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DOE/SC-ARM-15-002

ARM Climate Research Facility Quarterly Value-Added Product Report

C Sivaraman

January 2015

ARM CLIMATE RESEARCH FACILITY

DISCLAIMER

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First Quarter:
October 1 to December 31, 2014

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Abstract

The purpose of this report is to provide a concise status update for Value-Added Products (VAPs) 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; (5) top requested VAPs from the ARM Data Archive; and (6) a summary of VAP and data releases to production and evaluation. 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

This report is developed largely from the information submitted by the developers and task leads to the Extraview reporting system (http://ewo.arm.gov). Special thanks to our VAP development team for providing timely and complete updates to the Engineering Change Orders and Engineering Work Orders, Sarah Shoemaker, who makes sure that this information is posted accurately on the ARM website, Giri Palanisamy of Oak Ridge National Laboratory for providing the metrics report on VAPs, and Ryley Dennis for preparing the graphics related to the metrics.

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1.0 New Value-Added Products (VAPs)

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

1.1 ARM Radar Cloud Simulator

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Yuying Zhang, Lawrence Livermore National Laboratory

The Engineering Change Order 01120 has been approved to develop an ARM Cloud Radar Simulator for Global Climate Models

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 extracted primarily from the monthly updates provided by the development team in the Engineering Change Orders (ECOs).

2.1 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 fixed research sites.

This task is 70% complete.

Next Milestone: Provide MICROBASE data with error bars for a selected intensive operational period (IOP), Spring Cloud IOP in 2000, for evaluation and discussion by April 30, 2015.

2.2 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

Some memory issues were found while running the data on the Data Management Facility (DMF). These were fixed and the VAP has been released to production.

2.3 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

2.4 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.

2.5 Aerosol Intensive Properties (AIP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

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 move data from the Brookhaven National Laboratory Aerosol Life Cycle IOP field campaign to the testbed.

No progress has been made last quarter.

Next Milestone: The bundling of the processed final testbed has been pushed back.

2.7 Aerosol Optical Depth (AOD) Derived from Either Multi-Filter Rotating Shadowband Radiometer (MFRSR) or Normal Incidence Multi-Filter Radiometer (NIMFR)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Connor Flynn, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

The Engineering Work Order 14994 has been opened to move the AOD VAP to the ARM Data Integrator (ADI).

The task is complete. PVC data are being reviewed for release.

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

There are no open ECOs for this VAP.

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 the Brookhaven National Laboratory (BNL) 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 BNL AOS data. A teleconference was held with key stakeholders in April 2014, and this task has been put on hold until the ingest work is completed.

2.10 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-14547 has been approved to make corrections to produce ARMBE.

Development of ARMBEATM for the ARM Mobile Facility (AMF) China deployment is on hold until land data development has been completed.

2.11 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

Development of ARMBECLDRAD for the AMF China deployment is on hold until land data set development has been completed.

2.12 ARM Best Estimate 2-Dimensional Grid (ARMBE2DGRID)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Qi Tang, Lawrence Livermore National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-01080 was approved to merge various datastreams together and interpolate them onto a common 2D grid with a uniform temporal resolution of a one-hour interval, the same as that used in current ARM best estimate (ARMBE) data sets.

Completed pre-processing of 2011 data.

2.13 ARM Best Estimate 2-Dimensional Station-Based (ARMBE2DSTNS)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Qi Tang, Lawrence Livermore National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-01080 was approved to develop an hourly station-based surface data set that contains the same variables as in ARMBE2DGRID.

Completed pre-processing of 2011 data.

2.14 Active Remote Sensing of Clouds (ARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Karen Jones, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

2.15 Areal Averaged Spectral Surface Albedo (AREALB)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Engineering Change Order-01094 was approved to implement an algorithm developed to calculate the white-sky areal average albedo from only an upward-looking MFRSR during overcast conditions.

Status: In Development

Tier: Evaluation

The initial code has been developed. The quicklook plots are being generated.

2.16 Best Estimate Fluxes from Energy Balance Bowen Ratio (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.

2.17 Broadband Heating Rate Profile (BBHRP)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

2.18 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.

2.19 Cloud Concentration Nuclei Profile (CCNPROF)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

Engineering Work Order-16147 was approved to adapt the existing CCNPROF VAP to run with the new aerosol observing system cloud condensation nuclei (AOSCCN) input that scans the supersaturation in the instruments in 10-minute steps with six supersaturation values each hour.

The VAP has been released to production. This task is complete.

2.20 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.

2.21 Corrected Moments in Antenna Coordinates (CMAC)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: In Development

Tier: Evaluation

2.22 Corrected Moments in Antenna Coordinates Version 2.0 (CMAC2)

Translator: Scott Collis, Argonne National Laboratory

Developer: Jonathan Helums, Argonne National Laboratory

Status: In Development

Engineering Change Order-01077 was approved to establish a pre-processing echo identification; improve upon linear-phase processing, allowing for larger areas of differential phase on backscatter previously not considered; and correction of correlation coefficient for low signal-to-noise.

Significant progress on both the multi-dimensional phase unwrapping and region based de-aliasing algorithm.

2.23 Convective Vertical Velocity VAP (CONVV)

Translator: Scott Collis, Argonne National Laboratory

Developer: Kirk North, McGill University

Status: In Development

Tier: Evaluation

2.24 Doppler Lidar Profile VAP (DLPROF)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Evaluation

Engineering Work Order-01035 and -01036 have been approved to create two VAPs—the vertical profiles of horizontal wind speed and direction using the velocity-azimuth-display (VAD) algorithm from the Doppler lidar data—and the cloud and vertical velocity statistics (WSTAT) from the Doppler lidar data.

Next Milestone: Evaluate user feedback by June 2015.

2.25 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.

2.26 Interpolated SONDE (INTERPSONDE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production

The Engineering Change Order-14216 is being tracked to ensure that the beginning and end discontinuities in this VAP have been addressed.

This task has been completed. The VAP is running on production.

2.27 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 Ka-band ARM zenith radar (KAZR), the follow-on to the now-retired millimeter-wavelength cloud radar.

Re-coded the velocity dealiasing routine to speed up execution. Began year-long test run at Tropical Western Pacific C-1 (TWP-C1) using calibrated KAZR data for the first time.

Next Milestone: Release of the VAP to production has been moved to September 30, 2015.

2.28 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.

2.29 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.

2.30 Merged Sounding (MERGESONDE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production

Engineering Change Order-00889 was approved to move the data to production.

Historical reprocessing continues. Issues with differences in processed data at TWP are being resolved.

Next Milestone: Compare production runs to development runs and release data to production.

2.31 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 MFRSR, including single-scattering albedo, asymmetry parameter, and bi-modal log-normal size distributions.

The VAP is waiting on reprocessed AOD input data.

Next Milestone: Release of the VAP to run at the DMF has been pushed back to April 30, 2015.

2.32 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) to input, run, and evaluate data from the AMF Azores deployment, then release the product.

This task has been completed.

2.33 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 moving MICROARSCL to the ARM computer cluster at Oak Ridge National Laboratory.

Data has been released to evaluation. This task has been completed.

2.34 Continuous Baseline Microphysical Retrieval (MICROBASE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Meng Wang, Brookhaven National Laboratory

Status: On Hold

2.35 Mapped Moments to Cartesian Grid (MMCG)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: Operational

Tier: Evaluation

2.36 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.

2.37 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.

2.38 Micropulse Lidar Cloud Mask (MPLCMASK)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

2.39 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.

No progress during this quarter.

Next Milestone: Complete processing of PVC and MAG data.

2.40 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 it can work with any set of n microwave frequencies to retrieve precipitable water vapor (PWV) and liquid water path (LWP).

No progress made during the last quarter. Waiting on guidance to move forward on the development of the VAP.

Next Milestone: Process Southern Great Plains (SGP), Tropical Western Pacific, and Gan Airport, Gan Island, Maldives (GAN), data with the latest code by March 30, 2015.

2.41 Marine ARM GPCI Investigation of Clouds Navigation (NAVBE)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Tami Toto, Brookhaven National Laboratory

Engineering Change Order-01071 was approved to create the Marine ARM GPCI[1] Investigation of Clouds (MAGIC) Navigation Best Estimate (MAGNAVBE) VAP to consolidate many different sources of instruments on the ship that collected Global Positioning System (GPS) and Inertial Navigation System (INS) measurements during the MAGIC campaign. This consolidation will result in a single, continuous datastream (rather than approximately a dozen different datastreams).

The development and evaluatin of 10Hz data are 90% complete.

Next Milestone: Release data to the evaluation area

2.42 Droplet Number Concentration (NDROP)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

2.43 Organic Aerosol Component Analysis (OACOMP)

Translator: Jerome Fast, Pacific Northwest National Laboratory

Developer: Tim Shippert, Pacific Northwest National Laboratory

[1] GPCI = GCSS Pacific Cross-section Intercomparison, a working group of GCSS
GCSS = GEWEX Cloud Systems Study
GEWEX = Global Energy and Water Cycle Experiment, a core project of the World Climate Research Programme.

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 and Speciation Monitors (ACSM) to be deployed at ARM's sites and as part of the Mobile AOS (MAOS).

The VAP is on hold since there are input data issues and is waiting for guidance from the mentor.

Next Milestone: Waiting for input data issues to be resolved.

2.44 Planetary Boundary Layer Height (PBLHT)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

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

The data object design (DOD) for PBLHT using Micropulise lidar has been created.

Next Milestone: Release the PBL VAP to evaluation using the MPL method by June 30, 2015.

2.45 Quality Checked Eddy Correlation (QCECOR)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Yunyan Zhang, Argonne National Laboratory

Status: Operational

Tier: Production

2.46 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

Engineering Change Order-15035 has been approved to run the second level (c2) of the VAP.

Some data at SGP and TWP has been processed.

Next Milestone: Waiting on broadband radiometer station (BRS) data to be reprocessed to complete this task.

2.47 Quantitative Precipitation Estimate (QPE)

Translator: Scott Collis, Argonne National Laboratory

Developer: Scott Collis, Argonne National Laboratory

Status: On Hold

Tier: Evaluation

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

Due to reconfiguration this VAP is put on hold.

2.48 Radiation Flux VAP (RADFLUX)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Engineering Change Order-00675 has been approved to develop the VAP. This VAP will use surface broadband radiation measurements to detect periods of clear skies and produce continuous clear-sky estimates. To run the c2 level of the VAP.

The VAP is ready for the release. Data has been validated for all sites for which it will run. Historical processing will begin following the release.

Next Milestone: Release the VAP to production by March 30, 2015.

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

2.50 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.

2.51 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.

2.52 Raman Lidar Profiles—Depolarization Ratio (RLPROFDEP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Chitra Sivaraman, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

2.53 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.

2.54 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.

2.55 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.

2.56 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.

2.57 Clutter Removal in Radar Wind Profiler (RWP) Doppler Spectra (RWPCLUT)

Translator: Scott Collis, Argonne National Laboratory

Developer: Jonathan Helums, Argonne National Laboratory

Engineering Change Order-01091 was approved to identify non-atmospheric returns in the Doppler spectra data from the RWP for improved estimation of moments and winds.

MATLAB codes have been developed to read the data, convert reported fields to the Doppler spectral moments and remove initial noise.

This work is on hold after the BNL meeting in October 2014.

2.58 Scanning ARM Cloud Radar Correction VAP (SACRCORR)

Translator: Michael Jensen, Brookhaven National Laboratory

Developer: Jonathan Helmus, Argonne National Laboratory

Engineering Work Order-01038 has been approved to develop a Scanning ARM Cloud Radars (SACR) corrections VAP to enhance the scientific value of data collected by the Ka-, W- and X-band Scanning ARM Cloud Radars.

Finished refinement of Python wrapper around McGill code with verification of results against known good results and output from original code. Moved development to big data system (BDS) system and adapted code to run in parallel. Initial script for visualization created.

2.59 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: Production

2.60 Shortwave Array Spectroradiometer Hemispheric Column Intensive Properties (SASHECIP)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: In Development

Tier: Evaluation

Engineering Change Order-01014 has been approved to develop a VAP to retrieve aerosol column intensive properties from the shortwave array spectrometer hemispheric column, including single--scattering albedo, asymmetry parameter, and bi-modal log-normal size distributions. The proposal is to extend this MFRSRCIP product to use measurements from the SASHE, including wavelengths in the near-infrared, which will improve the retrieval sensitivity to coarse-mode particles.

No progress has been made to this VAP. It is on hold until MFRSRCIP is completed.

2.61 Shortwave Array Spectroradiometer Hemispheric Langley (SASHE LANGLEY)

Translator: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

2.62 SGP Area Surface Cloud and Shortwave (SW) Radiation Grid (SFCCLDGRID)

Translator: Laura Riihimaki, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Tier: Production

The ECO 01107 has been opened to update the VAP to make it operational again to work more flexibly on the current arrangement of extended facilities and new arrangements in the future.

2.63 SONDE Adjust (SONDEADJUST)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production

All historical data has been reprocessed and sent to the ARM Data Archive.

2.64 Sea-Surface Temperature (SST)

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 and derive SST from the infrared thermometer measurements for the MAGIC deployment.

Next Milestone: Waiting on Atmospheric Sounder Spectrometer for Infrared Spectral (ASSIST) data to continue development.

2.65 Ship Correction (SHIPCOR)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Evaluation

2.66 Ship Motion Correction for Ceil, HSRL, and MPL

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: In Development

Engineering Change Order-00996 was approved to create a VAP that will post-process data from the unstabilized Vaisala ceilometer, high spectral resolution lidar, and micropulse lidar (VCEIL, HSRL, MPL) for ship deployments

Testing with NAVBE input data has begun.

2.67 Surface Spectral Albedo (SURFSPECALB)

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.

2.68 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.

2.69 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.

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

Translator: Scott Collis, Argonne National Laboratory

Developer: Edwin Campos, Argonne National Laboratory

Status: Operational

Tier: Principal Investigator (PI) Data Product

2.71 Variational Analysis (VARANAL)

Translator: Shaocheng Xie, Lawrence Livermore National Laboratory

Developer: Renata McCoy, Lawrence Livermore National Laboratory

Status: Operational

Tier: Evaluation

2.72 Vertical Velocity in Stratiform Rain (VVSR)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: Karen Johnson, 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 sheer of the velocity.

Next Milestone: No new milestone has been set.

2.73 W-Band ARM Cloud Radar Active Remote Sensing of Clouds (WACRARSCL)

Translator: Mike Jensen, Brookhaven National Laboratory

Developer: David Troyan, Brookhaven National Laboratory

Status: Operational

Tier: Production.

Data for TMP and MAO has been released to evaluation.

3.0 Future VAPs

This section describes new activities that may begin in the next quarter.

Implementation plans are being written for VAPs related to the Surface Cloud Grid.

4.0 VAP Metrics

Metrics from the ARM Data Archive were not available at the time this report was published.

5.0 Summary

This section describes the summary of VAP and data releases to production and evaluation.

5.1 Products Released to Production

This section includes VAPs that are released to production for automated operations by the ARM DMF.

Table 1. VAPs released to production.

VAP	Action
CCNPROF	Released to production after reconfiguring to read new input data.
MICROBASEPI	Released to production after porting to ADI.

5.2 Data Released to Evaluation

This section includes VAPs that are being released to the evaluation area for user feedback for the first time.

Table 2. Data released to evaluation.

VAP	Action
MICROARSCL	1.5 years of North Slope of Alaska (NSA) data released to evaluation.
WACRARSCL	Data for TMP and MAO released to evaluation.AMIE GAN data released to evaluation1.5 years of NSA data released to evaluation.

5.3 Data Released to the ARM Data Archive

This section includes data that are being released to the ARM Data Archive by the developer through a manual process.

Table 3. Data released to the ARM Data Archive.

VAP	Action
QCRAD	.c2 level of data released to the ARM Data Archive.

5.4 Significant Development

This section provides a summary of significant improvements.

Table 4. Significant developments.

VAP	Action
ACRED	Significant progress in the analysis for the ice cloud cases on March 2000.
ARMBE2DGRID	Completed pre-processing 2011 data for the 2D surface data sets.
KAZRARSCL	Re-coded the velocity dealiasing routine to speed up execution. Began year-long test run at TWP-C1 using calibrated KAZR data for the first time. Insect detection methodology has been completed and test data has been provided to beta users.
NAVBE	Issues with data gaps are being resolved.10Hz data has been processed.
RADFLUX	The VAP is ready for the release. Data has been validated for all sites for which it will run. Historical processing will begin following the release. The VAP is ready to be released to production.
SACRCORR	Finished refinement of Python wrapper around McGill code with verification of results against known good results and output from original code. Moved development to BDS system and adapted code to run in parallel. Initial script for visualization created. The outline for the code development has been completed.

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