

Aditya Sengupta

Portfolio: adisen99.github.io

Github: github.com/adisen99

Email: adityasenguptasai99@gmail.com

Mobile: +91-971-7335-942

EDUCATION

- National Institute of Technology, Rourkela** Odisha, India
• *Masters of Science - Atmospheric Sciences; CGPA: 9.24* August 2020 - June 2022
Theory Courses: Atmospheric Physics, Atmospheric Dynamics, Physical and Dynamical Oceanography, Science of Climate and Climate Change, Boundary Layer Meteorology, Weather Analysis and Forecasting, Numerical Weather Prediction, Parameterization of Physical Processes, Satellite Meteorology, Tropical and Applied Meteorology
Laboratory Courses: Fortran Programming Laboratory, MATLAB programming, Data Analysis and Visualization, Climate Diagnostics Laboratory, Simulation Laboratory (using WRF meso-scale model)
- Amity University, Noida** Uttar Pradesh, India
• *Bachelors of Science (Honors) - Physics; CGPA: 9.63* August 2017 - July 2020
Core Courses: Mechanics, Semiconductor Physics, Electricity and Magnetism, Waves and Oscillations, Material Sciences, Wave Optics, Classical Dynamics, Thermal Physics, Statistical Physics, Basic Quantum Mechanics, Atomic Physics, Optical Instrumentation, Digital and Analog Electronics, Quantum-Mechanics-1, Basic Mathematical Physics, Solid State Physics, Nuclear Physics, Optical communication, Molecular Spectroscopy, Non-Linear Optics, Plasmonics, Laser and Optical Fibre, Advanced Mathematical Physics, Nano-materials and devices, Fundamentals of Astronomy, Numerical Methods and Data Analysis
Value-added Courses: Communication Skills, Behavioral Sciences, French Business Language and associated courses
- Birla Vidya Niketan, New Delhi** Delhi, India
• *Higher Secondary Certificate Examination; Marks (in %): 91.2* February 2016 - May 2017
Board: Central Board of Secondary Education (CBSE)
Core Subjects: Mathematics, Physics, Chemistry, Economics, English Communication

SKILLS SUMMARY

- **Languages:** Python, Fortran, Lua, Julia, Bash
- **Tools:** MATLAB, LaTeX, QGIS, GrADS, Docker, Git, Gnuplot, Rstudio, WRF, (Numerial modelling)
- **Platforms:** Linux, MS Window
- **General:** MS Office, Academic Writing
- **Soft Skills:** Planning and Collaboration in heterogeneous groups, Task and Time Management, Team work

EXPERIENCE

- IITM, Pune** Remote
• *Summer Research Fellow (Full-time) selected through Science Academies' SRF - 2021* May 2021 - Jan 2022
 - **Supervisor:** Dr. Sachin Ghude, Scientist-E at IITM, Pune
 - **Title of the project:** Probing into the wintertime meteorology and particulate matter (PM_{2.5} and PM₁₀) forecast over Delhi.
 - **Description:** Analysing the performance of high resolution quality and meteorological parameters model data obtained from forecasting system developed at IITM, Pune against observation data from the WIFEX campaign and to calculate statistical performance and skill score of model AQI output against CPCB observation data for major cities of India during winter 2020-2021.
 - **Associated Publication:** DOI : [10.1016/j.apr.2022.101426](https://doi.org/10.1016/j.apr.2022.101426)
- CSIR-NEIST, Jorhat, Assam** Remote
• *Summer Trainee, selected through CSIR Summer Research and Training Program 2020* June 2020 - Sept. 2020
 - **Supervisor:** Dr. Debasis Das Mohanty, Scientist at CSIR-NEIST
 - **Title of project:** Frequency-Magnitude relations for Earthquakes and Hazard Estimation
 - **Description:** Part of a mega-project carried out by CSIR in the Summer Research Training Program (S RTP)- 2020 involving b-value estimation of earthquakes in the Andaman Region using the Gutenberg-Richter relation and hazard estimation using International Seismological Center (ISC) Catalogue data.
 - **Link to Project:** DOI : [10.13140/RG.2.2.27452.46727](https://doi.org/10.13140/RG.2.2.27452.46727)
- IUAC, New Delhi** Summer Training
• *Summer Trainee, selected through IUAC B.Sc. Summer Program 2019* June 2019 - July. 2019
 - **Supervisor:** Mr. Deepak Swami, Scientist-D at IUAC, New Delhi
 - **Title of project:** Measurement of Spatial Resolution, Linearity and Optimization of Bias Voltage and Gas Pressure of a Position Sensitive Proportional Counter
 - **Description:** The project involved the study of design and performance characteristics of a Position Sensitive Proportional Counter
 - **Link to Project:** DOI : [10.13140/RG.2.2.14635.18729/2](https://doi.org/10.13140/RG.2.2.14635.18729/2)

PROJECTS

- **The thermodynamic and dynamic response of precipitation extremes over the Indian subcontinent in a changing climate (Master's thesis):** This project carried out under the supervision of Dr. Naresh Krishna Vissa, explored the seasonal variations in the thermodynamic response of precipitation extremes over the Indian subcontinent using apparent scaling estimates and the objective was to determine the seasonal deviations of the apparent scaling rates from the expected climate scaling (based on Clausius-Claypeyron climate scaling i.e. $7\%K^{-1}$), and further to determine the dynamical and thermodynamic factors responsible for the deviations in the apparent scaling rates. [Link to Thesis](#); [Link to Presentation](#)
- **Probing into the wintertime meteorology and particulate matter (PM_{2.5} and PM₁₀) forecast over Delhi:** The project was carried out under the supervision of Dr. Sachin Ghude (Scientist-E at IITM, Pune). The Indian Institute of Tropical Meteorology (IITM), in partnership with the National Center for Atmospheric Research (NCAR), has developed a high resolution (400 m) air-quality Early Warning System (EWS) for Delhi using an advanced approach of assimilating aerosol optical depth, fire emissions from a space-borne platform, and real-time aerosol observations from in-situ network in WRF-Chem model to produce a 72-h forecast. The aim of this study was to summarize the performance of EWS forecast and prevailing meteorological conditions for winter months of 2020-2021. [Link to the publication - 10.1016/j.apr.2022.101426](#)
- **A review on climate change and its impact on agriculture and associated mitigation strategies:** A review, of the current literature available, on the impacts of climate change and extremes on crop yield and agricultural productivity and also review the associated mitigation strategies to combat the said impacts. [Link to the research work - 10.13140/RG.2.2.19072.30725](#); [Link to the poster - 10.13140/RG.2.2.14039.14248](#)
- **The dynamics of 2013 Uttarakhand extreme rainfall event using WRF model simulation:** A WRF Simulation technical report on the dynamical influences associated with the 2013 Uttarakhand extreme rainfall event, based on an 11 day WRF simulation. [Link to the research work - 10.13140/RG.2.2.16555.72483](#)
- **Earthquake Frequency-Magnitude Relation and Hazard Estimation:** The project deals with the study of the Geo dynamics of the Andaman Region and use ISC Catalog and the Gutenberg-Richter Relation to estimate the b-value of the Andaman Region (divided into two seismic zones) and use the b-values and the seismic history of the Andaman Region to do hazard estimation for the said region. This was Mega project-1 of the CSIR-SRTP 2020 This project was carried out under the guidance of Dr. Debasis Das Mohanty, Geo Sciences and Technology Division, CSIR-NEIST during the summer of 2020. [Link to the project - 10.13140/RG.2.2.27452.46727](#)
- **Measurement of Spatial Resolution, Linearity and Optimization of Bias Voltage and Gas Pressure for Position Sensitive Proportional Counter:** Measurement of the Spatial Resolution, Integral Linearity, and Optimization of Gas pressure and Bias voltage for a Single Wire Position Sensitive Proportional Counter. Experimental observation of Linearity and Spatial Resolution allow us to determine the values of applied Bias voltage ' V ' and fill gas Pressure a ' p ' at which the detector has optimum performance. Using these values we can then determine the values of Gas Gain factor ' M ' Using the Diethorn equation. This project was carried out under the guidance of Mr. Deepak Swami, Scientist-D at Inter University Accelerator Center (IUAC) New Delhi carried out in the Summer of 2019. [Link to the project - 10.13140/RG.2.2.14635.18729/2](#)
- **Kelvin-Helmholtz Instability and its Applications:** The project deals with the study of how interfacial perturbations in fluids grow or decay over time using the dispersion relation of the Kelvin-Helmholtz Instability and to compare this with the same effects that take place in other hydrodynamic stabilities. This project was carried out under the guidance of Prof. R.S. Pandey at Amity University, Noida carried out in the summer of 2018. [Link to the project - Here](#)

HONORS AND AWARDS

- **Shri Baljit Shastri Award** for showing best qualities in Human and Traditional values - Dec., 2020; issued by Amity University, Noida
- **Gold medal in B.Sc. (Hons.) Physics** for performance in academic committee and securing the highest CGPA in the Department of Physics at the Amity Institute of Applied Sciences - Dec., 2020; issued by Amity University, Noida
- **Winner of ICPS Worldwide Grant 2020**, awarded to only to only two students each year after extensive screening. The grant provides me the opportunity to attend the International Conference of Physics Students (ICPS 2020 at Puebla, Mexico) at a highly subsidized cost. Due to the outbreak of the Novel Coronavirus (COVID-19), The ICPS 2020 was cancelled. My award has been shifted to ICPS 2022. - Feb., 2020, issued by the International Association of Physics Students.
- **Best Presentation, IUAC B.Sc. Summer Program** for the presentation on the Design and Performance of a Position Sensitive Proportional Counter. - June 2019; issued by Inter University Accelerator Centre, New Delhi
- **On-Admission Merit Scholarship**, for academic achievements to waiver off 50% of University tuition fees. - Aug., 2017; issued by Amity University, Noida
- **Awarded Scholarship for Academic Excellence**, in 2016, 2014, and 2013 for academic performance in high school and middle school
- **Ideal Student Award**, for two straight years in 2011 and 2012

PUBLICATIONS

- Sengupta, Aditya, Gaurav Govardhan, Sreyashi Debnath, Prafull Yadav, Santosh H. Kulkarni, Avinash N. Parde, Prasanna Lonkar et al. "Probing into the wintertime meteorology and particulate matter (PM_{2.5} and PM₁₀) forecast over Delhi." *Atmospheric Pollution Research* 13, no. 6 (2022): 101426. DOI - [10.1016/j.apr.2022.101426](#)

CONFERENCES AND SEMINARS

- **Maritime Seminar 2020** at Amity University, Noida. I was part of the team of student presenters at the National Maritime Foundation (NMF) Seminar 2020 on the topic "**Blue Economy & Maritime Security in the Indian Ocean Region**" organised jointly by Amity University Uttar Pradesh and National Maritime Foundation. Our team from Amity Institute of Applied Sciences presented a talk on the sub-topic of "*Blue Economy Involving Offshore Hydrocarbons and Seabed Minerals*".
- **International Conference on Recent Trends in Materials and Devices (ICRTMD)**, at Amity Institute of Applied Sciences, Amity University, Noida. Attended the conference as a student delegate and participated in the Poster Presentation competition to contribute my summer project work carried out at IUAC-New Delhi under the guidance of Mr. Deepak Swami.
- **National Science Day**, at Inter University Accelerator Centre, IUAC. Attended twice as a student representative from my institution, once in February 2019 and in February 2020. Participated in a poster presentation competition presenting a poster on the topic of "Applications of Particle Accelerators for Mankind: A futuristic view"
- **India International Science Festival (IISF), DST/MHRD**, Proudly represented my institution as a Student Delegate twice - in 2015 at Indian Institute of Technology, Delhi; and in 2016 at the National Physical Laboratory (NPL), Delhi

VOLUNTEER EXPERIENCE

- **Co-Editor, Journal of the International Association of Physics Students (JIAPS)** Remote
Responsible for designing the layout of the journal *Feb. 2020 - Augst 2020*

CERTIFICATIONS

- **Academic Writing, Issued by SWAYAM MHRD** Online
Secured 88/100 (25/30 in internal assessment and 63/70 in Proctored Exam) *Dec. 2019*

TEST SCORES

- **Nationwide Education and Scholarship Test (NEST-Senior)** 2019
Secured 95/200, All India Rank - 231
- **Joint Admission Test (JAM)** For Master' degree
Secured 31.67/100 and All India Rank - 1480 2020