

Status, Accomplishments, Recent Developments, and Plans at the North Slope of Alaska ARM Climate Research Facility

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Over this past year, the North Slope of Alaska/Adjacent Arctic Ocean Arm Climate Research Facility (NSA/AAO ACRF) has been a very busy place. The year started with the Extended Range Atmospheric Emitted Radiance Interferometer (ER-AERI) Intercomparison Intensive Operating Period (IOP), January 9-August 2, 2004. During this effort, the ER-AERI to be operated elsewhere during the Mixed-Phase Arctic Cloud Experiment (M-PACE), was first operated alongside the station ER-AERI at Barrow for several months. Pacific Northwest National Laboratory (PNNL) led the comparison effort. Next, the Arctic Winter Radiometric Experiment, March 9-April 9, 2004, was conducted. An array of microwave radiometers were simultaneously operated at Barrow, backed with an intensive radiosonde launch schedule, including chilled mirror sonde launches. The effort was led by the University of Colorado and included several other researchers from NOAA, NASA, Montana State, the Universities of L'Aquila and Perugia, Science and Technology Corporation, as well as Argonne and Sandia National Laboratories. Next came Atmospheric Infrared Sounder (AIRS) Validation Phase III April 19-September 5. Pairs of radiosonde soundings were taken to coincide with overpasses of the Aqua satellite carrying the AIRS instrument to compare remotely sensed atmospheric profiles with in situ measured profiles. Argonne National Laboratory (ANL) served as the Atmospheric Radiation Measurement (ARM) principal investigator. AIRS finished just as the preparations for M-PACE reached a fever pitch. M-PACE (September 24-October 21) was the "big-show" of the year with radiosonde launches being made at four locations on the North Slope, the deployment of the Portable Atmospheric Remote Sensing Laboratory (PARSL) at one of the non-ARM locations (Oliktok Point Long Range Radar Station), and the participation of a pair of manned and one robotic research aircraft, as well as a tethered balloon. M-PACE stimulated parallel simultaneous IOPs involving lidars from the University of Alaska and the University of Wisconsin and the Spectral Water Phase Experiment fielded by NOAA. Pennsylvania State led the M-PACE effort. The number of participating institutions is too extensive to list here. As M-PACE was gearing up, so were initial preparations for the High Latitude Optical Turbulence Characterization Study. This is a year-long joint effort of the Atmospheric Science Lab (ASL) at White Sands Missile Range and the University of Alaska, Fairbanks. It will start in mid-January. As for the immediate future, it is expected that AIRS IV will begin in April 2005 and that the Boundary Layer Cloud Experiment (PNNL) will take place during July and August.