

# Curriculum Vitae

- **Personal Information**

**Name:** Dr. Akhilesh Kumar  
**Gender:** Male  
**Nationality:** Indian  
**Date of Birth:** June 30, 1992  
**Address:** Department of Physics, K. N. Government P.G. College, Gyanpur, Bhadohi-221304, India.  
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- **Current Position/ Work Experiences**

**Assistant Professor at K.N. Govt P.G. College, Gyanpur, Bhadohi-221304, India**

- Imparting knowledge of both fundamental and advanced physics principles to bachelor's (BS) and master's (MS) level students.
- Predicting the onset of monsoon by examining the impact of dust storms on rainfall patterns.
- Working on the annual and seasonal variation of black carbon over Varanasi
- Long term trend of aerosol properties.

**(September 01, 2021 - present)**

- **Academics**

**1. Doctor of Philosophy** (Thesis title “**Physical and Optical properties of Aerosols and its climate forcing over Indo-Gangetic Basin**”) Department of Physics, Institute of Science, Banaras Hindu University, Varanasi, U.P., India under the supervision of Prof. Abhay Kumar Singh.

**(September 2015 - August 2021)**

**2. M.Sc. in Physics** passed with First class from Department of Physics, Institute of Science, Banaras Hindu University, Varanasi, India. **(2013 to 2015)**

**3. B.Sc. Honors in physics** passed with First class Department of Physics, Institute of Science, Banaras Hindu University, Varanasi, India. **(2010 to 2013)**

**4. Intermediate** passed with First class. **(2010)**

**5. High School** passed with First class. **(2008)**

- **Achievements/Awards**

1. **DST-Inspire** Fellow
2. **CSIR – JRF** (Junior Research Fellow), Physical Science, All India Rank: **138** (December – 2015)
3. **GATE** (Graduate Aptitude Test in Engineering), Physics, All India Rank: **364** (March – 2016)
4. **JEST** (Joint Entrance Screening Test), Physics, All India Rank: **59** (March – 2016)

- **Research interests**

Aerosol physics, characteristics of aerosols, climate change, cloud-aerosol interaction, aerosol chemistry, radiative forcing, data analysis.

- **Programming/software skills**

1. MATLAB
2. QGIS
3. Data Analysis
4. Linux
5. Fortran

- **Instruments skills**

1. High volume air sampler (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>) to measure mass concentrations and chemical properties aerosol.
2. Net radiometer for measuring net radiation.
3. Aethalometer AE33 for measuring Black carbon.
4. MICROTOPS II sunphotometer to measure aerosol optical depth (AOD).

- **Conferences/proceedings:**

1. **Akhilesh Kumar**, Vineet Pratap, Pradeep Kumar, and Abhay Kumar Singh. "Frequency distribution of aerosol optical depth over Varanasi during 2011." In *2020 URSI Regional Conference on Radio Science (URSI-RCRS)*, pp. 1-2. IEEE, **2020**, DOI:10.23919/URSIRCRS4921.1.2020.9113642
2. **Akhilesh Kumar**, Vineet Pratap, Pradeep Kumar, and Abhay Kumar Singh. "Effect on aerosol optical depth during Diwali festival in Varanasi, India." In *2020 URSI Regional Conference on Radio Science (URSI-RCRS)*, pp. 1-3. IEEE, **2020**, DOI: 10.23919/URSIRCRS4921.1.2020.9113524.
3. **Akhilesh Kumar**, Vineet Pratap and A. K. Singh. "Short Term Air Quality Degradation by Firecrackers Used During Diwali Festival In Varanasi, India." "5<sup>th</sup> International Skynet Workshop, New Delhi, India 13-15 February, **2019**."

**4. Akhilesh Kumar**, Shani Tiwari, Vineet Pratap, A.K. Singh. "Impacts Of Severe Dust Storms On Aerosol Characteristics Over Kanpur". "Indian Aerosol Science and Technology Association (IASTA-2018) "Aerosol Impacts: Human Health to Climate Change" 26-28 November **2018** IIT Delhi New Delhi.

**5. Akhilesh Kumar**, Vineet Pratap and A. K. Singh. "Seasonal analysis of aerosol properties and its radiative impact over Kanpur". "National Conference on Environment & Energy Materials (NCEEM-**2020**)" Organized by Sharda University (Online Mode).

**6. Akhilesh Kumar**. "Seasonal analysis of aerosol properties and its radiative impact on one of the Indo Gangetic Basin Region". "National Conference on Biological diversity and Environmental Sustainability (NCBDES-**2022**)" Organized by K.N. Govt. P.G. College, Gyanpur, Bhadohi.

**7. Akhilesh Kumar**. "To measure the pollution into the atmosphere to study the health effect". "National Seminar on Self-Reliant India: Challenges and Prospects (**2023**)" Organized by K.N. Govt. P.G. College, Gyanpur, Bhadohi.

**8.** Pratap, Vineet, **Akhilesh Kumar**, and A. K. Singh. "Variability in air pollutants and AOD over Varanasi region for years 2005-2010." In *2019 URSI Asia-Pacific Radio Science Conference (AP-RASC)*, pp. 1-1. IEEE, **2019**, DOI: 10.23919/URSIAPRASC.2019.8738590.

**9.** Pratap, Vineet, **Akhilesh Kumar**, Pradeep Kumar, and Abhay Kumar Singh. "Pre-monsoon study of aerosol parameters and particulate matters over Varanasi for 2017." In *2020 URSI Regional Conference on Radio Science (URSI-RCRS)*, pp. 1-2. IEEE, **2020**, DOI:10.23919/URSIRCRS4921.1.2020.9113549.

## • **Book Chapters**

**1.** Chauhan, Prashant Kumar, **Akhilesh Kumar**, Vineet Pratap, Shivam Kumar Chaubey, and Abhay Kumar Singh. "Dust storm characteristics over Indo-Gangetic basin through satellite remote sensing." In *Atmospheric Remote Sensing*, pp. 373-392. Elsevier, **2023**. ISSN: **2072-4292**. ISBN: 978-0-323-99262-6.

**2.** **Akhilesh Kumar**, S.N. Singh, Prashant Kumar Chauhan, Singh Arun Kumar Laxman, And A. K. Singh. "Impacts Of Aerosols In Terms Of Dust Storms Over Climate And Human Health". In *Global Academic Society of India*, Page-16, **2022**. ISBN: 978-81-959099-0-2.

## • List of Publications

1. **Akhilesh Kumar**, Vineet Pratap, Sarvan Kumar, and A. K. Singh. "Atmospheric aerosols properties over Indo-Gangetic Plain: A trend analysis using ground–Truth AERONET data for the year 2009–2017." *Advances in Space Research* 69, no. 7 (2022): 2659-2670.
2. **Akhilesh Kumar**, Sanjay Kumar, Vineet Pratap, and A. K. Singh. "Performance of water vapour retrieval from MODIS and ECMWF and their validation with ground based GPS measurements over Varanasi." *Journal of Earth System Science*, 130 (2021): 1-11.
3. **Akhilesh Kumar**, Vineet Pratap, S.N. Singh, A.K. Singh. "Variation of Aerosol parameters (AI, AOD) and SO<sub>2</sub> over Indo – Gangetic Basin during COVID – 19 Outbreaks." *Indian Journal of Physics*, 1-10 (2023).
4. **Akhilesh Kumar**, S.N. Singh, P.K. Chauhan, G. Sharma, Vineet Pratap, A.K. Singh. "Variation of aerosol optical and physical properties and their impact on rainfall over Indo-Gangetic Basin." *Meteorology and Atmospheric Physics*, 137(3), pp.1-14 (2025).
5. Tiwari, Shani, **Akhilesh Kumar**, Vineet Pratap, and A. K. Singh. "Assessment of two intense dust storm characteristics over Indo–Gangetic basin and their radiative impacts: a case study." *Atmospheric Research* 228 (2019): 23-40.
6. Kumar, Pradeep, Vineet Pratap, **Akhilesh Kumar**, Arti Choudhary, Rajendra Prasad, Anuradha Shukla, R. P. Singh, and Abhay Kumar Singh. "Assessment of atmospheric aerosols over Varanasi: Physical, optical and chemical properties and meteorological implications." *Journal of Atmospheric and Solar-Terrestrial Physics* 209 (2020): 105424.
7. Pratap, Vineet, Upal Saha, **Akhilesh Kumar**, and Abhay K. Singh. "Analysis of air pollution in the atmosphere due to firecrackers in the Diwali period over an urban Indian region." *Advances in Space Research* 68, no. 8 (2021): 3327-3341.
8. Pratap, Vineet, **Akhilesh Kumar**, Shani Tiwari, Pradeep Kumar, Avneesh Kumar Tripathi, and Abhay Kumar Singh. "Chemical characteristics of particulate matters and their emission sources over Varanasi during winter season." *Journal of Atmospheric Chemistry* 77 (2020): 83-99.
9. Pratap, Vineet, Shani Tiwari, **Akhilesh Kumar**, and Abhay Kumar Singh. "COVID-19 lockdown induced air pollution reduction over India: A lesson for future air pollution mitigation strategies." *Journal of Earth System Science* 130 (2021): 1-16.
10. Chauhan, Prashant Kumar, **Akhilesh Kumar**, Vineet Pratap, and Abhay Kumar Singh. "Seasonal characteristics of PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> over Varanasi during 2019-2020." *Frontiers in Sustainable Cities*: 112 (2022).

11. V. Pratap, **Akhilesh Kumar**, A.K. Singh “Overview of solar eclipse of 21st June 2020 and its impact on solar irradiance, surface ozone and different meteorological parameters over eight cities of India.” *Advances in Space Research*, 68(10), pp.4039-4049 (2021).
12. Chauhan, Prashant Kumar, Shani Tiwari, Dileep Kumar Gupta, **Akhilesh Kumar**, Vineet Pratap, and Abhay Kumar Singh. "Assessment of equivalent black carbon variations and its source apportionment over Varanasi, Indo-Gangetic Basin." *Atmospheric Pollution Research* 15, no. 4 (2024): 102061. **ISSN:1309-1042**
13. V. Pratap, **Akhilesh Kumar**, A. K. Singh. "Short Term Air Quality Degradation by Firecrackers Used during Diwali Festival in Varanasi India." *IJRSET* 6, no. 9 (2017).