

The logo for ARM (Atmospheric Radiation Measurement) features the letters "ARM" in a bold, dark blue, sans-serif font. Below the letters is a light blue, curved swoosh that arches over the text.

CLIMATE RESEARCH FACILITY

Facility Strategy to support ARM Next-Generation Activities: Data Products and Beyond

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U.S. DEPARTMENT OF
ENERGY

Office of
Science

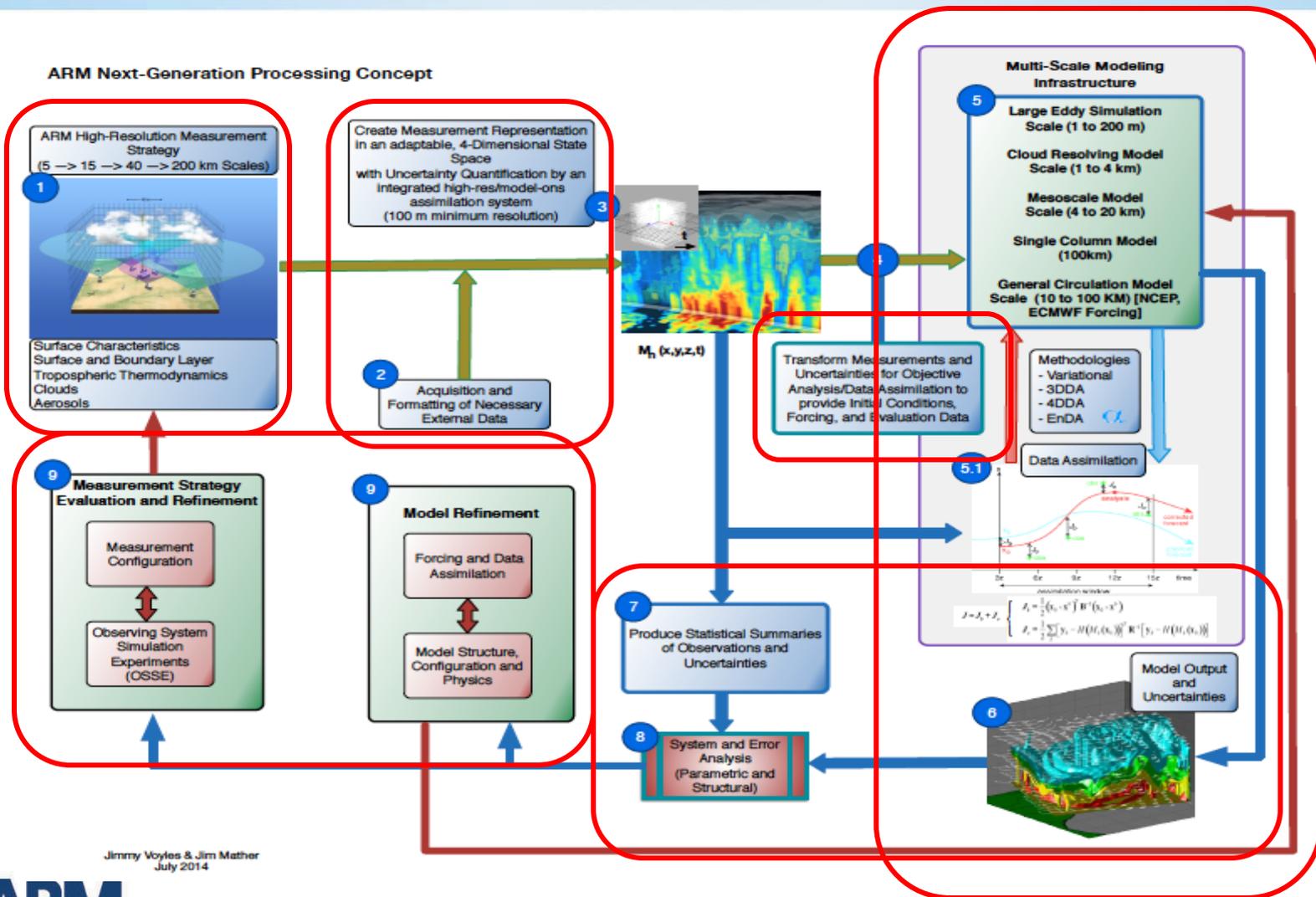
Next-Generation ARM Facility

In support of ARM's Mission to accelerate the use of ARM data for the development and improvement of climate models

- Mega-sites (NSA and SGP)
- Routine high-resolution modeling
- Develop data products and analysis tools

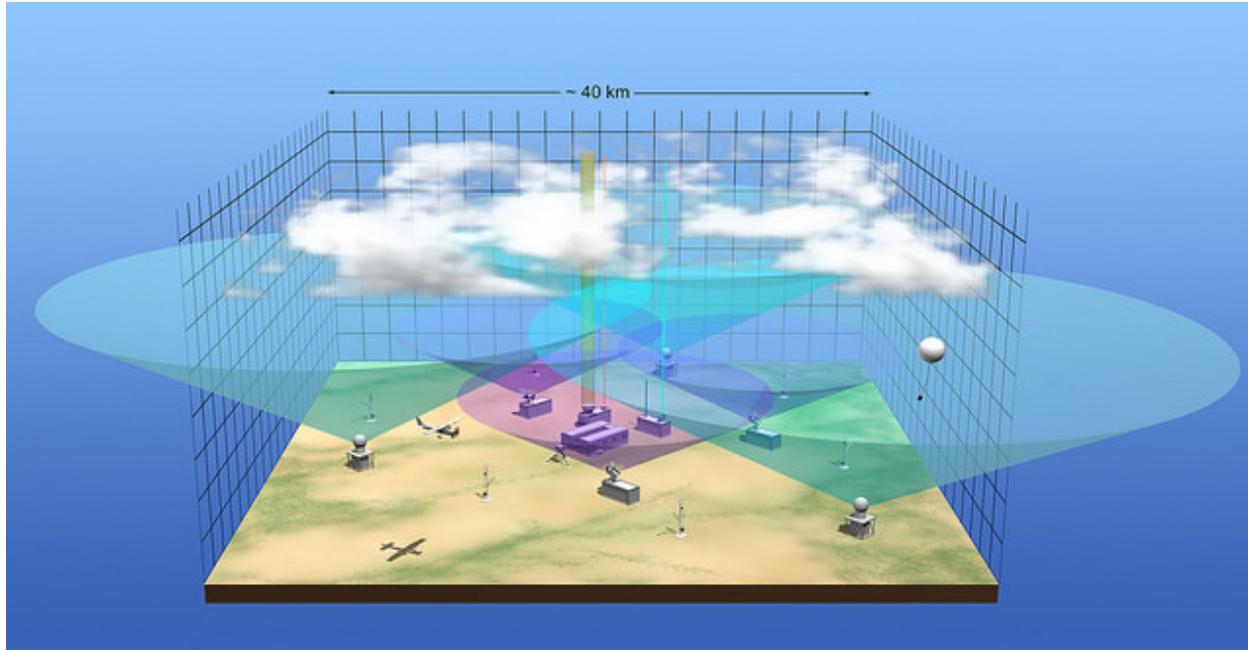
Need new approach for synthesizing model output and observational data.

New Paradigm for Bridging Observations and Models



Jimmy Voyles & Jim Mather
July 2014

Future Strategy for Data Products and Alternate Activities



- High quality datasets (uncertainty, data quality)
- Forcing datasets for data assimilation
- Tools for merging and visualizing spatial datasets

Emphasis on Data Quality Assessment & Communication

Assessing and communicating measurement uncertainties & data quality – (Thursday 10:30-12:30 Fairfax Room)

- DQRs → web reports
 - Data Quality Office (DQO)
 - Mentors
 - Users
- <https://www.db.arm.gov/DQPR2/>
- Machine readable DQ
 - Data Discovery Tool (red, yellow, green)
 - Included in data order
 - Data Quality Flags
- Encourage users to engage with DQO, instrument mentors, translators
 - Find issues with data
 - Have ideas to better communicate DQ



Emphasis on Uncertainty Quantification

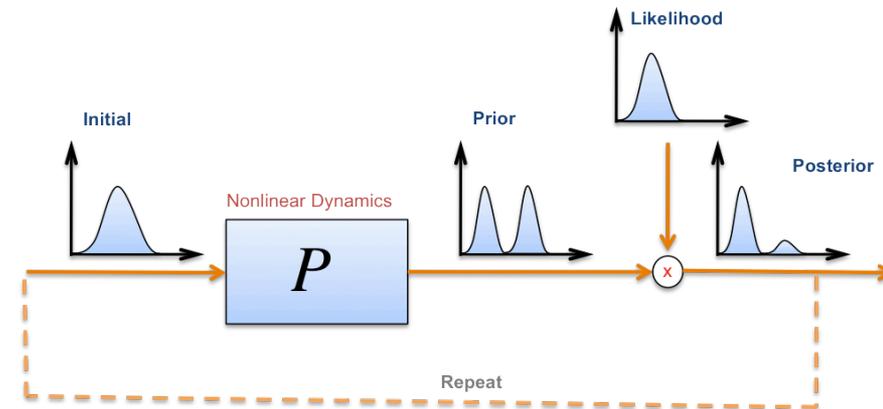
Assessing and communicating measurement uncertainties & data quality – (Thursday 10:30-12:30 Fairfax Room)

Standardization of UQ Assessment & Reporting

- UQ Suggested Variables
 - T, P, RH, Winds, Radar Moments
- Value Added Products (VAPs)
 - Provide input to UQ

Synergistic Activities

- Calibration Grooming Analysis (CGA) – Scanning radar
- Aerosol Observing System (AOS) Harmonization



uq.tamu.edu

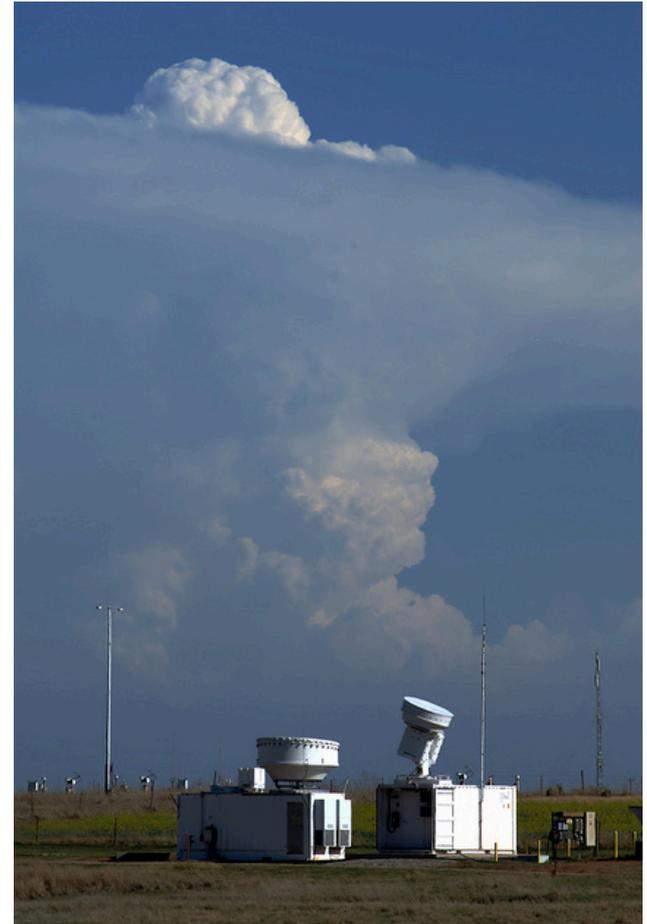
Focus on Data Products to Support High-Resolution Modeling

- Development of routine forcing datasets – real-time processing
- Improved precipitation measurements and products
- AERI profiles T, WV
- Scanning radar products
- Land-surface products
- Vertical Velocity products

Spatial Cloud measurements and Products
(Monday night)

Vertical Velocity (Wednesday 1:30-3:30)

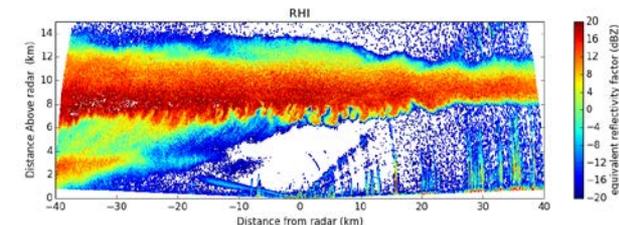
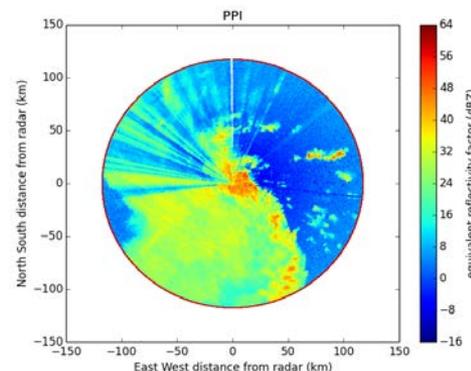
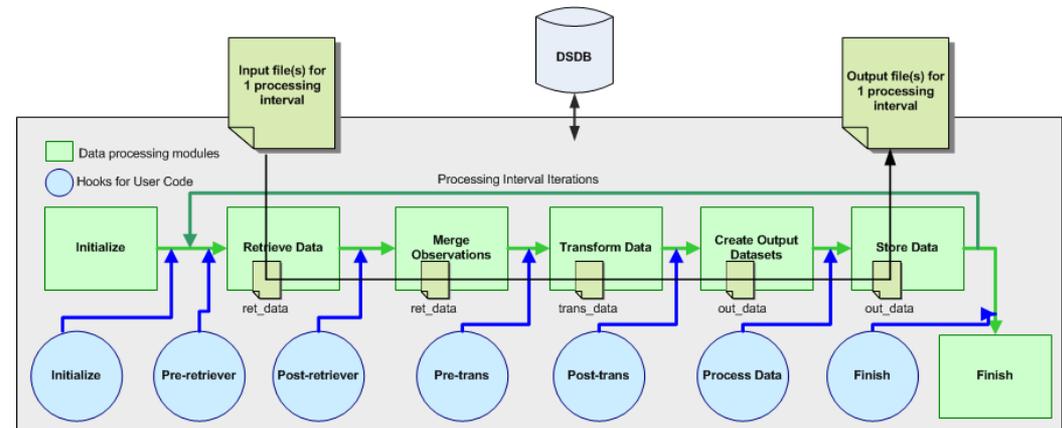
Precipitation Measurements (Thursday
10:30-12:30)



Analysis Tools

Next Generation ARM Data Analysis Tools (Wed. 1:30-3:30)

- ARM Data Integrator (ADI) Lunch tutorial (Tues)
 - Merged datasets
 - VAPs on the fly
- PyART Lunch tutorial (Wed)
- Visualization and statistical summaries
- Instrument Simulators (Thursday 1:30)
- Code sharing repository



Current and Future Activities

FY15 Highest Priorities

- KAZR and KAZR2 ARSCL
- Corrected Moments RWP, SACR
- LWP from 3 channel MWR
- Radiative Flux Analysis
- Ship focused VAPs – MAGIC
- AOS Harmonization
- Forcing Datasets AMIE
- Radar Simulators

FY16 Highest Priorities

- Quantified Uncertainties
- Data Quality Assessment
- Precipitation Measurements
- High quality radar data and products
- Forcing datasets
- Vertical Velocity
- Data tools (ADI, PyArt)
- Visualization of spatial datasets
- Instrument Simulators

New Process for Recommendations

In an effort to make the process for recommending ARM data products, tools, instruments etc. more formalized and transparent:

- Centralized website
 - Current activities and priorities
 - A web-based form for submitting new recommendations
 - Suggested algorithm or measurement technique/instrument
 - Overall scientific impact
 - Users
 - An open discussion forum
 - Links to ARM process descriptions (i.e. VAP lifecycle)
- Ideas would be assessed by ARM for feasibility and alignment with ARM objectives; provide feedback
- Engage with larger community (DOE CESD, GEWEX etc.)

Have an idea?

ARM Translators



Mike Jensen



Shaocheng
Xie



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Laura
Riihimaki



Scott Collis

ASR Working Group Chairs



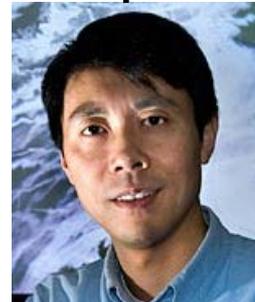
Tony
DelGenio



Matt Shupe



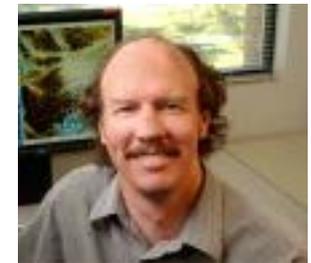
Allison
McComiskey



Jian Wang



Rob Wood



Steve Ghan