Argonne NATIONAL LABORATORY

News Release

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For immediate release

DOE selects Argonne to develop unique tools to collect climate data

Information crucial in continued improvement, accuracy of climate models

ARGONNE, Ill. (Oct. 24, 2008) – Argonne National Laboratory was awarded a $2.6 million-per-year contract by the U.S. Department of Energy (DOE) to expand DOE's ability to make accurate, reliable measurements of cloud and atmospheric processes over the Earth's oceans and other inhospitable locations. Such information is critical for advancing scientific knowledge of the Earth and building climate models that are more accurate, comprehensive and robust.

The long-term project to design, build and operate a second DOE Atmospheric Radiation Measurement (ARM) program mobile facility, known as AMF2, is being led by Argonne atmospheric researchers Brad Orr and Richard Coulter.

AMF2 will complement the original AMF facility, which supports climate research projects by collecting atmospheric data in regions across the globe, but only for land-based deployments. The AMF2 will make similar measurements but with the added capability of making those measurements on ocean-based platforms.

The AMF and AMF2 are part of the DOE Office of Science national user facility called the ARM Climate Research Facility (ACRF), which also operates three long-term fixed sites around the world and has an aircraft support component as well, the Aerial Vehicles Program (AVP). Argonne has also managed for more than 18 years the largest of the fixed sites located in the southern Great Plains. The capability of making ocean-based measurements is an important addition to the underlying ACRF mission to improve climate models.

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"The new instrumentation that will outfit AMF2 will be able to collect information while stationed both on land and sea," Orr said. "Until the AMF2 project, there has been no accurate way for ACRF to collect marine-based measurements. Ocean motion disrupts the ability to collect accurate measurements. AMF2 instruments, especially those that are position-sensitive, will be built on stabilized platforms that are able to mitigate the impact of the water's motion on the quality of the data that is collected."

"Water-specific measurements such as temperature, salinity, current velocity and ocean turbulence will be used in the AMF2 to help characterize the interface between the ocean and atmosphere," Coulter explained.

The ability to collect atmospheric data over oceans is not new; however, such data have been gathered by a variety of research groups using different instruments that were not ideally suited for the task and rarely over long time intervals.

AMF2 will also be smaller and easier to deploy than the original AMF, which will remain in commission, and it will be able to continuously collect atmospheric data, Orr said. The AMF2 project will be completed and ready for operation by October 2010; its first deployment will be to the Desert Research Institute's Storm Peak Laboratory (SPL), a cloud and aerosol research facility near Steamboat Springs, Colo. The deployment and operational logistics will be formidable at the 9,000 foot level in an isolated area that can receive between 150-300 inches of snow per year.

"The SPL experiment will address the critical shortage of cloud microphysics data that can be used for development and validation of new climate model algorithms," said Doug Sisterson, an Argonne meteorologist and DOE's ACRF operations manager. "The data sets collected will make it easier to convert remote sensing measurements to cloud properties." Such data are typically provided by episodic and expensive measurements obtained by an aircraft; however, the SPL experiment could potentially create a data set that would be the equivalent of between 200 and 300 aircraft flights in liquid and mixed phased clouds.

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