Curriculum-Vitae

Name: Shweta Yadav

Nationality: Indian

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Official Address: Room No.: D 35, Department of Environmental Sciences, Central University

of Jammu, Bagla (Rahya Suchani), District-Samba, J & K, India-181143

Present Designation

Assistant Professor (senior grade), Department of Environmental Sciences, Central University of Jammu-Samba-181143

Positions held

September, 2017 – August, 2018	Fulbright Kalam Climate Postdoo	ctoral Fellow, Department of
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Marine, Earth and Atmospheric Sciences, North Carolina State

University, Raleigh, NC, USA

July 2017 onwards Sr. Assistant Professor, Department of Environmental

Sciences, Central University of Jammu-Samba-181143

July 2013 - July 2017 Assistant Professor, Department of Environmental Sciences,

Central University of Jammu- Samba-181143

January - July 2013 Assistant Professor, Department of Environmental Studies,

Visva-Bharati (Central University), Santiniketan, West

Bengal., India-731235

Academic Background

Postdoctoral Research (Atmospheric Science), MEAS, NCSU, Raleigh, NC, USA (2017 - 2018)

[Project title: Influence of aerosol sources on the Ice Nucleating Particles spectrum over North-Western Himalayas: Implications on Regional Climate]

PhD (Environmental Science), JNU, New Delhi (2013)

[Thesis title: Quantitative Estimation of Elements and Carbonaceous Species in Ambient Aerosols and their Coupling with Local Meteorological Factors]

MSc (Environmental Science), JNU, New Delhi (2006)

[FGPA 8.51 on 0-9 scale (A⁺ Grade)]

[Dissertation title: Correlation between Ground Level Ultra-Violet Radiation & Lower Atmospheric Aerosol Load with other Meteorological Parameters]

Academic achievements/awards/recognitions

- ⇒ Nodal Faculty for Jammu & Kashmir in National Knowledge Network to support National Clean Air Programme (June 2019-till present).
- ⇒ Fulbright Campus Representative for Central University of Jammu, recognized by United States India Educational Foundation (USIEF), India (2019-till present).
- \Rightarrow SERB International Travel Support (ITS) award for European Aerosols Conference 2019 in Gothenburg, Sweden (25th 30th August, 2019).
- ⇒ Fulbright Kalam Climate Postdoctoral Fellowship Award (2017-2018), Fulbright Commission.
- ⇒ Subject expert member in district level expert appraisal committee on Environmental Impact Assessment for District Samba, Jammu & Kashmir (2017-2018).
- ⇒ Qualified University Grants Commission National Eligibility Test for Junior Research Fellowship & Lectureship (UGC-NET-JRF) in Environmental Sciences, December 2005.
- ⇒ Recipient of Jawahar Bhawan Trust Scholarship in M.Sc. (Package B) for scoring highest grade points, 2005.

Professional Trainings

- ⇒ Training in "Traditional and Modern methods for Bioaerosol analysis" organized by Paerl Lab, Jordan Hall, NC State University, Raleigh, NC, USA (13th August 24th August, 2018).
- ⇒ Laboratory Chemical Waste Management Training organized by Environmental Health and safety (EHS) Centre, NC State University, Raleigh, NC, USA (27th February, 2018).
- ⇒ Training in Chemical Hygiene Plan organized by Environmental Health and safety (EHS) Centre, NC State University, Raleigh, NC, USA (19th December, 2017).
- ⇒ Training in Hazardous Waste Management organized by Environmental Health and safety (EHS) Centre, NC State University, Raleigh, NC, USA (18th December, 2017).
- ⇒ Compressed Gas Regulator Safety Training organized by Environmental Health and safety (EHS) Centre, NC State University, Raleigh, NC, USA (18th December, 2017).
- ⇒ Principles of Radiation Safety Radioactive material safety training organized by Environmental Health and safety (EHS) Centre, NC State University, Raleigh, NC, USA (30th November, 2017).
- ⇒ "XXIII National Training Programme in Electron Microscopy for Scientific Investigators, 2007" (Basic & Advance Course) organized by AIIMS, New Delhi 110029 (12th November 2007 24th November 2007).

Areas of Research

Aerosols, Air quality and Climate Change

- Sub-fields: Characterization and source apportionment of ambient aerosols: carbonaceous and inorganic species
 - Ice nucleating particles: ground measurements
 - Bioaerosols: ecosystem health and climate implications
- ⇒ Characterization and source apportionment of ambient aerosols: carbonaceous and inorganic species

(Collaborators: Prof. Arun K Attri, JNU; Prof. Sachchidanand Tripathi, IIT Kanpur; Prof. Andrew Grieshop, NC State University, USA; Prof. Sudesh Yadav, JNU; Dr. Ankit Tandon, CUHP).

Our research group specializes in field measurements and source apportionment studies of aerosols. Initially, we performed source apportionment studies in Delhi³⁻⁶. We developed a protocol to analyze non-polar organic compounds using Thermal Desorption-Gas Chromatography Mass Spectrometry (TD-GCMS). To understand the physical and chemical attributes of ambient aerosols, our research group has conducted various field campaigns in the North Western Himalayan region^{7,8,11-14}. We have recently started comprehensive source apportionment study in Jammu (Project funding 2.18 crores). The instrumentation involved for source apportionment studies are: continuous monitors, particulate (high and low volume) samplers and cascade impactors (Moudi and Andersen) for sampling, soxhlet extractor, ultra-sonicator and microwave digester for sample preparation and TD-GCMS, ICP-OES, ICP-MS, TOR/TOT analyzer, SEM-EDS, CHNS-O analyzer, optical transmissometer, Ion Chromatograph for analysis.

⇒ Ice nucleating particles (INP): ground measurements

(Collaborators: Prof. Markus D. Petters, NC State University, USA; Dr. Bruce F. Moffett, Ocean lab, UK)

It is relatively a new field and knowledge on INP is sparse. We initiated ground measurements of INP in India⁹. We are interested in INP from precipitation, aerosols and fresh water systems. During my Fulbright postdoc with Prof. Markus D. Petters, I got a chance to learn the immersion mode measurements using NC cold stage instrument facility. We are currently working to develop the INP cold stage in India for conducting INP measurements. Under Indo-UK collaboration, we recently completed river campaign with Dr. Bruce F. Moffett to understand the contribution of the Himalayan rivers (Chenab, Sutlej and Beas) to INP. We are particularly interested in biological ice nucleators as they are the novel source of warm INPs.

⇒ Bioaerosols: Ecosystem health and climate implications

(Collaborators: Prof. Markus D. Petters and Prof. Ryan W. Paerl, NC State University, USA; Prof. Sachin S. Gunthe, IIT Madras, India)

We are interested in exploring the multifarious implications of bioaerosols on climate and ecosystem health. In our work on assessing impact of bioaerosols on crop health, we found an increasing trend

in emerging fungal diseases (EFDs) in India calling for immediate coordinated efforts towards understanding the type and diversity of pathogenic fungal bioaerosols¹⁰. There is a huge gap, as in India we are still working with traditional methods to characterize bioaerosols resulting into very limited knowledge on sources and implications of bioaerosols. During rigorous training on characterization of bioaerosols in Pearl Lab, NC State University, USA, I got a chance to learn advance instrumentation and protocols for bioaerosol characterization. The instrumentation involves: bioaerosol samplers, flow cytometry, Fluorescent microscopes, gel-electrophoresis, RT-PCR etc. We have adapted a hybrid approach, where we combine culture and non-culture based methods to understand characteristics of bioaerosols in the Himalayan region. To skip the bias of culture-based methods, we specialize in direct extraction of genomic DNA from filters using high end extraction kits, which is further used for downstream applications. Direct extraction of whole genomic DNA followed by high throughput Next Generation Sequencing (DADA 2 platform) allows study of diversity and abundance in bacterial communities upto single nucleotide resolution. We have got interesting diurnal and seasonal variations in bioaerosols from the Himalayan region and the manuscript involving this work is under preparation. We have also conducted some field measurements in Gurdaspur and Jammu region in different seasons to understand the relation between pathogenic bioaerosols and biotic stress on crop.

Publications: 12 (published), 2 (under review)

Published

- 12. Yadav, S., Bamotra, S., Tandon, A., 2020b. Aerosol-associated non-polar organic compounds (NPOCs) at Jammu, India, in the North-Western Himalayan Region: seasonal variations in sources and processes. Environ. Sci. Pollut. Res. https://doi.org/10.1007/s11356-020-08374-3
- 11. Yadav, S., Gettu, N., Swain, B., Kumari, K., Ojha, N., Gunthe, S.S., 2020a. Bioaerosol impact on crop health over India due to emerging fungal diseases (EFDs): an important missing link. Environ. Sci. Pollut. Res. https://doi.org/10.1007/s11356-020-08059-x
- Yadav, S., Venezia, R.E., Paerl, R.W., Petters, M.D., 2019. Characterization of Ice-Nucleating Particles Over Northern India. J. Geophys. Res. Atmos. 124, 10467– 10482. https://doi.org/10.1029/2019JD030702
- 9. Kaushal, D., Kumar, A., Yadav, S., Tandon, A., Attri, A.K., 2018. Wintertime carbonaceous aerosols over Dhauladhar region of North-Western Himalayas. Environ. Sci. Pollut. Res. 25, 8044–8056. https://doi.org/10.1007/s11356-017-1060-5
- 8. Huma, B., Yadav, S., Attri, A.K., 2016. Profile of particulate-bound organic compounds in ambient environment of Srinagar: a high-altitude urban location in the North-Western Himalayas. Environ. Sci. Pollut. Res. https://doi.org/10.1007/s11356-015-5994-1
- 7. Yadav, S., Tandon, A., Tripathi, J.K., Yadav, Sudesh, Attri, A.K., 2016. Statistical assessment of respirable and coarser size ambient aerosol sources and their timeline

- trend profile determination: A four year study from Delhi. Atmos. Pollut. Res. https://doi.org/10.1016/j.apr.2015.08.010
- 6. Yadav, S., Tandon, A., Attri, A.K., 2014. Timeline trend profile and seasonal variations in nicotine present in ambient PM₁₀ samples: A four year investigation from Delhi region, India. Atmos. Environ. https://doi.org/10.1016/j.atmosenv.2014.08.058
- 5. Yadav, S., Tandon, A., Attri, A.K., 2013b. Characterization of aerosol associated non-polar organic compounds using TD-GC-MS: A four year study from Delhi, India. J. Hazard. Mater. https://doi.org/10.1016/j.jhazmat.2013.02.024
- 4. Yadav, S., Tandon, A., Attri, A.K., 2013a. Monthly and Seasonal Variations in Aerosol Associated n-alkane Profiles in Relation to Meteorological Parameters in New Delhi, India. Aerosol Air Qual. Res. 13, 287–300. https://doi.org/10.4209/aagr.2012.01.0004
- 3. Tandon, A., Yadav, S., Attri, A.K., 2013. Non–linear analysis of short term variations in ambient visibility. Atmos. Pollut. Res. https://doi.org/10.5094/APR.2013.020
- 2. Tandon, A., Yadav, S., Attri, A.K., 2012. Analysis of annual cyclic variations in total ozone column over Indian region. J. Atmos. Chem. https://doi.org/10.1007/s10874-012-9243-4
- Yadav, S., Tandon, A. 2008. Correlation between Ground Level Ultra-Violet Radiation & Lower Atmospheric Aerosol Load. Nat Prec. https://doi.org/10.1038/npre.2008.2677.1

Manuscripts under review

- 14. Kaushal, D., Yadav, S., Tandon, A., 2020. Water Soluble Ionic Species in Atmospheric Aerosols over Dhauladhar Region of North-Western Himalaya. Environ. Sci. Pollut. Res.
- 13. Kaushal, D., Bamotra, S., Yadav, S., Tandon, A., 2020. "Aerosol associated nalkanes over Dhauladhar region of North-Western Himalaya: seasonal variations in sources and processes. Environ. Monit. and Assess.

Book Chapter

1. Yadav S. and Kumar, A. (2019). Chapter 3. Air Pollution: Types, Sources and Health Implications, In: Recent Trends and Advances in Environmental Health BISAC: SCI026000.

Research Projects

⇒ Completed (2015-2018): UGC funded major research project titled "Investigation of Multi-Scale Temporal Variations and Trend in the Mass, Composition and Sources of Carbonaceous Aerosols in Jammu, an Urban Location in the Foothill Region of North-Western Himalayas" (₹ 15,97,000).

⇒ Ongoing (2020-2023): Jammu & Kashmir Pollution Control Board (JKPCB) funded research project "Source apportionment of aerosols and carrying capacity in NAC of Jammu/Srinagar" (₹ 2,18,76,000).

Thesis Supervision

Ongoing PhD students	
Name of the scholar	Thesis title
⇒ Sarita Bamotra	Aerosol associated carbonaceous and ionic species in Jammu region of North-Western Himalayas.
⇒ Kiran Kumari	Characterization and Implications of Bioaerosols in Jammu region of North-Western Himalayas.

M.Sc. dissertations					
	Name	Dissertation Title			
(Y	(Year 2014)				
\Rightarrow	Pallavi Ballowria	A short-term investigation of $PM_{2.5}$ associated black carbon in Jammu, J&K.			
\Rightarrow	Monu Kumari Bhan	Temporal variation in PM _{2.5} aerosols and the local meteorological parameters.			
\Rightarrow	Anu Verma	A preliminary investigation on black carbon estimation in house dust.			
\Rightarrow	Anjali Sharma	Status of carbonaceous aerosol research in India: present scenario and future scope.			
\Rightarrow	Saroj Sargotra	A preliminary study on fine particulate matter in Jammu.			
(Year 2015)					
\Rightarrow	Sarita Bamotra	Status of NO _x concentration in the campus area of Central University of Jammu.			
\Rightarrow	Leela Banoo	Status of SO _x concentration in the campus area of Central University of Jammu.			
\Rightarrow	Rukhsana	Temporal variation in ambient aerosols in the indoor and outdoor environment of the campus area of Central University of Jammu.			
\Rightarrow	Rajat Sharma	A comparative study of ground level UV radiations in the temporary academic block and the campus area of Central University of Jammu.			
\Rightarrow	Shilpa Sharma	Avian diversity in the Central University of Jammu campus area.			
\Rightarrow	Pooja Rani	Study on biodiversity of Banyan tree.			
(Year 2016)					
\Rightarrow	Abida Khatoon	Investigation of ground level ultraviolet radiation in the campus area of central university of Jammu.			
\Rightarrow	Haneet Kaur	Ionic composition of road dust samples in Jammu city: a preliminary study.			
\Rightarrow	Kiran Bala	Weekly and diurnal variations in fine particulates at an urban location in Jammu.			
\Rightarrow	Riya Raina	Long term variations in aerosol optical depth over Jammu and Kashmir.			

⇒ Shobha Devi A preliminary study on ionic composition of leaf dust samples in

Jammu city.

⇒ Vrinda Sharma Long term variations in temperature over Jammu and Kashmir.

(Year 2017)

⇒ Ambika Dogra A preliminary investigation of temporal variability in PM_{2.5} load over

Central University of Jammu campus

⇒ Arti Devi Ionic composition of fine aerosols in the Central University of Jammu

campus

⇒ Harmeet Kour
⇒ Navita Verma
Status of NO₂ concentration in the Central University of Jammu campus
⇒ Status of SO₂ concentration in the Central University of Jammu campus

⇒ Zulaykha Khurshid A short term investigation of ionic composition of precipitation at

different locations in Jammu and Srinagar

(Year 2019)

⇒ Akhlesh Kotwal Status of concentration of NO₂, SO₂, and particulate matter in Rehari

colony, urban residential area in Jammu, Jammu and Kashmir, India

⇒ Kajol Status of selected criteria pollutants at a rural location in Jammu, J&K,

India

⇒ Konika Assessment of air quality of Bakshi Nagar in Jammu, J&K, India

⇒ Kavita Devi Investigation of ambient air quality of Kartholi area, Bari Brahmana,

Jammu

Plenary/Invited Talks

- ⇒ Invited talk titled "Characteristics of Aerosols in the Himalayan Region" in Centre for Incubation, Innovation, Research and Consultancy, Bengaluru, Karnataka (December 19, 2019).
- ⇒ Invited talk titled "Contribution of Rural Environment in Climate Modulations" in National Seminar on Science and Technology in Rural Environment organised by GDC Samba in collaboration with ISCA, Jammu Chapter (December 10, 2019).
- ⇒ Invited talk titled "Scientific temperament: Meaning for a meaningful life" in two day seminar on Inculcating Scientific temperament among the young minds in Government College for Women, Parade, Jammu (March 27, 2019).
- ⇒ Invited plenary talk titled "Bio-aerosols as potential Ice Nucleators in the Himalayan Region" in Golden Jubilee National Symposium on Current Interventions to Plants and Microbes for Environmental & Agricultural Sustainability (CIPME-2019)" in Guru Nanak Dev University, Amritsar (March 8, 2019).
- ⇒ Invited talk titled "Resurgence in INP research: Bioaerosols, pollution or dust?" in Environmental and Water Resources Engineering Division., IIT Madras, Chennai (February 15, 2019).
- ⇒ Invited talk titled "Air Pollution in the State of J&K-Current issues and Management Strategies" in One day Consultation Workshop on, "Environmental Issues of J&K Need for Cooperation.", Organized by J&K Envis Centre, Govt. of J&K in collaboration with Community College, Central University, Jammu (January14, 2017).
- ⇒ Invited talk titled "Multi-Scale Temporal Dynamics in Carbonaceous Aerosols over North-Western India" in two day National Conference on 'Change in Cryosphere and Impact on Ecosystem Services and Rural Livelihood: Climate change, agriculture and sustainable development in the Himalayan region organized by Institute of Mountain Environment, Bhaderwah Campus, University of Jammu, Jammu and Kashmir (November 21-22, 2016).)

- ⇒ Invited talk titled "India's Progress in Carbonaceous Aerosol Research: a Climate Change Perspective" in National Conference on Global Warming & Climate Change: A Way Out organized by Govt. of Madhya Pradesh in MP Legislative Assembly, Bhopal (November 21, 2015).
- ⇒ Invited talk titled "Application of Gas Chromatography in Atmospheric Science" in the Department of Environmental Sciences, Central University of Himachal Pradesh, Temporary Academic Block, Shahpur, Kangra 176206 (December 1, 2014).
- ⇒ Invited talk titled "Role of Science in Women Empowerment" on International Women's Day in Galaxy College of Education, Sainik Colony, organized by Indian Science Congress Association, Jammu Chapter A (March 8, 2014).
- ⇒ Invited talk titled "Gas Chromatographic Analysis of Aerosol Samples" in the Department of Environmental Sciences, Central University of Himachal Pradesh, Temporary Academic Block, Shahpur, Kangra 176206 (May 24, 2013).

International Conferences / Seminars

- ⇒ Presented on "Ice Nucleating Particles and Bioaerosol Diversity in the Himalayan Region" in European Aerosol Conference (EAC) 2019 in Gothenburg, Sweden (August 25 30, 2019).
- ⇒ Participated in 2017 Fulbright Visiting Scholar Enrichment Seminar, "Leveraging Strategic Innovation and Entrepreneurship for Long Term Success" in Hotel Kimpton solamar, San Diego, California (December 13- 16, 2017). Also visited University of San Diego and got a chance to meet fellow fulbrighters from 50 countries and also received a certificate of Friendship from the Mayor of San Diego inviting understanding and friendship between two countries.
- ⇒ Presented and demonstrated IN experimental set up in GEOPATHS Open House program, Petters lab, NC State University, Raleigh, NC, USA (November 30, 2017).
- ⇒ Participated and presented my research in 2nd Annual Showcase of NC State Women Faculty's Research, Creativity, and Scholarship event in the College of Textiles Atrium and Convocation Center Room 2225, NC State Centennial Campus, 1020 Main Campus Drive held on (November 1, 2017).
- ⇒ Presented on "Preliminary Assessment of Aerosol Associated Organic Tracers in Rural and Urban Location of Western Himalayas" in 36th American Association for Aerosol Research (AAAR) Annual Conference held at the Raleigh Convention Center, Raleigh, North Carolina, USA (October 16-20, 2017).
- ⇒ Participated in Third Roscoe R. Braham seminar on "COnvective Precipitation Experiment (COPE)" by Professor Sonia Lasher-Trapp from University of Illinois at Urbana-Champaign (October 16, 2017).
- ⇒ Participated in interactive seminar on "Mentor/mentee relationship: Communicating Expectations, Aligning Expectations and Assessing Understanding" by Susan Pusek, Director of Education and Training Programs for the UNC, Chapel Hill, NC TraCS program (September 20, 2017).
- ⇒ Attended a Seminar on "Mystery Fish Killer in Delaware, USA" by Dr. Carmelo Tomas, Emeritus Professor from UNC-Wilmington (September 18th, 2017).
- ⇒ Presented on "Identification and quantitative estimation of N-Alkanes Associated with Ambient Aerosols by using TD-GC/MS" in Fourth International Conference on Plants & Environmental Pollution (ICPEP-4), Organized by ISEB, at NBRI, Lucknow, India (2010).

National and State level Conferences/Workshops/Seminars

- ⇒ Presented on "Ice Nucleating Particle Properties of Aerosols In The Himalayan Region" in Conference on Aerosol Impacts: Human Health to Climate Change in Centre for Atmospheric Sciences, Indian Institute of Technology, Delhi, organized by IASTA (November 26 28, 2018).
- ⇒ Participated in two days Workshop on "Transacting Students' Engagement for Rural Community Development" organized at Central University of Jammu in collaboration with National Council of Rural Institutes (NCRI), Ministry of Human Resources and Development, Hyderabad (April 26-27, 2017).
- ⇒ Presented on "Multi Scale Temporal Variations in Black Carbon Aerosol Concentration at a Receptor Site in New Delhi, India" in National Workshop on Recent Trends in Environmental Sciences and Carbon Management, School of Earth and Environmental Sciences, Central University of Himachal Pradesh, Temporary Academic Block, Shahpur, Kangra 176206 (November 19-20, 2015; Oral Presentation)
- ⇒ Presented on "Source-Profiling Of Ambient Aerosols Using Organic Tracers: A Four Year Study From Delhi, India" in National Conference on Environmental Issues, Concerns and Solutions (EICS-2014)" organized by Department of Environmental Sciences, University of Jammu, J&K. (March 24-25, 2014; Oral Presentation)
- ⇒ Presented on "Temporal Profile of Ambient Free Fall (FF) Aerosol Load and of Associated nalkanes: A long term Investigation from Srinagar (J&K) region" in National Conference on Implications of Climate Change on Himalayan Environment (ICHE-14)" organized by School of Earth and Environmental Sciences, Central University of Himachal Pradesh, TAB, Shahpur, Kangra HP (March 20-21, 2014; Oral Presentation)
- ⇒ Presented on "Temporal Variations in source characteristics of aerosols in two size fractions: A four year study from Delhi, India" in National Seminar on Environmental Pollution and its Mitigation Strategies organized by SES, JNU, New Delhi (March 28-29, 2012; Oral Presentation)

Orientation/Refresher course

- ⇒ Seven days professional development workshop on design, develop and deliver massive open online courses (MOOCS) organized by Department of Educational Studies, Central University of Jammu (3rd to 9th January 2020).
- ⇒ General Orientation Course (GOC) organized by the HRDC, University of Jammu, Jammu (14th December, 2015 12th January, 2016).
- ⇒ Interdisciplinary refresher course in Disaster management, organized by the HRDC, University of Jammu, Jammu (7th December, 2016 -29th December, 2016).

Referees

- 1. Prof. Arun K Attri, JNU, New Delhi; +91-956-046-1930; attriak@gmail.com
- 2. Prof. Markus Petters, NC State University; +1-919-515-7144; markus petters@ncsu.edu
- 3. Prof. Sachchidanand Tripathi, IIT Kanpur; +91-941-505-0540; snt@iitk.ac.in
- 4. Prof. Sachin S. Gunthe, IIT Madras; +91-996-260-4979; s.gunthe@iitm.ac.in

[24.04.2020] [Shweta Yadav]