



Unmanned Aerial Systems, Moored Balloons, and the U.S. Department of Energy ARM Facilities in Alaska

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The U.S. Department of Energy (DOE), through its scientific user facility, the Atmospheric Radiation Measurement (ARM) Climate Research Facility, provides scientific infrastructure and data to the international Arctic research community via its research sites located on the North Slope of Alaska.

Facilities and infrastructure to support operations of unmanned aerial systems for science missions in the Arctic and North Slope of Alaska were established at Oliktok Point Alaska in 2013. Tethered instrumented balloons will be used in the near future to make measurements of clouds in the boundary layer including mixed-phase clouds. The DOE ARM Program has operated an atmospheric measurement facility in Barrow, Alaska, since 1998. Major upgrades to this facility, including scanning radars, were added in 2010.

Arctic Observing Networks are essential to meet growing policy, social, commercial, and scientific needs. Calibrated, high-quality arctic geophysical datasets that span ten years or longer are especially important for climate studies, climate model initializations and validations, and for related climate policy activities. For example, atmospheric data and derived atmospheric forcing estimates are critical for sea-ice simulations.

International requirements for well-coordinated, long-term, and sustained Arctic Observing Networks and easily-accessible data sets collected by those networks have been recognized by many high-level workshops and reports (Arctic Council Meetings and workshops, National Research Council reports, NSF workshops and others). The recent Sustaining Arctic Observation Network (SAON) initiative sponsored a series of workshops to “develop a set of recommendations on how to achieve long-term Arctic-wide observing activities that provide free, open, and timely access to high-quality data that will realize pan-Arctic and global value-added services and provide societal benefits.”

This poster will present information on opportunities for members of the arctic research community to make atmospheric measurements using unmanned aerial systems or tethered balloons.