

Research Scientist I
Cloud Properties and Cloud-Free Line of Sight Specialist
25-113

The Cooperative Institute for Research in the Atmosphere (CIRA) on the Foothills Campus at Colorado State University (CSU) in Fort Collins, CO, seeks to hire one Research Scientist I to contribute to the development/evaluation of 3D global cloud products from multi-satellite data, advance cloud–aerosol visibility studies, apply machine learning methods to quantify cloud and storm properties, and support validation and operational transition. The objective of this position is to provide an opportunity for a motivated researcher to explore innovative approaches in several high-impact, cutting-edge environmental satellite data applications while working in a highly stimulating and interdisciplinary team environment. This position requires a start date between 15 September 2025 and 6 October 2025. Onsite presence is required for this position because it requests significant collaboration with on-site teams. This position is partially funded by a US Department of Defense contract and therefore is open ONLY to citizens of the United States or Lawful Permanent Residents with a physical USCIS “Green Card.”

The individual in this position will serve as a member of CIRA’s Meteorological Satellite Application Team (Cloud) and will interact closely with the CSU Department of Atmospheric Science (ATS). Additionally they will be mentored by Principal Investigators of 3D global cloud projects, cloud–aerosol visibility projects, and machine learning projects. They also will be mentored by the CIRA Director and PI of CIRA’s ONR 3D Cloud/OVERCAST project. Specifically, the individual in this position will report to CIRA’s OVERCAST Project Manager. They will explore applications for weather and climate research to offer critical new insights to existing environmental satellite data records together with in-situ and model data, utilizing both physics/statistics-based approaches and AI/machine learning methods if applicable. They will use multi-sensor-based cloud retrieval products and employ both traditional and new machine learning methods to support CIRA’s cloud projects funded by the Department of Defense Office of Naval Research (ONR), the National Oceanic and Atmospheric Administration (NOAA), and the National Science Foundation (NSF). Target projects will include the following activities:

- Develop the processing framework and code packages for cloud-free line of sight calculations using quantitative global cloud products with geostationary/polar-orbiting satellite sensors
- Build machine learning (ML) models to quantify cloud and storm mode characteristics, incorporating satellite and numerical weather prediction model data
- Develop a model to derive cloud-aerosol visibility information using global satellite observations
- Evaluate new products using multi-sensor data analysis from both in-situ and satellite measurements and demonstrate the results.

Decision Making:

The individual in this position will execute a plan of research that will resonate with the underpinning science objectives of the supporting projects. The decisions they will make and the approaches they will take will be determined by the individual’s own scientific acumen and in consultation with the associated project’s Principal Investigators and their research teams. Successful execution of the proposed research, i.e., supporting the tasks, milestones, and deliverables as articulated in the project statements of work, will hinge upon the definition of a scientifically-sound plan and its execution. This decision-making process will lay a foundation that will be critical for success of the individual in this position in future proposals and will build an independent and self-sufficient research program. Similarly, the individual in this position will conduct their research with an eye toward establishing strong partnerships with both CIRA scientists and sponsors in the future. Specific examples of the decisions the individual in this position will make are as follows:

- select cutting-edge scientific principles to investigate and select methodologies to further improve satellite cloud properties;
- decide the optimal application of statistical and/or machine learning models for quantifying cloud and precipitation properties across satellite sensors and multiple scales;

- choose computational methods and proper datasets for global cloud data analysis and evaluation on a range of timescales;
- set meetings with developers and stakeholders to discuss and develop algorithm codes for computational effectiveness of new and existing infrastructure and then decide an optimal way to implement the results into the operational systems;
- identify limitations and potential improvements while carrying out milestones of the current research projects, and determine feasible research details, in preparation for scientific journal publications and ideas applicable to future project proposals.

Essential Job Duties:

Applied Research 50%

- analyze 3D global cloud fields based on geostationary and polar-orbiting satellite data;
- run, improve, and evaluate deterministic cloud-free line of sight calculations using ground-based and satellite data;
- conduct research and develop machine learning techniques to advance global cloud/aerosol visibility information;
- coordinate and collaborate with other team members on other machine learning applications to better characterize cloud, precipitation, and storm features in weather and climate research.

Independent Research 20%

- contribute to and lead scientific studies that serve the CIRA mission;
- develop scientific ideas and skills for future proposals that may lead to an independent research program.

Collaborative Research 20%

- collaborate with operational partners and product end users;
- collaborate with CIRA and ATS scientists working on similar research projects.

Documentation & Reporting 10%

- publish scientific results;
- travel to scientific conferences to present results.

Required Qualifications:

- Ph.D. in atmospheric science or closely related field, plus 1-2 years of experience working with meteorological data sets;
- experience working with meteorological satellite data sets;
- experience working with in-situ field campaign data sets, data quality control, analysis and evaluation;
- experience working with 3-dimensional atmospheric cloud and precipitation algorithms/products;
- experience developing and programming algorithms that estimate the cloud-free line-of-sight between two points in 3-dimensional cloud products;
- experience coding to read, write, and manipulate scientific datasets using Python;
- experience working with Linux/Unix OS;
- ability to communicate well, orally and written, and particularly across disciplinary boundaries;
- ability to work in a team environment.

Preferred Qualifications:

- experience working with numerical weather model data sets and multi-data intercomparisons;
- experience working with atmospheric cloud and precipitation algorithms/products;
- experience working on developing operational-ready data/code packages;
- experience using machine learning and big data analysis;
- experience working on DoD, NOAA, NSF, or NASA-related projects.

Annual Salary Range: \$75,000 - \$88,000 commensurate with qualifications and experience.

Background Check:

Colorado State University strives to provide a safe study, work, and living environment for its faculty, staff, volunteers and students. To support this environment and comply with applicable laws and regulations, CSU conducts background checks. The type of background check conducted varies by position and can include, but is not limited to, criminal history, sex offender registry, motor vehicle history, financial history, and/or education verification. Background checks will also be conducted when required by law or contract and when, in the discretion of the University, it is reasonable and prudent to do so.

Application Deadline and How to Apply:

For full position announcement and to apply, please click “Apply to this Job” at the following website: <https://jobs.colostate.edu/postings/166731>. Application Deadline: 11:59 PM MT on Wednesday, October 8, 2025. **Applications must be submitted via online portal.** We will not accept materials sent via email or other mode. NOTE: In your cover letter, please specifically address the required and preferred qualifications of this position. A cover letter that fails to address the qualifications of this position may not be further considered after review by the search committee. Likewise, an online application with a generic cover letter or missing a cover letter, and/or an application that does not include current/correct reference contact information may not be further considered after review by the search committee.

Colorado State University is committed to providing an environment that is free from discrimination and harassment based on race, age, creed, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity/expression, or pregnancy in its employment, programs, services and activities, and admissions, and, in certain circumstances, marriage to a co-worker. The University will not discharge or in any other manner discriminate against employees or applicants because they have inquired about, discussed, or disclosed their own pay or the pay of another employee or applicant. Colorado State University is an equal opportunity and equal access institution and affirmative action employer fully committed to achieving a diverse workforce and complies with all Federal and Colorado State laws, regulations, and executive orders regarding non-discrimination and affirmative action. The Office of Equal Opportunity is located in 101 Student Services. The Title IX Coordinator is the Director of the Office of Title IX Programs and Gender Equity, 123 Student Services Building, Fort Collins, CO 80523-0160, (970) 491-1715, titleix@colostate.edu. The Section 504 and ADA Coordinator is the Director of the Office of Equal Opportunity, 101 Student Services Building, Fort Collins, CO 80523-0160, (970) 491-5836, oeo@colostate.edu. The Coordinator for any other forms of misconduct prohibited by the University’s Policy on Discrimination and Harassment is the Vice President for Equity, Equal Opportunity and Title IX, 101 Student Services Building, Fort Collins, Co. 80523-0160, (970) 491-5836, oeo@colostate.edu. Any person may report sex discrimination under Title IX to the Office of Civil Rights, Department of Education.