Numerous rich datasets have been collected during current and ongoing Radar Deployments and Field Sampling for GPM Ground Validation Field Campaigns. GPM has collected myriad high quality multi-parameter radar, gauge, and disdrometer/gauge field datasets to support pre-launch GPM physical validation efforts. Collection and analysis efforts will continue into post-launch era.

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The Global Precipitation Measurement (GPM) Mission: A fundamental role/need for radars and supporting precipitation measurements

1. The Global Precipitation Measurement (GPM) Mission: A fundamental role/need for radars and supporting precipitation measurements

- Radars: Fundamental to GPM algorithm validation for characterizing column precipitation profiles and variability (e.g., DSD, water contents, microphysical processes)
- Numerous rich datasets have been collected during current and ongoing GPM GV field efforts.

2. Top down: Multi-Parameter Radar, Radiometers and Reference Networks

- Airborne
  - View from the top- Satellite "simulators"
    - CoSMIR, AMPR Radiometers
    - HiWRF, APR-2, Ka-Ku Radars
  - Ground: Dual-pol/Dual-Freq. Radar
    - Column microphysics
      - Cloud Microphysics Suite (e.g., 2D/3-P/S, CIP, CDP, HVPS-3, Nevizor, King)

3. Mid-latitude Continental Convective Clouds Experiment

4. Select GV Field Efforts, Observations, and Results: GCPEX and NASA Wallops

- GCPEX: GPM Cold Season Precipitation Experiment (Jan-Feb. 2012)
  - Small drop detection in cold rain
  - Verified consistency of reference SWE

- May-June 2013, Iowa
  - Assess sources of uncertainty in satellite estimates of rainfall
  - Ice and coalescence
  - Ice dominated DSD process

- How do vertical profile variability and microphysical process couple to produce satellite sub-pixel to pixel scale spatial variability in rain properties?

- Event 1: Event 2

- How many gauges to get a "representative" area mean rainfall over satellite fields of view (e.g., 5 - 25 km)

- 1/17/2012: POSS (red) vs. 2DVD (blue)
  - DSD Small-drop counts increase using single camera methods.

- 5/20/13: Squall Line Case
  - NPOL Rain mapping
  - NPOL Calibration with 2DVD network

- How do vertical profile variability and microphysical process couple to produce satellite sub-pixel to pixel scale spatial variability in rain properties?

- 4.0 Variability Maps to the Physics of Precipitation Process

- Summary: GPM has collected myriad high quality multi-parameter radar, gauge, and disdrometer/gauge field datasets to support pre-launch GPM physical validation efforts. Collection and analysis efforts will continue into post-launch era.

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