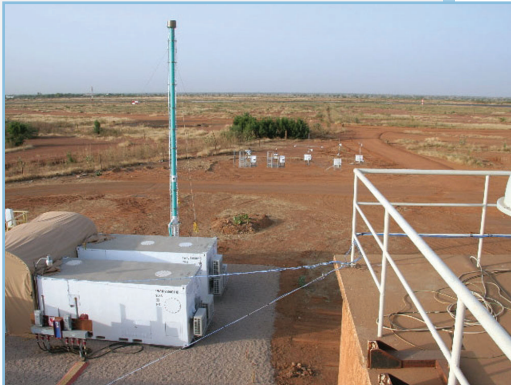




FACT SHEET

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



Through the Atmospheric Radiation Measurement (ARM) Climate Research Facility, the U.S. Department of Energy (DOE) funded the development of several highly instrumented fixed, mobile, and aerial sites 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 are available for use by scientists worldwide. The ARM Climate Research Facility has enormous potential to contribute to a wide range of interdisciplinary earth sciences in areas such as hydrology, ecology, and weather forecasting, to name only a few.

ARM Facility Locations and Instruments



ARM'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). 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. Using a broad range of instruments, each fixed site continuously collects massive amounts of climate data that are archived and made available to the scientific community. In addition, two separate ARM Mobile Facilities (AMF) are available for short-term deployments (about 1 year) at other locations, and the ARM Aerial Facility (AAF) provides airborne measurements required to supplement ground-based measurements. Collectively, the permanent research sites, mobile facilities, and aerial facility are referred to as the ARM Facility.

User Information

The ARM Facility provides a broad array of instruments to study climate processes and is capable of hosting guest instruments to augment measurement capabilities. There are a number of ways that researchers can use ARM's facilities and data:

- Access data gathered during normal operations or field campaigns
- Propose and conduct a field campaign
- Make an in-person or virtual visit to a site.

Costs

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



Recovery Act Enhancements

Through the American Recovery and Reinvestment Act of 2009, the ARM Climate Research Facility is receiving \$60 million dollars from the U.S. Department of Energy Office of Science to build the next-generation facility for climate change research. With these funds, ARM will purchase and deploy dual-frequency scanning cloud radars to all the ARM sites, enhance several sites with precipitation radars and energy flux measurement capabilities, and invest in new aerosol sampling and aerial instrumentation.

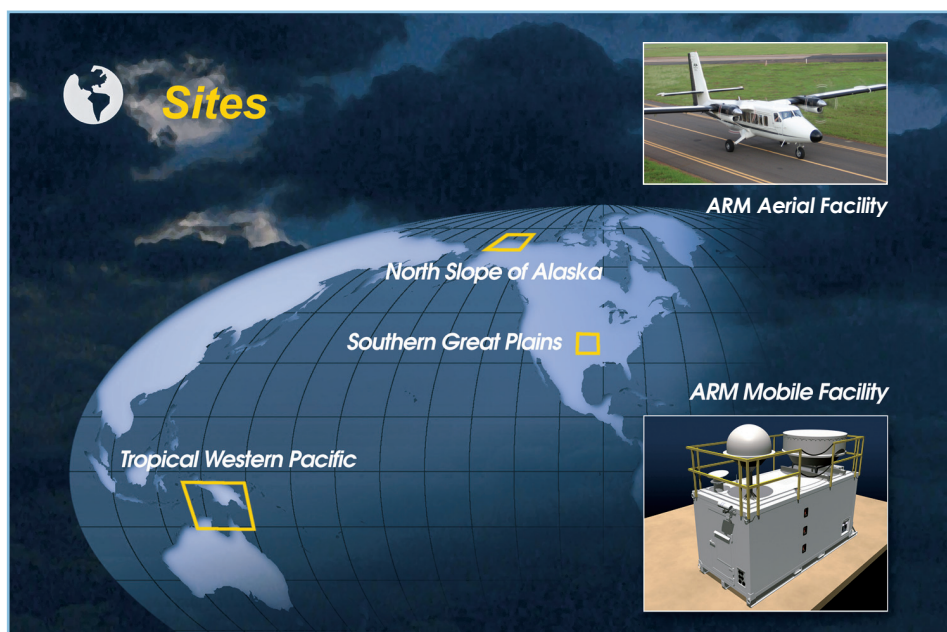
ARM Data Archive

The ARM Data Archive supports the scientific field experiments of the ARM Climate Research Facility by storing and distributing the multi-year collection of data obtained from observation and experiments. These data are used to study atmospheric radiation balance and cloud feedback processes, which are critical to the understanding of global climate change. The data are freely available to anyone free of charge.

As a general condition for using the ARM Facility, users are required to include their data in the ARM Data Archive. The data policy for the ARM Climate Research Facility is derived from the policies of the U.S. Global Change Research Program, which encourages “free and open” access to data and research results.

Conducting a Field Campaign

Any ARM operation that requires an augmentation of routine data acquisition at a site, even for a short period of time, is designated a field campaign. For example, the support



of guest instrumentation at a research site is considered a field campaign. 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.

The proposal for a field campaign can originate with any scientist proposing research directly related to the ARM Climate Research Facility’s scientific mission. Proposals for using the ARM Facility are reviewed based on scientific merit, feasibility, and associated costs. While ARM does not provide direct funding for scientific research, small amounts of funding may be provided to allow the ARM Facility to assist with logistics, the development of datastreams and archiving, and other infrastructure activities associated with using the ARM Facility.

Scientists are encouraged to submit proposals for field campaigns of any size and scope using the Field Campaign Preproposal form. For information and guidelines about proposing a field campaign, see the Campaigns page at <http://www.arm.gov/campaigns>.

Example of an ARM Field Campaign

In 2008, the ARM Mobile Facility (AMF) was deployed in China to acquire essential cloud, aerosol, radiative, and meteorological measurements for the Study of Aerosol Indirect Effects in China. High concentrations of aerosol particles in the region may influence the atmosphere across the Pacific Rim, especially the radiation balance and cloud properties. Measurements obtained at four different sites during the 8-month deployment will help scientists to validate satellite-based findings, understand the mechanisms of the aerosol indirect effects in the region, and examine the roles of aerosols in affecting regional climate and atmospheric circulation, with a special focus on the impact of the East Asian monsoon system.

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