



Tirumala Tirupati Devasthanams

**SRI PADMAVATHI WOMENS DEGREE & PG COLLEGE
TTD (AUTONOMOUS), TIRUPATI**



Report on the Visit to NARL, Gadanki

Department of Computer Science Students

Date of Visit: 28th February 2025

Location: National Atmospheric Research Laboratory (NARL), Gadanki, India

Participants: II B.Sc Honours Computer Science Students and faculty members from the Department of Computer Science

Objective of the Visit:

The primary aim of the visit was to familiarize students with the advanced technologies and research conducted at NARL, especially the application of computer science in atmospheric science, weather forecasting, and data processing. The visit allowed students to observe cutting-edge facilities used for atmospheric research and gain insights into the role of computational technology in this field.

Agenda of the Visit:

10:30 AM - 11:00 AM: PowerPoint Presentation on NARL

The visit began with an informative PowerPoint presentation by NARL staff, introducing the laboratory and its diverse range of activities and included a video that showcased the facility's work, including weather monitoring, satellite communication, and environmental studies.

11:00 AM - 12:30 PM: Lab Visits and Facility Tour

After the presentation, students were guided through various research facilities at NARL, each offering insights into advanced atmospheric research tools and technologies. The following facilities were visited:

1. Automatic Weather Station & Balloon Launch Facility (10 minutes):

Students observed the automatic weather station in operation, which collects real-time weather data. They also saw the balloon launch facility used to study atmospheric parameters at various altitudes. This equipment plays a critical role in weather prediction and climate modelling.

2. Lower Atmospheric Wind Profiler (10 minutes):

The students visited the lower atmospheric wind profiler, which helps in understanding wind patterns in the lower layers of the atmosphere. Students learned about its importance in weather forecasting and its integration with computer-based simulation models.

3. Data Center (10 minutes):

At the Data Center, students witnessed the large-scale data storage and processing systems used to handle massive datasets collected from various weather instruments. They were introduced to the role of data analysis and processing in atmospheric research.

4. **High-Performance Computing (10 minutes):**

The students visited the High-Performance Computing (HPC) facility, where they learned about the computational power required to analyze complex atmospheric models.

5. **VHF (MST) Radar (10 minutes):**

The students got an overview of the Very High Frequency (VHF) radar, used to study the mesosphere and lower thermosphere.

6. **50-meter Instrumented Tower (10 minutes):**

50-meter instrumented tower, provides crucial data on temperature, humidity, wind, and other meteorological factors. Students were briefed on how the tower supports real-time atmospheric monitoring

Key Learnings:

- **Real-World Application of Computer Science:** Students observed how their computer science knowledge, particularly in data processing, machine learning, and high-performance computing, plays a crucial role in atmospheric research and weather forecasting.
- **Integration of Technology in Atmospheric Science:** The visit highlighted the importance of technological tools such as data centers, high-performance computing, and radar systems in collecting and analyzing vast amounts of atmospheric data.
- **Practical Experience in Research Facilities:** The hands-on experience of visiting various research labs and facilities provided the students with a deeper understanding of how interdisciplinary research is conducted in the field of atmospheric sciences.

Conclusion:

The visit to NARL was an enriching and insightful experience for the students from the Department of Computer Science. It gave them a chance to witness the application of computer science in a high-tech research environment dedicated to atmospheric studies. The exposure to sophisticated weather monitoring tools and computational technologies

The Department of Computer Science looks forward to organizing more such educational visits to broaden students' horizons and offer them valuable insights into interdisciplinary research and technology.





