The Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University seeks to fill a professional research position designed to conduct collaborative research with the National Oceanic and Atmospheric Administration (NOAA) located at the Global Systems Laboratory (Earth Prediction Advancement Division) in Boulder, CO. The office for this position will be in Boulder, CO at a federal facility and requires the ability to pass a Tier One federal background check for building access. Onsite presence, with the option to telework, is desired for this position, but remote work will be considered.

Description of Work Unit

The position will be with the Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University (CSU) working in conjunction with and located at NOAA’s Global Systems Laboratory (GSL), a federal science and research laboratory under NOAA’s Office of Oceanic and Atmospheric Research, located in Boulder, Colorado. CIRA is a multi-million dollar research organization located on CSU’s Foothills Campus in Fort Collins, Colorado. CIRA is a cooperative institute that is also a research department within CSU’s College of Engineering, in partnership with the Department of Atmospheric Science. Its vision is to conduct interdisciplinary research in the atmospheric sciences by entraining skills beyond the meteorological disciplines, exploiting advances in engineering and computer science, facilitating transitional activity between pure and applied research, leveraging both national and international resources and partnerships, and assisting NOAA, Colorado State University, the State of Colorado, and the Nation through the application of our research to areas of societal benefit.

NOAA’s GSL provides the National Weather Service (NWS) and the nation with environmental observing, prediction, computer, visualization, and information systems. These systems deliver data, forecasts, and predictions of weather, including severe weather events, within the next few minutes to weeks away. The Global Systems Lab (GSL) is a leader in the applied research, directed development, and technology transfer of environmental data, models, products, and services that enhance environmental understanding with the outcome of supporting commerce, protecting life and property, and promoting a scientifically literate public.

Position Summary:
The individual in this position will be integrated within a numerical weather prediction (NWP) model development team. This position focuses on the development of the Common Community Physics Package (CCPP) and on supporting the CCPP to the scientific community. The CCPP is composed of a library of physical parameterizations (CCPP Physics) and a Python-based software infrastructure to connect it to host models (CCPP Framework). This Research Associate will
continue to enhance the well-established CCPP Framework, assist scientists in adding and modifying physical parameterizations in CCPP Physics, and facilitate the use of CCPP in selected host modeling systems, such as the Unified Forecast System (UFS). Ultimately, this research associate will be a key contributor to the improvement of NWP via the advancement of the representation of physical processes in models. This position will be supervised by the Numerical Weather Prediction, Data Assimilation and Ensemble Research Scientist.

**Decision Making Statement**

**RA III**

Decision making depends on the scale of each assignment and issues involved; the chosen course of action may need to be selected from many solutions, dependent upon the end user and technological requirements, and may require coordination with other members of the project team to reach a final decision. The individual in this position makes many decisions concerning such things as interpretation of data, planning work, and/or refining methods and techniques.

**RA IV**

The individual in this position will help execute a plan of research that will resonate with the underpinning science objectives of the supporting projects. The decision they will make and the approaches they will take will be determined by the individual’s own scientific acumen and in consultation with the Principal Investigator. Successful execution of the proposed research, i.e., supporting the deliverables mentioned in the project’s statement of work, will hinge upon the definition of a scientifically-sound plan and its execution. Ultimately this decision-making process will lay a foundation that will be critical for success in future proposals and build an independent and self-sufficient research program. Similarly, the individual in this position will conduct research with an eye toward establishing strong partnerships with both CIRA research staff and sponsors.

**Essential Job Duties:**

**CCPP development, support, and testing - 90%**

- Develop the CCPP Framework by advancing methods and codes to enhance the functionalities, performance, and user friendliness of the software.
- Contribute to the governance and code management for the CCPP Physics to foster its continued development and interoperable integration with a variety of host models.
- Work collaboratively with community members to advance the representation of physical processes in the CCPP Physics.
- Work collaboratively with internal and external users and partners in evaluation of physics innovations for Earth system models.
- Communicate results to external audiences, partners, and stakeholders via presentations in meetings, conferences, and workshops, as well as via peer-reviewed scientific papers and assessments.
Documentation and Reporting—10%

- In collaboration with the project team, document CCPP
- As needed or requested, give or assist with presentations related to project
- As needed or requested, provide status reports to CIRA and/or the project sponsor

Required Qualifications:

RA III Required Qualifications

- B.S. degree in atmospheric or related physical sciences AND
  - 5 years of related professional experience OR
- MS degree in atmospheric or related physical sciences AND
  - 2 year of related professional experience OR
- Recent PhD in atmospheric or related physical sciences

RA IV Required Qualifications

- B.S. degree in atmospheric or related physical sciences AND
  - 10 years of related professional experience OR
- MS degree in atmospheric or related physical sciences AND
  - 5 years of related professional experience OR
- PhD in atmospheric or related physical sciences AND
  - 2 years of related professional experience

Other Requirements for all classifications

- Basic understanding of numerical weather prediction and interest in the computational aspects of numerical weather prediction
- Advanced degree and/or a minimum of 3 years of experience in each of the areas below:
  - Python programming
  - Scientific programming in languages such as Fortran or C++
  - High-performance computing (HPC) and parallel computing
  - Parallel programming paradigms, such as MPI or OpenMP
  - Maintaining code using version-control software, such as Git
- Ability to work and communicate effectively (verbal and written) within a team environment, and to facilitate communication across multiple teams and organizational units
- Ability and desire to contribute to an inclusive work environment
- Ability to gain new knowledge to learn how the CCPP works
- Must be legally authorized to work in the United States by the start date. CIRA will not sponsor a visa for this position now or in the future.
- Ability to pass a National Agency Check with Inquiries (NACI) Tier 1 federal background check because the position is located inside a federal facility
Preferred Qualifications:

- Experience with development of physical parameterizations or atmospheric composition modules
- Familiarity with coupling software for Earth system models
- Familiarity with physics-dynamics interfaces for Earth system models
- Understanding of object-oriented programming
- Familiarity with code management practices used in the software development industry
- Familiarity with science and software of verification of physical processes and NWP models
- Excellent command of the English language and experience in presenting and publishing scientific research.

To ensure full consideration applications should be submitted by 11.59pm MT Tuesday, January 17, 2023.

Apply electronically by clicking “Apply to this Job” at the following website: https://jobs.colostate.edu/postings/117554. References will not be contacted without prior notification of candidates. In your cover letter, please specifically address the required and preferred qualifications of this position. A cover letter that fails to address the required and preferred qualifications of this position may not be considered further after review by the search committee. CSU is an EO/EA/AA employer and conducts background checks on all final candidates.