

P. RAMYA BALA

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WORK EXPERIENCE

Mar 2020 – : Visiting Scholar, University of Pennsylvania, Philadelphia, USA
Mar 2019 – Mar 2020: Fulbright Kalam Climate Change Post-Doctoral Fellow, Philadelphia, USA
Jan 2018 – Jan 2019: SERB - Overseas Post-Doctoral Research Fellow at Toulouse, France
Aug 2016 – Oct 2017: Research Associate at Divecha Centre for Climate Change, Bengaluru

ACADEMIC PERFORMANCE

November, 2017 –Principal candidate for **Fulbright-Kalam Climate Fellowship**
August, 2017 – **Overseas Post-Doctoral Fellowship** award by the Government of India
August, 2017 – **National Post-Doctoral Fellowship** award by the Government of India
September, 2016 – Awarded an **Interdisciplinary PhD** at the Centres for Earth and Ecological Sciences, **Indian Institute of Science**, having been admitted to the program on the merit of a national rank of **66** in Graduate Aptitude Test in Engineering (**GATE**), 2009. I cleared relevant courses during my PhD with a cumulative grade point average (cgpa) of **6.71** (upon 8)
May, 2009 – Admitted to the degree of Bachelor of Technology in **First Class** with a cgpa of **8.4** (upon 10) at **Anna University, Chennai**

LABORATORY EXPERIENCE

- Mar 2019 – Mar 2020: Paleoenvironmental reconstruction from late Neolithic and Megalithic settlements of Northern Karnataka
 - Stable C and N isotopes of bulk sediments, exposure to organic geochemical markers and compound specific isotopes
- Jan 2018 – Jan 2019: Multi-disciplinary characterization of the origin and constitution of Pyrenean cryoconites.
 - Apr, Dec 2018: Water sample preparation in Class 1000 clean room for Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
 - Nov, 2018: Mercury analysis on solid samples using Direct Mercury Analyzer
 - Dec, 2018: DNA extraction and amplification for microbial diversity on glaciers
- Aug 2009 – Oct 2017: Reconstruction of past environmental conditions using a multi-proxy approach using both organic and inorganic geochemistry in high altitude peat.
 - Feb 2017: Carried out stable carbon isotope analysis at the Centre for Earth Sciences, IISc, for plant samples and cellulose extracts from peat (for paleovegetation information).

- Jan 2017, July 2016: Measured C/N ratios at the National Centre for Biological Sciences, Bengaluru, on plant samples from diverse plant groups such as sedges, grasses, herbs, trees and flowers to build a baseline C/N ratio of the vegetation at my study site.
- Jan 2015: Visited National Geophysical Research Institute, Hyderabad, to evaluate Rock-Eval indices as indicators of decomposition in peat samples.
- Jan – Feb 2014: Visited EcoLab, Toulouse, France, to learn clean-room techniques for extraction of the inorganic constituents in peat (using hot plate method) and analysis of the extracts on Inductively Coupled Plasma Optical Emission Spectroscopy and Mass Spectrometry (ICP-OES & ICP-MS), used for tracking paleoenvironments in peat.
- Jan – March 2013: Worked at the TANDETRON AMS Lab, Division for Chronological Research, Nagoya University, Japan. Trained in chemical pre-treatment procedures for radiocarbon dating and graphitization.
- July – August 2012: Visited Physical Research Laboratory, Ahmedabad, to learn cellulose extraction protocols for stable isotope analysis. At PRL, I also measured C/N ratios (used in temperate peat) for evaluating their use as proxies for decomposition.
- Dec 2008 – April 2009: I worked on population genetics of bonnet macaques at the National Centre for Biological Sciences, where I amplified and sequenced genes in the mitochondrial D-loop and Cytochrome B from fecal DNA I had extracted.
- May – June 2008: Interned in Molecular Reproduction, Development and Genetics laboratory, Indian Institute of Science, for training in nucleic acid techniques in research.

COLLABORATIONS

- Exploration of molecular biomarkers and metagenomic indicators as paleoclimate proxies with Dr. Devanita Ghosh, IISc (ongoing).
- C/N analysis with Prof. Ravi Bhushan, Physical Research laboratory, Ahmedabad (completed).
- Stable carbon isotope analysis using IRMS with Prof. R. Ramesh at Physical Research laboratory, Ahmedabad, and Prof. Prosenjit Ghosh, IISc (completed).
- AMS Radiocarbon dating with Prof. Toshio Nakamura, Nagoya University, Japan (completed).
- Inorganic geochemistry using ICP-OES & MS with Dr. Gaël Le Roux and Dr. François de Vleeschouwer at ENSAT, Toulouse, France (completed).
- Rock – Eval pyrolysis on peat samples with Dr. Devleena Tiwari at the National Geophysical Research Institute, Hyderabad (completed).
- Pollen analysis with Dr. K. Anupama at the French Institute of Pondicherry (ongoing).
- Mercury analysis with Prof. Jeroen Sonke at GET, Toulouse (completed)

PUBLICATIONS

Ramya Bala P., Sarath P.K., Tayasu I., Yoshimizu C., Thirumalai K., Sajeev K., Sukumar R. 2020. Paleovegetation dynamics in a montane vegetation mosaic in the Western Ghats, India: evidence for alternative stable states in the past? *Quaternary Research* (*under review*)

Sarath, P.K., Ramya Bala P., Kumar. P., Ghosh, D., Sukumar, R. 2020. Climate change and the migration of a pastoralist people c.3500 cal. years BP inferred from palaeofire and lipid biomarker records in the montane Western Ghats, India. *Environmental Archeology (under review)*

Ramya Bala, P., Nakamura, T., Sajeev, K. & Sukumar, R. 2016. High-resolution age-depth chronology from tropical montane minerotrophic peat in the Sandynallah valley, Western Ghats, southern India: Analytical issues and implications. *Quaternary Geochronology* 34, 12-23.

Evaluating geochemical proxies for paleoclimate reconstruction in tropical montane peat: a case study from the Nilgiris, southern India. *PhD thesis*. December, 2015.

Ramya Bala, P., De Vleeschouwer, F., Le Roux, G., Sukumar, R. & Sajeev, K. Evaluating inorganic geochemical proxies for paleoenvironmental reconstruction, a first report from montane peat in India. *In preparation for submission to Holocene Special Issue on Dust*.

CO-CURRICULAR ACTIVITIES

- Participated in American Geosciences Union, San Francisco, December 2019
- Presented a poster titled '*Comparative analysis of pollutants in polar, high- and low-altitude cryoconites*' in POLAR 2018 at Davos, Switzerland and CNFRA, Strasbourg, France (as part of 14th Scientific Days of Polar Research)
- I presented a poster on '*Using proxies unexplored in Indian peat: a case study from Sandynallah, the Nilgiris*' in the INQUA- HaBCom workshop on 'Prehistory, Plants and People', jointly hosted by the Sharma Centre for Heritage Education, Chennai, and the French Institute of Pondicherry, Puducherry in January, 2016.
- I have presented my work on '*Variations associated with pre-treatment method in radiocarbon age measurement from mineral rich peat, India*' in the conference on 'Radiocarbon in the Environment', Belfast, Northern Ireland, 2014.

FIELD EXPERIENCE

For my second post-doc I organized a pilot sampling by excavation in a seasonal wetland in the Mudumalai Tiger Reserve, I also sampled surface waters and fresh sediments for proxy calibration. During my first post-doc, I have taken part in expeditions in sub-zero temperatures for sample collection from the sea-ice in Gulf of Bothnia and from the Ossoue glacier in the Pyrenees, France. I was also part of expeditions to high-altitude peatlands in the Pyrenees for routine monitoring.

For my PhD, I undertook several short field expeditions to my field site at Sandynallah, Nilgiris, for collection of plants, groundwater monitoring as well as rainwater collection. I organized a team expedition to procure core samples (using manual corer) from the peat at the same site.

I have completed a two-week long adventure training camp conducted by the National Institute for Mountaineering and Allied Sports at Dirang, Arunachal Pradesh.

As a Nature Club member at IISc, I participated in weekend camps for Rock climbing and Aquatic Sports conducted by the General Thimmayya National Academy of Adventure, Karnataka.

I participated in the 39th and 40th Shodh Yatra, a walk of learning spanning about 100 km in a week through remote rural areas, aimed at discovering creativity and innovation at the grassroots. This

journey exposed me to the extreme summer temperatures (Bargad, Odisha) and extreme winter temperatures (Gurez valley, Kashmir) and associated hardships – mental, physical and emotional.

SCIENCE WRITING AND OUTREACH

My enthusiasm to spread the word about the science I do made me pursue science writing as a serious hobby. I am on the team of writers at Research Matters which provides research based media services. This involves writing press releases which simplify science for lay persons and journalists, one of [my press releases](#) was published in Deccan Herald, an English language daily.

RESPONSIBILITIES UNDERTAKEN

2015 – Organized conference: ‘Ecology in Space and Time’ hosted by the Centre for Ecological Sciences, IISc, and workshop: ‘Geochronology: Challenges and possibilities’ hosted by the Centre for Earth Sciences, IISc.

2012-14 – Headed and coordinated activities of the Hostels and Social Initiatives committees, under the Students’ Council, Indian Institute of Science, Bangalore.

2012 – Convened and organized the annual In-house symposium at the Centre for Earth Sciences, Indian Institute of Science, Bangalore.

2008 – Headed the Organization committee for a national level symposium, Biotechcellence’08, hosted in Centre for Biotechnology, Anna University, Chennai.

COMMUNITY SERVICE

Engaging with the local community is very satisfying. Some of my experiences are detailed here. As convener of the Social Initiatives committee of the Students’ Council (2012-13) at IISc, we organized an activity: ‘Help the Needy’ for donation of reusable materials such as clothing, books, toys and bedding to the underprivileged in our city. We collected used but useful materials from the institute community and distributed them to various recipients such as slum/shack dwellers and orphanages for the blind. In this committee, we also populated and maintained a blood donor database for the institute community in case of emergency.

As a part of the Women’s welfare committee at IISc, I helped to organize a workshop ‘Blank Noise’ about street sexual abuse, popularly known as eve-teasing in India. The workshop taught us how to face our fears and transform society.

At IISc, I volunteered for Notebook Drive, an organization that engages in educational activities for the underprivileged. I taught English at a local school for two years on Saturdays, to help underprivileged children (10-12 year olds). I wrote about my experience [here](#).

I also volunteered for SWAMII, Solid Waste Management Initiative at IISc. This involved setting up labelled bins for solid waste segregation at various locations and spreading awareness among visitors and campus residents to follow segregation guidelines.

I participated in the 39th and 40th Shodh Yatra, a walk of learning through rural India. As a team, we documented traditional knowledge, traditional recipes with forgotten/rare plants, and agricultural hacks that farmers had developed for local challenges. We felicitated rural artisans, biodiversity conservationists and innovators. The experience was transformative and I have written a [short piece](#) about it.