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## **ARM Climate Research Facility Quarterly Ingest Status Report**

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## **Abstract**

The purpose of this report is to provide a concise status update for ingests maintained by the Atmospheric Radiation Measurement (ARM) Climate Research Facility. The report is divided into the following sections: (1) new ingests for which development has begun; (2) progress on existing ingests; (3) future ingests that have been recently approved; (4) other work that leads to an ingest; and (5) top requested ingests from the ARM Data Archive. New information is highlighted in [blue text](#).

## **Acknowledgements**

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## 1.0 New Ingests

This section describes new activities that have begun in the last quarter after being approved by the ARM Infrastructure and Science Team. There will be ingest software development needed for the following instruments.

### 1.1 AOS Cavity Attenuated Phase Shift (CAPS)

Mentor: Arthur Sedlacek, Brookhaven National Laboratory

Developer: Alison Tilp, Brookhaven National Laboratory

Status: Under development

This ingest will generate:

- aoscaps.b1

Purpose: The aoscaps ingest reads the data from the CAPS.

[Recent Modifications: Currently under development.](#)

### 1.2 Cryogenic Frostpoint Hygrometer (CFH)

Mentor: Martin Stuefer, University of Alaska, Fairbanks

Developer: Not assigned to a developer yet.

Engineering Change Order-00769 was approved in 2009 for the addition of this instrument. Ingest development has not started.

### 1.3 Ka ARM Zenith Radar Version 2 (KAZR2)

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Engineering Work Order-1598 was approved to create the new ingest for this instrument.

### 1.4 Marine Atmospheric Emitted Radiance Interferometer (MAERI)

Mentor: Denny Hackel, University of Wisconsin

Developer: Yan Shi, Pacific Northwest National Laboratory

Recent Modifications: The aeri ingest has been cloned as the new maeri\_ingest. Part 1 of the update is done, which involves changing how the mean\_rad field is computed and adding a new all\_mean\_rad field.

To complete part 2 of the update, sample files containing the nav data need to be received.

## 1.5 Vaisala Automatic Weather Station (MAWS)

Mentor: Donna Holdridge, Argonne National Laboratory

Developer: Christina Marinovici, Pacific Northwest National Laboratory

Status: In Development

Purpose: There is a new Automatic Weather Station (MAWS) instrument for the Southern Great Plains (SGP) C1 site.

Datastreams generated: maws.b1

The new datastreams are sgpmaawsC1.b1 and sgpmaawsC1.00. The new datastream follows the new standards and file names will end with the .nc extension. Scanning ARM Cloud Radar Version 2 (SACR2)

Instrument Mentor: Karen Johnson, Pacific Northwest National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Engineering Work Order-967 was approved to create the new ingest for this instrument.

Recent Modifications: In December 2014, the first production release of the maws\_ingest was made. The data are not flowing to the ARM Data Archive yet, though data are being processed.

## 2.0 Existing Ingests

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

In general, ingests read instrument raw data and generate one or more netCDF files from that input data. Once read, the raw data are properly named and prepared for shipment to the ARM Data Archive.

### 2.1 Atmospheric Emitted Radiance Interferometer (AERI)

Mentor: Denny Hackel, University of Wisconsin

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The aeri\_ingest is used to read raw data generated by the AERI.

The following datastreams are generated:

- aerich1.b1 or aeri01ch1.a1, channel 1 data
- aerich2.b1 or aeri01ch2.a1, channel 2 data
- aeriengineer.b1 or aeri01engineer.a1, contains engineering data
- aerisummary.b1 or aeri01summary.a1, summary data

The aeri\_ingest has been ported to the ARM data integer (ADI) libraries and was released to production in January 2014. The aeri\_ingest also processes MAERI data. If the MAERI instrument data format changes, there may be further development efforts needed.

## 2.2 Ameriflux Measurement Component (AMC)

Mentor: Marc Fischer, Lawrence Berkeley National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

This ingest generates:

- amc.b1

Purpose: The amc\_ingest is used to read raw data of the AMC.

Recent Modifications: The ingest was updated to process Oliktok, Alaska (OLI), data and was released to production in September 2014.

## 2.3 AOS Aerosol Chemical Speciation Monitor (ACSM)

Mentor: Thomas Watson, Brookhaven National Laboratory

Developer: Alison Tilp, Brookhaven National Laboratory

Status: Operational

This ingest generates:

- aosacsm.a1

Purpose: The aosacsm ingest reads the raw data from the ACSM.

Recent Modifications: [Standardizing data object designs \(DOD\) to latest standards, moving to new production \(Linux\), adding new diagnostic variables for Data Quality \(DQ\) Office.](#)

## 2.4 Aerosol Observing System (AOS)

Mentors: Anne Jefferson, National Oceanic and Atmospheric Administration, Stephen Springston, Brookhaven National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Purpose: To read both NOAA- and BNL-mentored AOS raw data from a variety of instruments and generate netCDF files.

The following datastreams are optionally generated:

- aosclap3w.b1, CLAP3W<sup>1</sup> data, NOAA system only
- aospsap3w.b1, PSAP3W<sup>2</sup> data, both NOAA and BNL systems
- aosnephdry.b1, reference nephelometer data, both NOAA and BNL systems
- aosnephwet.b1, “ramped” nephelometer data, both NOAA and BNL systems
- aosaeath.a1, aethelometer data, BNL system only
- aosccn100.a1, cloud condensation nuclei (CCN) data, both NOAA and BNL systems
- aosccn200.a1, dual CCN data, BNL system only
- aosco.a1, carbon monoxide data, BNL system only
- aoscpf.a1, Condensation Particle Counter (CPC) “fine” data, BNL system only
- aospc.a1, CPC data, NOAA system only
- aospcu.a1, CPC “ultrafine” data, BNL system only
- aosimpactor.a1, impactor state data, BNL system only
- aosmet.a1, meteorologic data collected by BNL system only
- aosnox.a1, nitrous oxide data collected by BNL system only
- aosozone.a1, ozone data collected by BNL system only
- aossmps.a1, Scanning Mobility Particle Sizer (SMPS) data collected by BNL system only
- aossmpstrh.a1, SMPS temperature and relative humidity (RH) data collected by BNL system only
- aosuhsas.a1, Ultra-High Sensitivity Aerosol Spectrometer (UHSAS) data collected by BNL system only

Status: Operational

[Recent Modifications: Some significant raw format changes required updated logic in the ingest. A revised ingest was released to production in August 2014. In November 2014, a new version of the ingest](#)

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<sup>1</sup> Continuous Light Absorption Photometer - 3-wavelength

<sup>2</sup> Particle Soot Absorption Photometer - 3-wavelength

was released to production. This release was done to change the nephdry, nephwet, psap3w, and clap3w datastreams to the a1 datalevel as a result of harmonization efforts. In addition, a couple subsequent releases were needed to handle changes in raw data formats. This harmonization effort will be ongoing and may take several months to complete.

## **2.5 Aerosol Observing System Humidified Tandem Differential Mobility Analyzer (AOS HTDMA)**

Mentor: Gunnar Senum, Brookhaven National Laboratory

Developer: Alice Cialella, Brookhaven National Laboratory

Purpose: To read AOS HTDMA raw data and generate netCDF files.

The aoshtdma.a1 datastream is generated.

Recent Modifications: The ingest has recently been ported to use the ADI libraries. The ingest will be released to production soon, pending datastream review.

## **2.6 Atmospheric Sounder Spectrometer for Infrared Spectral Technology (ASSIST)**

Mentor: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Recent Modifications: Released to production in May 2014, after the port to use the ADI library.

## **2.7 Beam-Steered Radar Wind Profiler (BSRWP)**

Mentor: Rich Coulter, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Purpose: Read raw data from the 1290bsrwp (“1290-MHz Beam-Steered Radar Wind Profiler”) instrument and generate the 1290bsrwpprecipavg.b1 and 1290bsrwpwindavg.b1 datastreams. It is also currently renaming the moments and spectral files for archival. Currently, this ingest is only used to process Marine ARM GPCI<sup>3</sup> Investigation of Clouds (MAGIC) intensive operational period (IOP) data.

Status: Operational

Recent Modifications: The bsrwp\_ingest was released to production in May 2014 so the raw spectra data can be processed in production to generate netCDF files.

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<sup>3</sup> 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.

## 2.8 Vaisala Ceilometer (CEIL)

Mentor: Victor Morris, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The `ceil_ingest` processes data collected from the Vaisala ceilometer (CEIL). Datastreams generated include the following:

- `ceil.b1`

This ingest has been ported to ADI and released to production.

The datastreams and the ingest are being renamed to “ceil.” There is an ongoing end-to-end reprocessing activity taking place before the new version of the ingest is run on the production system.

## 2.9 Planetary Boundary-Layer Height Ceilometer (CEILPBLHT)

Mentor: Vic Morris, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: `ceilpblht_ingest` processes raw `ceilpblht` data and generates:

- `ceilpblht.a0`

Release to production for the Finland deployment.

## 2.10 Disdrometer (DISDRROMETER)

Mentor: Mary Jane Bartholomew, Brookhaven National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The `disdrometer_ingest` is used to read data from disdrometer instruments. Disdrometers are used to collect data from tipping bucket rain gauges.

The following netCDF datastreams are generated:

- `disdrometer.b1`

[Recent Modifications: The `disdrometer\_ingest` was released in October 2014 to handle missing values in old raw data files.](#)

## 2.11 Doppler Lidar (DL)

Mentor: Rob Newsom, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The dl\_ingest processes raw Doppler Lidar data to produce daily netCDF files.

The following datastreams are optionally generated:

- dlcal1.a0
- dlcal2.a0
- dlftp.a0
- dlppi.a0
- dlppi2.a0
- dlrhi.a0
- dlrhi2.a0
- dlusr.a0

Released to production during January 2014 for the Finland deployment.

[Recent Modifications:](#) In October 2014, a new version of the ingest was released to handle new Oliktok data and to change the netCDF file extension from “cdf” to “nc”.

## 2.12 Energy Balance Bowen Ratio (EBBR)

Mentor: David Cook, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The ebbr\_ingest reads data from the EBBR system. The following datastreams are generated:

- 5ebbr.b1, 5-minute data
- 15ebbr.b1, 15-minute data
- 30ebbr.b1, 30-minute data

[Recent Modifications:](#) The production release was done in December 2014. The datastreams now follow the new ARM standards.

## 2.13 Eddy Correlation Flux Measurement System (ECOR)

Mentor: David Cook, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The `ecor_ingest` reads data from the ECOR and generates netCDF datastreams, which provide in situ, half-hour measurements of the surface turbulent fluxes of momentum, sensible heat, latent heat, and carbon dioxide.

Datastreams generated include the following:

- `30ecor.b1`

This ingest has been ported to ADI and released to production in March 2014.

Recent Modifications: This ingest was ported to ADI and released to production in April 2014. The configuration package was also updated for ENA, GAN, and OLI, and released to production in June 2014.

## 2.14 G-Band Vapor Radiometer (GVR)

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The `gvr_ingest` reads data generated by the 183.3-GHz radiometer and generates netCDF datastreams. The GVR is located at the North Slope of Alaska (NSA) C1 site.

Datastreams generated include the following:

- `gvr.a0`
- `gvr.b1`

This ingest has been ported to ADI and released to production.

## 2.15 G-band Vapor Radiometer Profiler (GVRP)

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The gvrp\_ingest processes data generated by the MP183 radiometer. The instrument is located at the NSA C1 site.

Datastreams generated by the ingest are:

- gvrpC1.b1
- gvrpC1.a1

This ingest has been ported to ADI and released to production.

## **2.16 High Spectral Resolution Lidar (Calibrated Files Produced by University of Washington) (HSRLUW)**

Mentor: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

This ingest has been ported to ADI and released to production.

## **2.17 In Situ Aerosol Profiles Multi-Filter Radiometer (IAPMFR)**

Mentor: Gary Hodges, National Oceanic and Atmospheric Administration

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest reads multi-filter radiometer (MFR) data collected from routine airplane flights around the SGP Central Facility. The MFR data are calibrated by the iapmfr\_ingest.

The following datastreams are produced:

- sgpiapmfrC1.a0
- sgpiapmfrC1.b1

[Recent Modifications:](#) This ingest has been ported to ADI and will be released during January 2015.

## **2.18 Infrared/Visible Sky Imager (IRSI)**

Mentor: Victor Morris, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Engineering Change Order-15948 was approved to create the new ingest for this instrument.

The irsi\_ingest produces the following datastreams:

- Irsiir.b1
- Irsiircldmask.a1
- Irsiirskimage.a1
- Irsivis.b1
- Irsiviscldmask.a1
- Irsivisskyimage.a1

[Recent Modifications: The irsi\\_ingest was released to production in October 2014.](#)

## 2.19 Infrared Thermometer (IRT)

Mentor: Vic Morris, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

This ingest generates the following datastreams:

- irt.b1
- irt10m.b1
- irt25m.b1

Purpose: The irt\_ingest, similar to the irthr\_ingest, reads data from the IRT instruments. However, this ingest is designed for the older IRTs that report data every 20 seconds.

[Recent Modifications: In November 2014, the ingest was released to fix a bug discovered while reprocessing very old IRT data.](#)

## 2.20 Infrared Thermometer – High-Resolution (IRTHR)

Mentor: Vic Morris, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Datastreams generated are for 200-millisecond, 2-second, and 1-minute sample intervals and include the following:

- irt200ms.a1, 200-millisecond data
- irt2s.b1, 2-second data

- irt.b1, 1-minute data

Purpose: The irtthr\_ingest reads data from the high-resolution IRT instruments distributed around the SGP site.

This ingest has been ported to use ADI libraries. In February 2014, the irt\_ingest was released to production.

[Recent Modifications: In November, 2014 the ingest was updated to address DQPR 4393.](#)

## 2.21 K-Band ARM Zenith Radar (KAZR)

Mentor: Karen Johnson, Brookhaven National Laboratory, Nitin Bharadwaj, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest reads the KAZR (formerly the millimeter-wavelength cloud radar [MMCR]) zenith-pointing radar data, generating the kazraux.a0, kazrge.a1, kazrmd.a1, kazrhi.a1 datastreams. The actual datastreams generated depend upon how the mentor configures the instrument.

The following datastreams are generated by this ingest:

- kazrge.a1
- kazrmd.a1
- kazrhi.a1

This ingest has been ported to ADI and released to production.

Recent Modifications: Datastreams were renamed, and the data levels were modified. Kazraux.a1 became kazraux.a0, and kazr\*.b1 became kazr\*.a1. The historical KAZR data are being reprocessed.

*There will be a redesign of the KAZR, which will be called KAZR2. The kazr\_ingest will require a major overhaul to handle the new KAZR2 data. This work has not started.*

## 2.22 Ka ARM Zenith Radar Filtered Spectral Data (KAZRSPEC)

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: Filter large spectra files to eliminate non-cloud content, generate netCDF files, and quicklook plots. The kazrspec\_ingest was updated and released to production in February 2014.

The following datastreams are generated by this ingest:

- kazrspeccmaskhicopol.a0
- kazrspeccmaskmdcopol.a0
- kazrspeccmaskmdxpol.a0
- kazrspeccmaskgecopol.a0
- kazrspeccmaskgexpol.a0

## **2.23 ARM-Standard Meteorological Instrumentation, Marine (MARINEMET)**

Mentor: Michael Reynolds, Remote Measurement and Research Company

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The marinemet\_ingest processes raw meteorological instrumentation at AMF (MET) data at MAGIC to produce daily netCDF files.

The following datastreams are generated by the ingest:

- marinemet.b1
- marinemets1.b1

Recent Modifications: This ingest was released after a minor logic fix in May 2014.

This is related to Engineering Work Order-14824.

## **2.24 Surface Meteorological Instrumentation (MET)**

Mentor: Michael Ritsche, Argonne National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The met\_ingest processes data collected from conventional in situ sensors measuring meteorological data such as wind speed, barometric pressure, and so on.

The following datastream is generated:

- met.b1

The MET ingest has been reprocessed end-to-end to convert SMET, SMOS, etc. to MET with consistent DODs. All of the data reprocessing has been completed and is at the data reviewing stage.

[Recent Modifications](#): The ingest was released in October 2014 after modifications to process old surface meteorological instruments for Tropical Western Pacific (TWP) (SMET) data (surface met data from TWP and NSA).

## 2.25 Multi-Filter Radiometer Cloud Detection Lidar (MFRCDL)

Mentor: Gary Hodges, National Oceanic and Atmospheric Administration

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest processes MFRSR, NIMFR, MFR3M, MFR10M, MFR25M, and NFOV2CH raw data and generates raw and calibrated netCDF files.

The following datastreams are generated:

- mfrsr.a0
- mfrsraux.a0
- mfrsr.b1
- nimfr.a0
- nimfr.b1
- mfr3m.a0
- mfr3m.b1
- mfr10m.a0
- mfr10m.b1
- mfr25m.a0
- mfr25m.b1
- nfov2ch.b1

[Recent Modifications](#): The ADI library version of the mfrcdl\_ingest was released to production in April 2014. The new version includes several updates to better handle 24-hour daylight in the polar regions of the planet and more consistent nighttime offset computations. [The ingest was released again in December 2014 to fix a few minor logic errors.](#)

## 2.26 Micropulse Lidar Polarized, Fast Sampling (MPLPOLFS)

Mentor: Rich Coulter, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The mplpol\_ingest processes data from the micropulse lidar (MPL, “fast sampling”).  
Datastreams generated include the following:

- mplpolfs.b1

This ingest has been ported to ADI and released to production.

Recent Modifications: The mplpolfs\_ingest was released for processing the Finland data in January 2014.

## **2.27 Microwave Radiometer (MWR)**

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The mwr\_ingest processes data from the MWR. Datastreams generated include the following:

- mwrlos.b1, line-of-sight data  
TIP mwrtp.a1 data

This ingest has been ported to ADI and released to production.

## **2.28 Microwave Radiometer – High Frequency (MWRHF)**

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The mwrhf\_ingest processes 90/150-GHz microwave radiometer – high frequency (MWRHF) data.

The following datastreams are generated:

- mwrhf.b1
- mwrhfcal90.a1
- mwrhfcal150.a1

[Recent Modifications:](#) This ingest has been ported to ADI and was released to production in July 2013. In October 2014, a new version was released to fix a problem discovered while processing data from Brazil.

## **2.29 Marine W-Band ARM Cloud Radar (MWACR)**

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest reads data from the M-WACR and generates the following datastreams:

- magmwacrauxM1.a0
- magmwacrM1.a1

Recent Modifications: The mwacr\_ingest was released for processing the Finland data in January 2014.

## **2.30 Marine W-Band ARM Cloud Radar Spectra Filter (MWACRSPEC)**

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Purpose: Filter huge spectra data files and eliminate non-cloud content. Generate netCDF files and quicklook plots.

Recent Modifications: The mwacrspec\_ingest was rewritten and released to production in September 2014. This version is written entirely in the interactive data language (IDL) language.

## **2.31 Microwave Radiometer – 3-Channel (MWR3C)**

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

The following datastreams are generated:

- mwr3c.b1
- mwrectip.a1

Purpose: Process data from the three-channel microwave radiometer.

This ingest has been ported to ADI and released to production. Historical MWR3C data have been reprocessed.

[Recent Modifications: In December, 2014, a new version of the mwr3c\\_ingest was released to production to handle data from the ACAPEX IOP.](#)

## **2.32 Microwave Radiometer Profiler (MWRP)**

Mentor: Maria Cadeddu, Argonne National Laboratory

Developer: Maria Cadeddu, Argonne National Laboratory

Status: Operational

Purpose: The mwrp\_ingest processes data collected from the MWRP. Datastreams generated include the following:

- mwrp.b1

This ingest has been ported to ADI and was released to production in June 2013.

Recent Modifications: A new version of the mwrp\_ingest was released to production in May 2014. The raw format was changed by the vendor for the Azores instrument.

## 2.33 Surface Navigation Data (NAV)

Mentor: Richard Coulter, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Purpose: This reads data from mobile location datastream for the MAGIC IOP.

The following datastreams are generated:

- nav.a1
- navgps.a1

Status: Operational

Recent Modifications: [This ingest has been ported to ADI and was released to production in January, 2015. The output datastreams now follow the new ARM standards.](#)

## 2.34 Optical Rain Gauge (ORG)

Mentor: Mike Ritsche, Argonne National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The org\_ingest processes ORG measurements.

The following datastreams are generated:

- org.b1

This ingest has been ported to ADI and released to production.

## 2.35 OTT Parsivel2 Laser Disdrometer (PARS2)

Mentor: Mary Jane Bartholomew, Brookhaven National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: pars2\_ingest processes raw pars2 data and generates:

- pars2.b1

This ingest has been ported to ADI and released to production.

## 2.36 Portable Radiation Package (PRP)

Mentor: Mike Reynolds, Remote Measurement and Research Company

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest reads prprad, prptcm, prptcm, prpfrsr raw data currently in operation for the MAGIC IOP. The following datastreams are generated:

- 6sprpfrsr.a0
- 1sprprad.a1
- 1sprptcm.a1
- 5sprpgps.a1
- prpfrsr.a0
- prpgps.a1
- prprad.a1
- prptcm.a1

[Recent Modifications:](#) In December 2014, a new version of the prp\_ingest was made to correct a logic error that was causing the ingest to abort prematurely.

## 2.37 Radiation Measurements at the ARM Mobile Facility Niamey, Niger, Deployment (RAD)

Mentor: Peter Gotseff, National Renewable Energy Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The rad\_ingest processes raw skyrad/gndrad data to produce daily netCDF files.

The following datastreams are generated:

- Skyrad20s.a0
- Skyrad60s.b1
- Gndrad20s.a0
- Gndrad60s.b1

Recent Modifications: Released to production to process the Finland data. Ported to ADI.

## **2.38 Rain Gauge (RAIN)**

Mentor: Mary Jane Bartholomew, Brookhaven National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The rain\_ingest processes tipping bucket measurements.

The following datastreams are generated:

- rainaux.b1
- rain.b1

Recent Modifications: This ingest is being ported to ADI. It has not been released to production yet.

## **2.39 Raman Lidar (RL)**

Mentor: Rob Newsom, Pacific Northwest National Laboratory

Developer: Laurie Gregory, Brookhaven National Laboratory

Status: Operational

Purpose: This ingest processes RL data.

The following datastreams are generated:

- rl.a0
- rllog.a0

## 2.40 Roll/Pitch Ingest (RP)

Mentor: Rich Coulter, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Purpose: The roll pitch ingest processes position data (roll, pitch and related data) from instruments on a moving platform. The ingest generates:

- rphilt.a1
- rphcontrol.a1

**Recent Modifications:** This ingest has been ported to ADI. [The ingest name was changed to avoid confusion and was released to production in December 2014. In addition, the output datastreams now follow the new ARM standards.](#)

## 2.41 Radar Wind Profiler (RWP)

Mentor: Rich Coulter, Argonne National Laboratory

Developer: Brian Ermold and Christina Marinovici, Pacific Northwest National Laboratory

Purpose: The rwp\_ingest reads data from the 50, 915, or 1290 RWP RASS wind profiler.

The following datastreams are generated:

- 50rwptempcon.a1
- 50rwptempmom.a0
- 50rwptempspec.a0
- 50rwpwindcon.a1
- 50rwpwindmom.a0
- 50rwpwindspec.a0
- 915rwpprecipcon.a1
- 915rwpprecipmom.a0
- 915rwpprecipspec.a0
- 915rwptempcon.a1
- 915rwptempmom.a0
- 915rwptempspec.a0
- 915rwpwindcon.a1
- 915rwpwindmom.a0

- 915rwpwindspec.a0
- 1290rwpprecipcon.a1
- 1290rwpprecipmom.a0
- 1290rwpprecipspec.a0
- 1290rwpwindcon.a1
- 1290rwpwindmom.a0
- 1290rwpwindspec.a0

The new RWP instruments for Oliktok and the Azores are different than the older RWPs deployed at the other sites. This required updates to the RWP ingest to read the new data formats, resulting in nine new datastreams:

- 915rwpwindmeanlow.a1
- 915rwpprecipmeanlow.a1
- 915rwpprecipmeanhigh.a1
- 915rwpwindmomentlow.a0
- 915rwpprecipmomentlow.a0
- 915rwpprecipmomenthigh.a0
- 915rwpwindspeclow.a0
- 915rwpprecipspeclow.a0
- 915rwpprecipspechigh.a0

These new datastreams follow the new standards and filenames will end with the.nc extension. The extensions of the older datastream will not change.

[Recent Modifications: The rwp\\_ingest was released to production in October 2014. Additional logic was needed to handle data from Oliktok and Azores instruments.](#)

## **2.42 Scanning ARM Cloud Radar (SACR)**

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: Read ARM scanning cloud radar data and generate a variety of datastreams (66 different datastreams are possible, depending on radar configuration).

This ingest has been ported to ADI and released to production.

Recent Modifications: In December 2014, another production release was made to make minor field-name changes.

*A completely new raw data format will be generated for the SACR2 raw data version. This work has not started yet.*

## **2.43 Shortwave Array Spectroradiometer – he Measurements (SASHE)**

Mentor: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Purpose: Read data from SASHE instruments and generate netCDF files.

The following datastreams are generated:

- sashemfr.b1
- sashenir.b1
- sashenirhisun.a0
- sashenirlowsun.a0
- sashevia.b1
- sashevishisun.a0
- sashevislowsun.a0

Recent Modifications: The ingest was modified to read new responsivity files created by the SASHE AOS VAP. The ingest was released to production in September 2014.

## **2.44 Shortwave Array Spectroradiometer – ze Measurements (SASZE)**

Mentor: Connor Flynn, Pacific Northwest National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: This ingest reads sasze input files and generates netCDF output.

The following datastreams are generated:

- saszefilterbands.a1
- saszenir.a0
- saszenir.a1
- saszevis.a0

- saszevis.a1

Recent Modifications: This ingest was recently cloned from the sas\_ingest, ported to ADI and released to production. Responsivity files for the Brazil deployment were released in January 2014.

## 2.45 Surface Energy Balance System (SEBS)

Mentor: David Cook, Argonne National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: pars2\_ingest processes raw SEBS raw data.

The following datastream is generated:

- sebs.b1

This ingest has been ported to ADI and released to production.

## 2.46 Solar Infrared Radiation Station (SIRS)

Mentor: Peter Gotseff, National Renewable Energy Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The sirs\_ingest processes data collected from SIRS instruments. Datastreams generated include the following:

- sirs.b1
- sirs20s.a0
- brs20s.a0
- brs.b1

Recent Modifications: The instrument data loggers were upgraded to newer Campbell data loggers. This required changes to the ingest logic, and a few bugs have been found and corrected. This ingest has been ported to ADI and released to production.

## 2.47 Mini Sound Detection and Ranging (SODAR)

Mentor: Richard Coulter, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The sodar\_ingest processes data collected from mini SODAR instruments. Datastreams generated include the following:

- sodar.b1
- sodarspec.a1

Recent Modifications: This ingest has been ported to ADI. It was released to production in May 2014.

## **2.48 Balloon-Borne Sounding System (SONDE)**

Mentor: Donna Holdridge, Argonne National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The sonde\_ingest processes data collected from the balloon-borne sounding system. Datastreams generated include the following:

- sondewnpn.b1

This ingest has been ported to ADI and released to production.

## **2.49 Surface Temperature and Humidity Reference (SURTHREF)**

Mentor: Mike Ritsche, Argonne National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The surthref\_ingest processes data collected from SURTHREF system instruments. Datastreams generated include the following:

- surthref.b1

This ingest has been ported to ADI and released to production.

## **2.50 Soil Water and Temperature System (SWATS)**

Mentor: John Harris, Cooperative Institute for Mesoscale Meteorological Studies

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The swats\_ingest processes data collected from the SWATS. Datastreams generated include the following:

- swats.b1
- swatsspcp.b1

## **2.51 Shortwave Spectroradiometer (SWS)**

Mentor: Connor Flynn, Pacific Northwest National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The sws\_ingest processes data collected from the SWS. Datastreams generated include the following:

- sws.b1
- swsaux.b1

Recent Modifications: The sws\_ingest was ported to ADI and released to production in June 2014. This time, the responsivity files for SGP were also corrected.

## **2.52 Temperature, Humidity, Wind, and Pressure Sensors (THWAPS)**

Mentor: Mike Ritsche, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The thwaps\_ingest processes data collected from THWAPS instruments.

Recent Modifications: The ADI library version of the thwaps\_ingest was released to production in January 2014.

Datastreams generated include the following:

- thwaps.b1

## **2.53 Total Precipitation Sensor (TPS)**

Mentor: Mark Ivey, Sandia National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The tps\_ingest processes data from the TPS (precipitation rate and daily accumulated precipitation). The instrument is located at the NSA C1 site. Datastreams generated by this instrument are nsatps.C1.b1 and nsatps.C1.00 (raw).

- tps.b1

This is related to Engineering Work Order-14846

Recent Modifications: The tps\_ingest has been ported to ADI and released to production. A new version is being developed to handle a new raw data format. This version of the ingest has not been released to production yet.

## 2.54 Total Sky Imager (TSI)

Mentor: Victor Morris, Pacific Northwest National Laboratory

Developer: Annette Koontz, Pacific Northwest National Laboratory

Status: Operational

Purpose: The tsi\_ingest process data from the TSI. Datastreams generated by this instrument are:

- tsicldmask.a1
- tsiskycover.b1
- tsiskyimage.a1

Recent Modifications: During January 2014, some minor logic errors were corrected and a new version was released to production.

## 2.55 Facility-Specific Multi-Level Meteorological Instrumentation (TWR)

Mentor: David Cook, Argonne National Laboratory

Developer: Brian Ermold, Pacific Northwest National Laboratory

Status: Operational

Purpose: The twr\_ingest processes data collected from meteorological instruments located on towers above the ground. The datastreams generated include the following:

- 1440twr21x.b1
- 1440twr25m.b1
- 1440twr60m.b1
- 1twr10x.b1

- 1twr25m.b1
- 1twr60mC1.b1
- 30twr10x.b1
- 30twr25m.b1
- 30twr60m.b1

## 2.56 Video Disdrometer (VDIS)

Mentor: Mary Jane Bartholomew, Brookhaven National Laboratory

Developer: Yan Shi, Pacific Northwest National Laboratory

Status: Operational

Purpose: The vdis\_ingest reads and processes 2D video disdrometer data

[Recent Modifications: In November, 2014 the ingest was modified in preparation for deployment in the Azores.](#)

## 2.57 W-Band ARM Cloud Radar (WACR)

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Purpose: The wacr\_ingest reads and processes W-band radar data and generate wacr.b1 data files.

Recent Modifications: The wacr\_ingest has been rewritten for the new wacr2 raw data format. This version of the ingest was released to production in June 2014. Data from Brazil is currently processing on the DMF.

## 2.58 Cloud Radar Spectra Filter (WACRSPEC)

Mentor: Karen Johnson, Brookhaven National Laboratory

Developer: Krista Gaustad, Pacific Northwest National Laboratory

Status: Operational

Purpose: Filter huge spectra files to eliminate non-cloud content and generate netCDF files and quicklook plots.

Recent Modifications: In September 2014, a new version of the ingest was released to production. This version was rewritten entirely in IDL.

## **2.59 X-Band Scanning Precipitation Radar (XSAPR)**

Mentor: Scott Collis, Argonne National Laboratory

Developer: Jonathan Helmus, Argonne National Laboratory

Purpose: The XSAPR ingest process is used to read data from the four XSAPR radar instruments. The data from these instruments comes stored in the IRIS/Sigmat format developed by Vaisala. The IRIS/Sigmat format is a published radar data format. During ingest, the radar moments and metadata contained in this format are read in and converted into netCDF.

The following datastreams are generated:

- xsaprppi.a1
- xsaprrhi.a1
- xsaprvpt.a1

[Recent Modifications: The xsapr ingest was installed in production in October, 2014.](#)

## **3.0 Ingest Metrics**

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



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