



NCAR
OPERATED BY UCAR

Research Applications
Laboratory

Fostering Community & Collaboration

Research Applications Laboratory (RAL)

We build lasting partnerships to apply Earth system science to real-world challenges that benefit society.

Our mission is to conduct research that advances our understanding of the Earth system and its interaction with society; extends the capabilities of the scientific community; and transfers knowledge and technology for the betterment of human kind. RAL is a world leader in performing end-to-end research, development, and technology transfer. We achieve results by forging strong partnerships with collaborators and stakeholders in the public and private sectors.

OPPORTUNITIES COLLABORATIVE RESEARCH

RAL scientists and engineers actively seek opportunities to collaborate with university investigators, federal agencies, and private partners to develop new projects across a wide range of application areas including short-term weather and air-quality forecasting, hydrology, agriculture, fire, energy, aviation, and surface transportation. Our R&D is focused on developing and refining applications in areas such as AI weather modeling, connected vehicles, dispersion and atmospheric composition modeling, weather decision-support systems, transportation safety and resiliency, assessment and communication of weather risk, hydrologic modeling, human health, GIS, community support for numerical weather prediction, data assimilation, urban meteorology and modeling, agriculture, wildland fire, artificial intelligence and machine-learning applications, and weather intelligence and decision-support capabilities for national security and defense.

Connect With Us!

- Collaborative research
- Visitor programs
- Graduate student & post-doctoral opportunities
- Fellowships, workshops, & tutorials
- GIS resources
- Model evaluation tools & data sets

Contact Us!

 ral.ucar.edu 
 303.497.8422 
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VISITOR PROGRAMS

RAL encourages and supports collaboration with researchers and organizations within the U.S. and abroad. We offer a variety of opportunities to visit RAL and work with our scientists and engineers. We offer administrative, computing, travel, and per-diem support for selected visitors. For example, the Developmental Testbed Center (DTC) solicits research proposals to test new forecasting and verification techniques, models, and model components for numerical weather prediction (NWP). Selected visitors receive salary support, travel, and per diem.

GRADUATE STUDENT & POST-DOCTORAL OPPORTUNITIES

RAL provides support for graduate research assistants and post-doctoral scientists in partnership with NSF NCAR's Advanced Study Program (ASP) and in partnership with our external funding sponsors.

FELLOWSHIPS

RAL offers graduate fellowship opportunities that support early-career researchers while advancing impactful Earth system science. The Halaby Fellowship supports research focused on mitigating aviation weather impacts and improving air-traffic management by providing travel, living expenses, and a stipend.

WORKSHOPS AND TUTORIALS

RAL invites numerous members of the broader community to the workshops and tutorials we conduct. We offer regularly scheduled classes about the Weather and Research Forecasting (WRF) model, the Model Evaluation Tools (MET), Noah-Multiparameterization (Noah-MP) and WRF-Hydro.

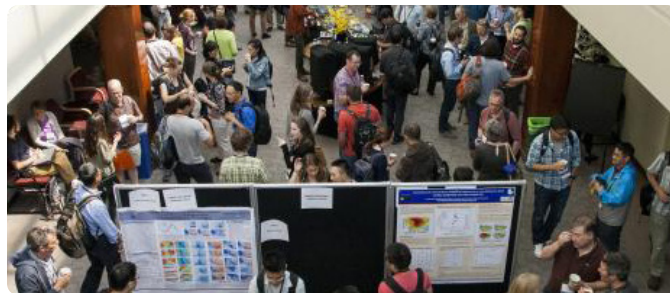
Bringing people & ideas together moves science forward.

COMMUNITY RESOURCES

GIS PROGRAM

The GIS program fosters interdisciplinary science, spatial data interoperability, and knowledge sharing using GIS. The goal of this program is to promote and support the use of GIS as both an analytical and infrastructure tool in atmospheric research. GIS is also used to address broader issues of spatial data management, interoperability, and geoinformatics within the geoscience disciplines.

RAL.UCAR.EDU



Sharing ideas. Building connections

MODEL EVALUATION TOOLS (METPLUS)

METplus is a verification framework developed by the DTC that is widely used in the international research and operational communities. It is well supported by thorough documentation and training materials. It assesses model performance across a wide range of temporal and spatial scales with a variety of traditional and advanced verification methods and diagnostics.

DATA SETS

RAL datasets include downscaled weather and climate model datasets such as the CONUS404 a 40-year long 4-km meteorological dataset or the North American CORDEX (NA-CORDEX). Additional datasets related to fuel moisture, continental hydrology, and even more. Many of these are available through NSF NCAR's Geoscience Data Exchange (GDEX). RAL also hosts a popular website with live weather data and forecasts at weather.ral.ucar.edu.

WORK WITH US

Leveraging the scientific expertise at NSF NCAR and UCAR's university partners, RAL conducts research and development to address specific weather and climate problems with tailored solutions. From transportation, and energy to national security and defense, RAL works with government and industry partners to translate advances in Earth system science, artificial intelligence, and weather prediction into trusted capabilities for real-world decisions.

RAL scientists and engineers collaborate across disciplines with research and operational science communities. RAL participates in all phases of the R&D cycle, with careful assessment of the science and its readiness for application. Direct engagement with users is essential to addressing real needs and enabling adoption of new capabilities.



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