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ARM Climate Research Facility Quarterly Value-Added Product Report

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May 2013



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**First Quarter:
January 1–March 31, 2013**

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Abstract

The purpose of this report is to provide a concise status update for value-added products (VAP) implemented by the Atmospheric Radiation Measurement (ARM) Climate Research Facility. The report is divided into the following sections: (1) new VAPs for which development has begun, (2) progress on existing VAPs, (3) future VAPs that have been recently approved, (4) other work that leads to a VAP, and (5) top requested VAPs from the ARM Data Archive. New information is highlighted in **blue text**. New information about processed data by the developer is highlighted in **red text**. The upcoming milestones and dates are highlighted in **green**.

Acknowledgements

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Contents

Abstract	iii
Acknowledgements	iv
1.0 New Value-Added Products (VAPs)	1
1.1 Microwave Radiometer Retrieval Version 2 (MWRRET2)	1
1.2 MAGIC KAZR and MAGIC WACR (MKAZR and MWACR)	1
1.3 Sea-Surface Temperature	1
2.0 Existing VAPs	2
2.1 Atmospherically Emitted Radiance Interferometer Noise Filter (AERINF)	2
2.2 AERI Profiles of Water Vapor and Temperature (AERIPROF)	2
2.3 Aerosol Best Estimate (AEROSOLBE)	2
2.4 ARM Cloud Retrieval Ensemble Data Set (ACRED)	2
2.5 Aerosol Intensive Properties (AIP)	3
2.6 Aerosol Modeling Testbed (AMT)	3
2.7 Aerosol Optical Depth Derived From Either MFRSR or NIMFR (AOD)	4
2.8 Aerosol Observing System Cloud Condensation Nuclei Average (AOSCCNAVG)	4
2.9 Aerosol Observing System Correction (AOSCORR)	4
2.10 ARM Best Estimate Cloud Radiation Measurements (ARMBECLDRAD)	5
2.11 ARM Best Estimate Atmospheric Measurements (ARMBEATM)	5
2.12 Active Remote Sensing of Clouds (ARSCL)	6
2.13 Best-Estimate Fluxes From EBBR Measurements and Bulk Aerodynamics Calculations (BAEBBR)	6
2.14 Broadband Heating Rate Profile (BBHRP)	6
2.15 Best-Estimate Surface Radiative Flux (BEFLUX)	6
2.16 Cloud Classification (CLDCLASS)	7
2.17 Cloud Concentration Nuclei Profile (CCNPROF)	7
2.18 Corrected Moments in Antenna Coordinates (CMAC)	7
2.19 Convective Vertical Velocity VAP (CONVV)	8
2.20 G-Band Vapor Radiometer Precipitable Water Vapor (GVRPWV)	8
2.21 Interpolated Sonde (INTERPSONDE)	8
2.22 Ka-band Zenith-Pointing Radar Active Remote Sensing of Clouds (KAZRARSCCL)	9
2.23 Langley Regression (LANGLEY)	9
2.24 Microwave Radiometer-Scaled Sonde Profiles (LSSONDE)	9
2.25 Merged Sounding (MERGESONDE)	9
2.26 MFRSR Column Intensive Properties (MFRSRCIP)	10
2.27 Cloud Optical Depth From MFRSR (MFRSRCLDOD)	10

2.28	Continuous Baseline Microphysical Retrieval (MICROBASE)	11
2.29	MICRO-ARSCL (MICROARSCL)	11
2.30	Mapped Moments to Cartesian Grid (MMCG)	11
2.31	Micropulse Lidar Cloud Optical Depth (MPLCOD)	12
2.32	Micropulse Lidar Polarized Average (MPLAVG)	12
2.33	MPL Cloud Mask (MPLCMASK)	12
2.34	Microwave Radiometer Retrievals (MWRRET)	12
2.35	Droplet Number Concentration (NDROP)	13
2.36	Organic Aerosol Component Analysis (OACOMP)	13
2.37	Planetary Boundary Layer Height (PBLHT)	14
2.38	Python ARM Radar Toolkit (PYART)	14
2.39	Quality Checked Eddy Correlation (QCECOR)	14
2.40	Data Quality Assessment for ARM Radiation Data (QCRAD)	15
2.41	Quantitative Precipitation Estimate (QPE)	15
2.42	Raman Lidar Profiles—Aerosol Scattering Ratio (RLPROFASR)	15
2.43	Raman Lidar Profiles—Best Estimate (RLPROFBE)	15
2.44	Raman Lidar Profiles—Depolarization Ratio (RLPROFDEP)	16
2.45	Raman Lidar Profiles—Extinction (RLPROFEXT)	16
2.46	Raman Lidar Profiles—MERGE (RLPROFMERGE)	16
2.47	Raman Lidar Profiles—Mixing Ratio (RLPROFMR)	16
2.48	Raman Lidar Profiles—Temperature (RLPROFTEMP)	17
2.49	Radiatively Important Parameters Best Estimate (RIPBE)	17
2.50	SGP Area Surface Cloud and SW Radiation Grid (SFCCLDGRID)	17
2.51	Shortwave Array Spectroradiometer Hemispheric Langley (SASHE LANGLEY)	18
2.52	Shortwave Array Spectroradiometer Hemispheric Aerosol Optical Depth (SASHE AOD)	18
2.53	SONDE Adjust (SONDEADJUST)	18
2.54	Surface Spectral Albedo (SURFSPECALB)	19
2.55	Shortwave Flux Analysis (SWFLUXANAL)	19
2.56	Tower Water-Vapor Mixing Ratio (TWRMR)	19
2.57	UHF ARM Profiling Radar Actively Remotely Sensed Atmospheric Layers (UAPARSAL)	20
2.58	Variational Analysis (VARANAL)	20
2.59	Vertical Velocity in Stratiform Rain (VVSAR)	20
2.60	W-Band ARM Cloud Radar Active Remote Sensing of Clouds (WACR-ARSCL)	21
3.0	Future VAPs	21
4.0	VAP Metrics	21

Figures

Figure 1. Top five VAPs that were requested by users from the ARM Data Archive during the last four quarters.	23
Figure 2. Top five VAPs downloaded from the evaluation data area for the last four quarters.....	23

Tables

Table 1. Top five VAPs requested by users from the ARM Data Archive during the second quarter.	22
Table 2. Top five VAPs requested by users from the evaluation area of the ARM Data Archive during the second quarter.....	22

1.0 New Value-Added Products (VAPs)

This section describes new activities that have begun in the last quarter after being approved by the Atmospheric Radiation Measurement (ARM) Infrastructure and Science Team.

1.1 Microwave Radiometer Retrieval Version 2 (MWRRET2)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00985 has been approved to update the current retrieval algorithm to be more flexible so that it can work with any set of n microwave frequencies to retrieve precipitable water vapor and liquid water path.

1.2 MAGIC KAZR and MAGIC WACR (MKAZR and MWACR)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00957 has been approved to correct ship motion for the cloud radar data for the Marine ARM GPCI Investigation of Clouds (MAGIC) deployment.

1.3 Sea-Surface Temperature

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00970 has been approved to develop to derive sea-surface temperature from the infrared thermometer measurements for the MAGIC deployment.

2.0 Existing VAPs

This section describes the status of each VAP and the ongoing activities that were approved to improve the performance of or maintain existing VAPs. The information is abstracted primarily from the monthly updates provided by the development team to the Engineering Change Orders (ECOs).

2.1 Atmospherically Emitted Radiance Interferometer Noise Filter (AERINF)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.2 AERI Profiles of Water Vapor and Temperature (AERIPROF)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

The VAP is waiting for Rapid Update Cycle (RUC) input data.

2.3 Aerosol Best Estimate (AEROSOLBE)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.4 ARM Cloud Retrieval Ensemble Data Set (ACRED)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Chuanfeng Zhao and Renata McCoy, Lawrence Livermore National Laboratory

Status: In Development

Tier: Evaluation

Engineering Work Order-13590 has been approved to address the uncertainty in cloud retrievals and provide three different retrievals at the five ARM permanent research sites.

Eighty percent progress has been made with uncertainty studies on Continuous Baseline Microphysical Retrieval (MICROBASE) VAP cloud retrieval data set.

Next Milestone: The development of an ensemble MICROBASE cloud retrieval data set has been pushed back to June 30, 2013.

2.5 Aerosol Intensive Properties (AIP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no ECOs for this VAP.

2.6 Aerosol Modeling Testbed (AMT)

Translator: Jerome Fast, Pacific Northwest National Laboratory

Developer: Chen Song and Manish Shrivastava, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Work Order-13683 has been approved to port data from the Brookhaven National Laboratory Aerosol Life Cycle intensive operational period field campaign to the testbed.

Updated data have been received for the testbed case, and the data have been processed for the AMT.

Next Milestone: The bundling of the processed final testbed is scheduled before June 30, 2013.

2.7 Aerosol Optical Depth Derived From Either MFRSR or NIMFR (AOD)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Connor Flynn, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.8 Aerosol Observing System Cloud Condensation Nuclei Average (AOSCCNAVG)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00898 was approved to initiate and coordinate the development of an AOSCCNAVG VAP to consolidate the relevant cloud condensation nuclei parameters into a single file and average the data over the 5-minute integration time of each percent supersaturation (%ss) value.

[The VAP has been released to the Data Management Facility \(DMF\), and the data are being processed.](#)

2.9 Aerosol Observing System Correction (AOSCORR)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: On Hold

Tier: Evaluation

Engineering Work Order-00934 was approved to apply instrument corrections and calibrations to handle Brookhaven National Laboratory aerosol observing system (AOS) datastream.

[The original plan has been put on hold due to the discrepancies with the National Oceanic and Atmospheric Administration \(NOAA\) AOS data and Brookhaven National Laboratory \(BNL\) AOS data. A teleconference was held with key stakeholders, and this task has been put on hold till the ingest work is completed.](#)

2.10 ARM Best Estimate Cloud Radiation Measurements (ARMBECLDRAD)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Renata McCoy, Lawrence Livermore National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00620 has been approved to make updates to run Southern Great Plains (SGP), North Slope of Alaska (NSA) and Tropical Western Pacific (TWP) sites; publish the Cloud Modeling Best Estimate (CMBE) VAP to the Earth System Federated Grid; and adhere CMBE to ARM data object design (DOD) standards to produce ARMBE.

Seventy percent progress has been made to develop a land data set to support land modeling studies.

Ninety-five percent progress has been made to develop ARMBE for the ARM Mobile Facility (AMF) China deployment.

Next Milestone: Develop ARMBECLDRAD for the AMF China deployment.

2.11 ARM Best Estimate Atmospheric Measurements (ARMBEATM)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Renata McCoy, Lawrence Livermore National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00620 has been approved to make updates to run SGP, NSA, and TWP sites; publish CMBE to the Earth System Federated Grid; and adhere CMBE to ARM DOD standards to produce ARMBE.

Seventy percent progress has been made to develop a land data set to support land modeling studies.

Ninety-five percent progress has been made to develop ARMBE for the AMF China deployment.

Next Milestone: Develop ARMBEATM for the AMF China deployment.

2.12 Active Remote Sensing of Clouds (ARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Karen Jones, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00086 has been approved to catch up on processing of ARSCL data and development of a new ARSCL product for the upgraded Ka-band ARM zenith radar (KAZR) system.

No progress has been made in the last quarter due to other priorities.

Next Milestone: Complete historical processing of data has been moved to July 31, 2013.

2.13 Best-Estimate Fluxes From EBBR Measurements and Bulk Aerodynamics Calculations (BAEBBR)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.14 Broadband Heating Rate Profile (BBHRP)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

2.15 Best-Estimate Surface Radiative Flux (BEFLUX)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.16 Cloud Classification (CLDCLASS)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chaomei Lo, Pacific Northwest National Laboratory

Status: No Development

Tier: Evaluation

There are no open ECOs for this VAP.

2.17 Cloud Concentration Nuclei Profile (CCNPROF)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.18 Corrected Moments in Antenna Coordinates (CMAC)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: In Development

Tier: Evaluation

Engineering Work Order-13977 was approved to initiate and coordinate the development of CMAC in evaluation at the SGP.

[The code to correct moments and write generic conversion code has been completed.](#)

[Next Milestone: The date to release data to evaluation has been extended to July 31, 2013, since there are challenges with clutter in the lowest tilt of the X-band scanning ARM precipitation radar \(X-SAPR\).](#)

2.19 Convective Vertical Velocity VAP (CONVV)

Translator: Scott Collis, Argonne National Laboratory

Developer: Kirk North, McGill University

Status: In Development

Tier: Evaluation

Engineering Work Order-13978 was approved to initiate and coordinate the development of the CONVV VAP to assist in implementing a convective Vertical Velocity VAP for the Midlatitude Continental Convective Clouds Experiment (MC3E).

Next Milestone: [Review comments from beta users by June 30, 2013.](#)

2.20 G-Band Vapor Radiometer Precipitable Water Vapor (GVRPWV)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.21 Interpolated Sonde (INTERPSONDE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production

Engineering Work Order-14216 has been approved to create a thermodynamic profile in the same manner as the Merged Sounding (MERGESONDE) VAP. The difference is that INTERPSONDE does not include the European Centre for Medium-Range Weather Forecasts model data.

[The product has been released to the DMF.](#)

2.22 Ka-band Zenith-Pointing Radar Active Remote Sensing of Clouds (KAZRARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Karen Johnson, Brookhaven National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00899 was approved to initiate and coordinate the development of an ARSCL-like VAP to enhance the scientific value of data collected by the KAZR, the follow-on to the now-retired millimeter-wavelength cloud radar.

Next Milestone: Review comments from the beta users by June 30, 2013, due to other priorities.

2.23 Langley Regression (LANGLEY)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.24 Microwave Radiometer-Scaled Sonde Profiles (LSSONDE)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.25 Merged Sounding (MERGSONDE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00092 has been approved to add quality check fields and release the second version of the code to the DMF.

Next Milestone: The release of version 2 for routine processing at DMF is waiting for the SONDE Adjust (SONDEADJUST) VAP to be released.

2.26 MFRSR Column Intensive Properties (MFRSRCIP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00823 has been approved to develop a VAP to retrieve aerosol column intensive properties from the multifilter rotating shadowband radiometer (MFRSR), including single scattering albedo, asymmetry parameter, and bi-modal log-normal size distributions.

Next Milestone: Review comments from beta users by March 2013.

2.27 Cloud Optical Depth From MFRSR (MFRSRCLDOD)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00287 has been approved to update the VAP to run with the Microwave Radiometer Retrievals VAP (MWRRET) as input, run and evaluate data from the AMF Azores deployment, and release the product.

Data have been processed and reviewed for the SGP extended facilities. Ninety-five percent of the TWP sites' data and 70% of the Azores deployment have been reviewed.

Next Milestone: Completion of processing and analyzing of historical data has been pushed back to June 30, 2013.

2.28 Continuous Baseline Microphysical Retrieval (MICROBASE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Maureen Dunn, Brookhaven National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00804 has been approved to update the VAP with quality checks and release to production.

Next Milestone: Complete processing of data for the AMF Gan Island deployment as soon as MWRRET data are available.

2.29 MICRO-ARSCL (MICROARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Ed Luke, Brookhaven National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00847 has been approved to solve the spectral imaging problem and porting MICROARSCL to the ARM computer cluster at Oak Ridge National Laboratory.

The generic user profile (GUP) implementation of the insect clutter detection algorithm has been completed.

Next Milestone: Reprocess historical data at Oak Ridge. This milestone has been pushed back to June 30, 2013.

2.30 Mapped Moments to Cartesian Grid (MMCG)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00887 was approved to develop a VAP to map the radar moments to Cartesian grid.

The data have been released for evaluation.

Next Milestone: Review of the user feedback to be completed by September 30, 2013.

2.31 Micropulse Lidar Cloud Optical Depth (MPLCOD)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chaomei Lo, Pacific Northwest National Laboratory

Status: No Development

Tier: Evaluation

There are no open ECOs for this VAP.

2.32 Micropulse Lidar Polarized Average (MPLAVG)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.33 MPL Cloud Mask (MPLCMASK)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.34 Microwave Radiometer Retrievals (MWRRET)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00526 has been approved to transition the product from evaluation to production, release the product, and process historical data.

This product is waiting for the WACR-ARSCL VAP to be available at the ARM Data Archive.

Next Milestone: Process AMF data when WACR-ARSCL data are reprocessed.

2.35 Droplet Number Concentration (NDROP)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00955 has been approved to initiate and coordinate the development of a VAP to implement a method for determining droplet number concentration.

The data have been staged for evaluation.

Next Milestone: Waiting on WACR-ARSCL data to process data from the Azores deployment. Review user feedback by September 30, 2013.

2.36 Organic Aerosol Component Analysis (OACOMP)

Translator: Jerome Fast, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00838 has been approved to develop a VAP to estimate organic aerosol components from aerosol mass spectrometers (AMS) and aerosol chemical speciation monitors (ACSM) to be deployed at ARM's sites and as part of the Mobile Aerosol Observing System (MAOS).

There appears to be a positive bias in the VAP time series data versus the total organics field from ACSM, which is being investigated.

Next Milestone: The deadline for producing evaluation data has been pushed back to June 30, 2013.

2.37 Planetary Boundary Layer Height (PBLHT)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00893 has been approved to initiate and coordinate the development a VAP to implement methods for Planetary Boundary Layer (PBL) height detection using radiosondes, ceilometer, and micropulse lidar.

User feedback reviews have been addressed. Waiting on comments from the DOD review.

Next Milestone: Release the PBLHT VAP to production after adapting the VAP to ARM Data Integrator software by June 30, 2013.

2.38 Python ARM Radar Toolkit (PYART)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Engineering Change Order-00920 was approved to initiate and coordinate the development of a toolkit that is usable by the ARM community for working with all the radar data formats produced by the scanning ARM precipitation radars (SAPRs).

Significant progress has been made with regards to meeting CF-Radial standards.

2.39 Quality Checked Eddy Correlation (QCECOR)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Yunyan Zhang, Argonne National Laboratory

Engineering Work Order-00941 was approved to apply quality checks and correct the latent and sensible heat fluxes for historical eddy correlation (ECOR) data.

Data for all sites (surface flux using old ECOR data) have been released to the evaluation area.

Next Milestone: Review DOD comments and determine path forward.

2.40 Data Quality Assessment for ARM Radiation Data (QCRAD)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.41 Quantitative Precipitation Estimate (QPE)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: In Development

Tier: Evaluation

Engineering Work Order-00936 was approved to produce the QPE VAP for the Manus C-band scanning ARM precipitation radar for ARM Madden-Julian Oscillation Investigation Experiment (AMIE) campaign data.

[Data have been processed for November.](#)

[Next Milestone: The data will be released by June 30, 2013.](#)

2.42 Raman Lidar Profiles—Aerosol Scattering Ratio (RLPROFASR)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.43 Raman Lidar Profiles—Best Estimate (RLPROFBE)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.44 Raman Lidar Profiles—Depolarization Ratio (RLPROFDEP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.45 Raman Lidar Profiles—Extinction (RLPROFEXT)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.46 Raman Lidar Profiles—MERGE (RLPROFMERGE)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.47 Raman Lidar Profiles—Mixing Ratio (RLPROFMR)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.48 Raman Lidar Profiles—Temperature (RLPROFTEMP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.49 Radiatively Important Parameters Best Estimate (RIPBE)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00767 has been approved to fix bugs and enhance the product based on feedback from beta users.

[ACRED was used as input to run RIPBE, and the data have been provided to the stakeholders for review.](#)

[Next Milestone: Provide documentation on creating RIPBE-like inputs to the BBHRP testbed by July 30, 2013.](#)

2.50 SGP Area Surface Cloud and SW Radiation Grid (SFCCLDGRID)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.51 Shortwave Array Spectroradiometer Hemispheric Langley (SASHE LANGLEY)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00958 has been approved to initiate and coordinate the development of additional input to the existing LANGLEY VAP, implementing the Langley regression on SASHE instrument data.

[The data have been staged in the evaluation area for review.](#)

2.52 Shortwave Array Spectroradiometer Hemispheric Aerosol Optical Depth (SASHE AOD)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00959 has been approved to initiate and complete development of additional input to the existing AOD VAP, using SASHE data to calculate AOD.

[The data have been staged in the evaluation area for review.](#)

2.53 SONDE Adjust (SONDEADJUST)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00824 has been approved to correct the documented biases in radiosonde humidity measurements.

[Review of user feedback has been completed.](#)

Next Milestone: The deadline for migrating data to the ARM Data Archive and releasing the VAP for routine processing has been pushed back to June 30, 2013.

2.54 Surface Spectral Albedo (SURFSPECALB)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Change Orders-13943 and 14346 have been opened to manage processing of the data at the DMF and to adapt to NSA.

Ninety percent progress has been made to adapt the VAP to run at NSA, but the script is not yet processing data at the DMF.

Next Milestone: Release the VAP and run the historical data at NSA before May 31, 2013.

2.55 Shortwave Flux Analysis (SWFLUXANAL)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.56 Tower Water-Vapor Mixing Ratio (TWRMR)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

There are no open ECOs for this VAP.

2.57 UHF ARM Profiling Radar Actively Remotely Sensed Atmospheric Layers (UAPARSAL)

Translator: Scott Collis, Argonne National Laboratory

Developer: Edwin Campos, Argonne National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-00967 has been approved to initiate and complete a product that uses the UHF ARM Zenith Radars and a variety of supporting instruments to retrieve information about precipitating cloud systems and planetary boundary-layer heights and information.

Significant progress has been made to the PBL top code. The code is being developed in the ARM computer cluster.

Next Milestone: Release the evaluation data set by September 30, 2013.

2.58 Variational Analysis (VARANAL)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Renata McCoy, Lawrence Livermore National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Request-0096 (ECR-0096) has been approved to develop continuous large-scale forcing data.

Significant progress has been made on the AMIE GAN evaluation data set. The precipitation uncertainty analysis for this product is 60% done. The development of large-scale forcing data for the Small Particles in Cirrus (SPARTICUS) data set has been completed.

Next Milestone: The development of ensemble large-scale forcing data for MC3E and AMIE- GAN is due on June 30, 2013.

2.59 Vertical Velocity in Stratiform Rain (VVSR)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Maureen Dunn, Brookhaven National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Order-00865 was approved to initiate and coordinate the development of the VAP to generate profiles of vertical air motion during large-scale stratiform liquid precipitation. It will include information on the horizontal and vertical shear of the velocity.

The data have been staged in evaluation area for user feedback.

Next Milestone: Review user comments by September 30, 2013.

2.60 W-Band ARM Cloud Radar Active Remote Sensing of Clouds (WACR-ARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Evaluation

Engineering Change Request-00826 has been approved to run WACR-ARSCL at all AMF deployments and continue development at SGP.

Next Milestone: The deadline for re-running the VAP and moving data to the ARM Data Archive has been pushed back to June 30, 2013.

3.0 Future VAPs

This section describes new activities that have been approved in the last quarter by the ARM Science and Infrastructure and Science Steering Committee. Work on these activities will begin in the next quarter.

White papers are being written for VAPs related to the Column Intensive Properties for SASHE.

4.0 VAP Metrics

This section lists the top five VAPs that were requested by users from the ARM Data Archive during the second quarter.

Table 1. Top five VAPs requested by users from the ARM Data Archive during the second quarter.

	N files requested	N unique requests	N unique users
RLPROF	29532	147	79
MWRRET	120060	124	66
BAEBBR	24837	113	25
ARSCL	90241	94	94
AIP	79501	94	48

Table 2. Top five VAPs requested by users from the evaluation area of the ARM Data Archive during the second quarter.

	N files requested
PBLHTSONDE	15564
CCNPROF	1050
VARANAL	686
MMCG	259
CMBE	209

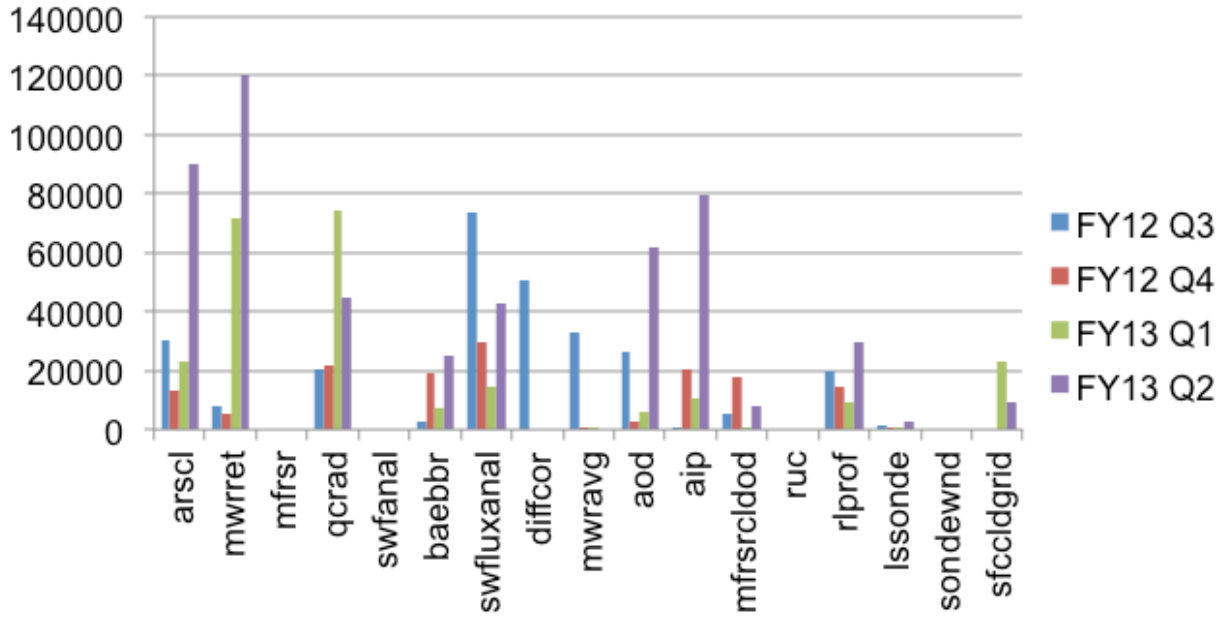


Figure 1. Top five VAPs that were requested by users from the ARM Data Archive during the last four quarters.

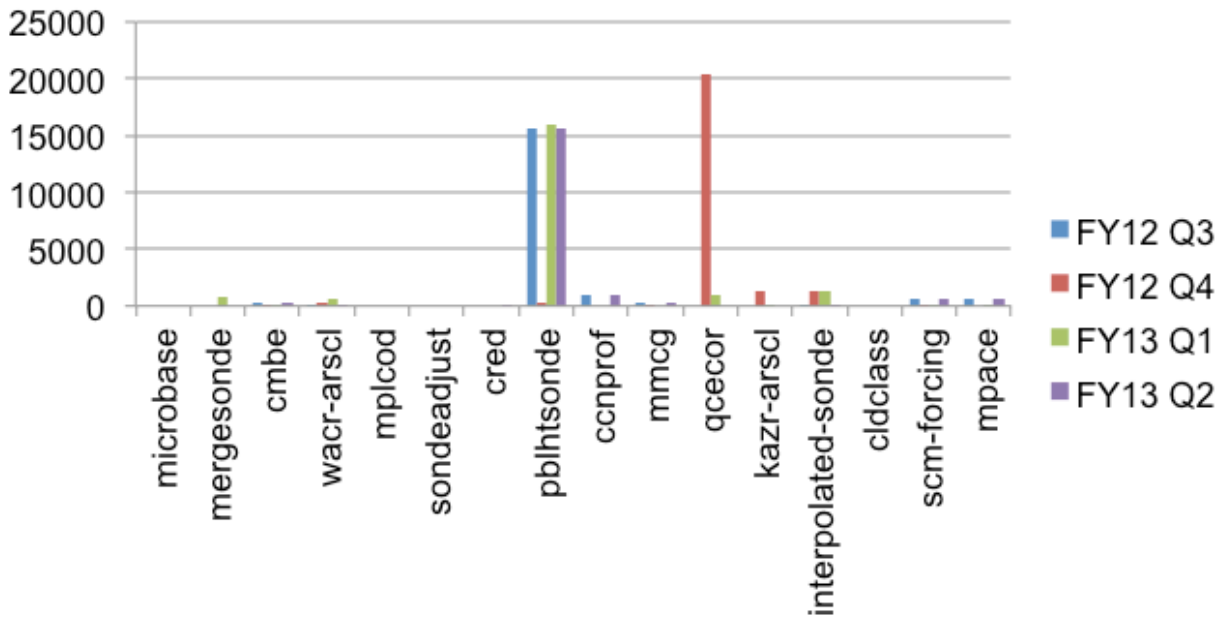


Figure 2. Top five VAPs downloaded from the evaluation data area for the last four quarters.



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