NEWS RELEASE

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In Midst of Drought, Scientists Hunt for Water Vapor

Massive Research Study Based in Norman, Oklahoma

Note to Editors: For more details on IHOP2002 media day, May 13, see the accompanying release.

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BOULDER—Humidity doesn't guarantee rainfall, especially in a drought. Chasing a target that's not only moving but invisible, over 100 researchers will profile the water vapor that feeds heavy rain and thunderstorms across Kansas, Oklahoma, and Texas as part of the large, complex International H20 Project (IHOP2002). Although drought conditions in parts of the study area may make water vapor even more elusive than usual, scientists expect to find it nevertheless.

Over two years of planning have gone into IHOP, which runs from May 13 to June 25. This planning is being led by the Atmospheric Technology Division within the National Center for Atmospheric Research (NCAR/ATD) and the Joint Office for Science Support (JOSS), part of the University Corporation for Atmospheric Research (UCAR). Because of IHOP2002's scope and complexity, JOSS teamed directly with the scientists and technical staff at NCAR/ATD to form a project office team that has tackled a wide range of issues, such as negotiating with farmers for the placement of soil moisture sensors to changing the scanning strategies of satellites.

JOSS has overseen logistics for some of the world's biggest weather experiments. Yet according to JOSS's Jim Moore, who coordinates facilities for field projects, "IHOP2002 is huge. It's a challenge as big as anything we've ever undertaken." Up to six aircraft could be flying at one time. On the ground, some 30 vehicles will carry Doppler radars and other instruments across dry lines and other boundaries where storms form.

The study's home base will be its Operations Center at the National Severe Storms Laboratory (NSSL) in Norman. Here, JOSS staff will be in communication with scientists, project aircraft, and ground-based crews from as early as 4:00 a.m. to as late as midnight. Project forecasters and researchers will meet at NSSL and the collocated Storm Prediction Center, both part of the National Oceanic and Atmospheric Administration (NOAA). This teamwork will shape the project¹s daily activities and help stimulate progress in water-vapor research and prediction. Each day's data will be analyzed by scientists stationed at the adjacent Norman office of the National Weather Service, then archived on the JOSS Data Management System.

Flight operations for IHOP2002 are especially complex. JOSS has met frequently with the Federal Aviation Administration (FAA) and the U.S. Air Force (which operates two flight-training centers in Oklahoma), as well as with IHOP2002 scientists. Each day, project leaders will choose from among six

flight patterns in coordination with FAA and military air-traffic controllers. Some patterns are keyed to quiet weather days, when the hour-by-hour evolution of water vapor will be sampled. Other patterns apply to days on which storms are predicted, when aircraft and ground crews may have to reposition themselves quickly as weather evolves.

The IHOP2002 aircraft will cover altitudes from 100 to 56,000 feet. Two turboprop craft--a P-3 operated by the Naval Research Laboratory and a King Air from the University of Wyoming--will make the lowest passes, sensing air flow, radiation, and moisture near the ground. Several aircraft will carry lidars, laser-based sensors that detect moisture and wind.

With dozens of scientists sharing resources during the study, part of JOSS's job is to foresee and prevent problems for pilots and other technicians. "We provide the reality check, then the scientists make the decisions," says Richard Dirks, associate director of JOSS. Toward the end of each day, JOSS and the lead scientists will guide the airborne and mobile crews back to Norman or an alternate base. "With six aircraft," says Moore, "the last thing you want is a big squall line developing between them and home base."

Other safety concerns have arisen since September 11. Foreign participants in IHOP2002 will be undergoing various background checks, and even U.S. participants may need several badges in traveling among the various staging points. Still, Dirks says, the scientific goals outweigh the inconvenience.

"This is the first attempt to define the water-vapor field before rain develops. We¹ll be trying to track the moisture in three dimensions over time and map its structure much more completely than ever before." If the IHOP2002 team is successful, its findings may hold the key to better predictions of when and where summertime storms develop.

On the Web:

IHOP home page
More on IHOP science (news release)
IHOP media day (news release)

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