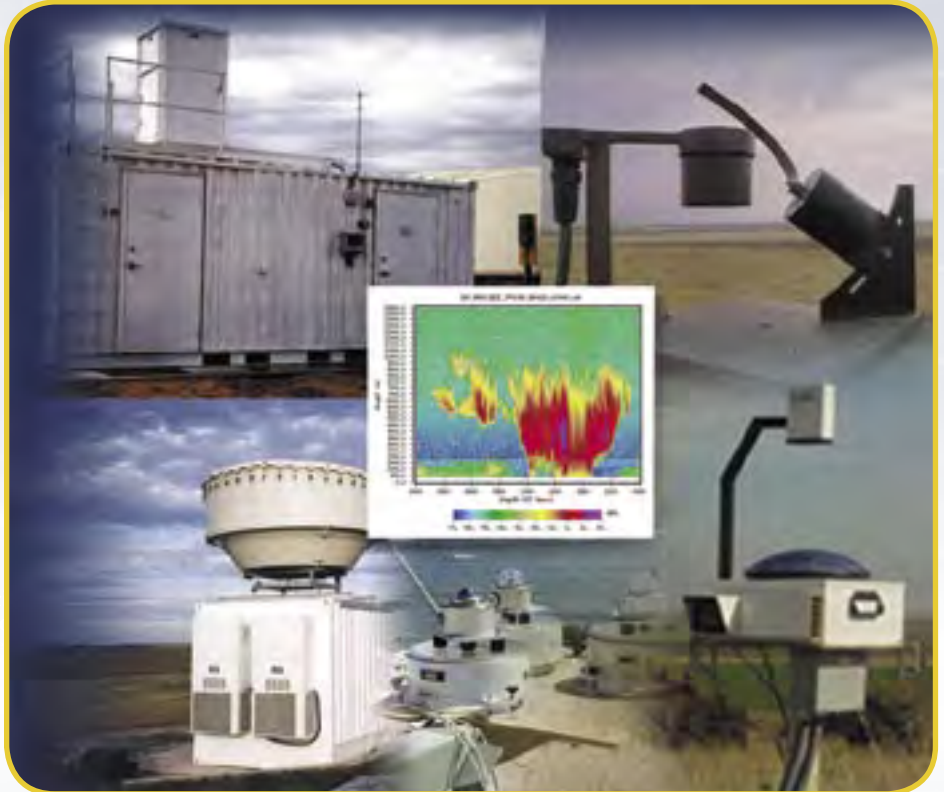


# U.S. Department of Energy Atmospheric Radiation Measurement Climate Research Facility



Through the Atmospheric Radiation Measurement (ARM) Program, the U.S. Department of Energy (DOE) has funded the development of several highly instrumented ground stations for studying cloud formation processes and their influence on radiative transfer, and for measuring other parameters that determine the radiative properties of the atmosphere. This scientific infrastructure, and resultant Data Archive, is a valuable national and international asset for advancing scientific knowledge of earth systems. To provide more research capability for the global scientific community, ARM's field research sites are now available for use by scientists worldwide through the ARM Climate Research Facility (ACRF). The ACRF has enormous potential to contribute to a wide range of interdisciplinary science in areas such as hydrology, ecology, and weather forecasting to name only a few. The ACRF Science Board serves as an independent science review body that reviews proposals for use of the ACRF and makes recommendations on scientific research projects to be conducted at the fixed and mobile ACRF sites.

## ACRF Locations and Instruments

ACRF's permanent research sites represent three different climatic regimes: the Southern Great Plains (SGP), the North Slope of Alaska (NSA), and the Tropical Western Pacific (TWP) Ocean. Respectively, these sites address a range of climatic conditions: (1) variable mid-latitude climate conditions, (2) land and land-sea-ice

arctic climate, and (3) the tropical warm pool in the western Pacific Ocean. In addition, an ARM Mobile Facility (AMF) is available for short-term deployments (about 1 year) at sites determined by the ACRF Science Board.

## User Information

The ACRF is an ideal platform on which to develop and test new instrumental approaches. Activities conducted by ACRF users may include a visit to one of the sites for informational or educational purposes; an effort to test or validate new instruments; a short-duration period of data acquisition, or a longer, more permanent type of data acquisition effort.

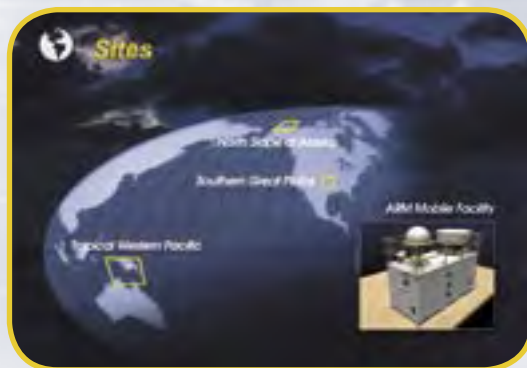
## Costs

There is no “fee” for taking advantage of the ACRF scientific infrastructure. In lieu of costs, users are expected to contribute collaborative funding for their research and to give referential credit to ACRF in publications as appropriate.

The ACRF Science Board considers proposals in a timely manner to assist the scientific investigators with their proposals for funding from their prospective funding agencies. Proposals are reviewed based on scientific merit and the feasibility and costs associated with using the facility. While the ACRF does not provide direct funding for scientific research, small amounts of funding may be provided to allow the facility to assist with logistics, the development of datastreams and archiving, and other infrastructure activities associated with using the facility.

## Accessing the Data

The Data Archive supports the scientific field experiments of the ARM Program by storing and distributing the large quantities of data collected from these experiments. These data are used to



research atmospheric radiation balance and cloud feedback processes, which are critical to the understanding of global climate change.

## Conducting a Field Campaign

Any ACRF field campaign that requires an augmentation of routine data acquisition at a site, even for a short period of time, is designated an intensive operational period (IOP). For example, the support of guest instrumentation at a research site is considered an IOP. At the other end of the scale, a major field experiment might include ships or aircraft activities at or near a research site, requiring extensive planning of a year or more.

To request changes in routine data acquisition or to test and validate new instruments, the IOP Preproposal form is required. For information and guidelines about proposing an IOP, see the ACRF proposal page available at [http://www.arm.gov/acrf/submit\\_proposals.stm](http://www.arm.gov/acrf/submit_proposals.stm).

## ARM Data Archive and User Reporting Requirements

A significant attribute of the ARM Program is the large multi-year collection of ARM data that is stored and accessible to users. Resources for the storage and distribution of data by the Data Archive can be made available to ACRF users. As a general condition for use of the

facilities, users are required to include their data in the ARM Data Archive. The data policy for the ARM/ACRF program is derived from the policies of the U.S. Global Change Research Program, which encourages “free and open” access to data and research results.

## Example of an ACRF Project

An example of an ACRF project is the Cloud and Land Surface Interaction Campaign (CLASIC) to be conducted at the SGP field measurement site during the summer of 2007. The purpose of this study is to advance the understanding of how land surface processes influence cumulus convection. Continental cumulus convection is strongly modulated by land surface conditions, while at the same time influencing the land surface itself through rain-induced changes in soil moisture and through its impact on photosynthesis. This project will cover a period of 1-3 months and will straddle the winter wheat harvest when large changes in the land surface lead to large changes in the surface albedo, latent heat flux, and sensible heat flux. The results of this research will lead to improved representation of cloud and land surface feedbacks in climate models. This project will also enhance ACRF capabilities by expanding into cross-disciplinary research with enhanced interagency cooperation. The Climate Change Science Program has designed the campaign as the core of the near term focus area for its Interagency Water Cycle Working Group.

**For more information, contact:**

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