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PARTIAL AND PRELIMINARY INVENTORY OF NOAA DATA FOR ARM/IDASS RESEARCH

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June 1991

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OVERVIEW

The first quarter of 1991 was an extremely active time for atmospheric measurements in the Denver area. As shown in Table 1, four field projects were conducted with overlapping schedules and area domains between mid-January and mid-April. The data collected may be of mutual interest to the participants of the various projects. Data inventory catalogs for each project will assist researchers by documenting the kinds of measurements, periods of observation, the data archival mediums, and the data availability.

This report provides a partial and preliminary inventory of data obtained for the Department of Energy's Atmospheric Radiation Measurement (ARM) program Integrated Data Assimilation and Sounding System (IDASS) research. It includes only those measurements obtained by the National Oceanic and Atmospheric Administration's Wave Propagation Laboratory and Aeronomy Laboratory (NOAA/WPL and NOAA/AL). Table 2 shows which of the IDASS research data are inventoried in this report and which are not. Many of these data are currently undergoing post-processing and inspection by each instrument's operating group to improve and insure data quality. Therefore, the information in this report is preliminary.

Preparation of a complete and final inventory of all the IDASS research measurements is planned to be made available at a later date by the National Center for Atmospheric Research (NCAR) where all the data are being archived. Following calibration adjustments and quality tests, final data archival on NCAR's CRAY computer mass-store system is expected to be completed by about October 1991. At that time the data will be available to participants of ARM. All requests for the data should be directed to the project's data manager at NCAR (see next page).

The ARM research was conducted in close coordination with the more extensive Winter Icing and Storms Project (WISP). It is likely that the data obtained by WISP will be useful to ARM researchers and vice versa. Agreements for exchange of data between participants of these two projects have been arranged. A WISP data inventory catalog will soon be available and requests for those data should be addressed to the WISP data manager (next page).

Meanwhile, this partial and preliminary inventory, which has been prepared to satisfy contractual obligations, serves as a guide to the kinds of measurements obtained by the NOAA instrumentation for the ARM/IDASS research. The project declared seven intensive operating periods (IOPs) between 15 February 1991 and 15 March 1991 (Table 3). However, the NOAA instruments were designed to operate essentially continuously, not just during IOPs. In some cases special operating and sampling modes may have been employed during the IOPs. This report covers the entire data collection period for these instruments which in most instances extended from early January to early April 1991.

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--- DATA AVAILABILITY ---

ARM/IDASS:

WISP:

catalog available:

October 1991
from NCAR/SSSF

July 1991
from NCAR/RAP

approximate date that complete and
"cleaned" data set is expected to be
available to all project participants:

October 1991

August 1991

archival on:

NCAR CRAY Mass Store
by NCAR/SSSF

NCAR CRAY Mass Store (most)
by NCAR/RAP

direct requests to:

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(303) 497-8843

Mr. Ben Bernstein
WISP Data Manager
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Boulder, CO 80307
(303) 497-8424

TABLE 1. Field Projects Conducted in Denver Area in Early 1991

ARM/IDASS (Atmospheric Radiation Measurement/Integrated Data Assimilation and Sounding System) research

Purpose: field test an ad-hoc integrated sounding system and evaluate its performance for the design of ARM Cloud And Radiation Testbed (CART) sites

Period: 15FEB91-15MAR91

Area: Platteville site (primarily)

Data Catalog: complete & final version available from NCAR/SSSF by October 1991

ARM/CLARET-II (Cloud Lidar And Radar Exploratory Test)

Purpose: obtain measurements of non-precipitating stratiform clouds with combinations of remote sensors and evaluate the clouds' radiational effects

Period: 15FEB91-31MAR91

Area: Erie-1 site

Data Catalog: available from NOAA/WPL by June 1991

WISP-91 (Winter Icing & Storms Project)

Purpose: study the meteorological conditions which produce hazardous aircraft icing, and conduct basic research on winter storms

Period: 15JAN91 - 31MAR91

Area: Northern Colorado plains adjacent to the Front Range

Data Catalog: Available from NCAR/RAP by July 1991

ASCOT-91 (Atmospheric Studies in Complex Terrain)

Purpose: study local nocturnal flows from canyons and slopes and transport and dispersion around Rocky Flats

Period: intensive period: 3FEB91-19FEB91

Front Range Air Quality Study: mid-January to mid-April

Area: Front Range and plains centered around Rocky Flats

Data Catalog: Available from TRC, Inc. by August 1991

TABLE 2. Primary Instruments Operated for ARM/IDASS

* = data inventoried in this report

At Platteville:

- * 50 MHz wind profiler (NOAA/WPL)
- * +RASS (NOAA/WPL)
- 404 MHz "UNISYS" wind profiler (NOAA/FSL)
- * +RASS (NOAA/WPL)
- * 915 MHz "boundary layer" wind profiler (NOAA/AL)
- * +RASS (NOAA/AL)
- * microwave radiometer (NOAA/WPL)
- other radiometers (Jet Propulsion Lab)
- High resolution Interferometer Sounder (Univ. Wisconsin)
- CLASS radiosondes (NCAR/SSSF)
- ASTER (NCAR/SSSF)
- Doppler sodar (NCAR/SSSF)
- PAM surface mesonet stations (NCAR/SSSF)
- ceilometer (NWS)

At Denver Stapleton Airport:

- * 915 MHz wind profiler (NOAA/WPL)
- * +RASS (NOAA/WPL)

At Erie-1 site:

- * 403 MHz RASS system (NOAA/WPL)

At Adams County:

- * 915 MHz "boundary layer" wind profiler (NOAA/WPL)
- * +RASS (NOAA/WPL)

On-going field work (after WISP):

915 MHz wind profiler/RASS comparisons with BAO tower
field tests of Fourier InfraRed Sounder (FIRS)

TABLE 3

ARM INTENSIVE OPERATING PERIODS 15FEB91 - 15MAR91

1. 17FEB(12Z)-19FEB(01Z)
variable cloudiness, with WISP
2. 24FEB(12Z)-25FEB(13Z)
light snow, with WISP
3. 28FEB(03Z)-1MAR(04Z)
clear sky turning to broken and overcast
4. 5MAR(18Z)-7MAR(01Z)
rain to variable cloudiness, with WISP
5. 8MAR(21Z)-9MAR(22Z)
clear sky
6. 11MAR(21Z)-12MAR(22Z)
cold front showers then clear, with WISP
7. 14MAR(12Z)-16MAR(03Z)
variable low and high clouds, with WISP

--- LOCATIONS OF ARM/IDASS RESEARCH INSTRUMENTATION ---

Primary site

Platteville

Latitude: 40° 10' 48" N
Longitude: 104° 43' 48" W
Altitude: 1523 m AMSL

Secondary sites

Stapleton

Latitude: 39° 46' 12" N
Longitude: 104° 42' 48" W
Altitude: 1611 m AMSL

Erie-1

Latitude: 40° 5' 56" N
Longitude: 105° 2' 6" W
Altitude: 1503 m AMSL

Adams County site

Latitude: 39° 56' 4" N
Longitude: 104° 52' 26" W
Altitude: 1527 m AMSL

Map of instrumentation locations for ARM/IDASS research. Platteville was the principal site.

PLATTEVILLE

 50 MHZ WIND PROFILER/RASS AT PLATTEVILLE

The Wave Propagation Laboratory operated a 50 MHz wind profiler and Radio Acoustic Sounding System (RASS) at the Platteville site as part of the ARM/IDASS research. Basic characteristics of the system and its operation are shown below. Periods for which profiles of horizontal wind, vertical wind, and virtual temperature were obtained are listed on the following pages. Data gaps of less than 2 hours may exist between the listed start and end times.

System Characteristics

Wind Profiler:

Frequency: 49.82 MHz (VHF)

Wavelength: 6.0 m

Antenna size: 10,000 m²

Beamwidth (1 way): 3°

Mean power: 200 w

Sampling time (1 profile): 1 min

RASS:

Acoustic frequency: 110 Hz

Beamwidth (1 way): 60°

Acoustic power: 50 w

Operating parameters for ARM

	Recorded Observations -----	No. of Profiles Averaged -----	Typical Range (AGL) -----	Resolution -----
horizontal winds	1 per hour	12	1.8 - 8.4 km & 4.2 - 17.3 km	300 m 870 m
vertical winds	1 per hour	12	1.85-12.7 km	350 m
virtual temperature	1 per hour	6	2 - 6 km	300 m

Platteville Horizontal Winds (50 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
-----		-----	
31-DEC-90	120000	01-JAN-91	180000
01-JAN-91	210000	04-JAN-91	180000
04-JAN-91	220000	09-JAN-91	170000
09-JAN-91	192936	10-JAN-91	150000
11-JAN-91	010000	15-JAN-91	060000
15-JAN-91	100000	15-JAN-91	130000
15-JAN-91	160000	16-JAN-91	030000
16-JAN-91	054213	17-JAN-91	190000
17-JAN-91	223000	18-JAN-91	170000
18-JAN-91	200000	22-JAN-91	090000
22-JAN-91	170000	30-JAN-91	010000
30-JAN-91	040000	01-FEB-91	220000
02-FEB-91	010000	06-FEB-91	050000
06-FEB-91	160000	08-FEB-91	200000
08-FEB-91	230000	14-FEB-91	120000
15-FEB-91	120000	15-FEB-91	150000
15-FEB-91	170001	17-FEB-91	203000
19-FEB-91	160000	20-FEB-91	150000
20-FEB-91	221517	04-MAR-91	190000
04-MAR-91	210001	15-MAR-91	153000
15-MAR-91	173214	21-MAR-91	160000
26-MAR-91	180000	26-MAR-91	210000
27-MAR-91	032931	01-APR-91	200000
01-APR-91	223454	02-APR-91	113000
03-APR-91	033000	05-APR-91	110000

Gap Interval: 2 hours
Total Profiles: 2465

Platteville Vertical Winds (50 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
-----		-----	
31-DEC-90	120000	04-JAN-91	193651
04-JAN-91	214522	09-JAN-91	175112
09-JAN-91	195113	10-JAN-91	155110
11-JAN-91	010000	18-JAN-91	175112
18-JAN-91	200000	22-JAN-91	095110
22-JAN-91	170000	30-JAN-91	015109
30-JAN-91	035112	01-FEB-91	225113
02-FEB-91	010000	06-FEB-91	055110
06-FEB-91	160000	08-FEB-91	205112
08-FEB-91	230000	17-FEB-91	202349
19-FEB-91	160000	20-FEB-91	162130
20-FEB-91	220609	21-MAR-91	165112
26-MAR-91	180000	26-MAR-91	190000
27-MAR-91	030105	03-APR-91	031649
13-DEC-89	205132	13-DEC-89	205132
03-APR-91	034648	05-APR-91	115118

Gap Interval: 2 hours
Total Profiles: 4956

Platteville RASS Temperature (50 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
-----		-----	
31-DEC-90	125119	04-JAN-91	193651
04-JAN-91	214522	09-JAN-91	175112
09-JAN-91	200430	10-JAN-91	155110
11-JAN-91	015110	11-JAN-91	185111
11-JAN-91	205112	14-JAN-91	215112
14-JAN-91	235114	15-JAN-91	075109
15-JAN-91	105109	15-JAN-91	145109
15-JAN-91	175111	18-JAN-91	175112
18-JAN-91	205113	22-JAN-91	095110
22-JAN-91	175112	30-JAN-91	015109
30-JAN-91	065111	01-FEB-91	225113
02-FEB-91	015111	06-FEB-91	055110
06-FEB-91	165112	08-FEB-91	205112
08-FEB-91	235112	13-FEB-91	195114
13-FEB-91	225113	15-FEB-91	185113
15-FEB-91	205116	17-FEB-91	201648
19-FEB-91	165112	20-FEB-91	162130
20-FEB-91	220609	15-MAR-91	121648
15-MAR-91	151655	15-MAR-91	151655
15-MAR-91	171750	21-MAR-91	165112
27-MAR-91	031551	01-APR-91	205112
01-APR-91	232611	05-APR-91	115118

Gap Interval: 2 hours
Total Profiles: 2461

Example of wind data from the 50 MHz wind profiler at Platteville

 404 MHZ WIND PROFILER/RASS AT PLATTEVILLE

The 404 MHz "Unisys" wind profiler at Platteville is one of the NOAA demonstration network profiling radars which are being installed at 31 locations across the central United States. The wind data are processed and archived by the NOAA Forecast Systems Laboratory. An inventory of the wind data for the ARM/IDASS research is not currently available. The NOAA Wave Propagation Laboratory added RASS capability to this 404 MHz wind profiler for the ARM project to obtain profiles of virtual temperature. These data were processed by NOAA/WPL and an inventory of the data collection periods is contained on the following page. Data gaps of less than two hours may exist between the listed start and end times. Basic characteristics of the system and its operation are listed below.

System Characteristics

Wind Profiler:	RASS:
Frequency: 404 MHz (VHF)	Acoustic frequency: 900 Hz
Wavelength: 0.74 m	Beamwidth (1 way): 18°
Antenna size: 170 m ²	Acoustic power: 15 w
Beamwidth (1 way): 4°	
Mean power: 2220 w	
Sampling time (1 profile): 1 min	

Operating parameters during ARM

	Recorded Observations -----	Profiles Averaged -----	Typical Range (AGL) -----	Resolution -----
horizontal winds	?	?	0.5 - 16.5 km	250 m
virtual temperature	2 per hour	1	0.5 - 3.5 km	250 m

Platteville Unisys RASS Temperature (404 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
-----		-----	
18-JAN-91	191800	18-JAN-91	192400
18-JAN-91	235400	18-JAN-91	235400
19-JAN-91	024800	19-JAN-91	030600
22-JAN-91	183000	24-JAN-91	160600
24-JAN-91	195400	25-JAN-91	031200
25-JAN-91	154200	27-JAN-91	161200
28-JAN-91	112400	28-JAN-91	121800
28-JAN-91	191800	28-JAN-91	191800
28-JAN-91	221800	29-JAN-91	071800
29-JAN-91	101800	29-JAN-91	164800
30-JAN-91	000600	31-JAN-91	141200
31-JAN-91	163600	14-FEB-91	201200
14-FEB-91	225400	15-FEB-91	002400
15-FEB-91	124200	15-FEB-91	124200
15-FEB-91	170000	16-FEB-91	164200
17-FEB-91	004200	17-FEB-91	004200
17-FEB-91	210600	18-FEB-91	002400
18-FEB-91	174200	18-FEB-91	234200
05-MAR-91	203600	06-MAR-91	160000
06-MAR-91	182400	06-MAR-91	213000
07-MAR-91	001200	07-MAR-91	004200
07-MAR-91	035400	07-MAR-91	170000
07-MAR-91	211800	08-MAR-91	034800
09-MAR-91	000000	11-MAR-91	172400
11-MAR-91	193600	11-MAR-91	193600
11-MAR-91	224800	12-MAR-91	175400
12-MAR-91	214200	18-MAR-91	063600
18-MAR-91	143600	19-MAR-91	183600
19-MAR-91	210600	20-MAR-91	214200
20-MAR-91	235400	27-MAR-91	193000
27-MAR-91	230000	02-APR-91	230600

Gap Interval: 2 hours
Total Profiles: 2094

915 MHZ BOUNDARY LAYER WIND PROFILER/RASS SYSTEM AT PLATTEVILLE

The NOAA Aeronomy Laboratory installed and began operating a small 915 MHz boundary layer radar with RASS capability at the WPL Platteville site on 10 February 1991 to support the ARM/IDASS project. The 915 MHz profiler was operated with a new software program which switches between wind profiling and temperature profiling using a new RASS technique. The new RASS method uses a 2048 point Fast Fourier Transform to observe both the acoustically generated signals at the local speed of sound as well as the simultaneous vertical wind speed in the same volume. This allows correction of the sound speed by the wind speed which in most cases reduces the variance in the sound speed (and, thus temperature) determinations. Some initial difficulty was experienced with the new RASS software with the result that some data gaps exist for the first 15 days of operation.

The normal mode of operation was to begin a 5-minute RASS consensus on the hour and half-hour, and to operate in a 25-minute consensus mode for wind profiling. This mode produced profiles of both winds and virtual temperature at 30 minute intervals. During the later part of the ARM project the 30-minute consensus values were transmitted to WPL's hub computer in Boulder where they were recorded and available for display. An example of one day of wind plots obtained from the 30-minute consensus values is shown in the figure on a following page.

All of the basic 30 second average Doppler spectra at all heights were also continuously recorded on an optical disk drive at the Platteville site. One disk can store about 1000 megabytes of data. These data can be used for post-processing to refine estimates of wind and temperature profiles and also to examine other recorded parameters such as signal-to-noise profiles, hydrometeor fall speed profiles, etc. At this time the optical disk data have not yet been reprocessed, so the attached data log (in Mountain Standard Time) is only approximate. Parameters for the Platteville boundary layer profiler are given in the table on the next page.

PLATTEVILLE BOUNDARY LAYER PROFILER PARAMETERS

FREQUENCY	915 MHz
WAVELENGTH	32.8 cm
PEAK PULSE POWER	500 W
PULSE REPETITION PERIOD	50 microseconds
ANTENNA TYPE	Microstrip array mounted on mechanical positioner (3 beams)
BEAMWIDTH (ONE-WAY)	9 degrees
NUMBER OF RANGE SAMPLES	48 (winds) 14 (RASS)
SAMPLE SPACING	100 meters
MAXIMUM RADIAL VELOCITY	± 10.9 m/s (winds)
NUMBER OF SPECTRAL POINTS	64 (winds) 2048 (RASS)

AERONOMY LAB 915 MHZ WIND PROFILER/RASS DATA
AT PLATTEVILLE FOR ARM 1991 PROJECT

RAW DATA

OPTICAL DISK # -----	APPROX. START DATE/TIME (MST) -----	APPROX. END DATE/TIME (MST) -----
ARM2A	10FEB/1200	15FEB/1300
ARM1A	15FEB/1300	22FEB/1400
ARM3A	22FEB/1400	1MAR/1400
ARM1B	1MAR/1400	8MAR/1600
ARM4A	8MAR/1600	15MAR/0815
ARM4B	15MAR/0815	28MAR/0830
ARM5A	28MAR/0830	31MAR/?

WIND PROFILES:

START		END	
DATE	TIME	DATE	TIME
-----	-----	-----	-----
15FEB	1810	17FEB	2100
18FEB	0120	18FEB	1830
19FEB	1610	21FEB	0300
21FEB	1615	25FEB	1740
26FEB	1340	27FEB	0010
27FEB	2140	01MAR	0330
01MAR	1915	16MAR	0700

RASS TEMPERATURE PROFILES:

START		END	
DATE	TIME	DATE	TIME
-----	-----	-----	-----
15FEB	1830	17FEB	2030
21FEB	1930	23FEB	0300
23FEB	0700	25FEB	1730
26FEB	1400	26FEB	2300
27FEB	2200	01MAR	0300
01MAR	1930	16MAR	0700

NOAA MICROWAVE RADIOMETER AT PLATTEVILLE

The NOAA Wave Propagation Laboratory operated a dual-channel microwave radiometer at the Platteville site for the ARM/IDASS research. The radiometer is a passive device which measures brightness temperatures at two microwave frequencies. Statistical retrieval algorithms applied to the brightness temperatures provide measurements of the total water vapor and liquid water content along the beam direction. When pointed vertically, as it was at Platteville, the vapor measurement represents the atmosphere's precipitable water vapor over the site. The instrument is designed to operate unattended and continuously.

WPL operated similar radiometers in conjunction with WISP at Stapleton Airport and Elbert, Colorado, as well as a three-channel steerable system, operated first near Roggen, Colorado, and later at the Erie-1 site for the WISP and CLARET-II projects. Data from all of these radiometers will be included in the final ARM/IDASS computer archive. However, only the WPL Platteville radiometer's data are inventoried below. Other microwave radiometers were operated at Platteville by the Jet Propulsion Laboratory.

System operating characteristics for ARM

Radiometer frequencies: 20.6 GHz (water vapor)
31.65 GHz (liquid water)

Antenna orientation: zenith

Data recorded: Precipitable water vapor (cm)
Path-integrated liquid water content (mm)
Surface meteorological data:
Temperature (C), Dew Point (C), Pressure (mb)
Data rate: 2 min

Location: WPL Platteville profiling site

Operational period: 15 February 1991 through 16 March 1991
Data were recorded continuously during
this period except for tipping curve
calibrations conducted at the following
times:

22 February	1541-1550 UTC
	1651-1700 UTC
26 February	1728-1740 UTC
12 March	1707-1716 UTC

Example of WPL microwave radiometer data from Platteville

1-MAR-1991 Time UTC → 2-MAR-1991

NOAA/WPL Thermodynamic Profiling

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DENVER STAPLETON AIRPORT

 915 MHZ WIND PROFILER/RASS AT DENVER STAPLETON AIRPORT

WPL continued operation of a 915 MHZ wind profiler with RASS capability at Stapleton Airport for the ARM/IDASS research. This system uses a more powerful transmitter and a larger and very different antenna than is employed in the "boundary layer" 915 MHZ profiles, such as the one operated at Platteville. It therefore produces wind and virtual temperature profiles which extend to greater heights than the boundary layer profiler, but the minimum measurement height is also higher. Periods for which profiles of the horizontal wind, vertical wind, and virtual temperature were acquired are listed on the following pages. Data gaps of less than two hours duration may exist between the listed start and end times.

System Characteristics

Wind Profiler:

Frequency: 915 MHz (UHF)

Wavelength: 0.33 m

Antenna size: 100 m²

Beamwidth (1 way): 2°

Mean power: 100 w

Sampling time (1 profile): 1 min

RASS:

Acoustic frequency: 2000 Hz

Beamwidth (1 way): 8°

Acoustic power: 12 w

Operating parameters for ARM

	Recorded Observations -----	No. of Profiles Averaged -----	Typical Range (AGL) -----	Resolution -----
horizontal & vertical winds	3 per hour	12	0.3-6.5 km	200 m
virtual temperature	1 per hour, 3/hr for special events	6	0.3-1.5 km	150 m

Denver Horizontal Winds (915 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
31-DEC-90	120000	03-JAN-91	183401
03-JAN-91	210708	18-JAN-91	173400
18-JAN-91	203400	22-JAN-91	101700
22-JAN-91	170000	06-FEB-91	060000
06-FEB-91	161700	01-MAR-91	161700
01-MAR-91	190000	04-MAR-91	113401
05-MAR-91	120000	23-MAR-91	183600
27-MAR-91	192156	01-APR-91	193400
01-APR-91	221700	03-APR-91	022000
31-JUL-90	032000	31-JUL-90	034000
03-APR-91	034933	05-APR-91	113401

Gap Interval: 2 hours
Total Profiles: 6391

Denver Vertical Winds (915 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
31-DEC-90	120000	03-JAN-91	183401
03-JAN-91	210708	18-JAN-91	173400
18-JAN-91	203400	22-JAN-91	101700
22-JAN-91	170000	06-FEB-91	060000
06-FEB-91	161700	01-MAR-91	161700
01-MAR-91	191700	23-MAR-91	183600
27-MAR-91	192156	01-APR-91	193400
01-APR-91	221700	03-APR-91	024000
29-JUL-90	010000	29-JUL-90	010000
03-APR-91	034933	05-APR-91	113401

Gap Interval: 2 hours
Total Profiles: 6463

Denver RASS Temperature (915 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
31-DEC-90	125038	03-JAN-91	185038
03-JAN-91	210315	14-JAN-91	215038
14-JAN-91	235039	15-JAN-91	145037
15-JAN-91	165038	18-JAN-91	175038
18-JAN-91	205038	22-JAN-91	095035
22-JAN-91	175039	30-JAN-91	015036
30-JAN-91	052512	01-FEB-91	225038
02-FEB-91	012823	06-FEB-91	055037
06-FEB-91	165038	08-FEB-91	205039
08-FEB-91	235039	13-FEB-91	195038
13-FEB-91	225039	01-MAR-91	155039
01-MAR-91	195039	04-MAR-91	115038
05-MAR-91	125040	14-MAR-91	115035
14-MAR-91	135036	21-MAR-91	115338
21-MAR-91	135339	23-MAR-91	185340
26-MAR-91	205000	27-MAR-91	174000
27-MAR-91	195548	01-APR-91	195038
01-APR-91	225038	02-APR-91	115525
03-APR-91	040457	05-APR-91	115038

Gap Interval: 2 hours
Total Profiles: 2991

Example comparison of temperature profiles obtained with:

National Weather Service radiosonde at Denver (solid line)

915 MHz RASS at Denver (solid circles)

50 MHz RASS at Platteville (stars)

403 MHz RASS at Erie-1 (open circles)

ERIE-1 SITE

 403 MHZ RASS AT ERIE-1

WPL operated a 403 MHz RASS system at the Erie-1 site to obtain profiles of virtual temperature. Horizontal winds were not measured with this system which only used a vertical beam. Periods for which virtual temperature profiles were obtained are listed on the next page. Gaps of less than 6 hours duration may exist between the listed start and end times.

Operating parameters for ARM

	Recorded Observations -----	No. of Profiles Averaged -----	Typical Range (AGL) -----	Resolution -----
virtual temperature	1 per 3 hours	6	0.4-2.5 km	200 m
	1/hr for special events	2		

Erie RASS Temperature (403 MHz)
WISP 91 EXPERIMENT

START		END	
Date	Time	Date	Time
-----		-----	
31-DEC-90	120000	07-JAN-91	120000
07-JAN-91	194947	20-JAN-91	140000
21-JAN-91	080000	21-JAN-91	170000
22-JAN-91	020000	22-JAN-91	080000
22-JAN-91	200000	27-JAN-91	020000
27-JAN-91	200000	30-JAN-91	230000
31-JAN-91	110000	06-FEB-91	060000
06-FEB-91	180000	04-MAR-91	120000
05-MAR-91	120000	09-MAR-91	050001
09-MAR-91	160000	09-MAR-91	170001
10-MAR-91	020000	10-MAR-91	123000
11-MAR-91	070000	01-APR-91	190000
02-APR-91	161550	02-APR-91	210000
03-APR-91	040000	05-APR-91	100000

Gap Interval: 6 hours
Total Profiles: 1610

ADAMS COUNTY SITE

915 MHZ WIND PROFILER/RASS AT ADAMS COUNTY SITE

WPL's Atmospheric Studies Program Area operated a 915 MHz wind profiler with RASS capability in Adams County for the ARM/IDASS research. The system is similar to the boundary layer profiler operated at Platteville by the NOAA Aeronomy Lab. Originally WPL planned to operate its profiler at the Boulder Atmospheric Observatory (BAO) during WISP to obtain detailed comparisons with wind and temperature profiles measured by instrumentation on the 300 m tower. Unfortunately, this comparison had to be postponed because of a catastrophic failure of the tower's computer data system. The tower computer system has subsequently been replaced and the comparisons with the 915 MHz wind profiler/RASS system will be conducted later in 1991.

Meanwhile, the 915 MHz system was operated during WISP at a site in Adams County. Its performance will be compared with that of five identical systems operated in different environments for the Front Range Air Quality Study portion of the ASCOT-91 Winter Validation Study. WPL was forced to discontinue RASS at this location after two weeks of operation because of complaints about the acoustic noise from nearby residents. The wind data spanned the entire WISP and ARM/IDASS project periods. Vertical resolutions of 100 and 200 m were employed.

Data Collection Periods

wind profiles:

18JAN91-25JAN91
28JAN91-2FEB91
6FEB91 (1200-1400 MST)
7FEB91 (1000-1500 MST)
8FEB91 -25APR91
with gaps of a few hours

temperature profiles:

15FEB91-1MAR91

END

**DATE
FILMED**

1/13/94