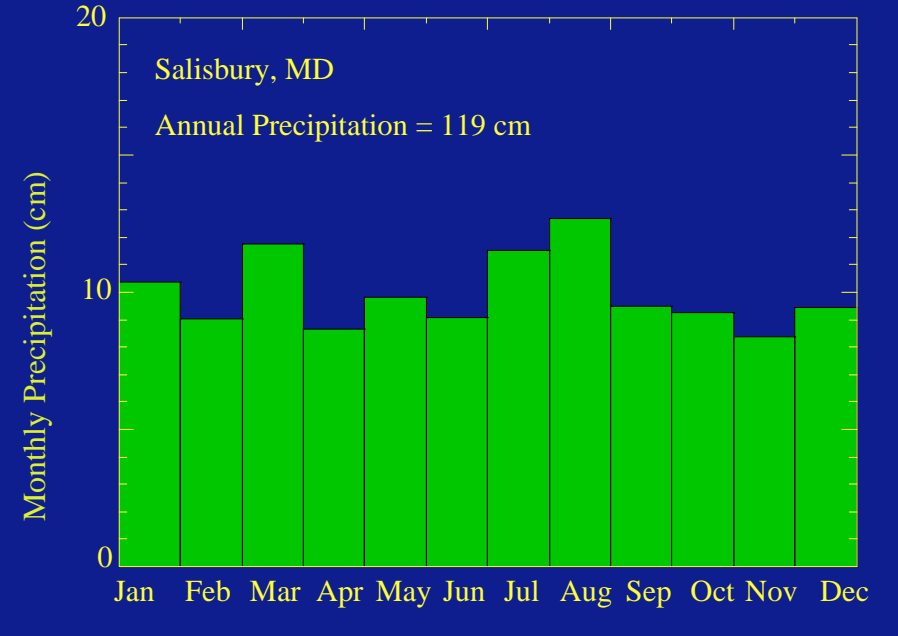
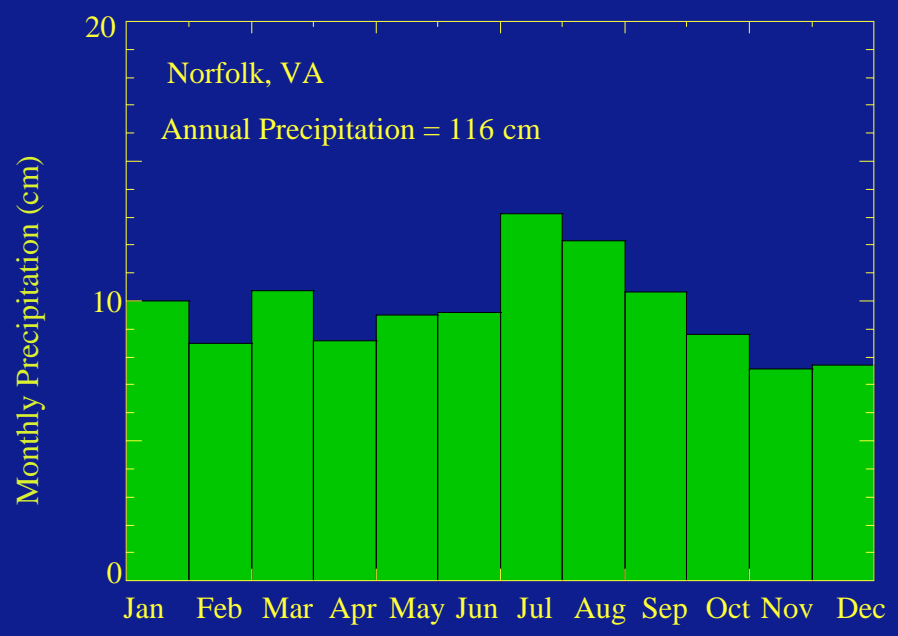
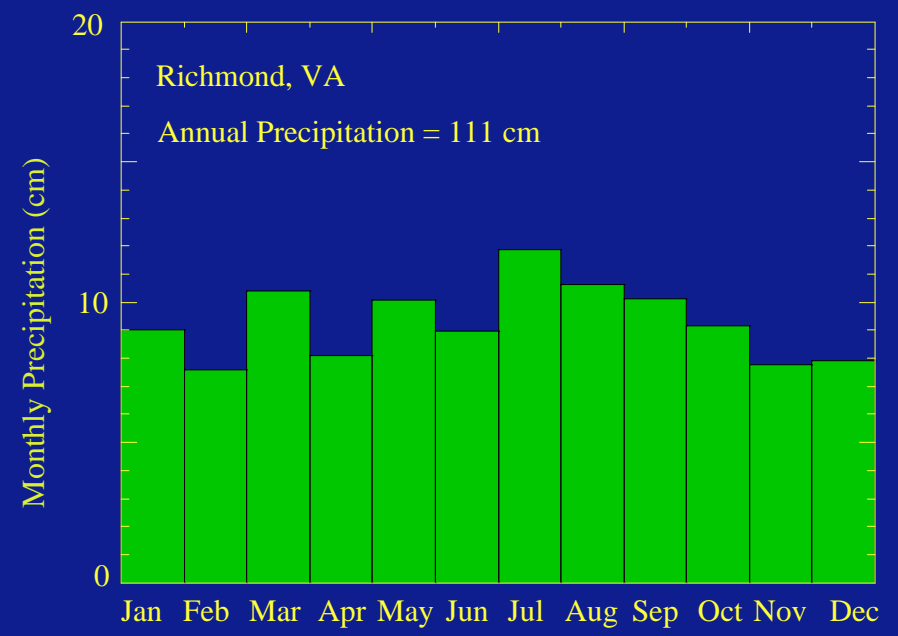
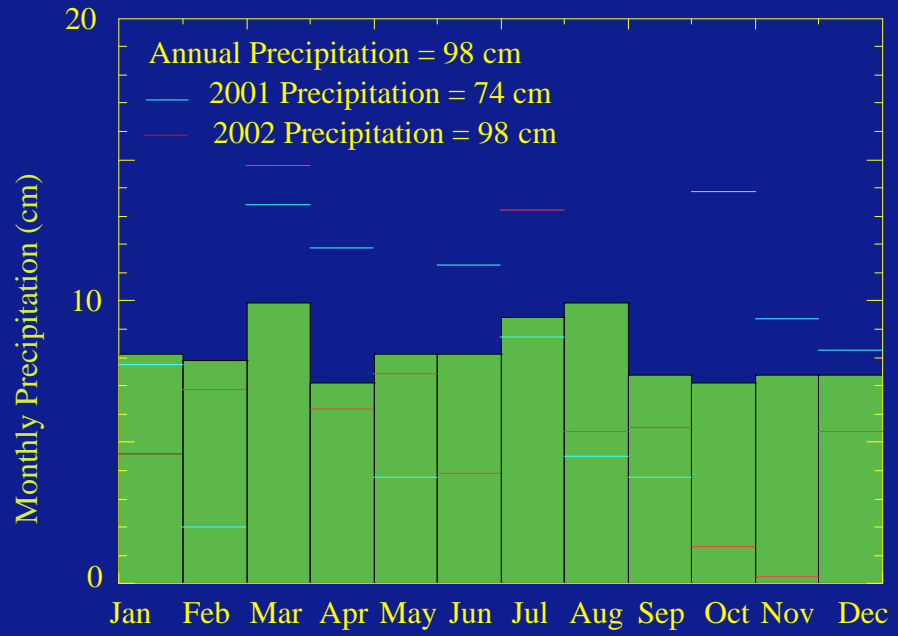
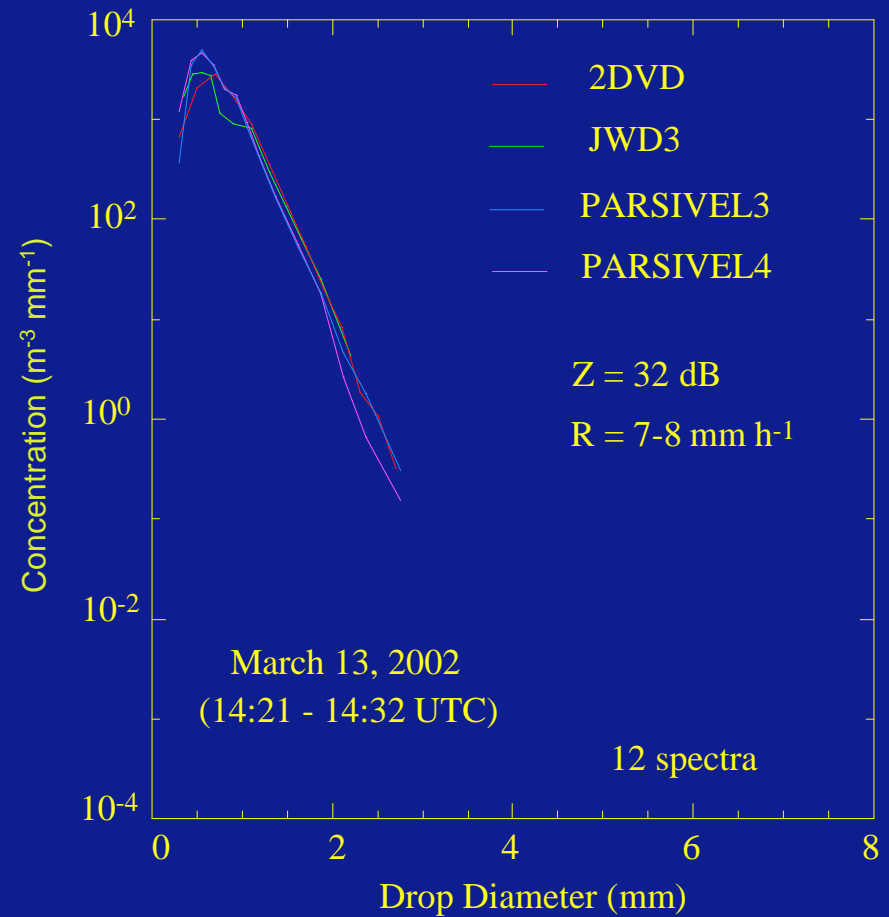
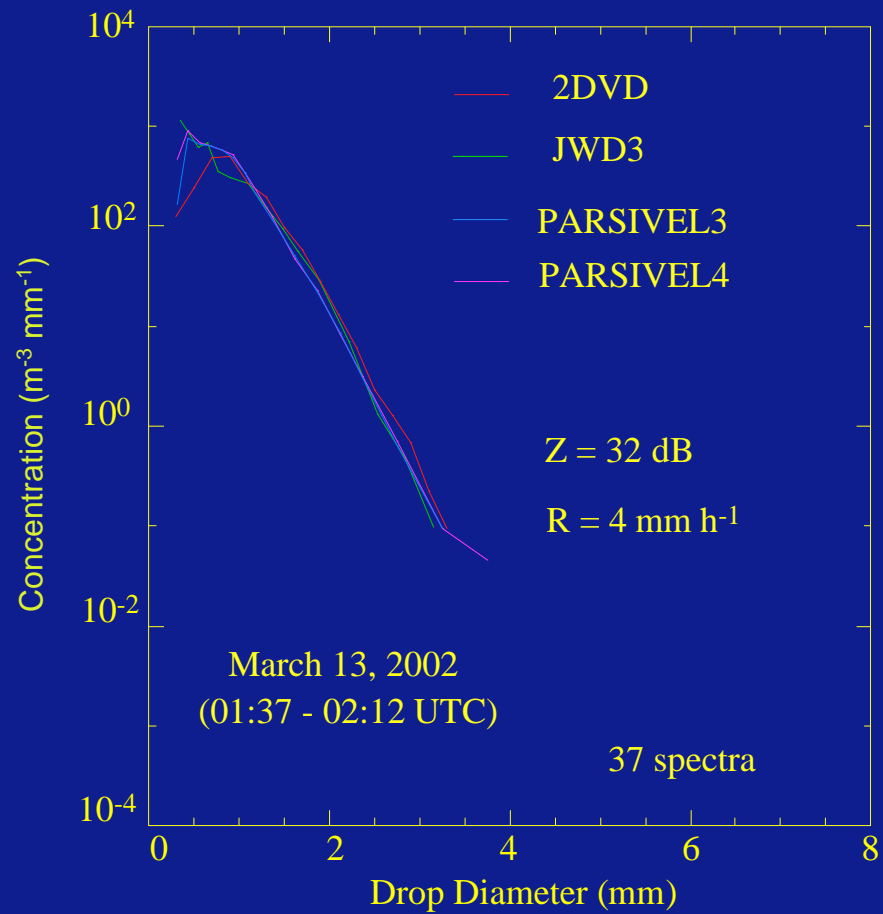


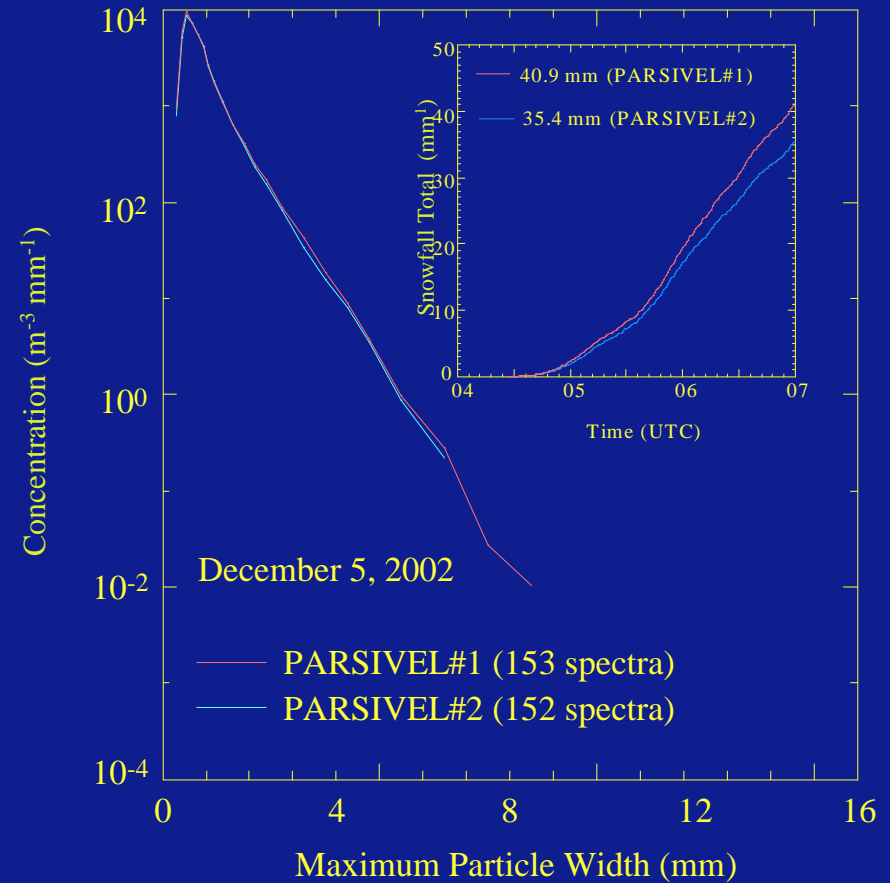
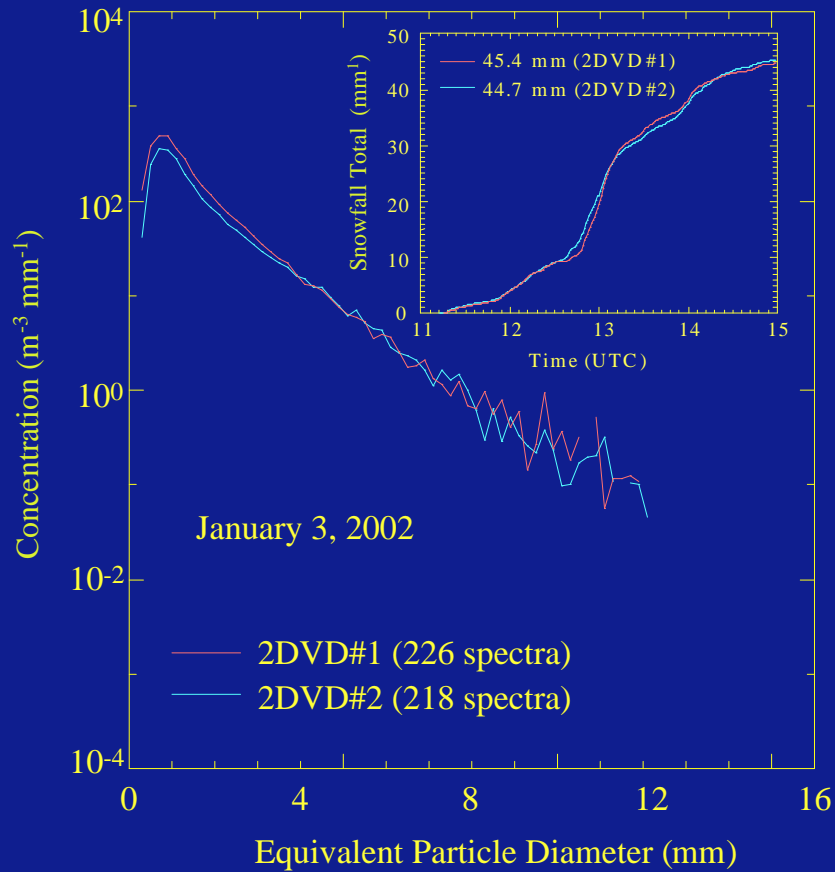
Mid-Atlantic Region Precipitation Climatology



Case Studies of the Drop Size Distributions: March 13, 2002



Case Studies of Snowflake Size Distributions



Greater Wallops Ground Validation Operation Program

Validation products utilizing Wakefield 88D (instantaneous and monthly rainfall)

Greater Wallops Ground Validation Operation Program

Validation products utilizing Wakefield 88D (instantaneous and monthly rainfall)

Evaluation of NASA's S-band Polarimetric Doppler Radar (NPOL) measurements

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Comparison of ground-based and satellite rainfall products

- SSM/I
- TMI
- AMSR-E
- AMSU (NOAA)

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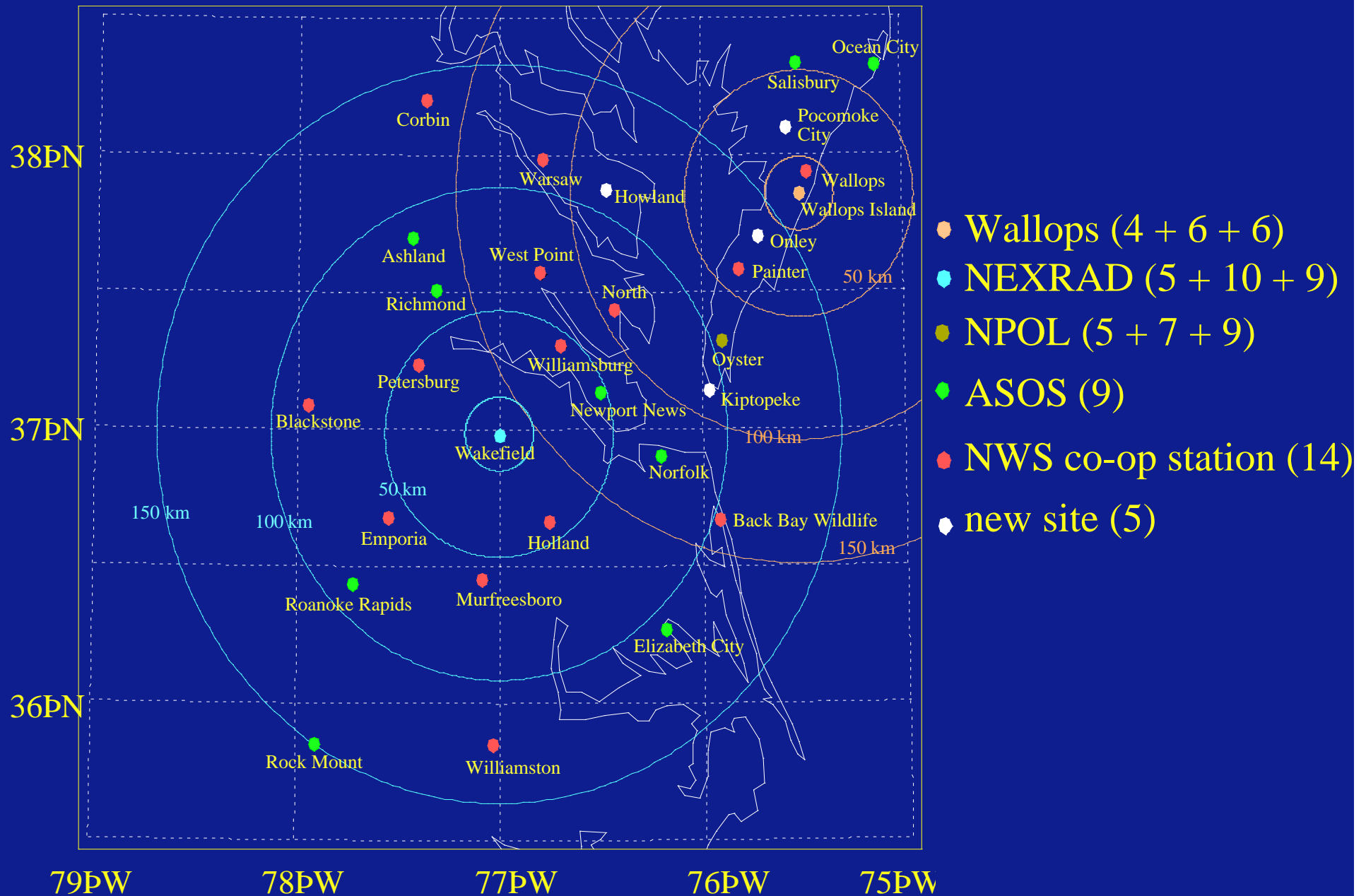
Comparison of ground-based and satellite rainfall products

- SSM/I
- TMI
- AMSR-E
- AMSU (NOAA)

Special purpose field campaigns

- testing a new concept
- performance of a new instrument

Greater Wallops Radar Rain Gauge Network



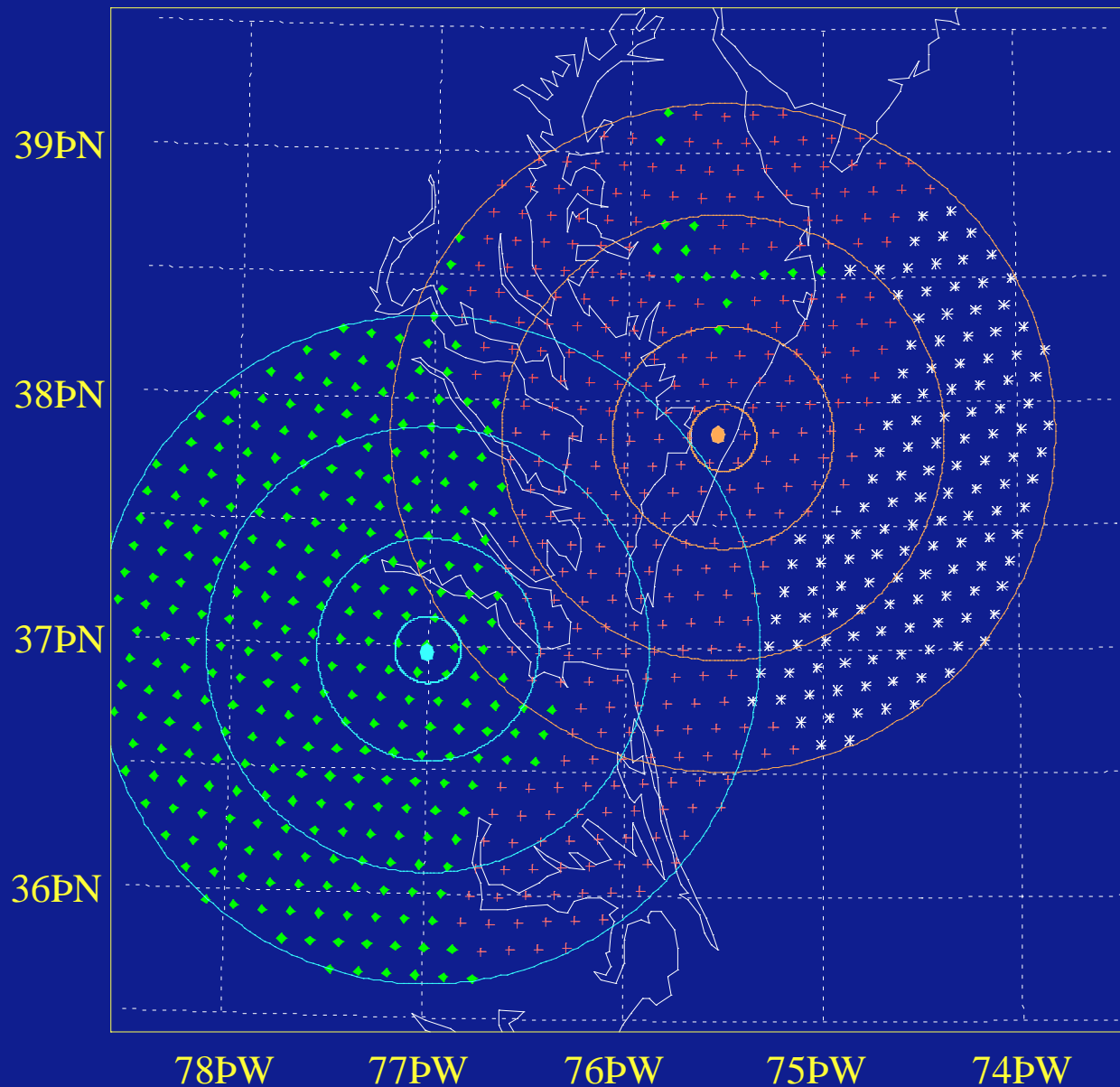
National Weather Service Co-op Station at Painter, VA



NWS Automated Surface Observing System at Wallops Island, VA



SSM/I Surface Type (Modified Wentz Algorithm)

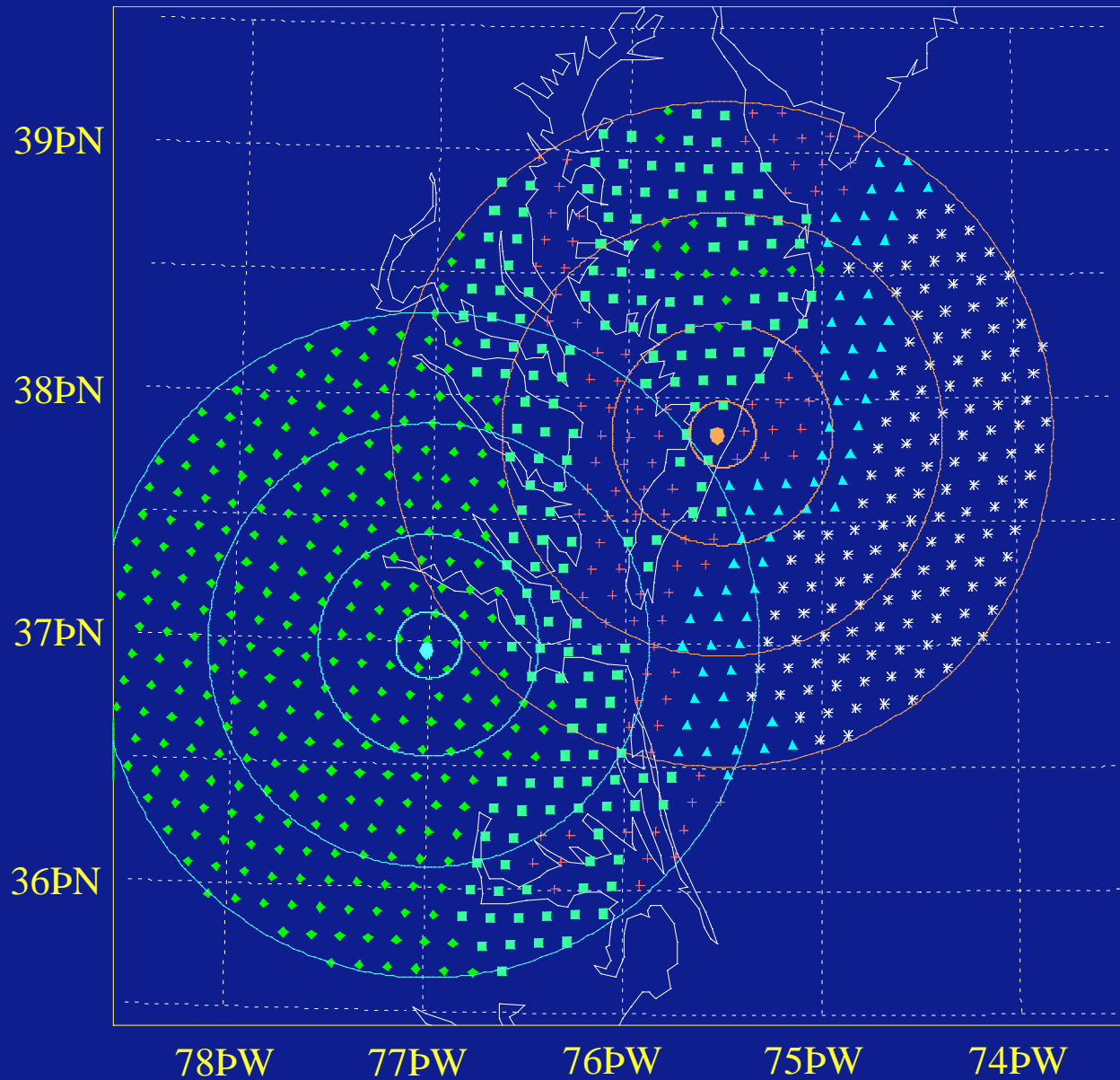


- ◆ land (296, 39%)
- * ocean (132, 18%)
- + coast (326, 43%)

- ◆ land (279, 63%)
- * ocean (1, <1%)
- + coast (166, 37%)

- ◆ land (56, 12%)
- * ocean (132, 29%)
- + coast (272, 59%)

SSM/I Surface Type (Original Wentz Algorithm)



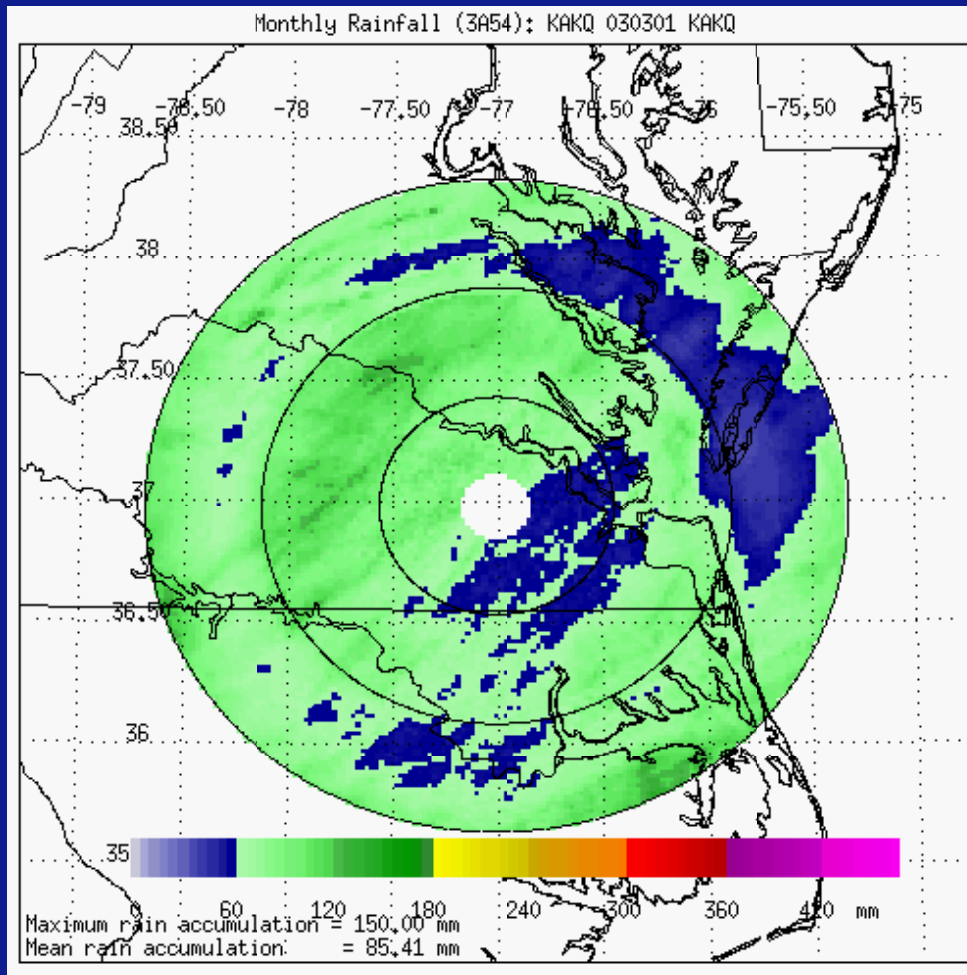
◆ ■ land (296+158, 61%)
* ▲ ocean (132+63, 26%)
+ coast (95, 13%)

◆ ■ land (279+72, 82%)
* ▲ ocean (1+20, 5%)
+ coast (55, 13%)

◆ ■ land (56+129, 40%)
* ▲ ocean (132+62, 42%)
+ coast (81, 18%)

March 2003 Radar Rainfall (mm)

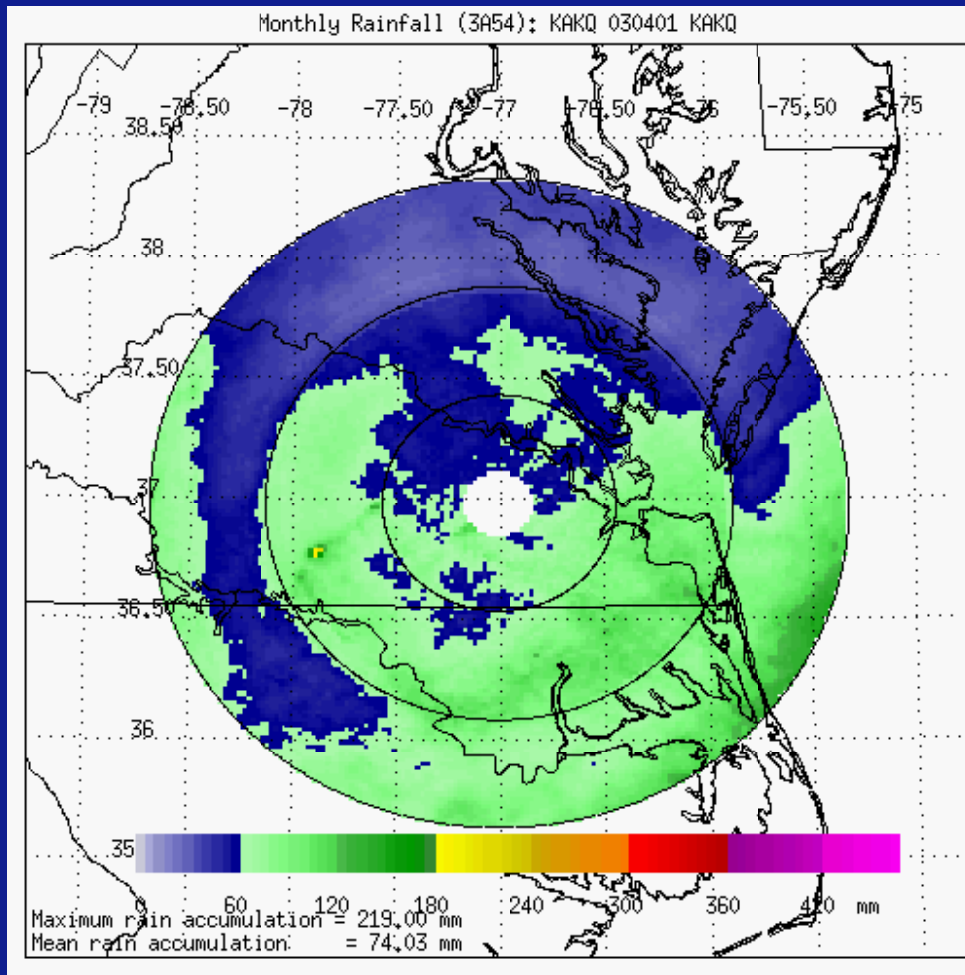
$$Z = 187 R^{1.50} \text{ (disdrometer)}$$



Targeted start date: late January 2004

April 2003 Radar Rainfall (mm)

$$Z = 190 R^{1.64} \text{ (disdrometer)}$$



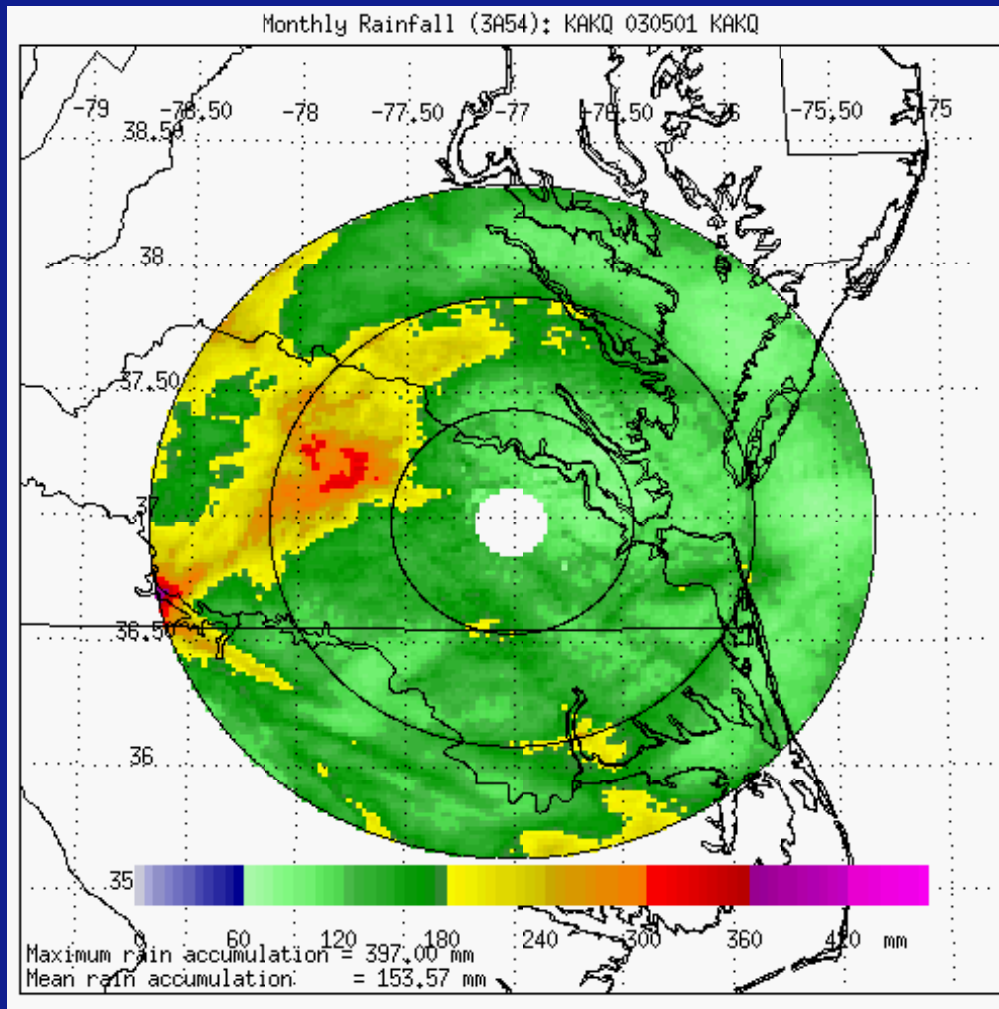
Targeted start date: late January 2004

NASA - NOAA Collaboration

- VCR LTER
- VA Dept. of Transportation
- USGS

May 2003 Radar Rainfall (mm)

$$Z = 155 R^{1.64} \text{ (disdrometer)}$$



Targeted start date: late January 2004

NASA - NOAA Collaboration

- VCR LTER
- VA Dept. of Transportation
- USGS

Collaboration with

- Algorithm developers
- hydrologists
- cloud modelers
- other interested partners

Wallops Island Radar and Microwave Link Network

S-band Polarimetric Doppler Radar (NPOL)

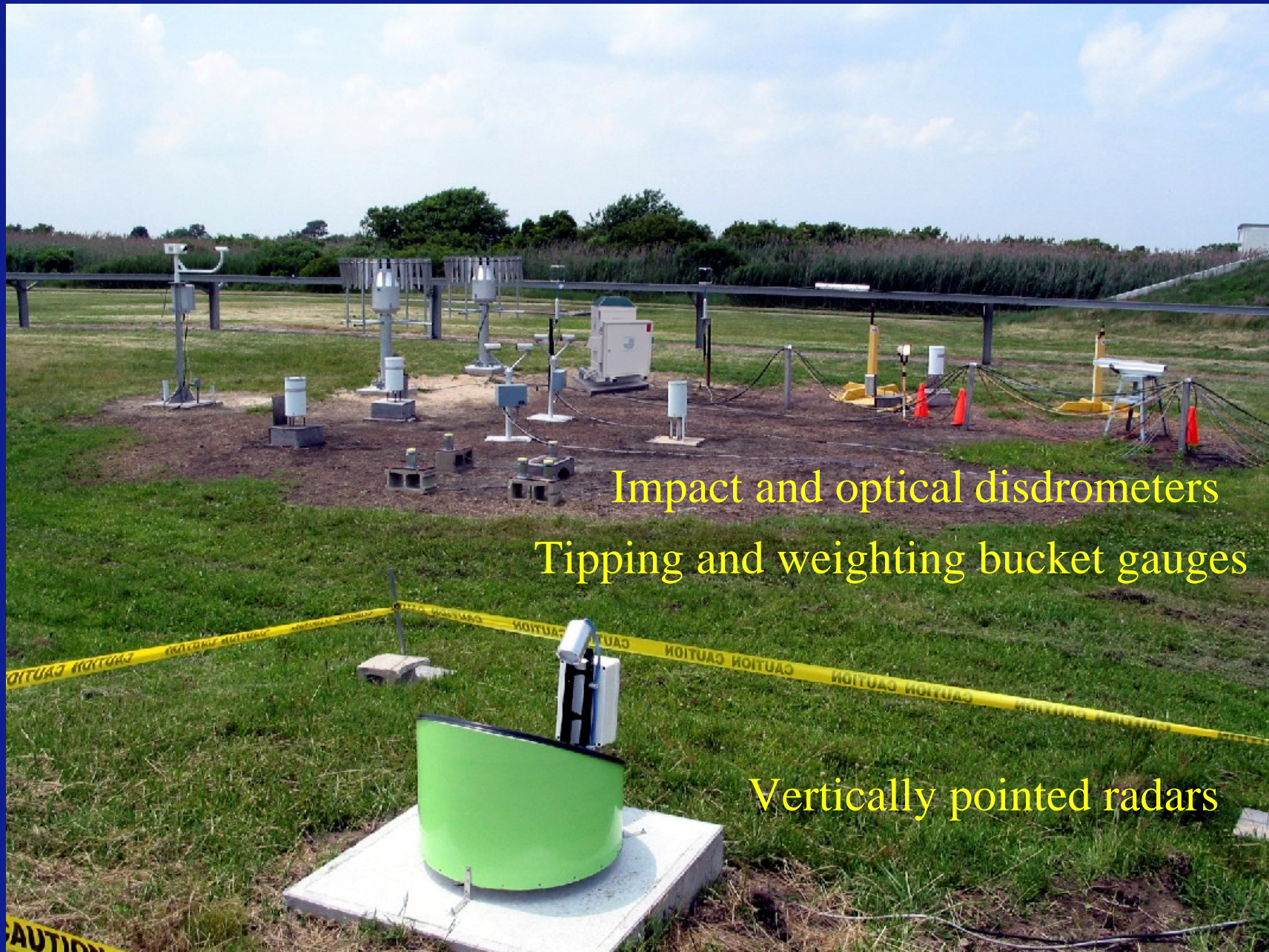
C-band Doppler Radar (TOGA)

S-band Doppler Radar (SPANDAR)



Multi-Channel Microwave Link

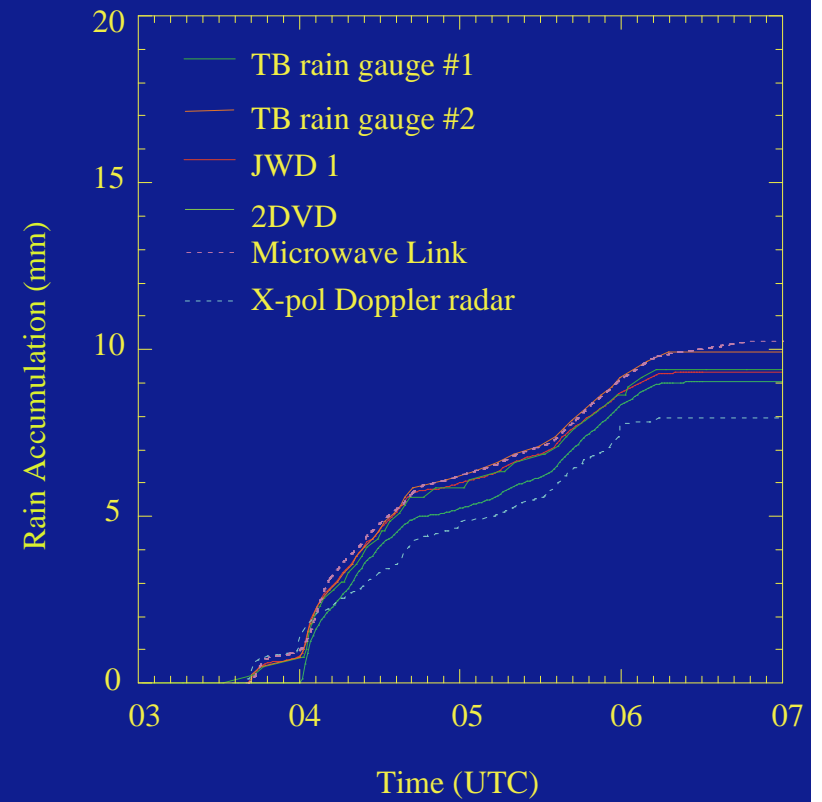
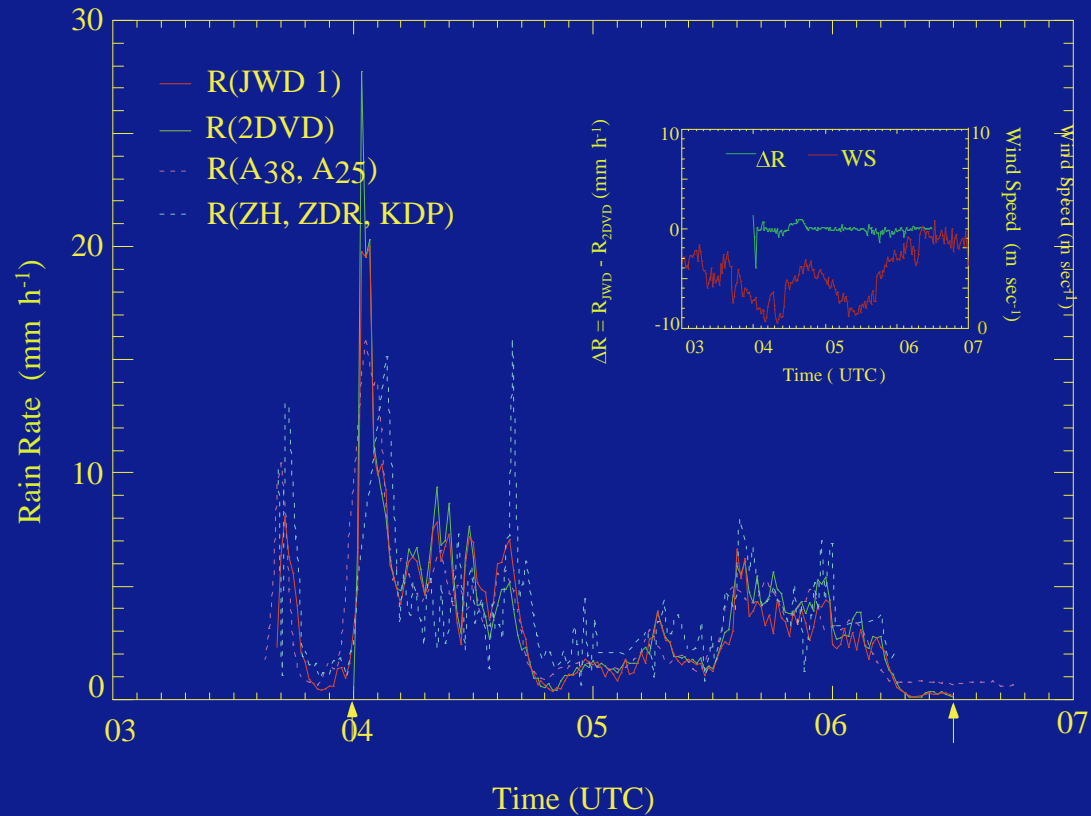
Wallops Island Disdrometer and Rain Gauge Instrument Park



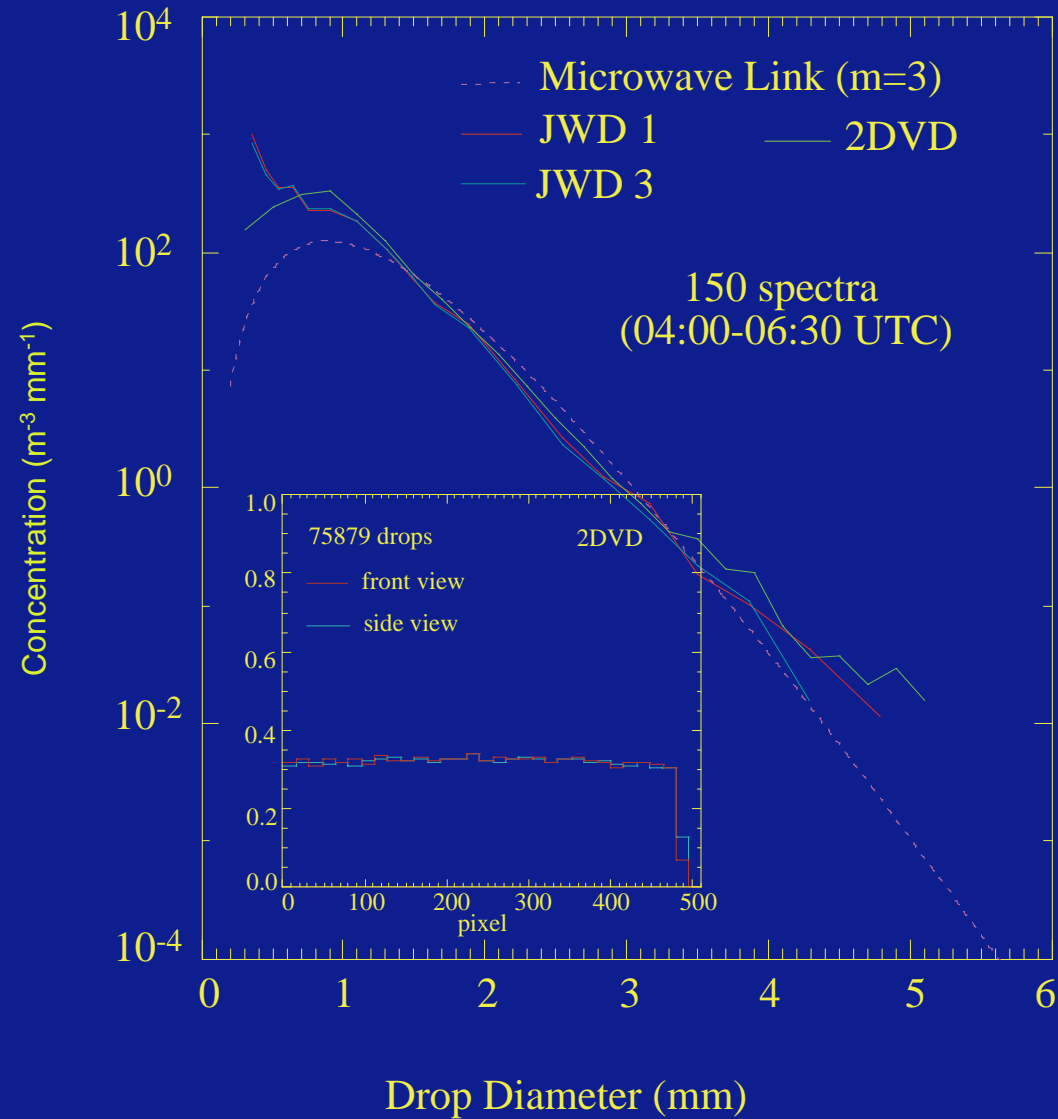
Impact and optical disdrometers
Tipping and weighting bucket gauges

Vertically pointed radars

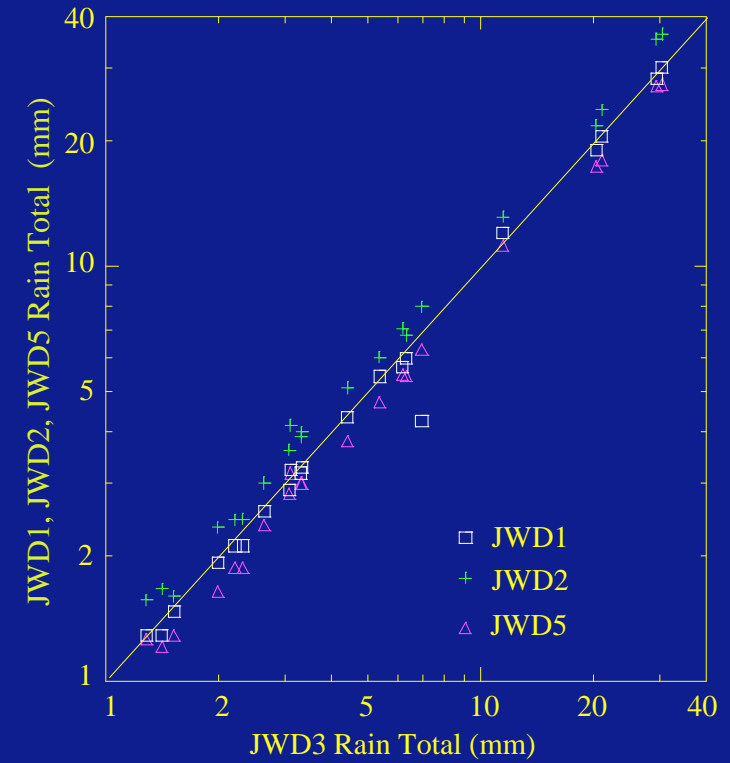
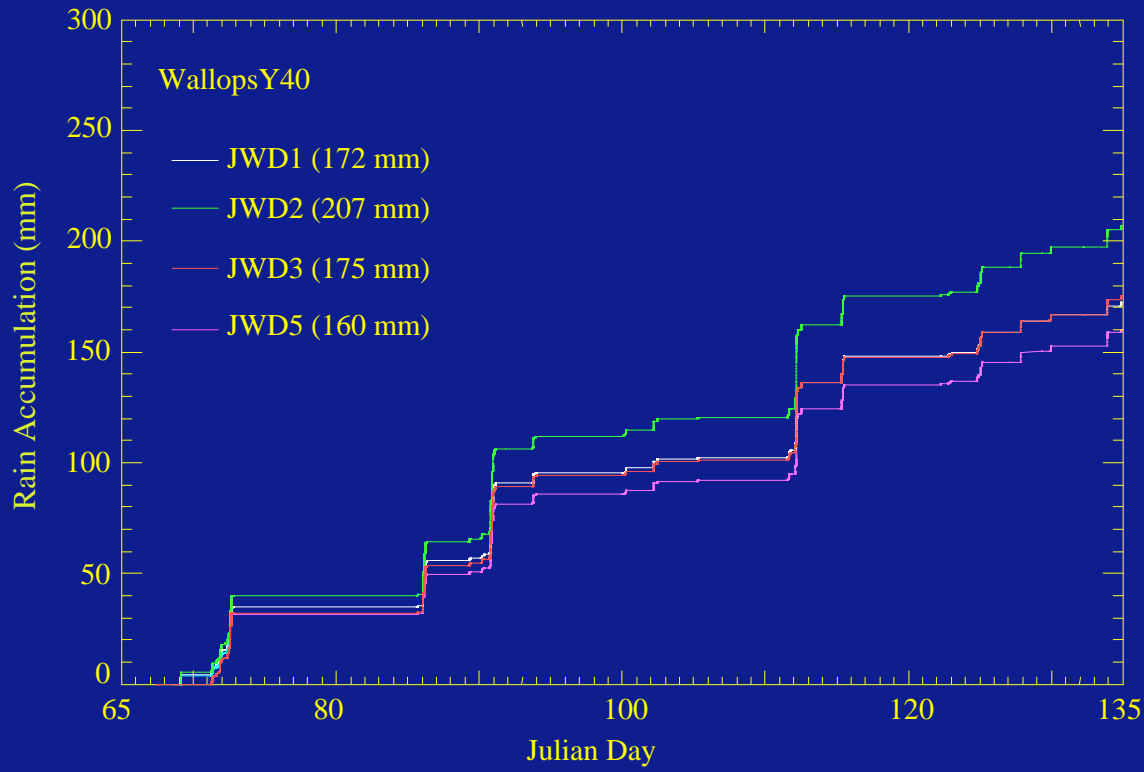
A Case Study: April 11, 2001



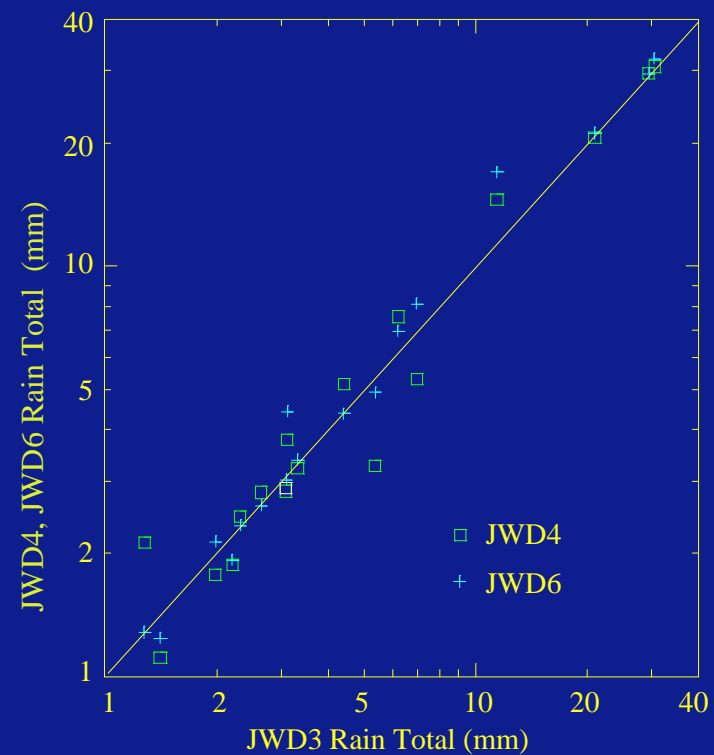
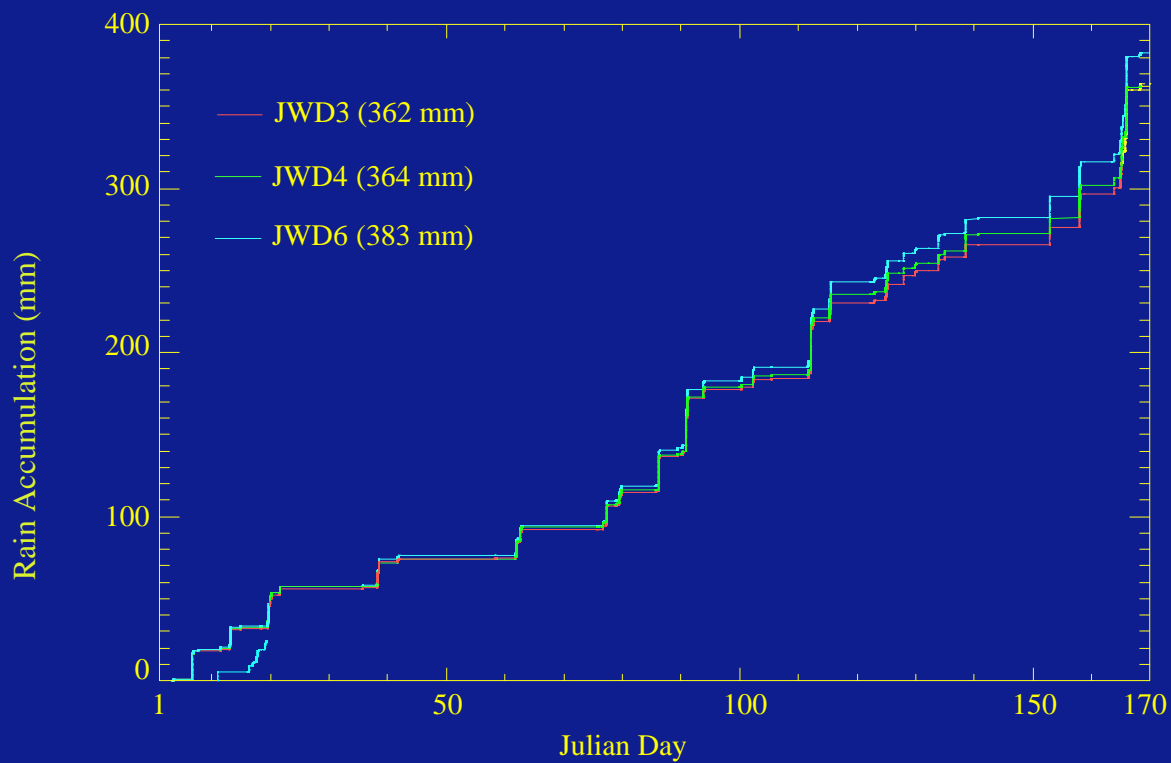
A Case Study: April 11, 2001 (Drop Size Distribution)



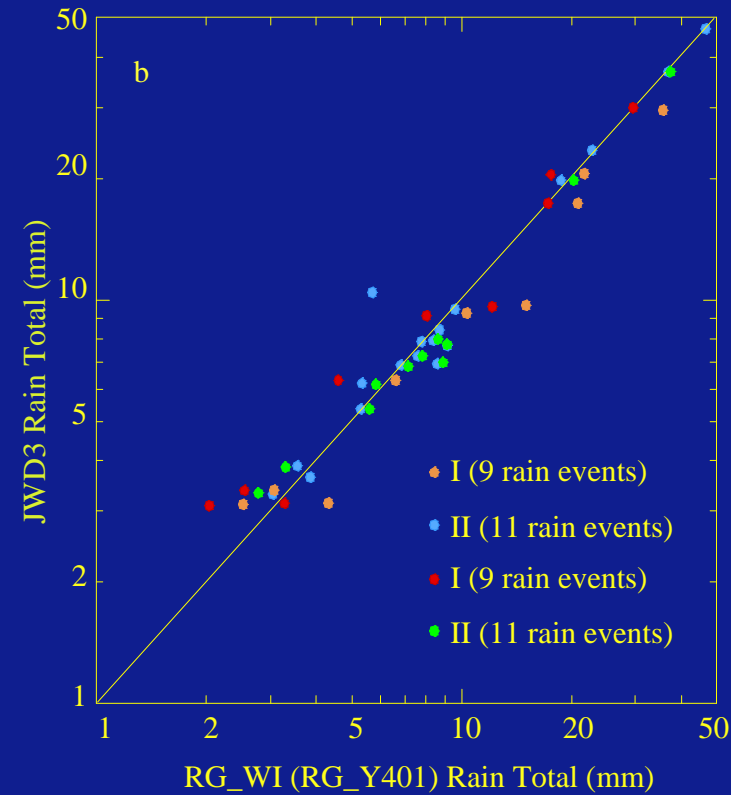
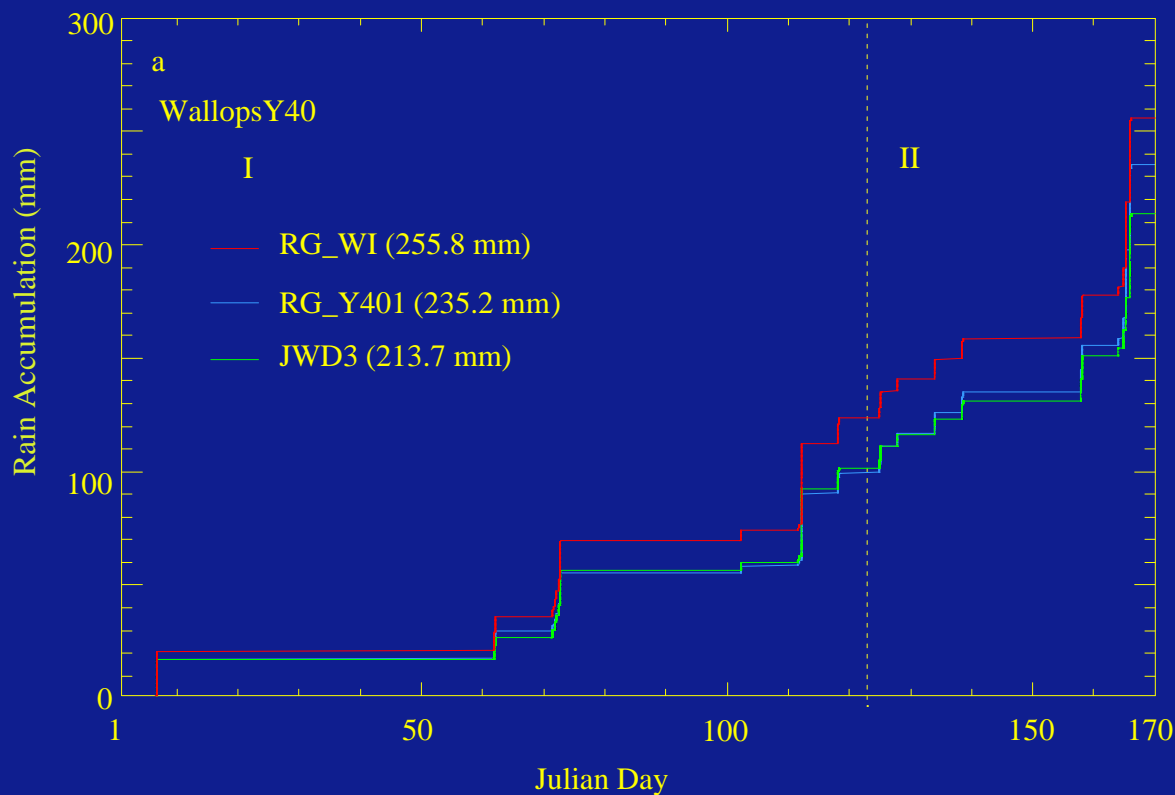
Collocated Impact Disdrometers Statistics: Rain Accumulation and Rain Event Totals



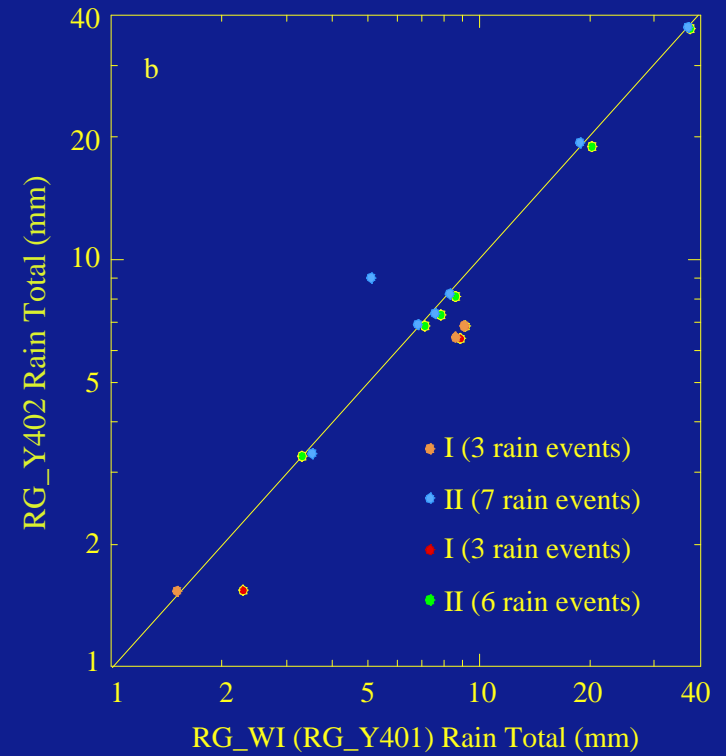
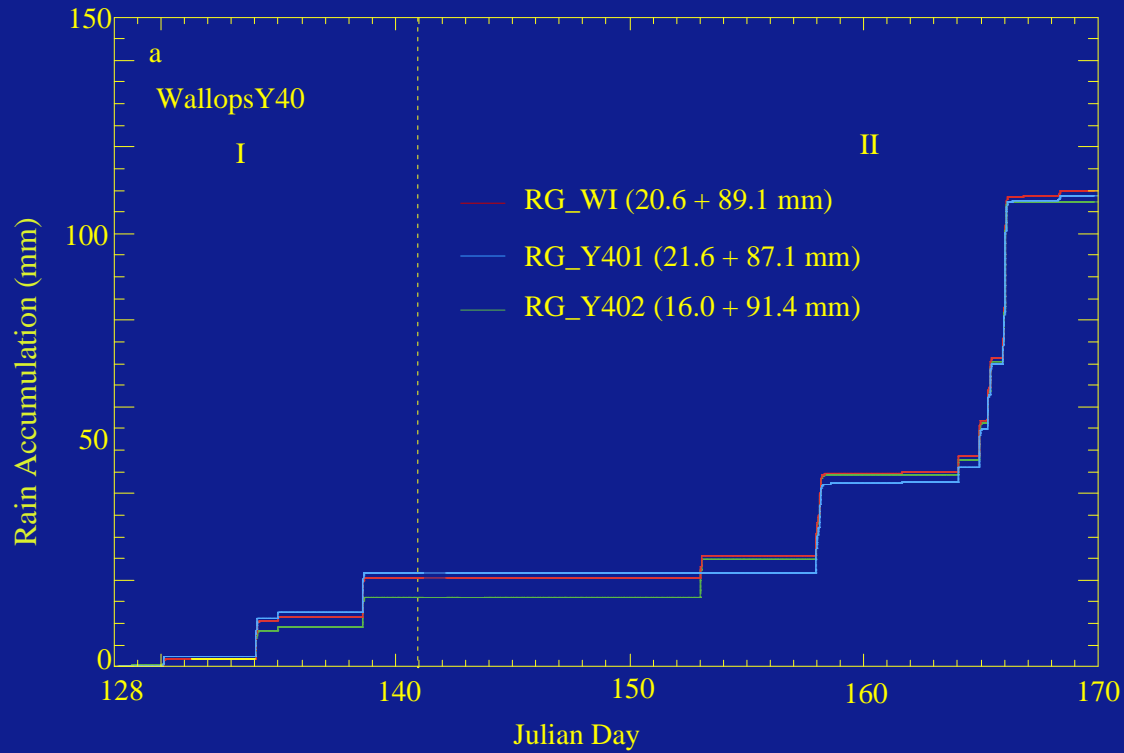
Distributed Impact Disdrometers Statistics: Rain Accumulation and Rain Event Totals



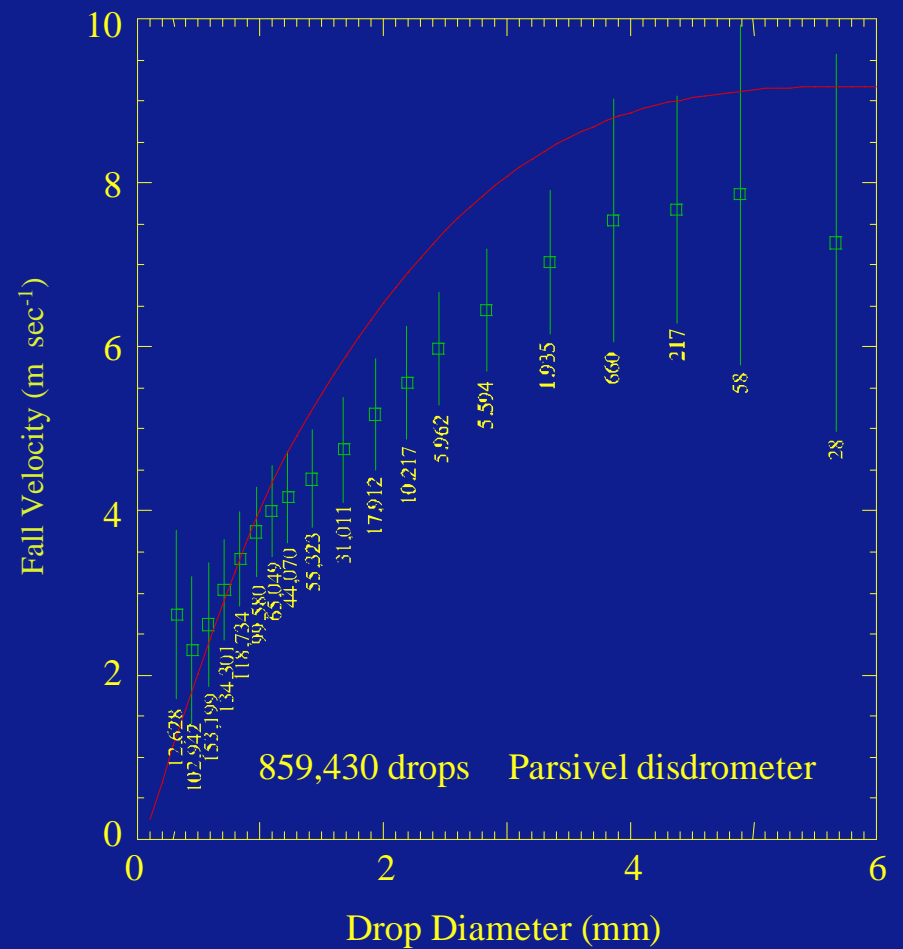
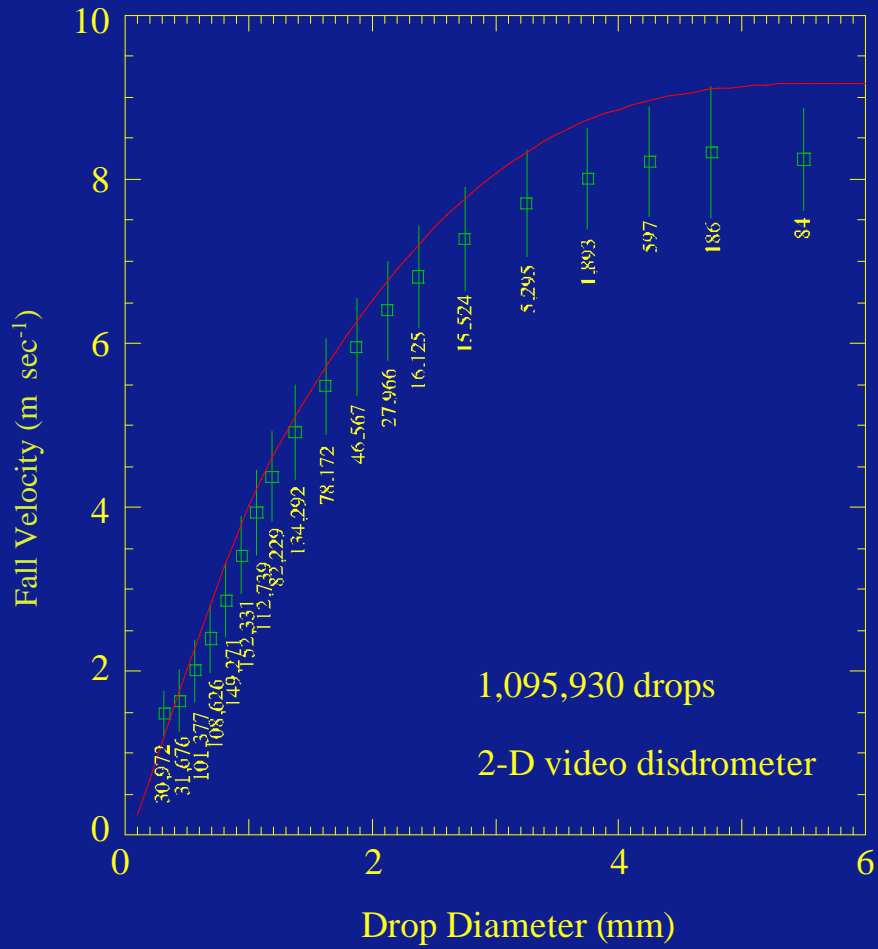
Collocated Disdrometer and Rain Gauge Statistics: Rain Accumulation and Rain Event Totals



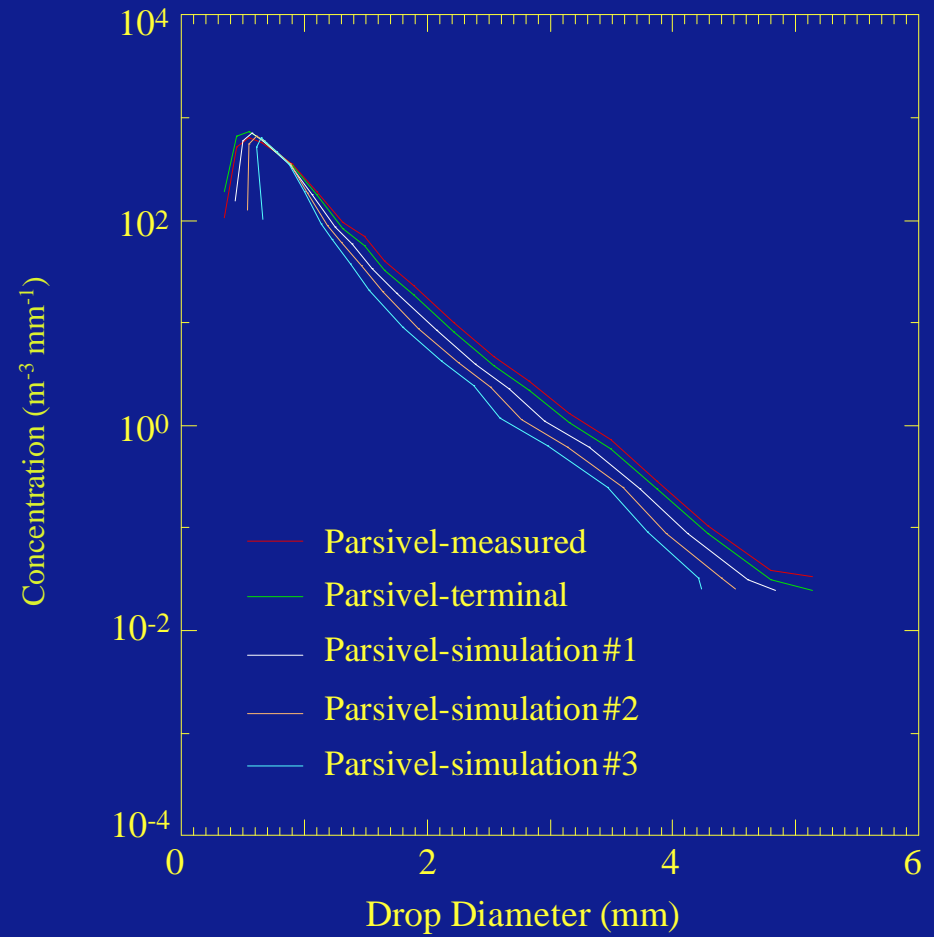
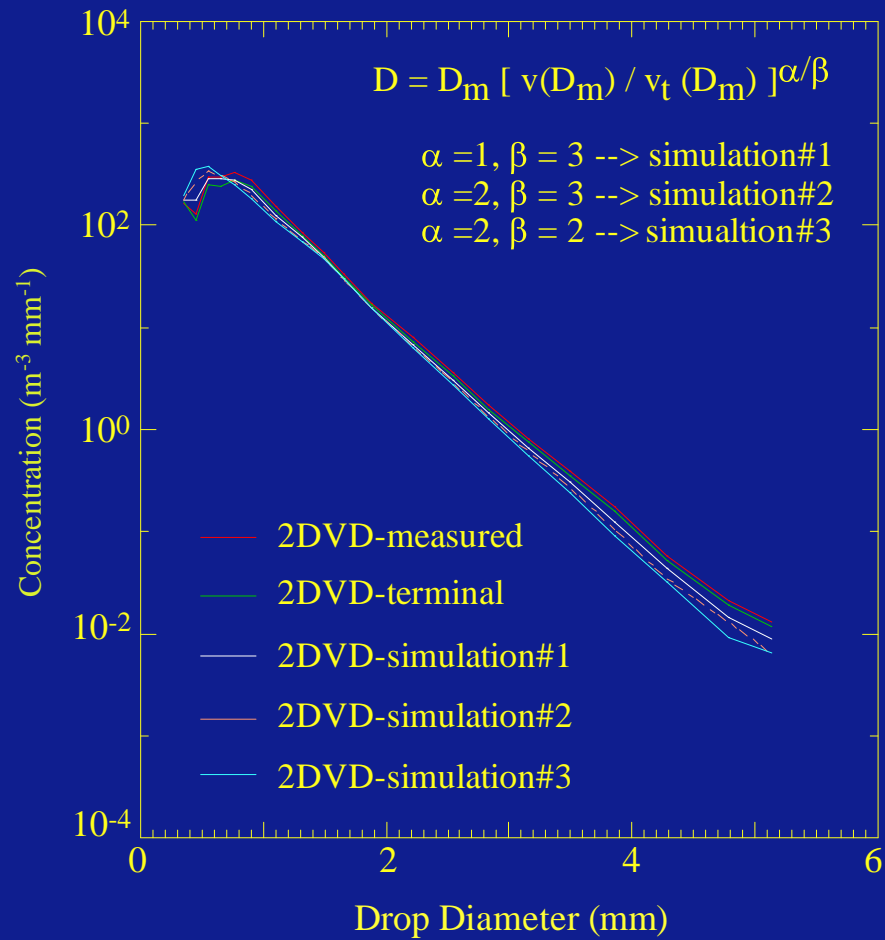
Collocated Rain Gauge Statistics: Rain Accumulation and Rain Event Totals



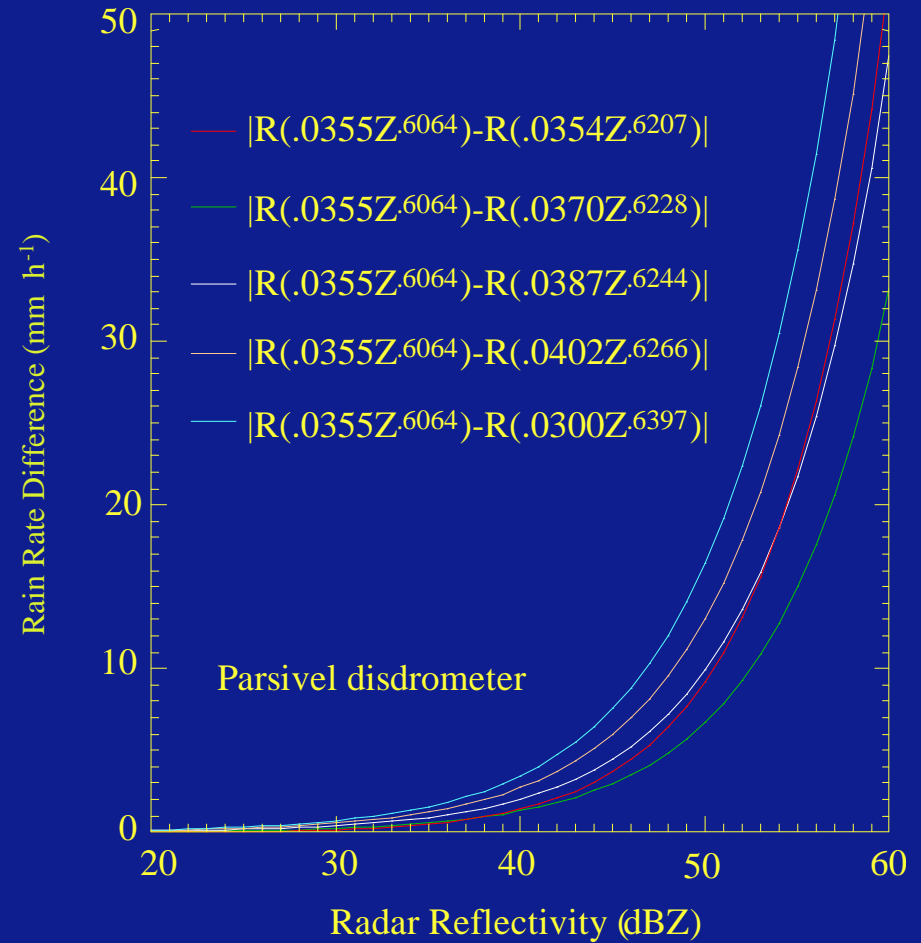
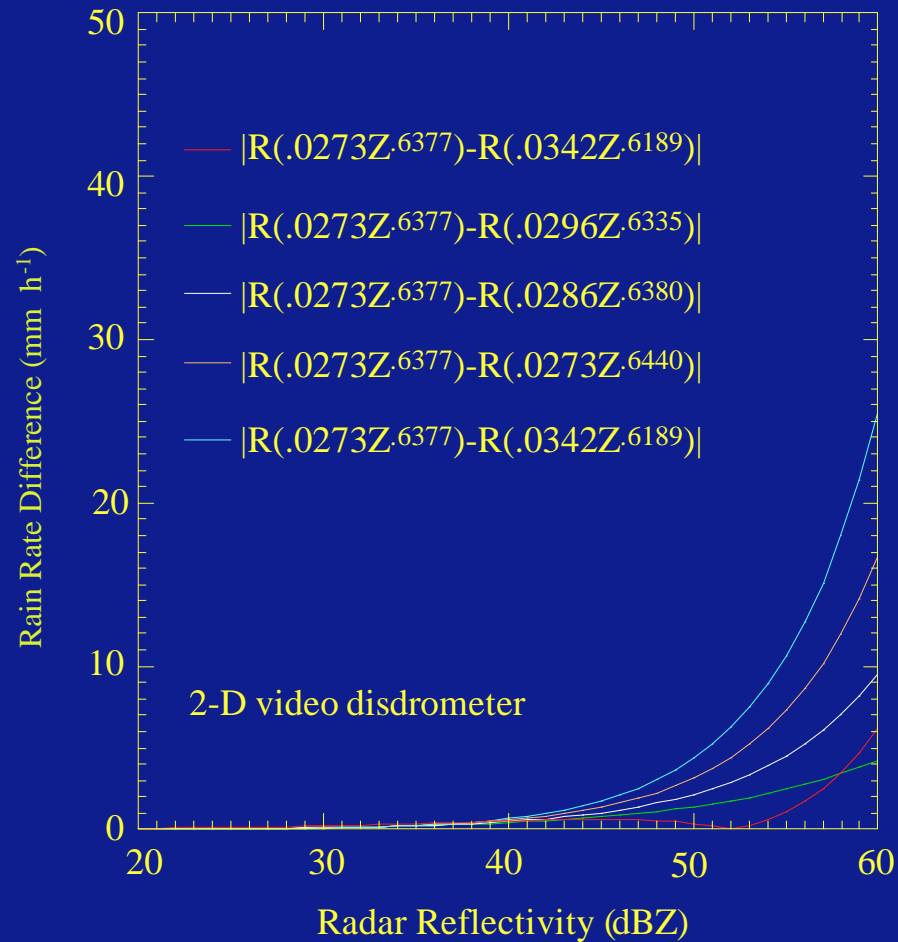
Drop Fall Velocity Measurements



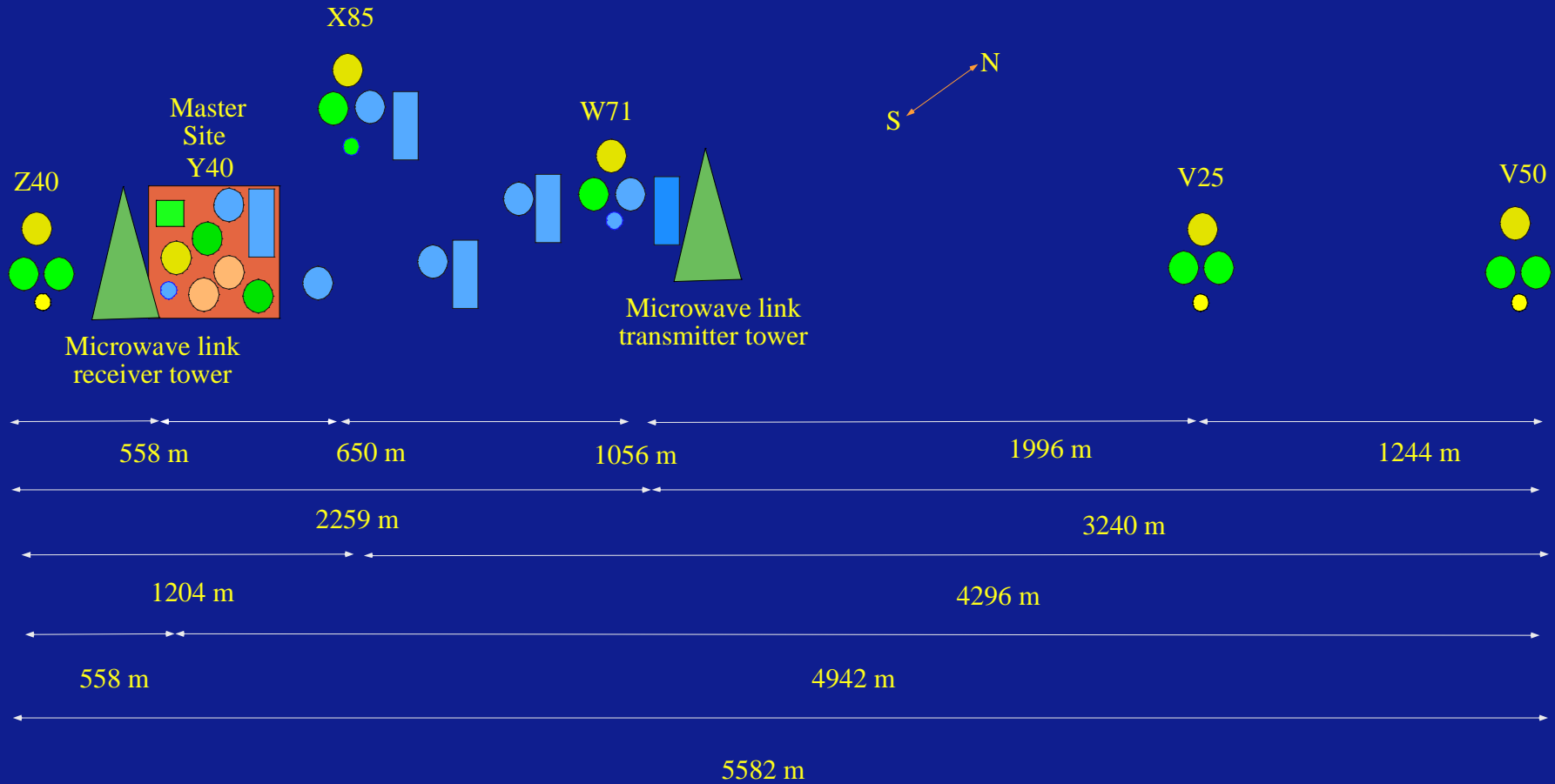
Drop Size Distribution Simulations












Simulated Z-R Relationships



Wallops Island Data Acquisition Network: Past, Present, and Future



- | | | |
|--|---|---|
|  ML tipping bucket rain gauge |  ML optical rain gauge |  Future tipping bucket rain gauge |
|  TSVO tipping bucket rain gauge |  ML Joss-Waldvogel disdrometer |  Future Joss-Waldvogel disdrometer |
|  TSVO 2-D video disdrometer |  TSVO Joss-Waldvogel disdrometer |  Vibrating wire weighing gauge |

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