

Tools for merging, downloading, and processing ARM data

With contributions from:

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ARM Data Integrator

Team: Krista Gaustad, Brian Ermold, Tim Shippert, and Sherman Beus

Challenge

Automate process of integrating data from diverse datasets.

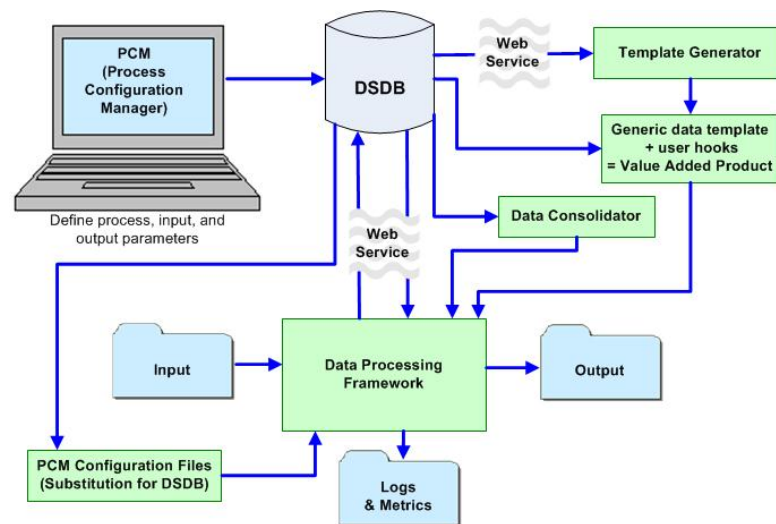
Simplify development of scientific algorithms.

Ensure adherence to data standards.

Address diversity of user programming preferences.

► Solution

- Fully define data integration through web interface
- Provide user hooks to manipulate/analyze at any point in the data integration framework
- Define output product via interface that displays graphical representations of violations of standards
- Supports C, IDL, and Python implementations



Open source for OSX:

<https://github.com/ARM-DOE/adi-macosx>

Adding consolidation to archive data customization

Sean Moore, Krista Gaustad, Tim Shippert, Brian Ermold, Sherman Beus

Exploring option to consolidate multiple data streams from data discovery tool by selecting nearest neighbor to a common time grid.

Data Selection Summary Signed in as moore.

MWRLOS b1 @ MAG M1 [Generate Citation](#) 21 file(s) // 10 MB

Order Complete Datastream Extract Specific Measurements 2013-05-12
2013-05-25

Measurement: Microwave narrowband brightness temperature
Variable: Radiation, longwave, brightness temp, 23.8 GHz // tbsky23 [Data Plots](#)
[Quality Reports \(2\)](#)

[Show Other Variables](#)

RPHTILT a1 @ MAG M1 [Generate Citation](#) 14 file(s) // 228 MB

Order Complete Datastream Extract Specific Measurements 2013-05-12
2013-05-25

Measurement: Surface condition
Variable: Roll angle reported by tilt table // roll [Data Plots](#)

Measurement: Surface condition
Variable: Pitch angle reported by tilt table // pitch [Data Plots](#)

[Show Other Variables](#)

NAV a1 @ MAG M1 [Generate Citation](#) 21 file(s) // 1,608 MB

Order Complete Datastream Extract Specific Measurements 2013-05-12
2013-05-25

Measurement: Surface condition
Variable: Roll: starboard down positive // roll [Quality Reports \(27\)](#)

Measurement: Surface condition
Variable: Pitch: bow up positive // pitch [Quality Reports \(27\)](#)

[Show Other Variables](#)

Consolidate data? No Yes

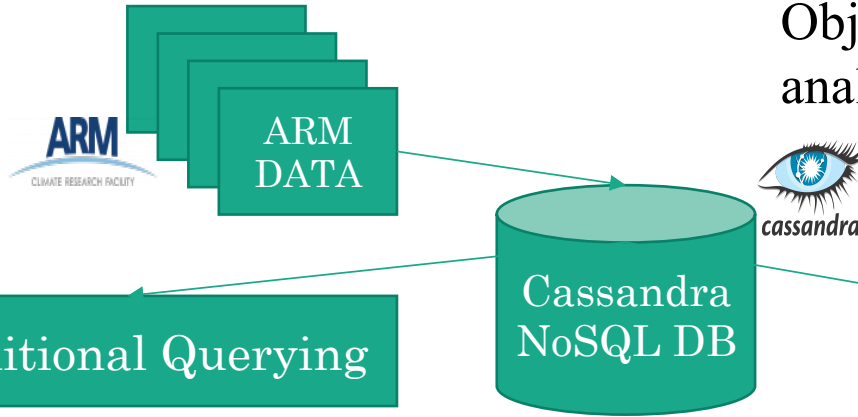
Primary source

File format

Remove data points from DQR(s) known to be Incorrect Suspect

ARM & NoSQL – Bhargavi Krishna

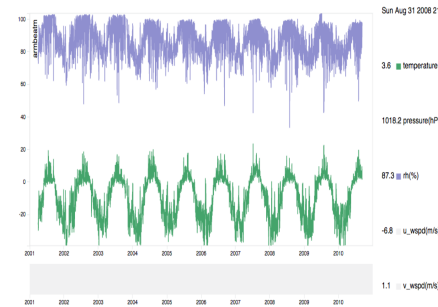
Objective: Provide “near” Real-time analytics and visualizations



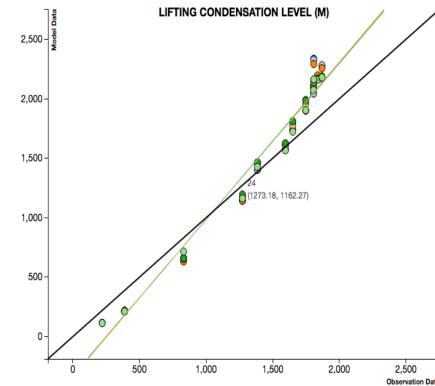
Visualization



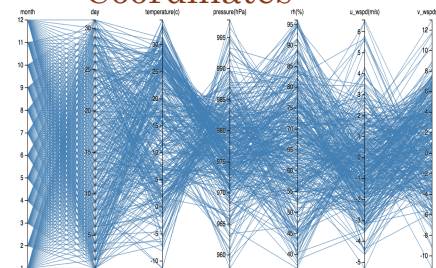
Multiline
Interactive



Scatter Plot



Parallel
Coordinates



- 16-WRF-ECMWF SCM-SONDE-VARANARAPSIMPLE PRESCRIBED
- 17-WRF-ECMWF SCM-SONDE-VARANARAPSIMPLE PRESCRIBED
- 22-WRF-not available-SONDE-VARANARAPSIMPLE PRESCRIBED
- 23-WRF-not available-SONDE-VARANARAPSIMPLE PRESCRIBED
- 24-WRF-not available-SONDE-VARANARAPSIMPLE PRESCRIBED

Scala
Spark
Conditional Querying

ARM data can be retrieved based on the days (shown in the below table) in which surface temperature was less than 0 °C/273.15 K in 2012. Data Source: ARMBEATM

year	month	day	temp0	year	month	day	temp0
2012	1	1	271.96	2012	2	5	272.63
2012	1	2	269.26	2012	2	6	271.02
2012	1	3	269.06	2012	2	8	271.6
2012	1	4	273.05	2012	2	9	271.23
2012	1	7	271.57	2012	2	10	271.75
2012	1	9	269.47	2012	2	11	263.28
2012	1	10	269.49	2012	2	12	264.58
2012	1	11	271.13	2012	2	13	269.49
2012	1	12	265.63	2012	2	14	268.22
2012	1	13	265.81	2012	2	16	271.21
2012	1	14	269.9	2012	2	17	272.6
2012	1	15	269.88	2012	2	19	271.08
2012	1	17	266.56	2012	2	21	271.68
2012	1	18	264.22	2012	2	22	272.36
2012	1	19	268.97	2012	2	24	270.43
2012	1	20	266.67	2012	2	25	270.24
2012	1	21	264.1	2012	3	3	270.02
2012	1	22	270.59	2012	3	4	271.47
2012	1	23	270.35	2012	3	9	272.41
2012	1	24	272.75				
2012	1	26	271.01				
2012	1	27	272.48				
2012	1	28	268.36				
2012	1	29	270.94				

Several Visualization and Exploration Tools developed by the Data Quality Office See dq.arm.gov

Sean Moore, Ken Kehoe, Josh King, Justin Monroe, Randy Pepler, Adam Theisen

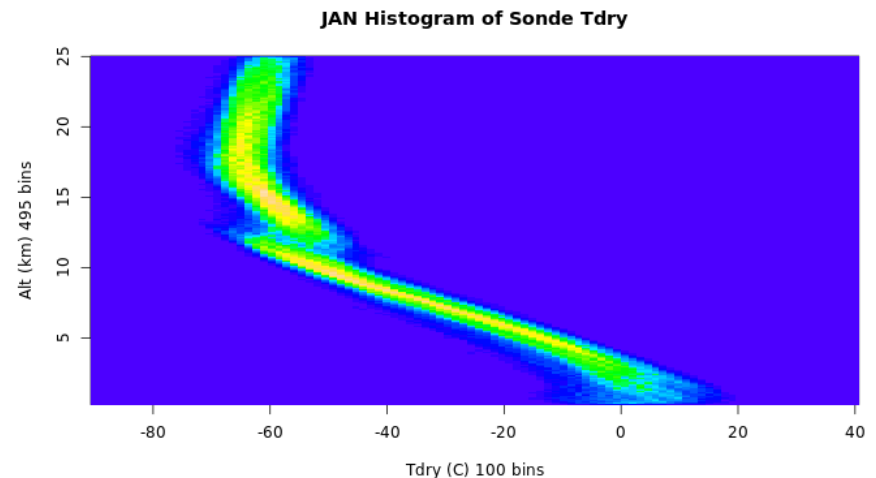
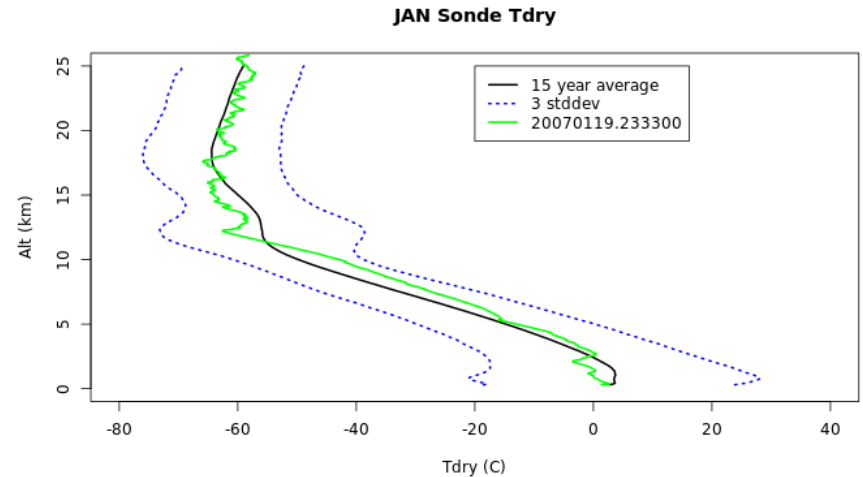
ARM SGP Sonde Climatology

Month:
JAN

Limits:
+/- 3 StdDev

Overlay a Sonde:
20070119.233300

Stats derived from 16453 launches spanning 1999-2013



<http://demo.physicstools.com/armstar/sonde>