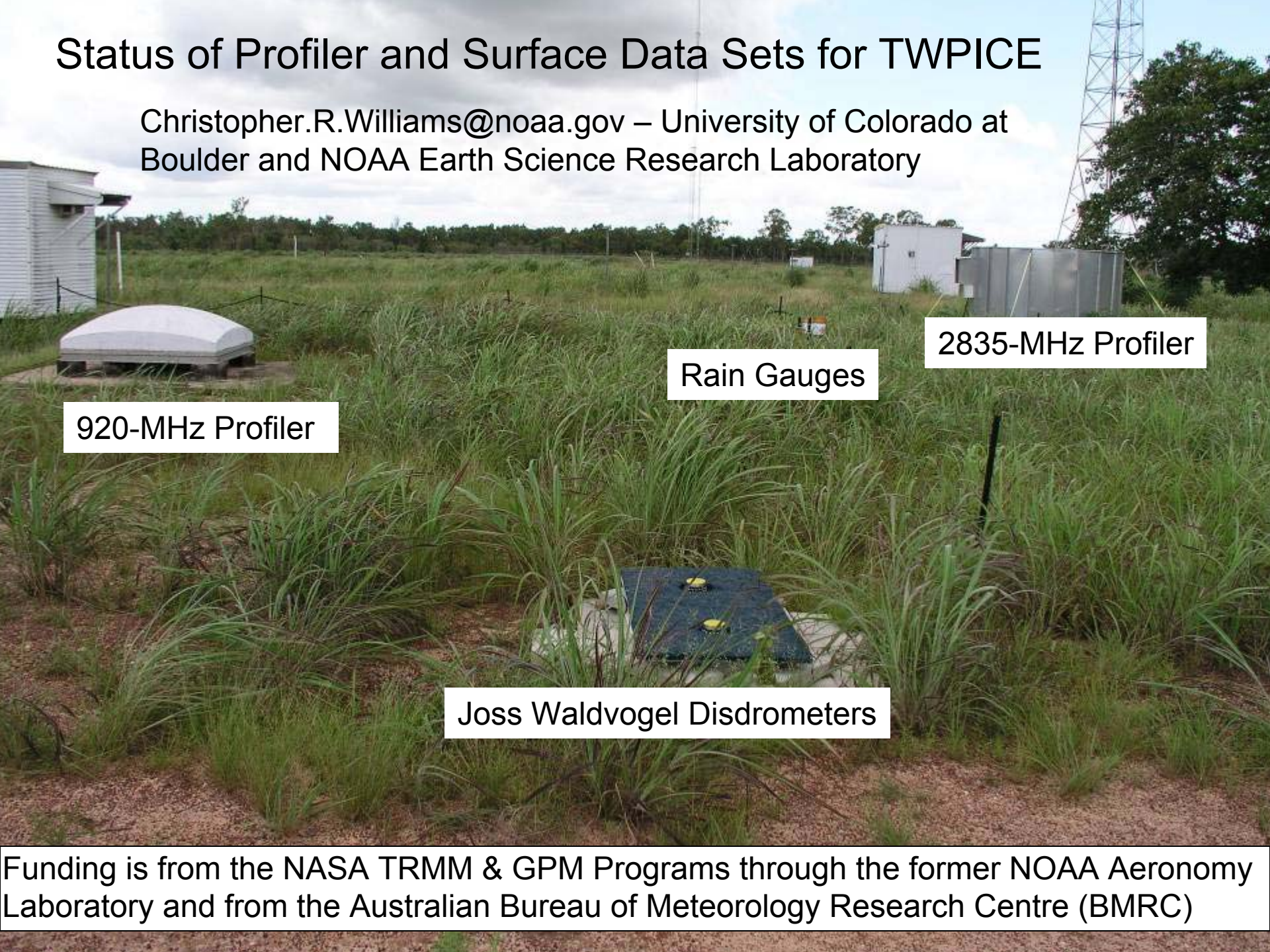


Status of Profiler and Surface Data Sets for TWPICE

Christopher.R.Williams@noaa.gov – University of Colorado at Boulder and NOAA Earth Science Research Laboratory



920-MHz Profiler

Rain Gauges

2835-MHz Profiler

Joss Waldvogel Disdrometers

Funding is from the NASA TRMM & GPM Programs through the former NOAA Aeronomy Laboratory and from the Australian Bureau of Meteorology Research Centre (BMRC)

The profiler and surface observations deployed at the BMRC Wind Profiler Site
(North-East Corner of Stuart Highway and McMillans Road)

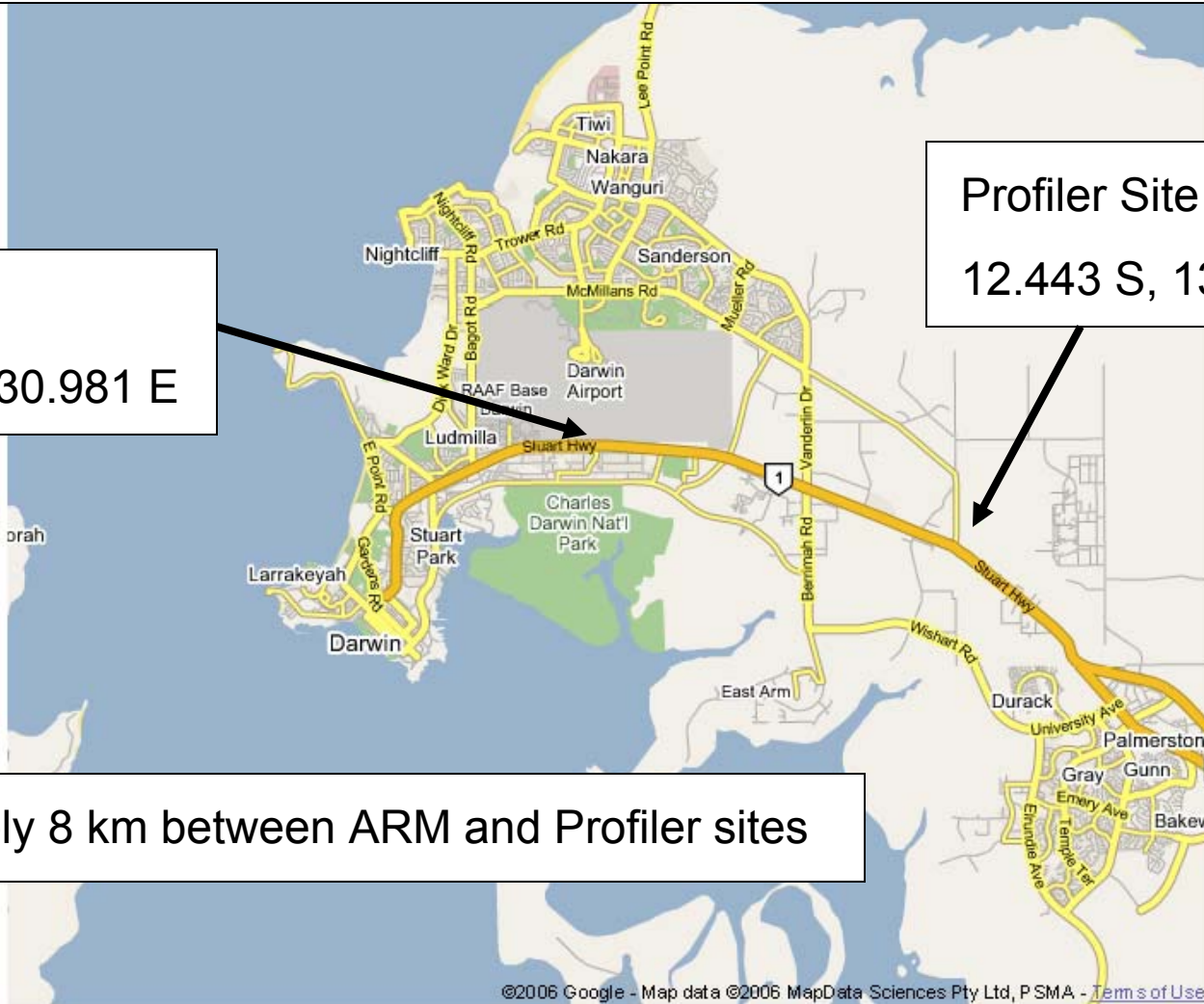
ARM Site

12.425 S, 130.981 E

Profiler Site

12.443 S, 130.956 E

Approximately 8 km between ARM and Profiler sites

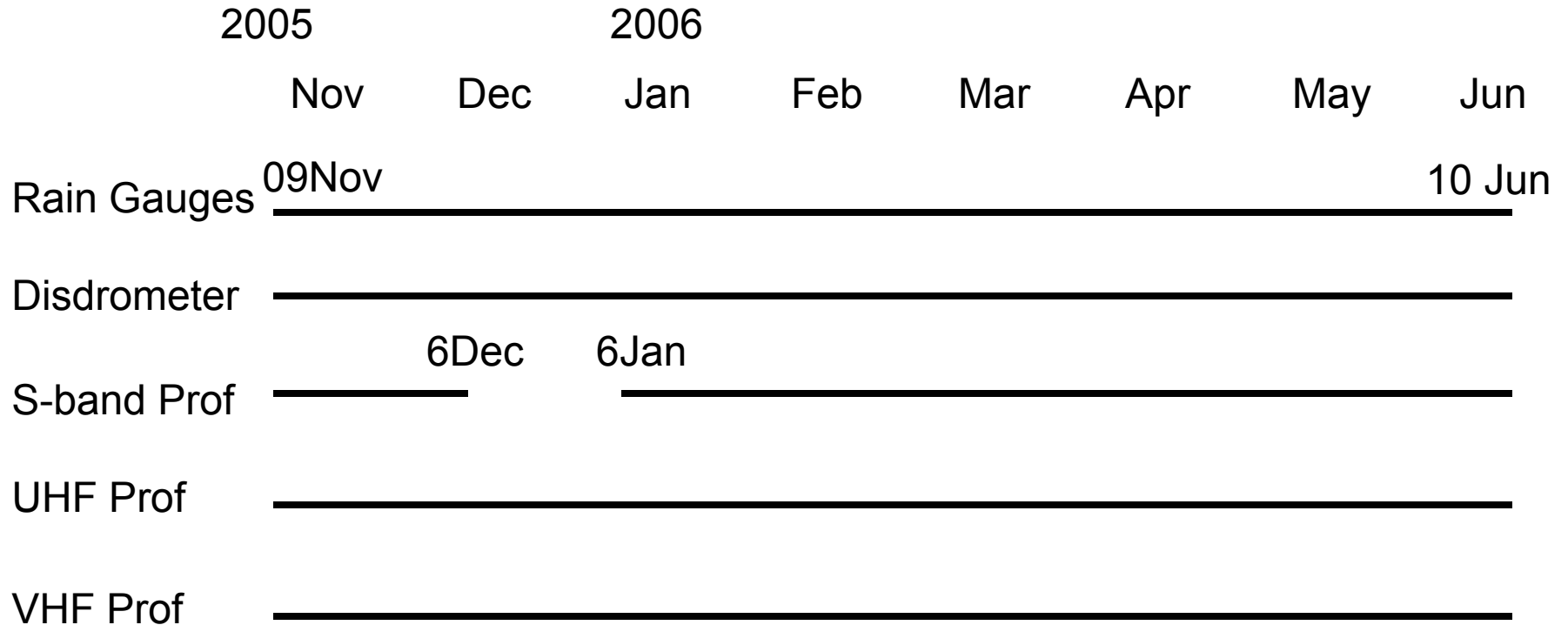


Instruments

Instruments deployed at the BMRC Wind Profiler Site during TWPICE:

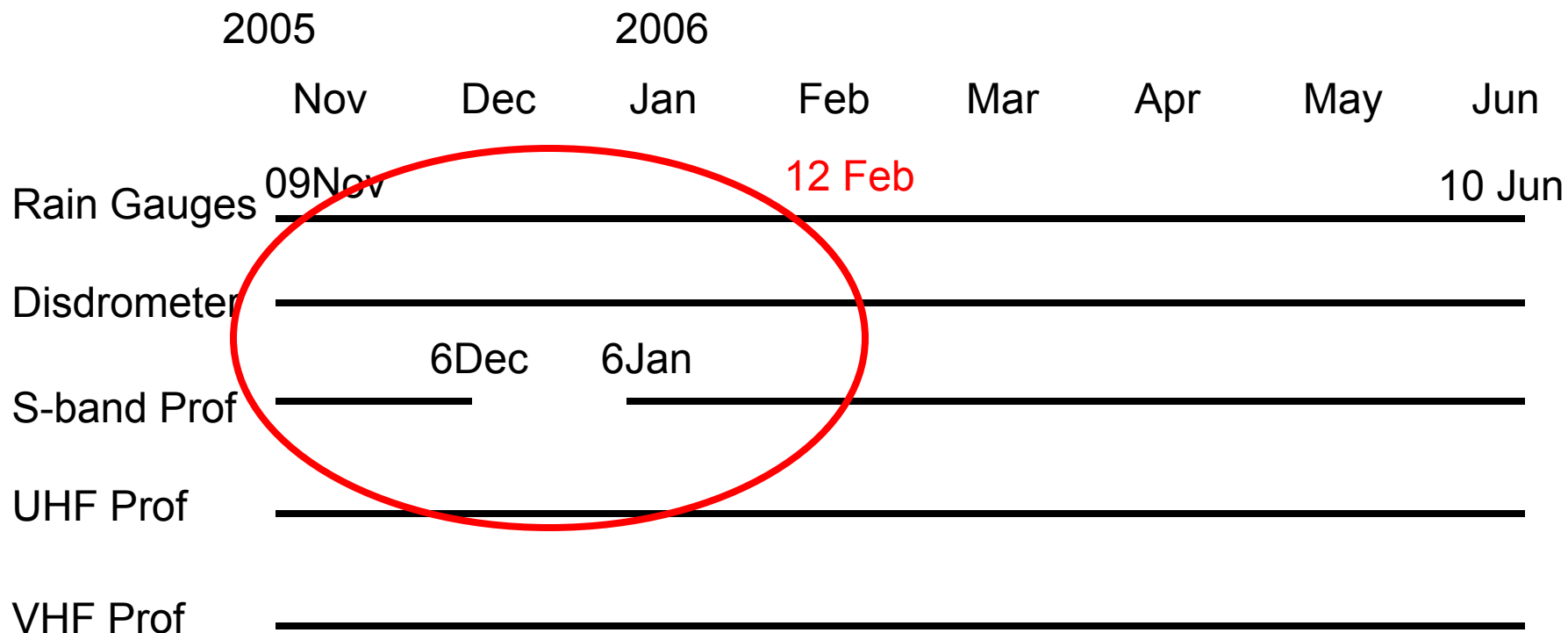
- 2 Tipping Bucket Rain Gauges
- 1 Joss-Waldvogel Disdrometer
(second unit DOA [dead on arrival])
- 1 Vertical S-band Profiler (2835-MHz)
- 1 UHF Wind Profiler (920-MHz)
- 1 VHF Wind Profiler (50-MHz)

Data Available



S-band profiler was down from 6 Dec – 6 Jan due to a software error.

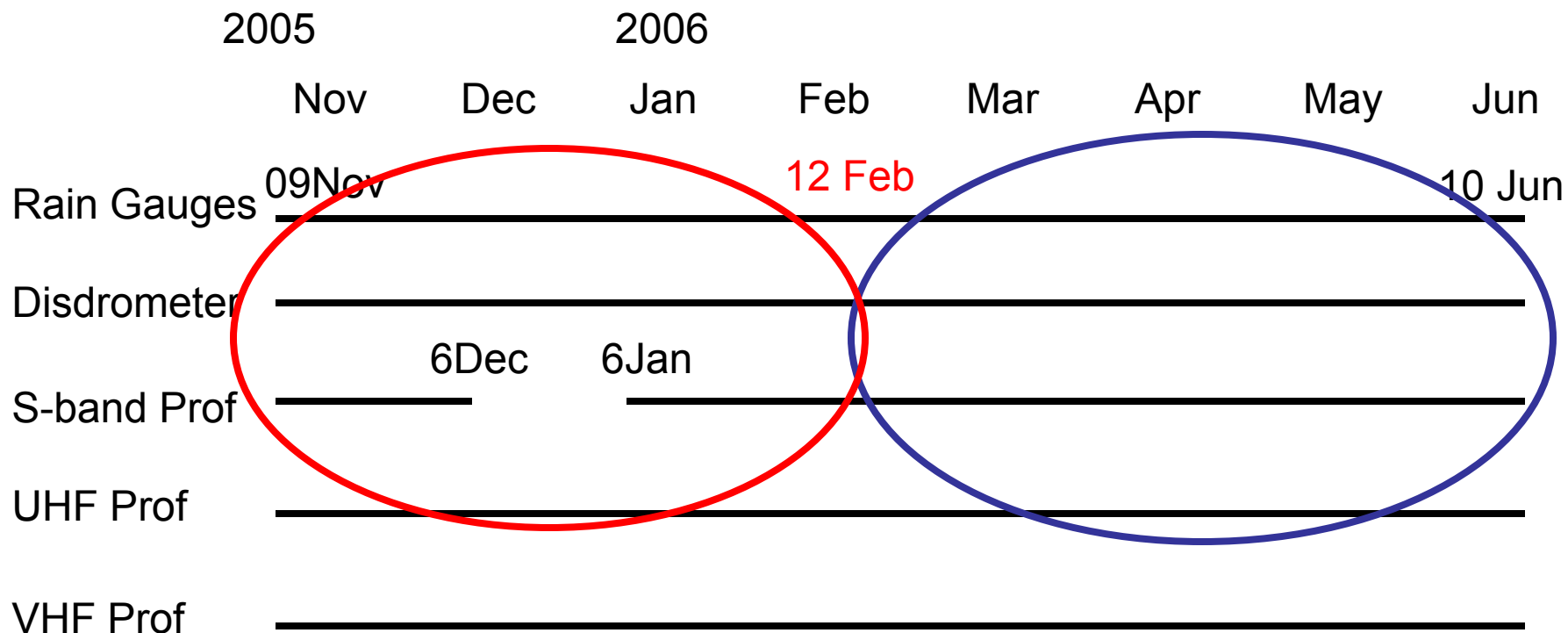
Data Available



S-band profiler was down from 6 Dec – 6 Jan due to a software error.

Before 12 Feb, on TWPICE IOP Archive

Data Available

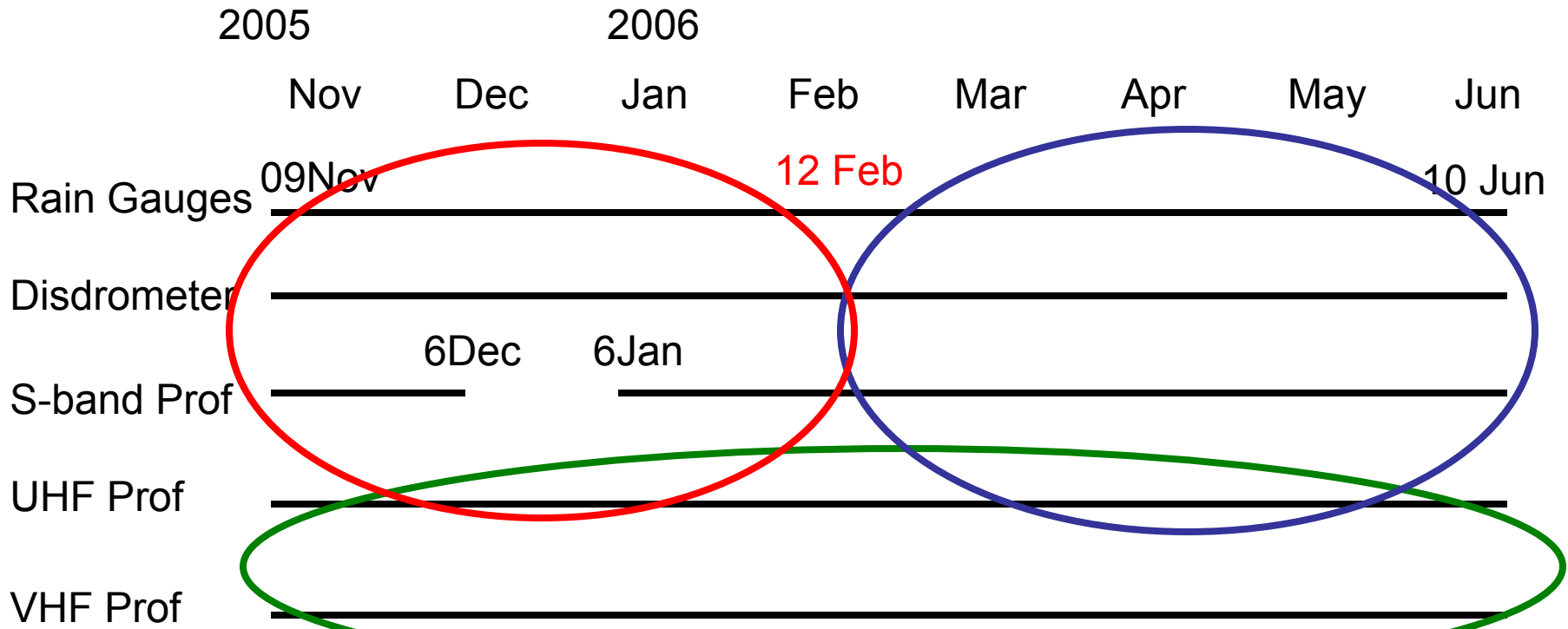


S-band profiler was down from 6 Dec – 6 Jan due to a software error.

Before 12 Feb, on TWPICE IOP Archive

After 12 Feb needs to be put on TWPICE IOP Archive

Data Available



S-band profiler was down from 6 Dec - 6 Jan due to a software error.

Before 12 Feb, on TWPICE IOP Archive

After 12 Feb needs to be put on TWPICE IOP Archive

UHF and VHF should appear on ARM Standard Archive

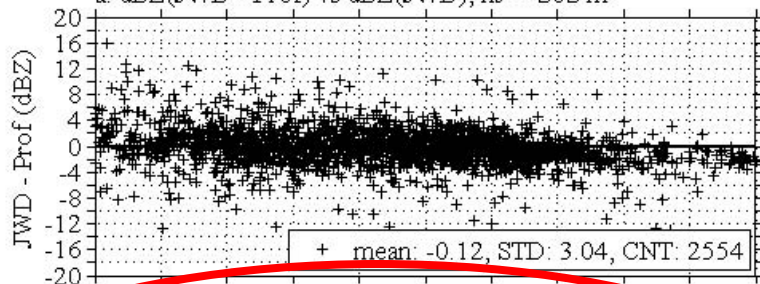
Documentation

- Hypertext on ARM TWPICE IOP Archive describes:
 - Data format
 - Calculations that convert disdrometer number count to number concentration, $N(D)$
 - Calibration procedure for S-band Profiler using Disdrometer observations

Calibration of S-band Profiler



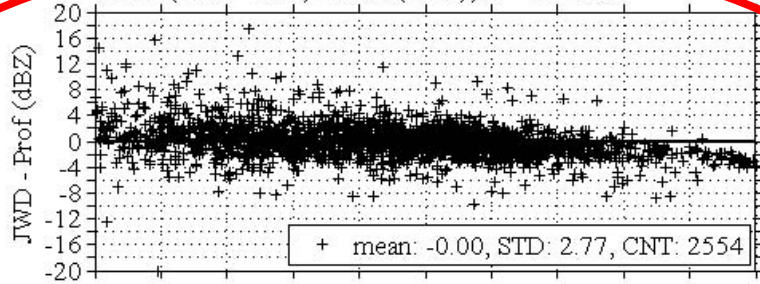
Darwin, JWD & S-band Profiler, 19-24 January 2006
Profiler Radar Constant = 5.70 (linear), ADJUSTMENT = -8.34 (dBZ)
a. dBZ(JWD - Prof) vs dBZ(JWD), ht = 282 m



Third Range Gate

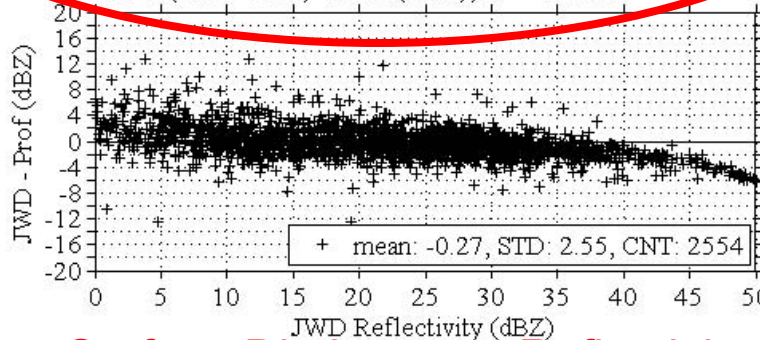
Profiler reflectivity is adjusted until difference with simultaneous disdrometer reflectivity is zero.

b. dBZ(JWD - Prof) vs dBZ(JWD), ht = 222 m



Second Range Gate

c. dBZ(JWD - Prof) vs dBZ(JWD), ht = 162 m



First Range Gate

Surface Disdrometer Reflectivity

Data Format

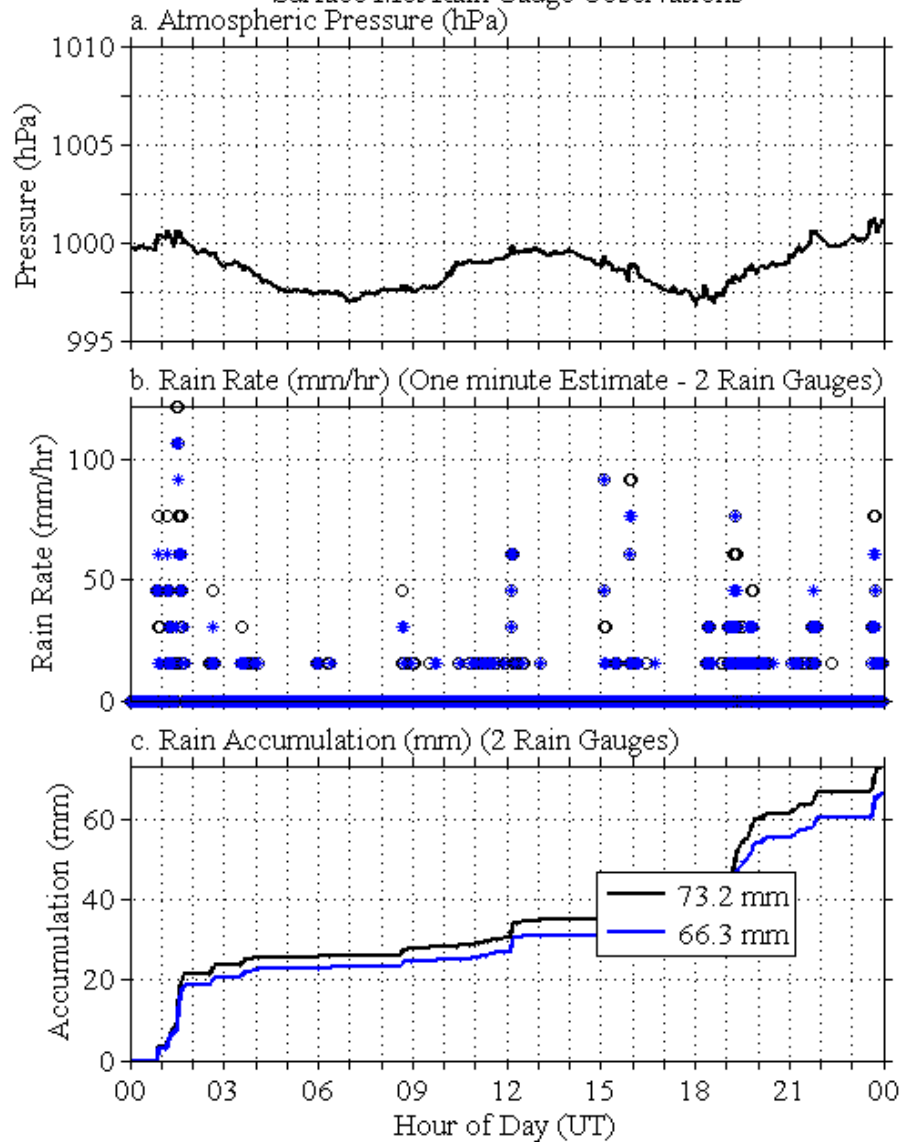
- Rain Gauge
 - Daily Images
 - Rain Rate and Accumulation
 - Daily ASCII files (10 second)
- Disdrometer
 - Daily Images
 - Reflectivity, Rain Rate, N(D)
 - Reflectivity, Rain Rate, Rain Accumulation
 - Daily ASCII files (minute)
- S-band Profiler
 - Daily Images
 - Precipitation Mode (0-9 km): Z, <V>, Spectral Width
 - Cloud Mode (0-15 km): Z, <V>, Spectral Width
 - Daily netCDF files
 - Every profile: Precip & Cloud modes (new profile every 10 seconds)
 - Minute Averages: Precip & Cloud modes



NOAA/ESRL Physical Sciences Division Preliminary Observations



Darwin, Australia, 16 January 2006 (Day #16)
Surface Met Rain Gauge Observations

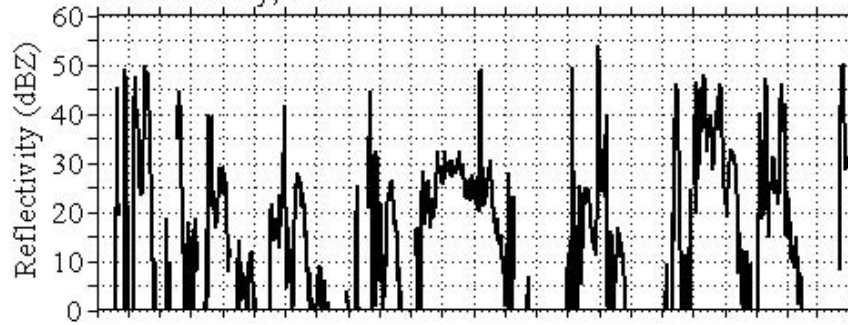


Data Format

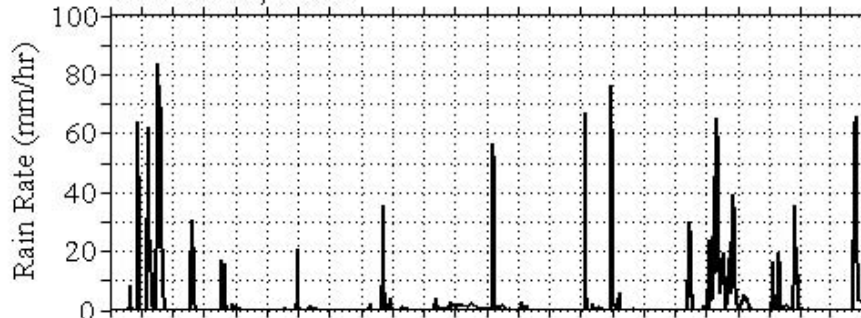
- Rain Gauge
 - Daily Images
 - Rain Rate and Accumulation
 - Daily ASCII files (10 second)
- Disdrometer
 - Daily Images
 - Reflectivity, Rain Rate, N(D)
 - Reflectivity, Rain Rate, Rain Accumulation
 - Daily ASCII files (minute)
- S-band Profiler
 - Daily Images
 - Precipitation Mode (0-9 km): Z, <V>, Spectral Width
 - Cloud Mode (0-15 km): Z, <V>, Spectral Width
 - Daily netCDF files
 - Every profile: Precip & Cloud modes (new profile every 10 seconds)
 - Minute Averages: Precip & Cloud modes



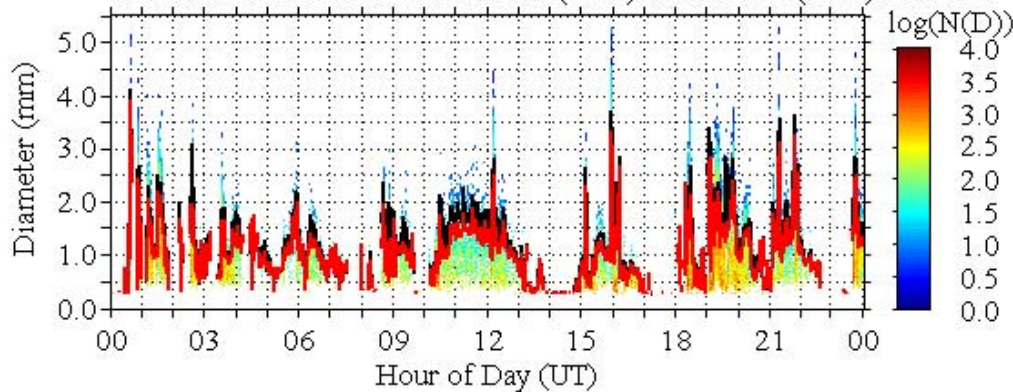
Darwin, Australia, 16 January 2006 (Day #16)
NOAA-AL Joss-Waldvogel Disdrometer Observations
a. Reflectivity, dBZ



b. Rain Rate, mm/hr

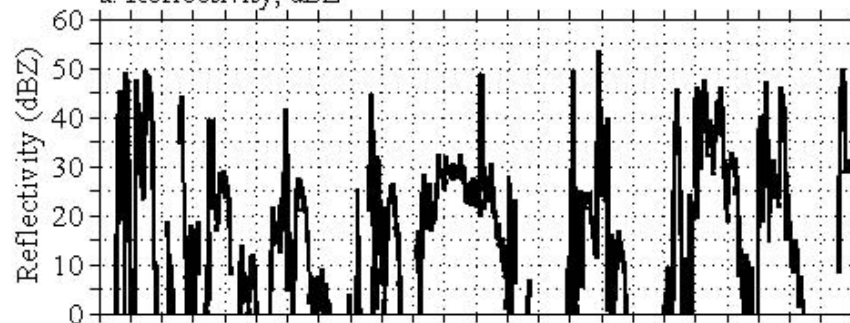


c. Number Concentration and Mean (BLK) and Median (RED) Diameter

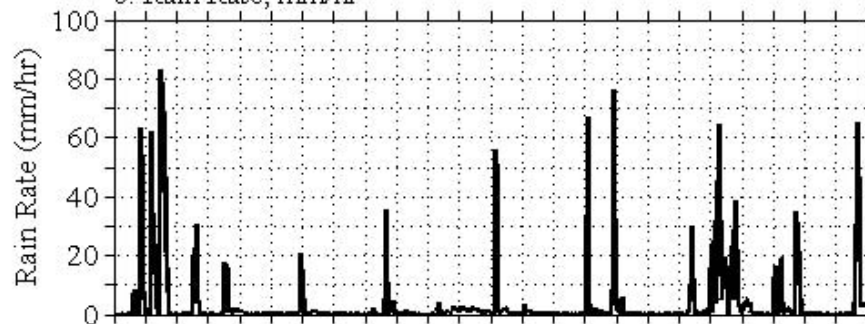




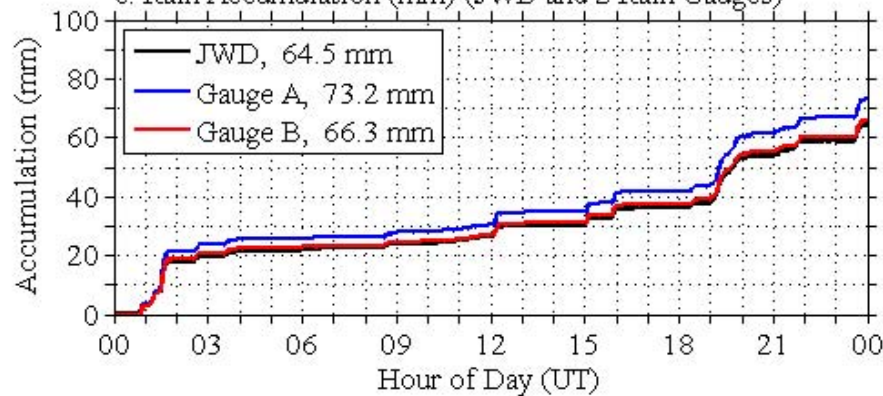
Darwin, Australia, 16 January 2006 (Day #16)
NOAA-AL Joss-Waldvogel Disdrometer Observations
a. Reflectivity, dBZ



b. Rain Rate, mm/hr



c. Rain Accumulation (mm) (JWD and 2 Rain Gauges)



Data Format

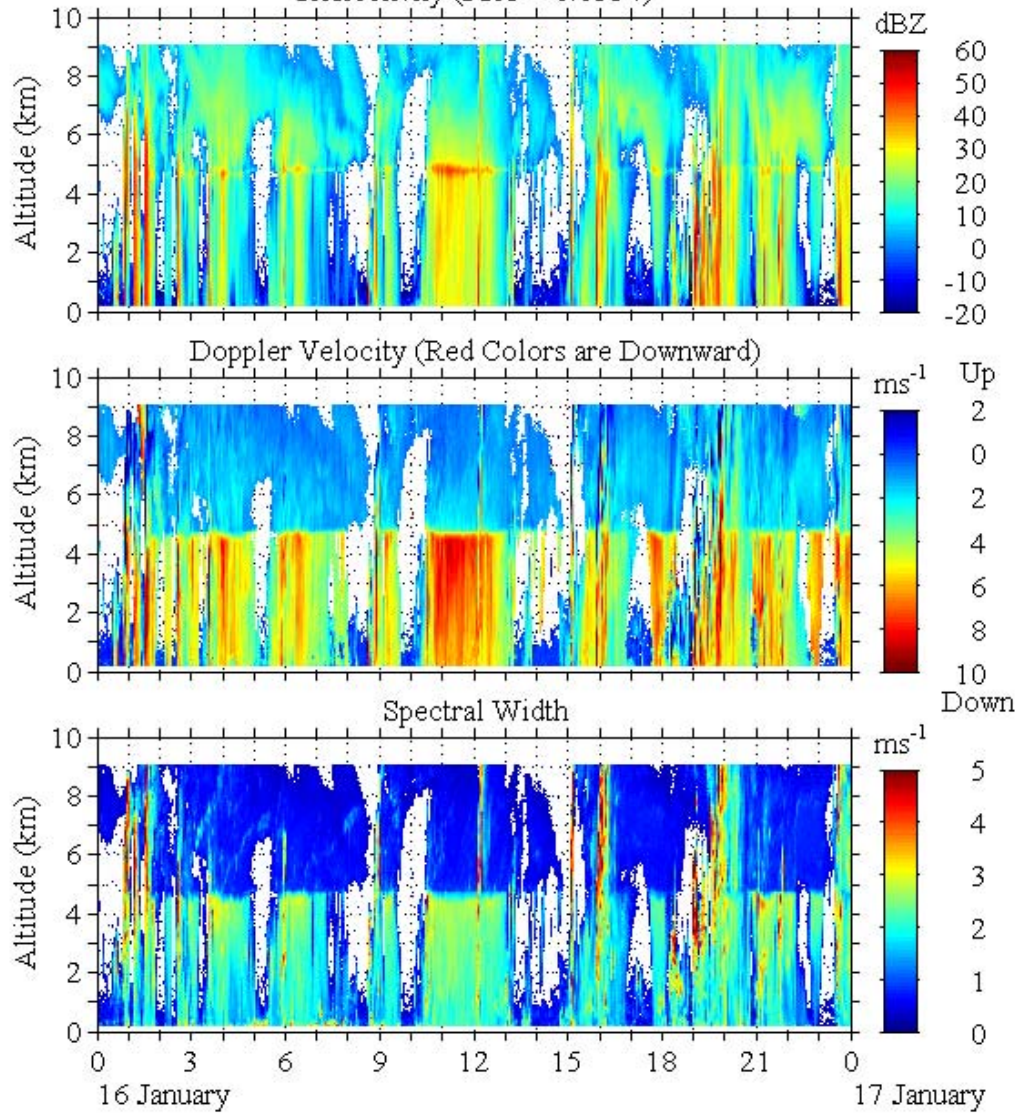
- Rain Gauge
 - Daily Images
 - Rain Rate and Accumulation
 - Daily ASCII files (10 second)
- Disdrometer
 - Daily Images
 - Reflectivity, Rain Rate, N(D)
 - Reflectivity, Rain Rate, Rain Accumulation
 - Daily ASCII files (minute)
- S-band Profiler
 - Daily Images
 - Precipitation Mode (0-9 km): Z, <V>, Spectral Width
 - Cloud Mode (0-15 km): Z, <V>, Spectral Width
 - Daily netCDF files
 - Every profile: Precip & Cloud modes (new profile every 10 seconds)
 - Minute Averages: Precip & Cloud modes



NOAA/ESRL Physical Sciences Division



Darwin, Australia, 16 January 2006 (Day #16)
S-Band (2835 MHz) Profiler, Pulse Width = 60 m
Reflectivity (PRC = 0.8354)

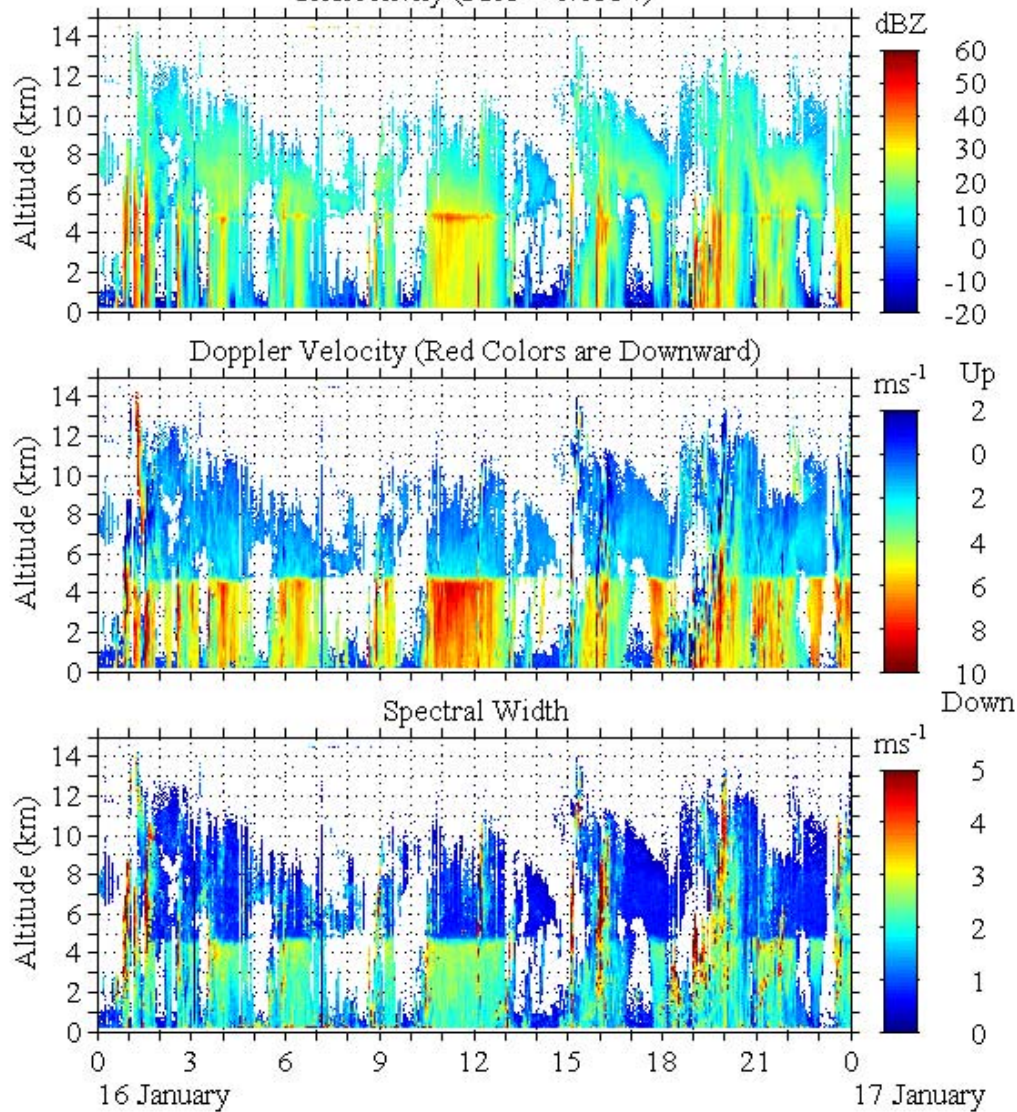




NOAA/ESRL Physical Sciences Division



Darwin, Australia, 16 January 2006 (Day #16)
S-Band (2835 MHz) Profiler, Pulse Width = 60 m
Reflectivity (PRC = 0.8354)



Location of Data

- ARM TWPICE IOP Archive (09Nov-12Feb)
- DVD's (09Nov-12Feb)
- Drop Size Distributions as a function of altitude (DSDs) available on case-by-case basis – but not on IOP archive