ARM
Atmospheric Radiation Measurement

A Review of the Status and Direction of VAP Development and Operations

Working Group Meetings
Fall 2006

The ARM Science Translators:

Connor Flynn, Chuck Long, Jennifer Comstock,
Mike Jensen, Dave Turner, Shaocheng Xie

ARM Science Translators

ARM
Atmospheric Radiation Measurement

Aerosol Working Group:

Connor Flynn

Cloud Modeling Working Group:

Shaocheng Xie

Cloud Properties Working Group:

Mike Jensen

Radiative Properties Working Group:

Chuck Long

CLOWD Working Group:

Jennifer Comstock & Dave Turner

VAPs Add Critical Value to ARM Data

ARM
Atmospheric Radiation Measurement

VAPs add value to input datastreams:

- Geophysical quantities unavailable by direct means
  - Cloud properties from ARSCL
  - Vertical profiles from MWR
- Apply corrections or calibrations to input data
  - SW Diff Corr, RL Prof, MPLnor
- Perform comparisons of geophysical quantities
  - QME AERI LBL, QME AERI Prof
- Best Estimate of geophysical quantity.
  - RL Prof BE, SW Flux Anal, Aerosol BE

❖ **VAPs are recommended, and supported by the Working Groups with an identified Science Team Point-of-Contact**

Total VAPs in production or development: 47

Official VAP Development Cycle

ARM
Atmospheric Radiation Measurement

1. Discussion

-VAP idea proposed to Working Group
-WG/Translator prioritize VAPS
- Sponsor POC identified

2. Planning

Programmatic prioritization
Allocation of resources

3. Development

Beta-Test
Documentation

PI Sponsor

Translator

4. Production

- Hands-Off Operations
- VAP output stored in the archive

- Organize and focus developer efforts along programmatic goals
- Facilitate cooperation between Infrastructure and ARM Science Team

… with a dose of “Reality”.

ARM
Atmospheric Radiation Measurement

- **Complex VAPs tend to remain in the development stage**
  - Examples: BBHRP, MICROBASE, MWR Retrieval
- **Near-real time operation is applicable only to some VAPs**
  - Corrections/calibrations often require extended time series
  - Examples: MFRSR OD, IR Loss Correction
- **Some are impossible or impractical to fully automate**
  - Examples: ARSCL, Variational Analysis
- **Some VAPs may automate well but are dependent on varying corrections that change unpredictably**
  - Examples, Raman Lidar and Micropulse Lidar VAPs

Other Issues Impacting VAP Schedules

ARM
Atmospheric Radiation Measurement

- Program-wide standardization
  - Example: Updating existing VAPs to new QC standards
- Reprocessing due to problems with VAP dependencies

  Example: MFRSR raw -> MFRSR AOD -> BBHRP
- Needs for updating existing VAPs
  - Examples: updating codes and data object design; documenting older VAPs currently in production

Revised VAP Development Cycle

ARM
Atmospheric Radiation Measurement

1. Discussion

VAP idea proposed to Working Group

WG/Translator prioritize prioritize VAPS

2. Planning

Programmatic prioritization prioritization

Allocation of resources

3. Development

PI Sponsor

Translator

Developer

Beta-Test & Initial Docs

4. Evaluation Release

Science Team

Translator

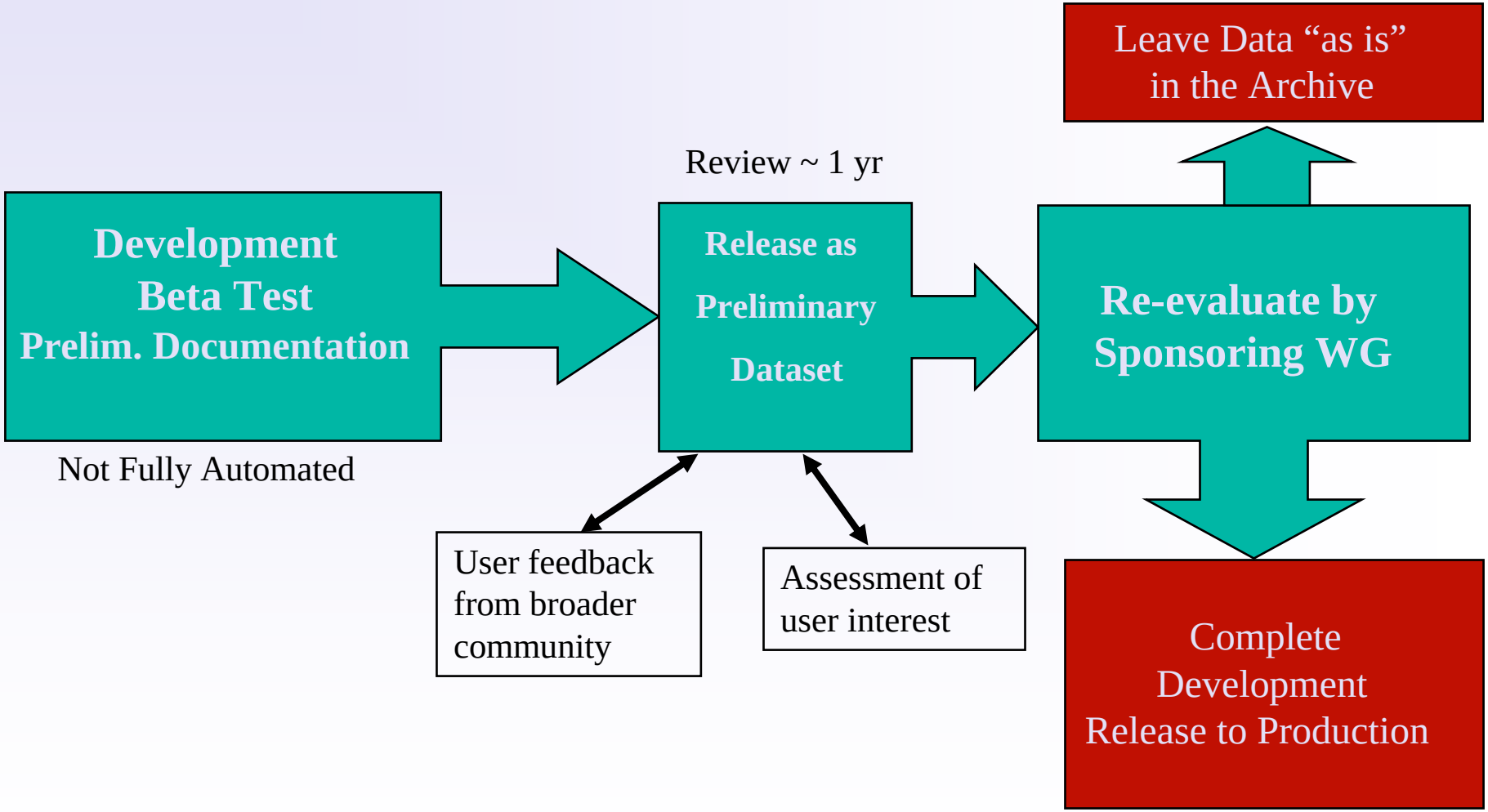
Developer

5. Production

Manual or Auto. Operations
VAP output stored in the archive

“Evaluation Release of VAPs”

ARM
Atmospheric Radiation Measurement



Benefits of Evaluation Release

ARM
Atmospheric Radiation Measurement

- Facilitate earlier availability of VAP output to the user community
- Provide greater opportunity for community feedback/suggestions in the development process before finalization of development cycle
- Include VAP output for those cases where full automation is not desirable
- Allow the assessment of community interest and use to be included in the VAP development process
- Culminate in “standard” VAP output into Archive
- Current ER Products: Merged Sonde, BBHRP, MICROBASE

VAPs: Current Status

ARM
Atmospheric Radiation Measurement

Total VAPs: 47

Autonomous vs. Manual Operation

- 26 - "autonomous"
- 11 - manual operation
- 10 – both autonomous and manual aspects

Operational Status

- 16 - in some need of repair or updating
- 3 - have been retired
- 2 - recommended for sunsetting

QC/Web Pages/Tech. Reports

- 26 - updating to the new QC standards
- 21 - need some degree of Web page work
- 22 - do not have a technical report.

Working Group recommendations: Prioritization of Translator Tasks

ARM
Atmospheric Radiation Measurement

- VAP QA/QC monitoring
- VAP production for cases where autonomous operation is either not possible or not cost-effective.
  - i.e. ARSCL, MicroBase, MergedSonde
- Updating and repairing VAPs, including QC flagging
- Updating web pages, technical reports, and documenting data format/content for VAPs currently in production