

Prof. Deepak Kumar Jha

Assistant Professor

Department of Applied Geology
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Research interests

Biogeochemistry, Organic and Stable Isotope Geochemistry, Sedimentology, Paleoclimatology, Geoarchaeology (Human-Environment Interactions)

Scientific research and academic experience

- 2025 (Aug)–Present: **Assistant Professor**, Indian Institute of Technology (Indian School of Mines) Dhanbad, India.
- MAR 2024–DEC 2025: **Visiting Professor**, School of Archaeology, University of the Philippines Diliman, Philippines.
- MAR 2025–JUL 2025: **Postdoctoral Researcher**, Department of Coevolution of Land Use and Urbanisation, Max Planck Institute of Geoanthropology, Germany.
- SEP 2024–FEB 2025: **Postdoctoral Researcher**: isoTROPIC Research Group, Max Planck Institute of Geoanthropology, Germany.
- JUN 2022–JUN 2024: **Visiting Scientist**: Department of Biogeochemical Processes, Max Planck Institute for Biogeochemistry, Germany.
- JUN 2021–AUG 2024: **Postdoctoral Researcher**, Department of Archaeology, Max Planck Institute of Geoanthropology ((formerly MPI for the Science of Human History), Germany.
- MAR 2021–MAY 2021: **Postdoctoral Researcher**, Department of Earth and Environmental Science, IISER Mohali, India.

Educational experience

- 2016–2021: **Ph.D.** (Geological Sciences), Department of Earth Sciences, IISER Kolkata, India.
- 2013–2016: **Master of Science** (Geological Sciences), Department of Earth Sciences, IISER Kolkata, India.
- 2010–2013: **Bachelor of Science** (Hons. Geology), Department of Geology, University of Delhi, India

Scientific research grants (PI or participations)

- 2025–2027: Wenner-Gren Foundation (\$25,000): Technological Transition or Independent Evolution? Investigating the Blade and Bladelet Industry in South Bihar, India. Role: Co-PI
- 2025–2027: MPI-GEA funded project: Tracing Anthropogenic Changes and Environmental Evolution in Central Asia (TRACE). Role: PI
- 2021–2026: MPI-GEA funded project: Perspective from the Global South on the Anthropocene. Role: Scientific Committee.

- 2024-2025: UK Research and Innovation (UKRI): Socio-ecological Atlas of Atlantic Forest Impacts. Role: Technician
- 2021-2024: MPI-GEA funded postdoc project: Reconstruction of environmental conditions during critical transition phases of prehistoric humans in the Indian subcontinent. Role: PI
- 2021-2023: HABCOM, INQUA Grant (€ 10,000): Building a synthesis database of past human-environmental systems in the Global South (pSESYNTH). Role: Participant
- 2018-2020: International Association of Sedimentologist (IAS) Post Graduate Research Grant (€1,000): Decoding the role of climate in provenance change in Indo-Gangetic plain during the Late Quaternary. Role: PI

Supervision & teaching experience:

- 2019-Present: Guidance to 4 PhD students from India, Brazil, and Germany
- 2017-2025: Guidance to 5 Master's Dissertation students from India and Germany
- 2021-2025: Invited Academic Talks (N = 25) around the globe
- 2024-2025: Theory Course on "Application of Stable Isotopes and Biomarkers in Geology and Archaeology" for Bachelor, Master, and PhD students at University of the Philippines as a Visiting Professor
- 2019-2020: Theory course on "Hydrology and Geodynamics" for semester III, BS-MS program in the academic year 2019 - 2020 at IISER Kolkata (as a TA)
- 2016-2019: Theory course on "Groundwater Hydrology and Geomorphology" for semester III, BS-MS program in the academic year 2016 - 2019 at IISER Kolkata as a TA for 3 semesters

Key scholastic achievements & outreach

- **Guest Editor**, Special Issue: Applications of Compound-Specific Isotope Analysis (CSIA) in Environmental Archaeology, *Frontiers in Environmental Archaeology* (2024 – 2025).
- **Guest Editor**, Special Issue: Quaternary Research in South Asia: Exploring Human-Environment Interaction, *Quaternary Environments and Humans* (2024–2025).
- **Lead Convener**, Session #46: "Applications of Biomarkers and CSIA in Pleistocene Archaeology," INQUA Roma (2023).
- **Co-convener**, Session #92: "Zooming into the Quaternary Research in South Asia: Understanding the Landscape-Cultural-Climatic Evolution," INQUA Roma (2023).
- **Reviewer for journals** (n=15): *Earth Science Reviews*, *Organic Geochemistry*, *Quaternary Science Reviews*, *Applied Geochemistry*, *Communication Earth & Environment*, *Scientific Reports*, *Geoarchaeology*, *Frontiers in Earth Science*, *Quaternary International*, *Environmental Pollution*, *Journal of Field Archaeology*, *Latin American Antiquity*, *Quaternary Environment and Humans*, *The Oriental Anthropologist*, and Peer community in Archaeology.
- **Reviewer for funding agencies** (n = 2): The Leakey Foundation; DAAD: German Academic Exchange Service.
- **PAGES Travel Grant** (€1700), Young Scientist Meeting (YSM) 2025, Shanghai, China (2025)

- **Postdoctoral Research Fellowship**, Max Planck Institute of Geoanthropology, Jena, Germany (2021 – 2025).
- **Postdoctoral Research Fellowship**, IISER Mohali (2021 – 2022; left after 3 months).
- **Recipient, Young Scientist Meeting Grant** (€1500), PAGES, Shanghai, China (2025).
- **Recipient, Goldschmidt Conference Grant** (APC and Registration Waiver (€500)), Lyon, France (2021).
- **Recipient, Tilly Edinger Travel Grant Award** (€485), Goldschmidt2021, Lyon, France (2021).
- **Recipient, Special Registration Support Program** (€300), 36th International Geological Congress (IGC), Delhi, India.
- **Recipient, INQUA Bursary** (€1000), INQUA Congress, Dublin, Ireland (2019).
- **Recipient, IAS Post Graduate Research Grant** (€1000), International Association of Sedimentologists (2018).
- **Recipient, IAS Travel Grant** (€500), 20th International Sedimentological Congress, Canada (2018).
- **Best Poster Award**, Advances in Modern Earth System Sciences, IISER Kolkata (2017).
- **Best Poster Award**, Annual Conference, IISER Kolkata (2016).
- **MS-PhD Fellowship**, IISER Kolkata (2013 – 2020).
- **Interviewed:**
 - ❖ Climate Change and Human Evolution Series, Down to Earth Magazine (2024).
 - ❖ Meet the Scientists: Time Scavengers (2021).
 - ❖ Fire use by prehistoric humans in India by Times of India (2020).

Peer reviewed publications (* Corresponding author)

1. Jha, G., Longman, J., Tsoupra, A., Shree, S., **Jha, D.K.**, Rudd, R., Anilkumar, D., Breitenbach, S., Barrocas-Dias, C.M., Achyuthan, H., Raj, R., Krishnan, K., Roberts, P. and Petraglia, M.D. (2025). Six Monsoon After Toba Super-Eruption: Novel Evidence of Short-Term Impact on South Asia 74,000 Years Ago. *PNAS nexus*, 4(4), p.pgaf109.
2. Vaishnav, H.K., ***Jha, D.K.**, Janardhana, B. (2025). Geoarchaeological and environmental perspectives on Mesolithic and Neolithic settlement patterns in the Ganga Valley, India. *Quaternary Environment & Humans*, 3(1), p.100051.
3. Vaishnav, H.K., Janardhana, B., ***Jha, D.K.**, (2025). Acheulean habitation in the Upper Son Valley, India: Insights into Early Settlement and Environment. *Antiquity*, pp.1-9.
4. Ramírez-Pedraza, I., Tornero, C., Aouraghe, H., Rivals, F., Patalano, R., Haddoumi, H., Expósito, I., Rodríguez-Hidalgo, A., Mischke, S., van der Made, J., Piñero, P., Blain, H.-A., Roberts, P., **Jha, D.K.**, Agustí, J., Sánchez-Bandera, C., Lemjidi, A., Benito-Calvo, A., Moreno-Ribas, E., Oujaa, A., Mhamdi, H., Souhir, M., Aissa, A.M., Chacón, M.G. and Sala-Ramos, R. (2024). Arid, mosaic environments during the Plio-Pleistocene transition and early hominin dispersals in northern Africa. *Nature Communication* 15, 8393.

5. ***Jha, D.K.,** Hirave, P., Ghosh, S., Dasgupta, B., and Sanyal, P. (2024). Does Leaf wax isotopic characterisation capture environmental gradients in Himalayas? *Organic Geochemistry*. 187, 104720.
6. Jha, G., Sinha, D.K., **Jha, D.K.,** Ajithprasad, P. (2024). Coasting into India? - Assessing lithostratigraphic context of Middle Palaeolithic occupation in Saurashtra Peninsula. *Quaternary Environment & Humans*, p.100034.
7. Roberts, P., Caetano-Andrade, V.L., Fisher, M., Hamilton, R., Rudd, R., Stokes, F., Amano, N., Dugmore, A., Findley, D.M., Furquim, L.P., Fletcher, M., Haberle, S., Hambrecht, G., Heddell-Stevens, P., Iminjili, V., **Jha, D.K.,** et al. (2024). Uncovering environmental legacies of past human societies on the Earth system at the global scale. *Annual Review of Environment and Resources*, 45.
8. Sanyal, P., Adhya, S.P., Roy, B., Dasgupta, B., Samantaray, S., Mandal, R., Sen, R., Sarangi, V., Kumar, A., **Jha, D.K.,** Ajay, A. (2024). Geologic History of Plants and Climate in India. *Annual Review of Earth and Planetary Sciences*, 52.
9. ***Jha, D.K.,** Patalano, R., Ilgner, J., Achyuthan, H., Alsharekh, A.M., Armitage, S., Blinkhorn, J., Boivin, N., Breeze, P.S., Devra, R., Drake, N., Groucutt, H.S., Guagnin, M., Roberts, P. and Petraglia, M.D., (2024). Preservation of plant-wax biomarkers in Deserts: Implications for Quaternary environment and human evolutionary studies. *Journal of Quaternary Science*, 39(3), pp.349-358.
10. ECHOES., Freire, V.Z., Ziegler, M.J., Caetano-Andrade, V., Iminjili, V., Lellau, R., Rudd, R., Stokes, F., Heberle Viegas, D., Maezumi, S.Y., Jha, G., Antonosyan, M., **Jha, D.K.,** Winkelmann, R., Roberts, P., and Furquim, L. (2024). Addressing the Anthropocene from the Global South: Integrating Paleoecology, Archaeology and Traditional Knowledge for COP Engagement. *Frontiers in Earth Science*. Vol. 12.
11. ***Jha, D.K.,** Vaishnav, H.K., and Roy, N. (2024). Late Quaternary human-environment relationship in the Ganga Plain, India. *Quaternary International*, 680, 1-16.
12. Kumar, A., Basu, S., Ajay, A., **Jha, D.K.** and Sanyal, P. (2023). Quantitative delineation of water sources in the river Ganga using stable water isotopes. *River Research and Applications*, 1-14.
13. Guagnin, M., Shipton, C., Stileman, F., Jibreen, F., AlSulaimi, M., Breeze, P.S., Stewart, M., Hatton, A., Drake, N., **Jha, D.K.,** Al-Tamimi, F., Al-Shamry, M., Al-Shammari, M., Kay, A., Groucutt, H.S., Alsharekh, A.M., and Petraglia, M.D., (2023). Before the Holocene humid period: Life-sized camel engravings and early occupations on the southern edge of the Nefud Desert. *Archaeological Research in Asia*, 36, 100483.
14. Huber, B., Hammann, S., Loeben, C. E., **Jha, D. K.,** Vassão, D. G., Larsen, T., Spengler, R. N., Fuller, D. Q., Roberts, P., Devière, T., Boivin, N. (2023). Biomolecular characterization of 3500-year-old ancient Egyptian mummification balms from the Valley of the Kings. *Scientific Reports*, 13(1), p.12477.
15. Dhiman, H., Verma, V., Singh, L.R., Miglani, V., **Jha, D.K.,** Sanyal, P., Tandon, S.K. and Prasad, G.V. (2023). New Late Cretaceous titanosaur sauropod dinosaur egg clutches from Lower Narmada valley, India: Palaeobiology and taphonomy. *PloS One*, 18(1), p.e0278242.

16. Prieto A., Aldea-Moreira X., Arzarello M., Berruti GLF, Caracausi S., Daffara S., de la Peña P., Favreau J., García-Rojas M., Huysecom E., Janardhana B., **Jha, D.K.**, Lahiri, L., Molefyane, T.R., Pruvost, C., Rodríguez-Álvarez, X.P., Thomas, M., Vaishnav, H.K., Villeneuve, Q., Lombera-Hermida, A.j. (2022). How to deal with an elephant in the room? Understanding “Non-flint” raw materials: characterization and technological organization. *Revista ArkeoGazte*, 12, pp. 73-98.
17. ***Jha, D.K.**, Samrat, R., Sanyal, P. (2021). The first evidence of controlled use of fire by prehistoric humans during the Middle Paleolithic phase from the Indian subcontinent. *Palaeogeogr. Palaeoclimatol. Palaeoecol.* 562, p.110151.
18. Singh, A., Muhammad, R.F., Taib, I., **Jha, D.K.** and Srivastava, A.K. (2021). Surface texture, mineralogy and stable isotope studies of nodular calcretes preserved in the YTT ash of Padang Terap river basin and Lenggong valley, Peninsular Malaysia: implications in its origin and paleoclimatic reconstruction. *Rhizosphere*, p.100380.
19. ***Jha, D.K.**, Sanyal, P. and Philippe, A. (2020). Multi-proxy evidence of Late Quaternary climate and vegetational history of north-central India: Implication for the Paleolithic to Neolithic phases. *Quaternary Science Reviews*, 229, p.106121.
20. Pillai, A.A.S. Anoop, A. Sankaran, M. Sanyal, P. **Jha, D.K.** Ratnam, J. (2017). Mid-late Holocene vegetation response to climatic drivers and biotic disturbances in the Banni grasslands of western India. *Palaeogeogr. Palaeoclimatol. Palaeoecol.* 485, 869-878.
21. Yadav, A. Mishra, P.K. Kumar, P. **Jha, D.K.** Kumar, V.V. Ambili, V. Anoop, A. (2017). Molecular distribution and carbon isotope of n-alkanes from Ashtamudi Estuary, South India: Assessment of organic matter sources and paleoclimatic implications. *Marine Chemistry*. 196, 62-70.

Other publications (* Corresponding author)

22. Kulkarni, C., Jara, I.A., Chevalier, M., Isa, A.A., Alinezhad, K., Brugger, S.O., Bunbury, M.M.E., Cordero-Oviedo, C., Courtney-Mustaphi, C., Echeverría-Galindo, P. and Ensafi Moghaddam, T., **Jha, D.K.**, et al. (2023). pSESYNTH project: Community mobilization for a multi-disciplinary paleo database of the Global South. *Past Global Changes Magazine* 31(1), 30-31. (Non Peer-Reviewed)
23. ***Jha, D.K.** (2021). Reconstruction of Late Quaternary climate, vegetation, fire and sediment provenance of Indo-Gangetic floodplains and its implication for the Paleolithic to Neolithic phases of the Indian subcontinent. Doctoral Thesis, *Indian Institute of Science Education and Research Kolkata*. <http://eprints.iiserkol.ac.in/1100/> (Peer Reviewed).

International and national conference abstracts:

** Invited talk

1. ****Jha, D.K. (2025).** Understanding Human-Environment Interactions across time and space. UKRI Workshop, University of Gottingen, Germany.
2. ****Jha, D.K., (2025).** Quaternary human–environment interactions in South Asia. Invited talk presented at the Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China, 29-31 May.
3. ****Jha, D.K., (2025).** Plant wax biomarkers and their isotopes ($\delta^2\text{H}$ and $\delta^{13}\text{C}$): Understanding past human–environment interactions. Invited talk presented at Beijing Normal University, Zhuhai Campus, China, 25–28 May.
4. **Jha, D.K.,** Gupta, P., Quamar, M.F., Stokes, F. & Roberts, P. **(2025).** Environmental and ecological impacts of European colonialism in South Asia. PAGES YSM 2025, Shanghai, China.
5. **Jha, D.K.,** Miyash, N., Gupta, P., Rudd, R., Singh, S.P. & Roberts, P. **(2025).** Plant Biomarkers in Arid Ecosystems: Molecular and Isotopic Insights from the Thar Desert. EGU Copernicus Meetings, Vienna, Austria.
6. Rudd, R., Patalano, R., **Jha, D.K.,** Schalkwyk, J.V., Schwalkwyk, L.V., Mokhachane, R., Stewart, B.A. and Roberts, P., **(2025).** Plant Wax n-Alkanes Track C3-C4 Vegetation Transitions and Hydrological Responses Along Elevation Gradients in Lesotho, Southern Africa. EGU 2025, Vienna, Austria.
7. ****Jha, D.K. (2024).** STABLE ISOTOPES AND BIOMARKER ANALYSES: Understanding Human-Environment Interactions across time and space. Paleoschool by Paleoher Foundation, India.
8. ****Jha, D.K. (2024).** Understanding Human-Environment Interactions across time and space. Max Planck Institute of Geoanthropology, Germany.
9. **Jha, D.K.,** Blinkhorn, J., Schwab-Lavric, V., Freire, V.Z., Ilgner, J., Achyuthan, H., Boivin, N., Devra, R., Maezumi, S.Y., Gleixner, G. and Roberts, P. **(2024).** Plant-wax biomarkers and their isotopes reveal complex relationships between climate, vegetation and fire during collapse of Indus Valley Civilization (No. EGU24-20312). EGU Copernicus Meetings, Vienna, Austria.
10. ****Jha, D.K. and Jha, G. (2024).** Rethinking the Environmental Context of Hominin Evolution in India. Human Evolution Workshop at the ARCHE, Griffith University, Australia.
11. ****Jha, D.K., (2023).** Late Quaternary human-environment relationship in India: perspective from plant lipids and multi-isotope (^2H , ^{18}O , ^{13}C) analyses. Max Planck Institute of Geoanthropology. Germany.
12. ****Jha, D.K., (2023).** Late Quaternary human-environment relationship in India: Insights from plant biomarkers, compound-specific isotopes and macro-charcoal. University of Liverpool, UK.

13. ****Jha, D.K.,** Patalano, R., Roberts, P., and Petraglia, M. **(2023).** Plant-wax biomarkers in the Quaternary sediments of Deserts: Implications for human-environment reconstructions. XXI INQUA Congress 2023. Rome, Italy (Keynote Talk).
14. **Jha, G.,** Jha, D.K., Patalano, R., Roberts, P., Krishnan, K., Boivin, N., and Petraglia, M. **(2023).** One Toba, Different Tales: Assessing variability in environmental impact of ~74ka Toba super eruption on South Asian mosaic. XXI INQUA Congress 2023. Rome, Italy.
15. Pedraza, I. R., Patalano, R., Aouraghe, H., Rivals, F., Tornero, C., **Jha, D.K.,** Roberts, P., Haddoumi, H., Rodríguez-Hidalgo, A., Aissa, A. M., Chacón, G., and Sala-Ramos, R. **(2023).** Plant wax biomarker record from the Plio-Pleistocene site Guefaït-4.2 (Eastern Morocco). XXI INQUA Congress 2023. Rome, Italy.
16. Patalano, R. Miller, J. Carleton, W. C., Gayantha, K., Gleixner, G., **Jha, D.K.,** Ilgner, J., Lucas, M., Scott, E., Roberts, P., Ndiema, E. Boivin, N. and Petraglia, M., (2023). Isotopic Evidence for Human Microhabitat Use Within and Across an Ecological Refugium, Panga ya Saidi, Kenya. XXI INQUA Congress **2023.** Rome, Italy.
17. ****Jha, D.K., (2023).** Plant wax biomarkers and their isotopes ($\delta^2\text{H}$ and $\delta^{13}\text{C}$): Understanding past human-environment interactions. University of Cologne, Germany.
18. ****Jha, D.K. (2023).** Plant wax and PAH biomarkers: Tracing Anthropogenic Signature. PANTHROPOCENE Workshop, University of the Philippines.
19. ****Jha, D.K. and Roberts, P. (2023).** Plant-wax biomarkers and their isotopes ($\delta^2\text{H}$ and $\delta^{13}\text{C}$): Understanding past human-environment interactions. Marine Science Institute, University of the Philippines.
20. **Jha, D.K. and Sanyal, P. (2021).** Decoding the role of Late Quaternary climate and vegetation in the evolution of Indo-Gangetic plain, India. (Poster) at Goldschmidt2021, Lyon, France
21. ****Jha, D.K (2021).** Reconstruction of Late Quaternary climate, vegetation and fire events from archaeological sites of Belan valley, north-central India (Spotlight talk) at ROCEEH Working Group Meeting, University of Tübingen, Germany.
22. ****Jha, D.K (2020).** Role of Late Quaternary climate and vegetation composition in the evolution of prehistoric humans in India (Invited oral talk) at Paleopercs online seminar series.
23. ****Jha, D.K (2020).** Reconstruction of Late Quaternary climate, vegetation and fire events from archaeological sites of Belan valley, north-central India (oral talk) at IISER Mohali.
24. **Jha, D.K. Samrat, R. Sanyal, P. (2019).** Reconstructing human-induced fire from archaeological sites of Belan valley, north-central India. INQUA 2019, Dublin, Ireland.
25. **Jha, D.K. Samrat, R. Sanyal, P. (2019).** Late-Pleistocene climate and vegetation of north-central India: Clues from sedimentology, molecular distribution of n-alkane and stable isotopes. INQUA 2019, Dublin, Ireland.

26. **Samrat, R.** Jha, D.K. Sanyal, P. **(2019)**. Evidence of early human induced paleofire events in Belan valley, north-central India. EGU General Assembly Conference Abstracts 2019. Vienna, Austria.
27. **Jha, D.K.** and Sanyal, P. **(2018)**. Late Quaternary climate variability and civilisation history of Belan valley, India. EGU General Assembly Conference Abstracts 2018. Vienna, Austria.
28. **Jha, D.K.** Ghosh, S. Hirave. P. Sanyal, P. **(2017)**. Isotopic response of angiosperm and gymnosperm species along a climate gradient: a case study from NW Himalaya. Advances in Modern Earth System Sciences- 2017. IISER Kolkata, India.
29. Kumar, P. Ankit, Y. Mishra, P.K. **Jha, D.K.** Anoop, A. **(2017)**. Characterisation of organic matter source and sediment distribution in Ashtamudi Estuary, southern India. EGU General Assembly Conference Abstracts 2017. Vienna, Austria.
30. **Jha, D.K.** and Sanyal, P. **(2016)**. Paleohydrological and vegetational history of Quaternary Belan valley, north central India: Multi-proxy evidence from archaeological site. Annual General Meeting of The Geological Society of India 2016, IIT Kharagpur, India