean and its impact on the surface biogeochemical processes

Ashwini Kumar (CSIR-NIO)

O55 Variations of Black Carbon aerosols over the Arctic in a regional climate model

Rohit Srivastava (NCPOR)

O56 Characterization of phytoplankton productivity and bio-optical variability in a polar marine ecosystem

Sarat Chandra Tripathy (NCPOR)

Poster session + Tea break
In Library Lawn

10:30 – 11:00

Session 6A: Climate of the past, present and future

11:00 – 13:15

Session Chairs: Devesh Sinha (Univ. Delhi), M.G. Yadava (PRL)

In K.R. Ramanathan Auditorium (Parallel Session)



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- O57 Tropical equatorial Pacific forcing on Indian monsoon rainfall variability throughout last two millennia
Naveen Gandhi (IITM Pune)
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- O58 Hydroclimate changes during 3-5 ka from the Southern India and its global teleconnection
Upasana Swaroop Banerji (NCESS)
-
- O59 Past geomagnetic field intensity reconstructed using authigenic $^{10}\text{Be}/^9\text{Be}$
Partha Sarathi Jena (PRL)
-
- O60 Triple oxygen isotopes of plant biogenic silica as quantitative proxy for relative humidity
Ritika Kaushal (IISc)
-
- O61 Isotopic analysis of domestic animal remains from Dholavira Harappan site to reconstruct past human-animal interactions
Manisha Kesarwani (IIT Gandhinagar)
-
- O62 Longer chain length dominates the leaf wax n-alkanes in C3 angiosperms in the semi-arid monsoonal region
Amrita Saishree (IISER Pune)
-
- O63 Global wildfires triggered the Plio-Pleistocene CO_2 drawdown.
Thamizharasan Sakthivel (IISc)
-
- O64 Paleo-redox conditions of Paleoproterozoic positive $\delta^{13}\text{C}$ bearing carbonates of Jhamarkotra Formation (Aravalli Supergroup) in the Umra subbasin, Rajasthan, India
Abhisikta Goswami (IIT ISM)
-
- O65 Lake Sediments - An Archive of the Past: Study Using eDNA and ^{210}Pb Dating to Investigate Invasion of Azolla Plant in Dal Lake, Srinagar.
Zulaykha Khurshid (Univ. Kashmir)
-
- O66 Southern Ocean Atmosphere-Ocean CO_2 Exchange During the Last Deglaciation
I.V. Satya Chanakya (IISc)
-
- O67 Role of upper-level atmospheric teleconnection in the recent out-of-phase relationship between the Atlantic multi-decadal oscillation and Indian summer monsoon
Arijeet Dutta (IISER Pune)
-
- O68 Application of clumped isotopes in speleothem to investigate the kinetic fractionation associated with calcium carbonate precipitation in caves
Rachana Subba (IISc)
-



O69 Carbon and Helium Isotopes to address Himalayan metamorphic CO₂ fluxes to the atmosphere

Samyak Pradhan (IIT Kanpur)

Session 6A may continue in the K.R. Ramanathan Auditorium after lunch.

Session 6B: Hydrogeology and Hydrometeorology 11:00 – 13:15
Session Chairs: S. K. Bhattacharya (Academica Sinica), K Balakrishna (Manipal Univ.)

In NanoSIMS Lecture Hall (Parallel Session)

O70 GIS-based Machine Learning technique of Landslide hazard zonation in the Chaliyar river basin of the Western Ghats, India

Kaliraj S. (NCESS)

O71 The evolution of thermal springs along the west coast geothermal province of Maharashtra, India: Hydrochemical and isotopic constraints

Prasenjit Das (NCESS)

O72 Enhanced Local Recycling of Moisture in North-East Indian Subcontinent: Insights from stable water isotopes in precipitation

Akash Ganguly (PRL)

O73 Sr isotopic composition, major and trace element abundances in arsenic contaminated groundwaters of the Western Bengal Basin – Implication for evaluating the seasonality in source, mixing and sediment-water interaction processes

Pousali Pathak (PRL)

O74 Constraining Subsurface Dielectric Permittivities and Conductivities using Deep Convolutional Neural Networks for mine-impacted Groundwater Contamination Detection

Abhishek Kumar (IIT ISM)

O75 Comparative assessment of CO₂ sequestration in glaciated basins of the Himalaya

Kalyan Biswal (JNU)

O76 Atmosphere-Cryosphere coupling processes - a closer look into High Mountain Hydrology

Bibhasvata Dasgupta (IISER Kolkata)

O77 Atmospheric Water Vapor Dynamics at Guru Shikhar, Mt. Abu, the highest point of the Aravalli Range, Rajasthan

Virendra R Padhya (PRL)

Lunch

13:15 – 14:15



In Nursery

Session 7: Land, Ocean, Atmosphere Interactions 14:15 – 15:45

Session Chairs: Ashwini Kumar (CSIR-NIO), Narendra Ojha (PRL)

In K.R. Ramanathan Auditorium

O78 Effect of surface latent heat flux on ionospheric parameters during high magnitude earthquakes

Dinesh Kumar Sharma (Manav Rachna Univ.)

O79 Tracing the distribution of weathering and erosion in Sikkim Himalaya: A multi-isotopic approach

Satyabrata Das (WIHG)

O80 Reactive Oxygen Species (ROS) generation capacity of atmospheric PM 2.5 at a major city in the Indo-Gangetic Plain

Puneet Kumar Verma (PRL)

O81 Millennial-scale Variability of Neodymium isotopic composition (ϵ_{Nd}) of seawater in SE Arabian Sea: Implication to the Deep Ocean circulation and Continental Inputs

Arvind Shukla (CSIR-NIO)

O82 Atmospheric Chemistry of VOCs and Trace Gases: Their role in the formation Tropospheric Ozone and Secondary Organic Aerosol (SOA)

Neelam Baghel (Dayalbagh Edu. Inst.)

O83 Unraveling the potential sites of Seawater Intrusion and Submarine Groundwater Discharge by using in-situ physicochemical anomalies along Odisha coastal plains, India.

Soumya Kanta Nayak (JNU)

O84 Sulfide oxidation in the Brahmaputra river basin: A sulfur isotopic study

Rakesh Kumar Rout (IISER Pune)

Poster session + Tea break 15:45 – 16:15

In Library Lawn

Session on career guidance for PhD students and Post-docs 16:15 – 16:45

R. D. Deshpande (PRL)

In K.R. Ramanathan Auditorium

Concluding Session + Award Ceremony 16:45 – 17:15

In K.R. Ramanathan Auditorium



2nd Frontiers in Geosciences Research Conference
Physical Research Laboratory
1-3 February 2023



High Tea
In Admin Lawn

17:15 – 17:45