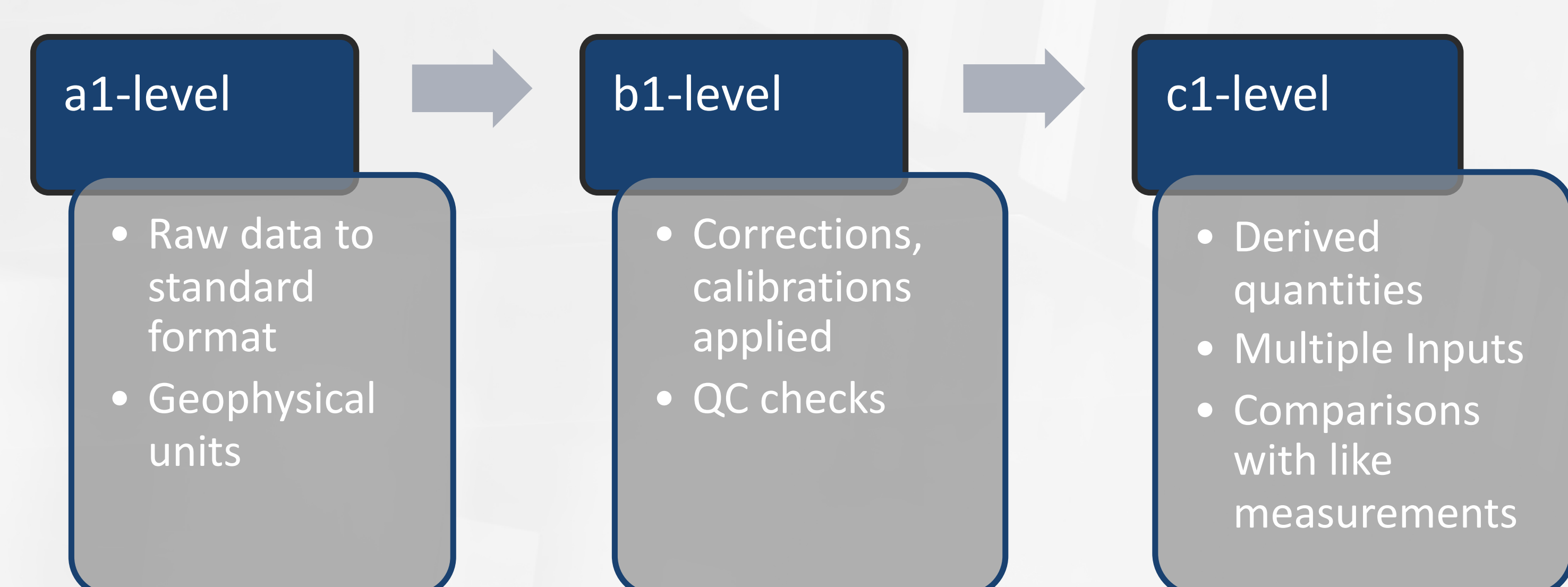# ARM Data Epochs

Motivation

ARM processes over a thousand of datastreams each year including raw, processed (ingests), Value Added Products (VAPs), and external products

Difficult for users to identify 'best' data source for their science focus

Several user groups and workshops have recommended that ARM identify 'good' datasets and time periods

Goal: Make it easier for users to find high quality data of interest to users

a1-level
- Raw data to standard format
- Geophysical units

b1-level
- Corrections, calibrations applied
- QC checks

c1-level
- Derived quantities
- Multiple Inputs
- Comparisons with like measurements

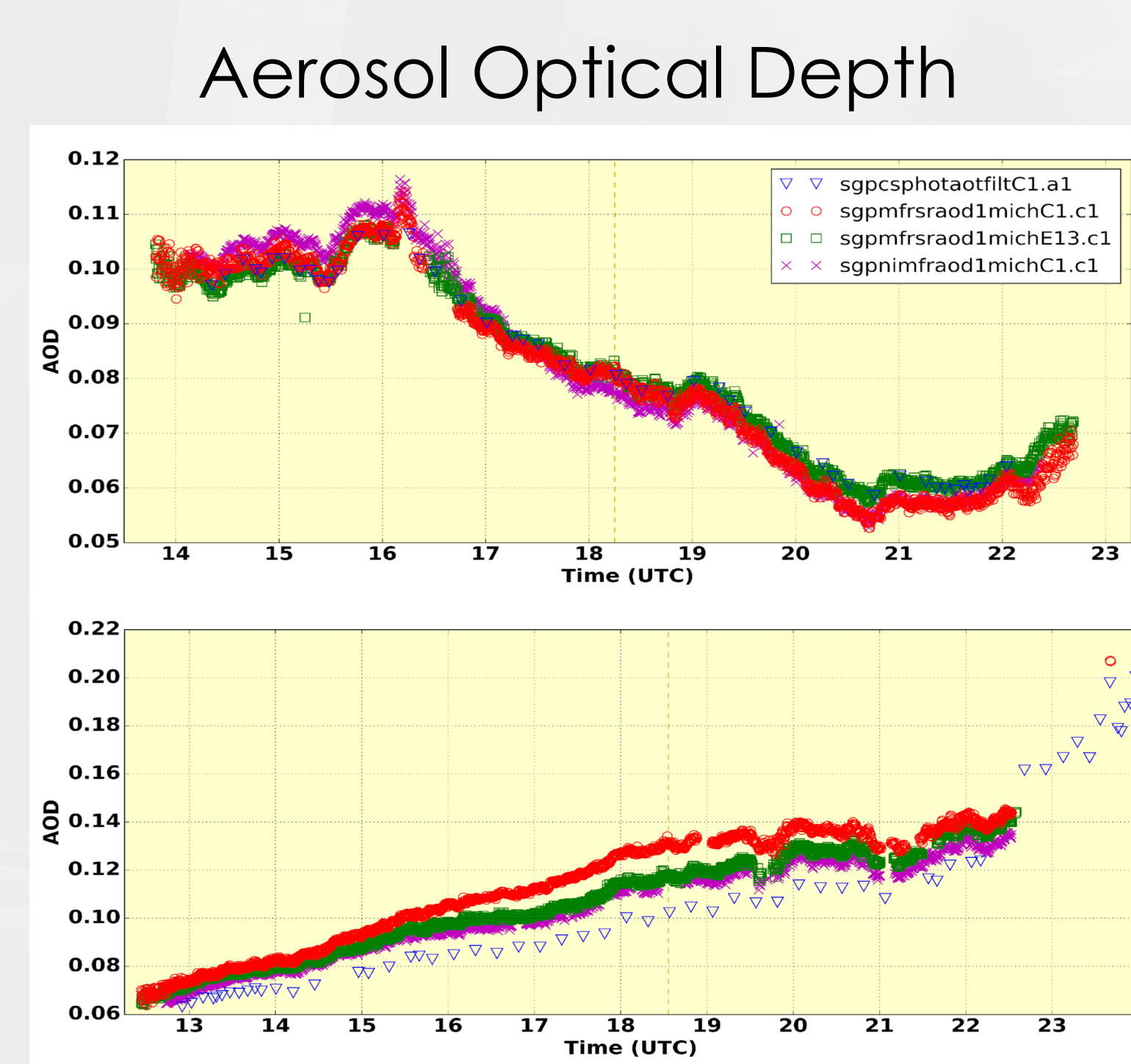## Data Quality – What ARM is doing now

Data Quality Assessment on a-level ingests – visual inspection

- Submit & Review Data Quality Problem Reports
- Issues are described to users upon data ordering
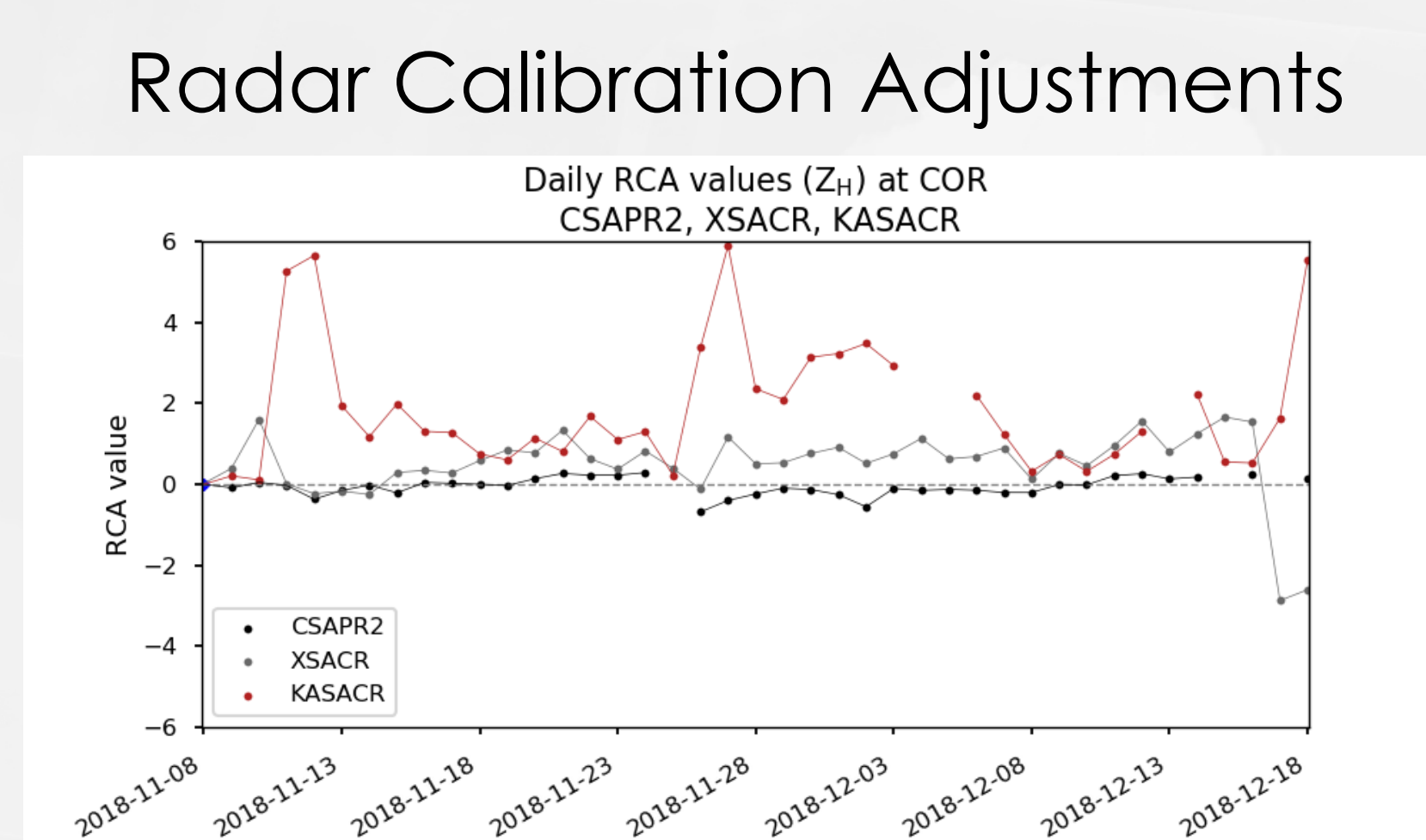- ARM does not create 'good' data quality reports

'QC' VAPs – QCRAD, QCECOR, QCAOD[NEW]

QME – Quality Measurement Experiments

Additional Quality Assessment by Trained Eye

Aerosol Optical Depth

- Statistical comparisons of like measurements
- Evaluate biases
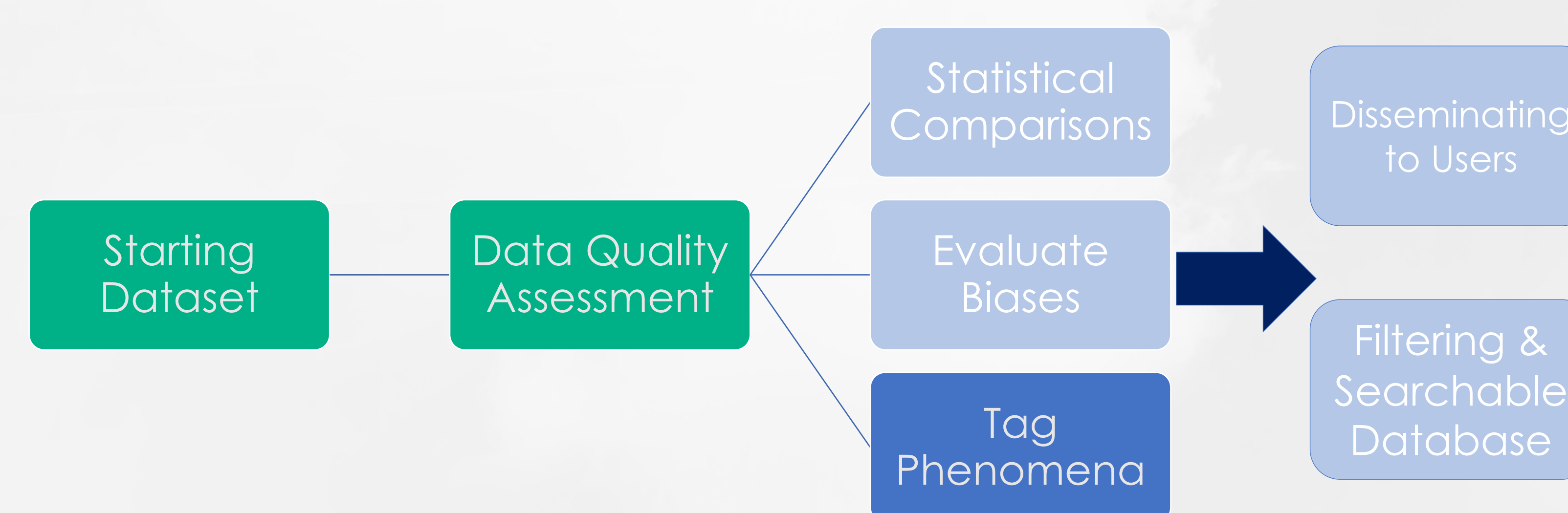- Tracking relative calibration adjustments

Radar Calibration Adjustments

What is a Data Epoch?

Epoch: A distinct period of time characterized by particular attributes (i.e. geologic time periods)
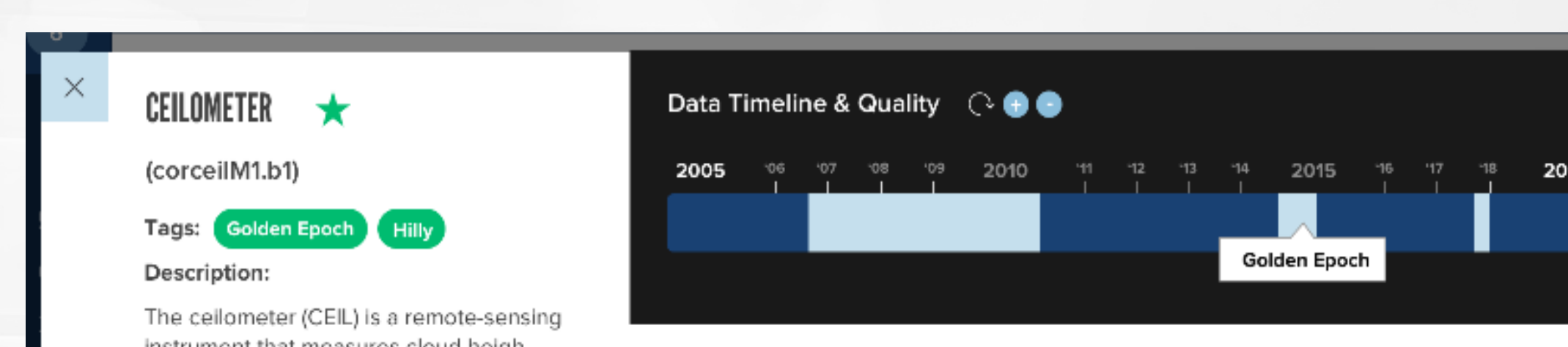
Data Epoch: A specific time period for a particular measurement:
- With well-characterized data quality
- Scientifically interesting
- Quantified uncertainties

Tags will be used to identify Data Epochs on data ordering and help users find phenomena of interest.

Starting Dataset → Data Quality Assessment → Statistical Comparisons / Evaluate Biases / Tag Phenomena → Disseminating to Users / Filtering & Searchable Database

Discovering Data Epochs Through Data Ordering

The new Data Discovery highlights epoch data using the timeline, data highlights, and tags.
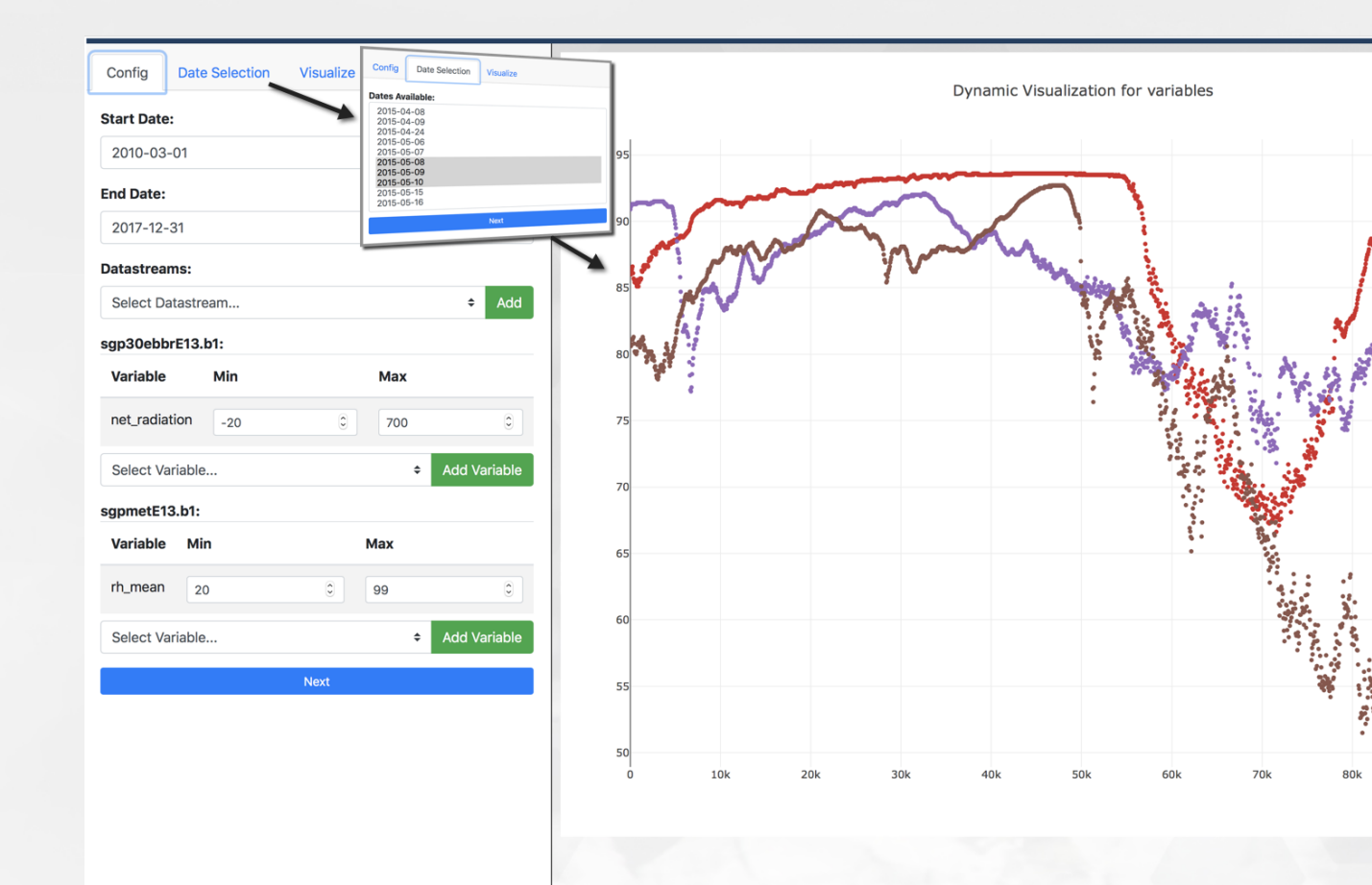
Tags: Make it easier to search for specific epochs or phenomena

Timeline: Highlights epochs visually

Data Highlights: Lists recent data epochs on the home page

Documentation: Describes methodology for developing individual epochs

Identifying Data Epochs – Data Search and Filtering

NoSQL data analytics platform allows users to search and filter data using conditional queries

Updating Recommended Datastreams

- Identified by ★ in Data Discovery
- Original list formed in 2012
- Updating list of recommendations and enhancing display
- Data epochs will appear as recommended datastreams

Available b1 and c1 level Products

AOS Harmonization Products (Optical properties, CCN, trace gas)
Doppler Lidar Products, RLPROF (FEX, WVMR, Temp)
AERIoe (LASSO cases), QCRAD, QCAOD, QCECOR
PARSQUANTS (disdrometer), ARMBE , ARSCL

Under Development

b-level radar products – CACTI
XSAPR data from SGP
KAZR/MMCR ARSCL corrections using CloudSat
MWR-RET v2 – auto bias correction for LWP
MPLCMASK – improved corrections (β, δ)

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