



Postdoctoral Research Fellow – Numerical Weather Prediction & Data Assimilation

Center for Atmospheric and Climate Sciences (CACS), IIT Madras

About the Role

The **Center for Atmospheric and Climate Sciences (CACS)** at IIT Madras invites applications for a **Postdoctoral Research Fellow** focused on advancing high-resolution, convective-permitting weather forecasting.

Candidates will have access to a **world-class, high-performance computing (HPC) facility** capable of running massive nested domains, data-heavy ensemble simulations, and complex parameterization workflows without computational bottlenecks.

Key Responsibilities

- **Advanced Model Development:** Configure, optimize, and execute high-resolution, convective-permitting simulations using advanced mesoscale models (e.g., WRF, ICON).
- **Data Assimilation (DA) Engineering:** Build, test, and deploy advanced data assimilation pipelines (e.g., WRF-DA, 3D/4D-Var) to ingest multi-source observations, including satellite radiances, radar reflectivity, and local surface networks.
- **Physics & AI Integration:** Explore hybrid modeling approaches by coupling traditional physics-based parameterization schemes with modern statistical techniques or Machine Learning ensemble frameworks.

Desired Qualifications

- **Ph.D.** in Atmospheric Sciences, Meteorology, Climate Science, Oceanography, Hydrology, Environmental Engineering, or related quantitative disciplines.
- **Domain Expertise:** Strong background in numerical modeling, data assimilation methodologies, pre-processing workflows, and atmospheric dynamics.
- **Technical Skills:** Strong programming proficiency in Linux/Unix environments, shell scripting, and scientific data languages (Python or R for geospatial data analysis, and Fortran/C++ for core model source code edits).

What We Offer

- A highly collaborative, interdisciplinary research environment working alongside eminent faculty across Engineering and Earth Science domains.
- Generous postdoctoral fellowship compensation aligned with institutional and IoE standards.
- Access to state-of-the-art computational infrastructure and resources at IIT Madras.

How to Apply

Interested candidates should submit the following documents as a single consolidated PDF to yaswanthpulipati@cacs.iitm.ac.in and info@cacs.iitm.ac.in

1. A **Cover Letter** detailing your research interests and alignment with the center.
2. A comprehensive **Curriculum Vitae (CV)** showcasing peer-reviewed publications and software/modeling experience.
3. A brief **Research Proposal (Max 2 pages)** addressing an interesting problem in NWP/DA you wish to pursue using our computing infrastructure.

For more details, visit the [CACS | IITM](#).



Project Associate – AI/ML & Data Science

Center for Atmospheric and Climate Sciences (CACS), IIT Madras

About the Role

CACS, IIT Madras invites applications for a **Project Associate** position in the areas of **Artificial Intelligence, Machine Learning, Data Science, and Atmospheric Analytics**. The selected candidate will work on developing AI/ML-based solutions for weather, climate, environmental, and geospatial applications using large atmospheric and remote sensing datasets.

Candidates will have access to advanced High Performance Computing facilities and modern scientific data workflows.

Key Responsibilities

- Develop AI/ML models for weather, climate, and environmental applications.
- Process and analyze large atmospheric, satellite, radar, and geospatial datasets.
- Build automated scientific data processing and visualization workflows.
- Support forecasting, analytics, and model evaluation activities.

Desired Qualifications

- Bachelor's/Master's degree in AI/ML, Data Science, Computer Science, Atmospheric Sciences, Earth Sciences, Engineering, or related fields.
- Strong programming skills in Python/R and Linux environments.
- Familiarity with:
 - CNN, LSTM, Deep Learning frameworks
 - TensorFlow/PyTorch/Scikit-learn
 - Geospatial and scientific data analysis
 - NetCDF, GRIB, HDF, xarray, pandas, GIS tools
- Background in atmospheric sciences, remote sensing, or weather/climate applications will be an added advantage.

What We Offer

- Collaborative interdisciplinary research environment.
- Access to state-of-the-art computing infrastructure and large scientific datasets.
- Opportunity to work on cutting-edge AI-driven forecasting and environmental analytics problems.

How to Apply

Interested candidates should submit the following documents as a single consolidated PDF to yaswanthpulipati@cacs.iitm.ac.in and info@cacs.iitm.ac.in

1. Cover Letter
2. CV/Resume
3. Brief statement of research/technical interests.

For more details, visit the [CACS | IITM](https://cacs.iitm.ac.in).