Research Associate I/II
Tropical Cyclone Product Developer
23-132

Position Summary:
The Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University (CSU), located on the CSU Foothills Campus approximately 5 miles northwest of CSU main campus, seeks to hire a Tropical Cyclone Product Developer, to be located at CIRA in Fort Collins, CO. CIRA has a long history of data analysis and algorithm development to improve understanding of and forecast skill for tropical cyclone track, intensity, and structure, with an emphasis on satellite data applications. The individual in this position will work with an interdisciplinary team of atmospheric researchers and hurricane forecasters to develop and implement CIRA tropical cyclone products in GeoIPS (https://github.com/USNavalResearchLaboratory/GeoIPS) and Advanced Weather Interactive Processing System (AWIPS2) to support efforts to transition satellite and ocean applications to operations at Joint Typhoon Warning Center (JTWC) and/or National Hurricane Center (NHC). The individual in this position will also assist with data management and product development at CIRA and will work with a wide range of applications including those utilizing geostationary and polar-orbiting satellite data, as well as ocean and model data. The applications are based on traditional statistical methods and machine learning techniques.

This position is planned to start as early as October 1, 2023 with later start date negotiable. The individual in this position must have a combination of the ability to program and implement products on operational computing systems, strong communication skills, and an understanding of the underlying science to evaluate the implemented tropical cyclone products. They will organize, read, analyze, and plot atmospheric and oceanic datasets, and evaluate products based off those datasets and theoretical understanding of tropical cyclones, and so must have at least a BA/BS in atmospheric science, computer science or a related field, and related experience. The individual in this position must also have extensive experience with programming in Python and some experience with Fortran and/or shell scripting and should possess experience in writing automation software. They should also have the ability to work independently and in a team environment.

The individual in this position will report to the Tropical Cyclone Research Scientist/Project PI, will be co- mentored by a CIRA Tropical Cyclone Research Scientist and will collaborate with other CIRA researchers, as well as Naval Research Laboratory (NRL) collaborators, NOAA collaborators at the Atlantic Oceanographic and Meteorological Laboratory (AOML) and National Environmental Satellite, Data, and Information Service (NESDIS) and operational partners at JTWC and NHC. This position requires on-site presence in Fort Collins, CO but will allow flexible work arrangements including hybrid office/telework. This position will require travel to collaborate with operational partners and/or scientific conferences.

This position will be classified Research Associate I or II according to the credentials of the finalist selected for hire as follows:

- Position classification Research Associate I will apply to the finalist who possesses a Bachelor’s degree in atmospheric science, meteorology, computer science, or closely related field and 1-2 years of experience working with geophysical data analysis.
- Position classification Research Associate II will apply to the finalist with a Bachelor’s degree in atmospheric science, meteorology, computer science, or closely related field and 3 or more years of experience working with geophysical data analysis, or a Master’s Degree in atmospheric science, meteorology, computer science, or closely related field.

Decision Making:
The individual in this position will make decisions about the development of software to support automation of new and existing TC products based upon his/her analysis of atmospheric and oceanic fields, the technical requirements of JTWC and NOAA/NHC real-time computing environments, and requirements and feedback from developers and stakeholders. They will also make decisions about data and database management at CIRA and automating data management and tropical cyclone applications at CIRA to optimize the application development and future possible transition to operations. They will work both independently and collaboratively with developers and stakeholders and will conduct regular meetings to develop and evaluate products and set priorities. Specific decision-making activities are described as follows:
• decides design and content of products for JTWC and NHC using knowledge of atmospheric science and experience in atmospheric science datasets and products;
• participates in meetings with developers and stakeholders to evaluate experimental product design and then decides which feedback to implement and how to implement it into final products;
• decides how to implement and automate products in GeoIPS and AWIPS2 to support product generation in automated operational computing environment;
• decides how to organize data and databases at CIRA to facilitate the current and future application development;

**Essential Job Duties:**

**Scientific Application Development Support (50%)**
• collaborate with researchers at CIRA and NRL and forecasters at JTWC and NHC on common applied research goals;
• work on integrating CIRA applications to GeoIPS;
• develop AWIPS2 displays for the existing and new CIRA applications;
• develop real-time TC applications using satellite and ocean data;
• improve existing TC applications based on forecasters feedback;
• travel as needed for collaborative interactions, and to scientific conferences to present research results

**Scientific Computing Support (30%)**
• manage very large geostationary and polar-orbiting satellite datasets required for the development and improvement of existing and future TC applications;
• work with CIRA researchers to develop and implement scientific software to meet various project goals;
• work with CIRA researchers to streamline transition of research to operations.

**Independent Research (20%)**
• explore areas of research aligned with the missions of CIRA, NHC, and JTWC;
• develop new satellite-based applications for operational estimation and forecasting of TC intensity and structure;
• learn new skillsets as required in statistics, machine learning, observational platforms and models

**Required Qualifications:**
In your cover letter, please specifically address EACH required qualification as it relates to your experience. A cover letter that fails to address the required qualifications for this position may not be considered further after review by the search committee.
• for Research Associate I: Bachelor’s degree in atmospheric science, meteorology, computer science, or closely related field plus 1-2 years of experience working with geophysical data analysis;
• for Research Associate II: Bachelor’s degree in atmospheric science, meteorology, computer science, or closely related field plus 3 or more years of experience working with geophysical data analysis, OR Master’s Degree in atmospheric science, meteorology, computer science, or closely related field;
• ability to pass a National Agency Check with Inquiries (NACI, Tier 1 federal background check) for access to special computers.
• strong technical computing skills;
• experience working on Linux operating systems;
• extensive experience with Python programming;
• experience with scripting languages, particularly shell scripting;
• experience working with large geophysical datasets;
• experience writing automation software;
• interest in working with tropical cyclone applications;
• strong verbal and written communication skills;
• Must be legally authorized to work in the United States by proposed start date because CIRA will not sponsor a visa for this position.

**Preferred Qualifications:**
In your cover letter, please specifically address the applicable preferred qualifications for this position. A cover letter that fails to address the preferred qualifications for this position may not be considered further after review by the search committee.

- Master’s Degree in atmospheric science, meteorology, computer science, or closely related field;
- experience with machine learning;
- experience with Fortran;
- experience working in a collaborative team environment (i.e. collaborating on git);
- experience creating and/or managing very large datasets;
- experience using and/or developing applications for AWIPS2;
- experience with statistical-dynamical models developed for TC applications;
- experience with regional hurricane and global numerical models;
- experience with netCDF/HDF, GRIB, and BUFR file processing;
- experience with geostationary and/or polar-orbiting satellite data;
- experience in TC applications and knowledge of TC structure and evolution.

**Annual Salary Range:** $62,000 – $74,000 Commensurate with experience and qualifications.

**Background Check:**
Colorado State University (CSU) 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 (felony and misdemeanor) history, sex offender registry, motor vehicle history, financial history, and/or education verification. Background checks will be conducted when required by law or contract and when, in the discretion of the university, it is reasonable and prudent to do so. In addition, the final candidate will be required to pass a National Agency Check with Inquiries (NACI, federal background check).

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**Commitment to Diversity and Inclusion:**
Reflecting departmental and institutional values, candidates are expected to have the ability to advance the Department's commitment to diversity and inclusion.

**Application Deadline and How to Apply:**
Applications will be accepted until the position is filled; however, to ensure full consideration applications should be submitted by 11:59 PM MT on September 5, 2023. Apply electronically by clicking “Apply to this Job” at the following website: [https://jobs.colostate.edu/postings/131901](https://jobs.colostate.edu/postings/131901). References may be contacted immediately and without further notification to the candidate. NOTE: In your cover letter, please specifically address both the required and preferred qualifications of this position. A cover letter that fails to address both the required and preferred qualifications of this position 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.