

Jitendra Kumar Pattanaik, Ph.D.

Assistant Professor

Centre for Geography and Geology
School of Environment and Earth Sciences
Central University of Punjab
Bathinda- 151001

Email Id: jitendra.bapi@gmail.com, jkp@cup.ac.in

Mobile : 9674227643



Education

- *Ph. D. (Earth Sciences), March, 2010*, Pondicherry University, Puducherry
- *M. Sc. (Applied Geology), 2002*, Pondicherry University, Puducherry
- *B. Sc (Geology Hon's), 2000*, A. S. D. College, Tirtol, Utkal University, Orissa

Experience

- *Assistant Professor*, August 2015 onwards, Central University of Punjab, Bathinda
- *Visiting Faculty*, 2015, IMSc., Chennai
- *Assistant Professor (O.C.)*, 2011-2015, IISER Kolkata
- *IISER Fellow*, 2010-2011, IISER Kolkata
- *Scientist in NFG Project*, 2008-2010, Pondicherry University

Teaching Assignments

- 5 academic years (10 Semester) of teaching experience of BS-MS and Integrated Ph.D. programme at IISER Kolkata, Mohanpur.

Course name	Number of Semester Taught
Mineralogy	03
Introduction to Oceanography	01
Economic Geology	04
Mineralogy Lab	01
Mineralogy Lab (Shared)	02
Sedimentology Lab (Shared)	02
Geophysics Lab (Shared)	02
Seminar and Field training	

- 4 semester teaching experience of M.Sc. programme at Central University of Punjab, Bathinda.

Course name: Mineralogy and Crystallography (+ Lab)

Geomorphology and Geotectonic

Principle of stratigraphy

Sedimentology (Shared) (+ Lab)

Geochemistry and Isotope Geology

Metamorphic Petrology (+ Lab)

Oceanography

Basic Statistics (Shared)

Seminar and Field Training (Shared)

Research Project

Ongoing

- Project Title: “Mobilization and redistribution of elements during different stages of chemical weathering of Rajmahal Basalt in Pakur district of Jharkhand” Funding Agency: Scheme for Young Scientists, SERB, Department of Science & Technology, Project Cost: 41.5 lacs.
- Project Title: Determination of extent and timing of Quaternary glaciation in the Upper Alakananda basin using cosmogenic radionuclides ^{10}Be and ^{26}Al , Funding Agency: IUAC, New Delhi, Sanctioned amount: 7.95 Lacs.
- Geochemistry of glacial lake deposits from upper Alakananda basin: Significance to paleoclimatic fluctuation, Funding Agency: CUPB, Under RSM grant, Project cost: ~ 3 Lacs.

Professional Recognition /Awards/Scholarship

- a) Awarded UGC – Dr. D. S. Kothari Post-doctoral fellowship, 2010.
- b) Second prize for best paper presentations in the 10th ISMAS, Triennial International Symposium on Mass Spectrometry, Munnar, India, 2006.
- c) Qualified CSIR-JRF-NET exam, June 2003.
- d) Qualified UGC-JRF-NET exam, Dec. 2002.

Peer Recognition

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Area specializations/Research Interest

- Application of cosmogenic radionuclides such as ^{10}Be and ^{26}Al to understand the earth surface processes and exposure dating
- Understanding the continental weathering and CO_2 consumption rate using major, trace elements and Sr isotopes on river water and bed load sediments.
- Accelerator Mass Spectrometry (AMS)

Publications

Research Papers

- Singh A. K., **Pattanaik J. K.**, Kumar G. and Jaiswal M. K., (2017). Late Quaternary Evolution of Tista River Terraces in Darjeeling-Sikkim-Tibet Wedge: Implications to Climate and Tectonics. *Quaternary International*, Volume 443, Part B, 132-142, dx.doi.org/10.1016/j.quaint.2016.10.004, 1040-6182.
- Singh A. K., Jaiswal M. K., **Pattanaik J. K.** and Dev M. (2016). Luminescence Chronology of Alluvial fan in North Bengal, India: Implications to Tectonics and Climate. *Geochronometria*, 43,102–112, DOI 10.1515/geochr-2015-0037.
- Saumik Samanta, Tarun K. Dalai, **Jitendra K. Pattanaik**, Santosh K. Rai, Aninda Mazumdar, (2015). Dissolved inorganic carbon (DIC) and its $\delta^{13}\text{C}$ in the Ganga (Hooghly) river estuary, India: Evidence of DIC generation via organic carbon degradation and carbonate dissolution, *Geochimica et Cosmochimica Acta*, vol 165, 226-248
- Pankaj Kumar, Chopra S., **J. K. Pattanaik**, S. Ojha, S. Gargari, R. Joshi and D. Kanjilal (2015) “A New AMS Facility at Inter University Accelerator Centre, New Delhi, India”. *Nuclear Instruments and Methods in Physics Research Section B*. Accepted. DOI: 10.1016/J.nimb.2015.03.078
- Pankaj Kumar, **J. K. Pattanaik**, N. Khare, S. Chopra, Sudesh Yadav, S. Balakrishnan and D. Kanjilal (2014) “Study of ^{10}Be in the Sediments from the Krossfjorden and Kongfjorden Fjord System, Svalbard”, *J Radioanal Nucl Chem*, DOI: 10.1007/s10967-014-3315-7

- **Pattanaik J.K.**, Balakrishnan S., Bhutani R. and Singh P., (2013)“Estimation of weathering rates and CO₂ drawdown based on solute load: Significance of granulites and gneisses dominated weathering in the Kaveri River basin, Southern India”, *Geochemica et Cosmochemica Acta*, Vol 121, 611 – 636
- Pankaj Kumar, **J. K. Pattanaik**, S. Ojha, S. Gargari, R. Joshi, G. S. Roonwal, S. Balakrishnan, S. Chopra, D. Kanjilal (2011): “¹⁰Be measurements at IUAC-AMS facility”, *J Radioanal Nucl Chem*, Vol. 290, pp. 179-182, DOI:10.1007/s10967-011-1184-x
- N. Khare, P. Govil, Pankaj Kumar, A. Mazumder, S. Chopra, **J. K. Pattanaik**, S. Balakrishnan, G. S. Roonwal (2011): “¹⁰Be as paleoclimatic tracer: initial results from south western Indian Ocean sediments”, *J Radioanal. Nucl. Chem*, Vol. 290, pp. 197-201, DOI 10.1007/s10967-011-1218-4.
- **Pattanaik J.K.**, Balakrishnan S., Bhutani R. and Singh P., (2007): “Chemical and Sr isotopic composition of Kaveri, Palar and Ponnaiyar rivers: Significance to weathering of Granulites and Granitic gneisses of southern Peninsular India”, *Current Science*, Vol. 93, No. 4, pp no. 523 – 531
- Nissar Ahmad, A. A. Wani, R. Ram, S. R. Abhilash, Rakesh Kumar, **J. K. Pattanaik**, Sankar De, R.K. Karn, and T. Nandi (2006): “Beam-single and beam-two-foil experimental facility to study physics of highly charged ions”, *Review of Scientific Instruments*, Vol. 77, 033107

Research papers (full) in the edited volume/proceedings (edited)/book

- **Pattanaik J. K.**, Balakrishnan S., Panakj Kumar and Chopra S., (2011): In: S. K. Aggarwal, A. G. Jaison and V. M. Telmore (Ed.) *ISMAS DM-HEAL-2011*, ISBN: 978-81-904442-3-1, Prudent Arts & Fab Pvt. Ltd, pp. 79 - 83.
- Panakj Kumar, **Pattanaik J. K.**, Archana Bohra, S. Ojha, S. Gargari, R. Joshi, Balakrishnan S., G. S. Roonwal and Chopra S., (2011): In: S. K. Aggarwal, A. G. Jaison and V. M. Telmore (Ed.) *ISMAS DM-HEAL-2011*, ISBN: 978-81-904442-3-1, Prudent Arts & Fab Pvt. Ltd, pp 61 – 63.
- Pankaj Kumar, **J. K. Pattanaik**, N. Khare, S. Chopra, SudeshYadav, S. Balakrishnan and D. Kanjilal (2014), *Proceedings of the International conference on Application of Radiotracers and Energetic Beams in Sciences (ARCEBS 14)*, 12–18th Jan. 2014, SINP, Kolkata, Vol. 4, pp no. 121–122
- Pankaj Kumar, **Pattanaik J. K.**, Sunil Ojha, Gargari S., Joshi R., Balakrishnan S., Chopra S. and Kanjilal D. (2010)., In: Lahiri S., Maiti M. and Das S. K., (ed.), *Proceedings of the International conference on Application of Radiotracers in Chemical, Environmental and Biological Sciences (ARCEBS)*, 7–13th Nov. 2010, SINP, Kolkata, Vol. 3, pp no. 104–106, ISSN 0973-256X.
- Khare N., Govil P., Pankaj Kumar, Mazumder A., Chopra S., **Pattanaik J. K.**, Balakrishnan S. and Roonwal G. S. (2010), In: Lahiri S., Maiti M. and Das S. K., (ed.), *Proceedings of the International conference on Application of Radiotracers in Chemical, Environmental and Biological Sciences (ARCEBS)*, 7–13th Nov. 2010, SINP, Kolkata, Vol. 3, pp no. 107–109, ISSN 0973-256X.
- Pankaj Kumar, **Jitendra Kumar Pattanaik**, S.Ojha, A. Jhingan, S. Gargari, R. Joshi, S. Balakrishnan, S. Chopra and S. K. Datta (2007), In. Choudhury R. K.; Mohanty, A. K.; Santra, S. (eds.), *Proceedings of the DAE-BRNS Nuclear Physics symposium, Sambalpur, December, 2007*, Vol. 52, pp. no. 599, ISBN 81-8372-034-X.
- Pankaj Kumar, **Pattanaik J. K.**, Golda K. S., Devarani Devi, Ojha S., Gargari S., Joshi R., Nandi T., Mandal A., Chopra S. and Datta S. K., (2005), In: Kailas S., Kumar S. and Pant L. M., (ed.), *Proceedings of the DAE-BRNS 50th Symposium on Nuclear Physics, BARC, Mumbai, Vol. 50, pp no. 467, ISBN: 81-8372-020-X.*

- Pankaj Kumar, **Jitendra Pattanaik**, K. S. Golda, Devarani Devi, S. Gargari, S. Chopra, T. Nandi, A. Mandal and S.K. Datta, (2004), In. Singh P. and Pant L.M. (ed.), Proceedings of DAE – BRNS Symposium on Nuclear Physics, BHU, December 6-10, 2004, Vol. 47B, pp no. 502-503.
- **Pattanaik J. K.**, Balakrishnan S., Rao P. S. and Senthil Nathan D., (2003), In: Anupama K. and Hema Achyuthan (Ed), Late Quaternary Environment Change: emerging issues, Proceedings of the International PAGES workshop, Vol. 42, pp no. 119-122.

Book Chapters

Review Articles

Popular Articles

Monographs

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Technical Reports

- **J. K. Pattanaik**, T. Nandi, Rajesh Kumar, Suraj Kumar and S. K. Datta, (2003): “Off-line testing of the Wien filter using α – source”, Category: Accelerator Mass Spectroscopy, **Reference No.:** NSC/TR/JKP/2002-2003/, submitted to: Nuclear Science Center, (An autonomous Inter-University Center of UGC), PO. Box No. 10502, ArunaAsaf Ali Marg, New Delhi – 110067.
- Pankaj Kumar, **J. K. Pattanaik**, K. S. Golda, Sunil Ojha, S. Gargari, T. Nandi, S. Chopra and S. K. Datta (2006): “Wien Filter Testing (calibration) using $^{16}\text{O}^{5+}$ beam tail present in 14 mass injections” **Reference No.:** IUAC/TR/PK/2005-06/39, submitted to: Inter University Accelerator Center, PO. Box No. 10502, Aruna Asaf Ali Marg, New Delhi – 110067.

Workshop/Conferences

Organised

- As a **convener** organised an acquaintance program of Inter University Accelerator Centre (IUAC), New Delhi at Central University of Punjab, Bathinda on 4th April 2016. Program was funded by IUAC, New Delhi. Sanctioned amount Rs. 40,000/-.
- Organised 5 days’ workshop on “GIS and its application: Recent Trend in Geography and Geology” and one day special lecture at Centre for Geography and Geology, Central University of Punjab, Bathinda, between 15th – 19th February, 2016. This workshop was university funded. Involvement as a member of organising committee.

Attended /Invited Talk

- **Pattanaik J. K.**, Singh A., Nayak K., Shah S. S., Semwal P., Jaiswal M. K., Banerjee A., Nainwal H.C., Shankar R. (2016). Chronology of relict lake deposits in the upper Alakananda basin: Implication to paleoclimate and variability of chemical weathering intensity. Oral Presentation in the 35th *International Geological Congress (IGC) 2016*, under the theme (T4)- Climate Change Studies, Session – 17, T4.17 - Understanding Tropical Climate Change from geological perspectives through multi-dimensional approach, held at CTICC, Cape Town, South Africa; 27th August to 2nd September, 2016.
- Pattanaik J. K. (2016). Applications of cosmogenic radionuclides (CRN) ^{10}Be and ^{26}Al in Earth system science. Invited talk on in the *iThemba* Lab, Johannesburg, South Africa on 30th

August, 2016.

- Project proposal entitled “Terrestrial exposure dating on *Roche Moutonnées* and glacial deposits of the Schirmacher Oasis to understand the extent and timing of Last Glacial Maxima in the Queen Maud Land, East Antarctica” defended in the National Workshop to evaluate the proposals for the 36th Indian Scientific Expedition to Antarctica, 9-10 June 2016, ESSO-NCAOR, Goa
- *Invited lecture* on “Application of ¹⁰Be and ²⁶Al in Earth Sciences studies and their sample processing techniques for AMS measurement” in the acquaintance program of Inter University Accelerator Centre (IUAC), New Delhi at Central University of Punjab, Bathinda on 4th April 2016.
- Attended workshop on “GIS and its application: Recent Trend in Geography and Geology” at Centre for Geography and Geology, Central University of Punjab, Bathinda, between 15th – 19th February, 2016.
- Project and beam time proposal entitled “ Determination of extent and timing of Quaternary glaciation in the Upper Alakananda basin using cosmogenic radionuclides ¹⁰Be and ²⁶Al” was presented by me in the 59th Accelerator User Workshop at IUAC, New Delhi from Dec 16 - 19th, 2015.
- Invited lecture in the SERB, DST, Govt. of India, sponsored training program on 'Earthquake Hazard: Basic Approaches, Field Investigations and Modeling' at SMVDU, Katra, from 10 – 16 November 2015.
- *Invited lecture* on determining the millennial scale weathering rates in the drainage basin using 10Be and 26Al at workshop on Accelerator Mass Spectrometry, IUAC New Delhi on September 15th, 2011.
- *Invited lecture* on sample preparation for AMS measurement at ISMAS International Discussion Meet on Elemental Mass Spectrometry in Health and Environmental Science (ISMAS-DM-HEAL-2011) at New Delhi during 14 – 15 April, 2011.
- *Invited Lecture on* “Be extraction from geological samples” at IUAC, New Delhi, User Awareness Program at Department of Earth Science, Pondicherry University on 21st October, 2008.
- Ultra clean geochemistry lab demonstration to the participant of DST sponsored Training course on “Application of radiogenic isotopes in geochronology and geochemistry” at Department of Earth Science, Pondicherry University during December 15 – 20, 2008
- Participated in one day seminar on Accelerator Mass Spectrometry at IUAC, New Delhi, on 15th September, 2010, followed by the review meeting on progress in AMS and the future plans, including the upcoming ¹⁴C AMS facility.
- Beam time proposal entitled “¹⁰Be measurements using AMS on sediment core samples from Sambhar and Didwana Lakes in Rajasthan to determine rate of sedimentation Significance to paleoclimate studies” presented by me in the 49th Accelerator User Workshop – Dec 17-18th, 2010 at IUAC, New Delhi.
- Premchnad Kisku, **Jitendra K. Pattanaik**, T. K. Dalai, S. Balakrishnan, (2013): “Chemical weathering and regolith development over Rajmahal basalt and Chotanagpur gneiss: A comparative study”, Annual V. M. Goldschmidt Conference, 2013, Florence, Italy. *Mineralogical Magazine*, vol. 77(5), pp-1473, doi:10.1180/minmag.2013. 077.5.11. ISSN: 0026-461X
- **Jitendra Kumar Pattanaik**, S. Balakrishnan, Rajneesh Bhutani (2013): Sr isotope study of Kaveri river – a potential proxy to infer the paleo-intensities of SW and NE monsoon in south India”, Proceedings of International PAGES 4th Open Science Meeting, Goa, 2013.

- **J. K. Pattanaik** and S. Balakrishnan (2007): “ ^{10}Be and clay mineralogical studies on lagoonal sediments from Kaluveli, Pondicherry, India: Significance to Paleoclimate”. Proceedings of the 17th Annual V. M. Goldschmidt Conference 2007, Cologne, Germany, *Geochemica et Cosmochemica Acta*, Vol. 71, Issues 15, A765, doi:10.1016/j.gca.2007.06.024. ISSN: 0016-7037.
- **J. K. Pattanaik**, S. Balakrishnan, Pankaj Kumar and S. Chopra (2007): “Development of AMS technique to measure ^{10}Be and ^{26}Al in quartz: Significance to estimate exposure ages and erosional rate of rocks in India”, 3rd International Symposium on Geological Anatomy of East and South Asia, 8-14 Oct. 2007, Delhi, pp no. 116.
- **Pattanaik J. K.**, Balakrishnan S., Pankaj Kumar, Golda K. S., Devarani Devi, Ojha S., Gargari S., joshi R., Chopra S., Mandal A., Nandi T. and Datta S. K., (2006): “ ^{10}Be Measurement from Manganese Nodules Using Accelerator Mass Spectrometer” 10th ISMAS Triennial International Symposium on Mass Spectrometry, January 28th – February 1st, Munnar, Kerala, ISMAS Souvenir cum Bulletin, 2006, pp no 121-122.
- **Pattanaik J. K.**, Balakrishnan S., Rao P. S. and Senthil Nathan D., (2004): “Suitability of EPR method in dating marine shells”, Asia-Pacific EPR/ESR symposium, 22-25th November, 2004, IISC, Bangalore.
- **J. K. Pattanaik**, Balakrishnan S, Pankaj Kumar and Chopra S (2011): “Determining the millennial scale weathering rates in the drainage basin using ^{10}Be and ^{26}Al ”, abstract volume, pp – 07, workshop on AMS, IUAC, New Delhi.
- **J. K. Pattanaik**, S. Balakrishnan, Pankaj Kumar, S. Ojha, A. Jhingan, S. Gargari, R. Joshi, S. Chopra and S. K. Datta (2007): “Determination of Sedimentation Rate and Paleoclimate Modeling using ^{10}Be and clay Mineralogical Studies on Lagoonal Sediments from Kaluveli, Pondicherry”, Workshop on Accelerator Mass Spectrometry, IUAC, New Delhi, Oct. 05, pp no. 10.
- **Pattanaik J. K.** and Balakrishnan S. (2005): “Paleoclimatic Study of the Kaluveli Lagoon, East Coast of Tamil Nadu: A Multidisciplinary Approach”, The National Academy of Sciences, India Conference, 75th Annual Session, December 8-9, Pondicherry, pp no. 08.
- **Pattanaik J. K.** and Balakrishnan, (2005): “ ^{10}Be Extraction from Manganese Nodules Sample for AMS Measurement”, Workshop on Accelerator Mass Spectroscopy, IUAC, New Delhi, September 23, pp no. 06.

Research Grants

SERB, DST Project grant: 41.5 lakhs.

IUAC project grant: 7.95 lakhs

RSM project grant: 3 lakhs

Other Achievements

- I. Scientific summer member in the 36th Indian Scientific Expedition to Antarctica for geological sample collection from Maitri station, Antarctica, from 2nd December 2016 to 1st March, 2017.
- II. Underwent Pre-Antarctic Expedition Ice and Snow Acclimatization training at Mountaineering and Skiing Institute, Indo-Tibetan Border Police Force, Auli, Uttarakhand; 7th – 28th September, 2016.

M.Phil. dissertation supervised

M.Phil. dissertation submitted/ under Supervision:

Ph.D. students enrolled (under Supervision) – 3

Details of completed MS dissertation:

<i>S.N.</i>	<i>Name of the students</i>	<i>Title of the MS dissertation</i>	<i>Guide</i>	<i>Year</i>
1.	<i>Ms. Kalyani Nayak</i>	Geochemical characterization and provenance study of glacial lake deposits of the Badrinath Valley	Single	2015
2.	<i>Mr. Sujit M. Naik</i>	Geomorphometric analysis of Badrinath valley: significance to paleoglaciation	Single	2015
3.	<i>Mr. Gagan Kumar</i>	Geochemistry and provenance study of Quaternary sediments from eastern Himalaya	Single	2015
4.	<i>Ms. Mansi Jain</i>	Reconstruction of Stratigraphy of Early Miocene of Kutch	Share	2015
5.	<i>Ms. Shail Vijeta Ekka</i>	Distribution and estimation of short term fall out rate of atmospheric ^{10}Be in Sambhar and Didwana lake, Rajasthan, India.	Single	2014
6	<i>Mr. Prem Chand Kisku</i>	A preliminary study on chemical weathering and development of regolith over Rajmahal basalt.	Single	2013
7	<i>Mr. Amit Kumar</i>	Enhancement of beam current using suitable metal matrix during ^{10}Be AMS measurement.	Single	2012
8	<i>Mr. Vikash Kumar Singh</i>	Paleo-Monsoon reconstruction using speleothem records.	Share	2012
9	<i>Mr. Debendra Baghel</i>	Suppression of ^{10}B isobar in ^{10}Be AMS measurement using post acceleration stripper and gas cell absorber.	Single	2012

→ No. of summer trainee – 5

→ No. of M.Sc. Dissertation at CUPB - 4

Administrative Responsibilities at Central University of Punjab:

Convenor of Academic and Administration committee (AAC) of the Centre

Member of the Board of Studies (BOS) of the Centre

Member of Curriculum Development committee (CDC) of the Centre

Member of Admission committee of the Centre

Member of Discipline committee for 1st convocation of the University

Extracurricular activities:

- Won first prize in the long jump event during 4th Annual Sports and athletic meet 2016, CUPB.
- Won third prize in the 80 m race during 4th Annual Sports and athletic meet 2016, CUPB.
- Won third prize in the shot put event during 4th Annual Sports and athletic meet 2016, CUPB.

As a Reviewer:

1. Applied Geochemistry, Elsevier Journal
2. Himalayan Geology
3. Journal of Iberian geology

Membership in Professional Bodies:

1. Life Member, Indian Society For Mass Spectrometry, (ISMAS), Mumbai, India
2. Annual Member, European Association of Geochemistry

Collaboration

1. AMS Group, Inter-University Accelerator Centre, New Delhi
2. Prof. S. Balakrishnan, Pondicherry University, Puducherry
3. Prof. R. Shankar, Indian Institute of Mathematical Sciences, Chennai
4. Prof. H.C. Nainwal, HNB Garhwal University, Srinagar (Garhwal), Uttarakhand
5. Dr. T. K. Dalai and Dr. Manoj K. Jaiswal, IISER Kolkata, Mohanpur
6. Dr. Argha Banarjee, IISER Pune, Pune