

NCAR

National Center for Atmospheric Research

P.O. Box 3000, Boulder, CO 80307-3000

1991-2

January 14, 1991

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Scientists Launch Aircraft Icing and Winter Storms Project Near Denver

BOULDER—Conditions that cause the buildup of ice on aircraft in winter storms are the focus of a 10-week field project to be launched along the Front Range of the Rocky Mountains near Denver beginning January 16 by scientists with the National Center for Atmospheric Research (NCAR), the National Oceanic and Atmospheric Administration (NOAA), Colorado State University and the Universities of North Dakota and Wyoming.

The \$2.5 million field project is the second winter field study of a six-year comprehensive program called WISP, for Winter Icing and Storms Project. Funded by the Federal Aviation Administration (FAA) and the National Science Foundation (NSF), WISP consists of four years of field research using instrumented aircraft, sensitive radars, wind profilers, solar-powered portable weather stations and a number of other instruments, and followed by two years of analysis.

The overall program scope of WISP is twofold: (1) to understand the weather situations that trigger the onset of aircraft icing conditions and to use this information to improve forecasts, nowcasts and warning of such conditions in a format suitable for aviation system use; (2) to understand the atmospheric conditions that cause heavy snowstorms to form, intensify and dissipate as well as to improve local area short-term forecasts of these storms.

Aircraft icing continues to be one of the primary causes of accidents among general aviation aircraft. Approximately 210,000 general aviation, air taxi and smaller commuter aircraft, including 7,000 helicopters, are not equipped with deicing or anti-icing devices and must therefore avoid all areas of potential aircraft icing. Protection systems on the

12,000 civil aircraft certified to fly into icing conditions are not always able to handle prolonged exposure to icing.

Marcia Politovich, field operations coordinator, and Roy Rasmussen, WISP scientific coordinator, are both associated with NCAR's Research Applications Program (RAP) where scientists, engineers and computer programmers create hardware and software ready for real-world use. They will coordinate the WISP field experiment from the RAP operation center in Boulder, Colorado, which includes full-color radar displays, aircraft tracks, radio communications equipment, a weather workstation and data displays produced by 39 of NCAR's portable automated mesonet (PAM) solar-powered weather stations and five of its semiautomated weather balloon launching sites.

The WISP program will also include weather data gathered by two research aircraft, the University of North Dakota's twin-jet Cessna Citation and the University of Wyoming's Beechcraft King Air, NCAR's 10-centimeter Mile High Doppler radar located 15 miles northeast of Denver; a second 10-centimeter wavelength Doppler radar located at Greeley and operated by Colorado State University; and the University of North Dakota's 5-centimeter wavelength Doppler radar.

The observing systems will also include three wind profilers, designed and operated by NOAA's Wave Propagation Laboratory (WPL) in Boulder, located at Stapleton, Erie and Platteville. These profilers "see" the wind speed and direction from 200 meters above ground up to 16 kilometers, depending upon atmospheric conditions and the specific instrument. WPL will also provide three microwave radiometers at Elbert, Stapleton, and Platteville, which measure total liquid water and water vapor in the atmosphere directly above the instrument.

The NOAA Forecast Systems Laboratory (FSL) will forecast snowfall and aircraft icing potential for WISP from its facilities at Boulder as an important collaborative effort in WISP. Results of FSL forecasting technology development will provide the basis for improved operational winter storm and icing forecasts in the future.

NCAR is sponsored by the National Science Foundation and is managed by the University Corporation for Atmospheric Research, a consortium of 58 member universities with graduate programs in the atmospheric and oceanic sciences.

NOTE TO EDITORS: If you would like to tour the WISP control room during the project any time after February 1, please contact: Joan Vandiver Frisch at NCAR at (303) 497-8607, Bill Mahoney at (303) 497-8426, or Joan Tanous at (303) 497-8433.