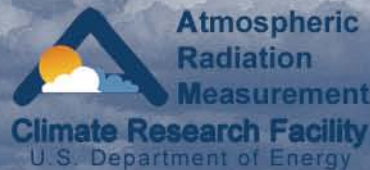


Common Calibration Database

Brad Perkins
2010 ASR Science Team Meeting



Agenda

- CCDB Overview (30-45 minutes)
- Demonstration (30-45 minutes)
- Q&A

Overview

- Common Calibration Database (aka CCDB)
- ACRF OSS Module. <http://oss.arm.gov>
- Who uses CCDB?
- How does CCDB document calibration?
- What information will CCDB provide?

CCDB Status

- First version released Feb 2010
 - Allow Calibration Entry
 - Basic Reports
 - No data yet
- Enhancements (In Progress)
 - Shortcuts for “Calibration” Users
 - On-Line Help

CCDB Purpose

- Record when Calibrations are performed
 - Document common details consistently
 - Enhance System and/or Component history
- Answer when calibrations are Due or Past Due
 - Based on last known Cal. Date. + specified interval
 - Maintenance and Calibration Planning
 - Does a “spare” need calibration?

CCDB Use

- Any System or Component may be calibrated
- Component Calibrations (More)
- System Calibrations (Less)
- Document most current Calibration
 - Move Forward
 - Document past history as resources allow
- Not for non-calibration maintenance

Why OSS Module?

- OSS tracks notable System & Component “Events”
- “Calibrations” are notable Events!
- OSS has always accounted for calibration events
 - Prior implementation lacks detail
- OSS tracks instrumentation inventory and locations
 - Calibration may require relocation
 - In place calibration provides a location audit/update
- Centralization
 - One less place to have to look for information
 - Remove need to integrate OSS and separate calibration DB

OSS Background Info

- Systems
- Components
 - Some Systems and/or Components require calibration
 - Not all OSS Systems, Components are calibrated
- Events
 - Calibration events are part of overall operational history
 - CCDB enhances OSS to adequately document calibrations
- State
 - Calibration events can change System or Component “State”

Who uses CCDB?

- Who will document calibration?
 - Instrument Mentors?
 - Calibration facility staff?
 - Site Operations Technicians?
 - Others?
- OSS account with “Calibration” Privileges is required to create or modify calibration records.
- **Any** OSS account may view Calibration info
- Sign up @ <http://oss.arm.gov>

Calibration

- Q: What is a “calibration”?
- A: It depends on what is being calibrated.
- Processes, Procedures, Inputs and Outputs Vary
- Documenting the activity varies
 - Calibration Procedures
 - Calibration Output or Result
 - Calibration Type (Full, Check, Loop)
 - Where performed – Field, Lab, Off Site?
- Challenge
 - N - <insert instrument here> Calibration Databases, vs.
 - Common Calibration Database for all instruments

CCDB Details

- How CCDB stores calibration information
 - Structured calibration information
 - Relational DBMS
 - Variable calibration information attached to CCDB records
 - Upload electronic documents.
 - Reference external documents on other Web or FTP servers.
 - Uploaded documents are permanently attached.
 - External documentation ideally should persist long term.

CCDB Details

Calibration Fields.

- Calibration ID
- Calibration Date
- Calibration Start Time *
- Calibration Duration
- Performed By
- Performed At
- Calibration Type
- Calibration Result
- State after Calibration

* *Optional Information*

Documents

- Filename
- Description
- File Metadata
 - Signature (find duplicates)
 - Who & When Uploaded
 - Storage Information
- URLs

CCDB Calibration Fields

Calibration ID

A system generated ID that is created when a calibration record is saved. This ID can be used to refer to and look up saved Calibration records. The ID format is CALYYYY-NNNN, where YYYY is the year calibrated and NNNN is a generated sequence number. For example, **CAL-2010-0001**.

Calibration Date

The date when the calibration was performed.

Calibration Start Time

The time (UTC) when the calibration was started. Since this may not be known it is optional. If not provided the CCDB will assign a default value (00:00)

Calibration Duration

The amount of time spent performing the calibration. Entry is in hours: minutes. This value is required. If the exact duration is unknown, the user will need to provide an estimate.

Continued...

CCDB Calibration Fields (cont.)

Performed By

The name of the person or organization that performed the calibration.

Performed At

The location where the calibration was performed. Established OSS location names are preferred, but other values are allowed. The CCDB entry field will try to auto-complete this entry based on known location names to enforce consistency. When a defined location is specified OSS will update the calibrated item's location history.

Calibration Type

A value chosen from a list of defined calibration types.

Calibration, Calibration Check, Loop Calibration, ...

Continued...

CCDB Calibration Fields (cont.)

Calibration Result

A free text field for recording the outcome of the calibration and any other details that can't be expressed in other specific fields. This field can contain as little or as much information as desired. It should at a minimum record if the calibration was a success. When additional information will be attached to the calibration record, it doesn't need to be copied or summarized here.

State after Calibration

OSS keeps track of the state of all Systems and Components. When an item is calibrated it's OSS state is marked as OUT-CALIBRATION. Once the calibration is completed, the item's state should change to a non-calibration state. Choosing an appropriate option from the State After Calibration list will determine that state.

Existing OSS Calib. Info

Pre-CCDB OSS Calibration Info

■ Component Calibration Fields

- Is component “Calibrated”
- Calibration Interval (in days, 365 = yearly)
- Last Calibration Date (CCDB entries update this)

■ “OUT-CALIBRATION” Event state

- Some OSS events document actual calibration activities
 - Not structured
 - Varying level of detail.
- Others document a need to calibrate a Component
 - “X” was removed for calibration

Pre-CCDB OSS Calibration Data

For existing Component 'calibration' fields

- Fields were not required
- Components of same type may not all be marked "is calibrated"
- Components may have data, but not in all three fields.
- User had to manually enter Last Calibration Date
- CCDB fixes this!
 - Force entry of missing Calibration Interval field
 - Mark Component as "Calibrated"
 - Update "Last Calibration Date"
- Direct modification of Last Calibration Date will eventually be removed.

Populating CCDB

- OSS Calibration Forms
 - Component Calibrations
 - System Calibrations
 - Minor differences

- Can we import external calibration information?
 - Source data must meet our requirements
 - Source must provide all required fields
 - Tools require development
 - Volume will justify if/when

Past Due/Pending Reporting

- When are Calibrations past due?
 - Via Calibration Form (now for Components)
 - Via Calibration Reports (TBD)
 - Email Notification?
 - Distribution?
 - Determined by OSS?
 - Opt-in? (not developed)
 - On request?
 - RSS Feed?

Calibration Activity Reporting

■ When Calibrations Occur

□ Calibration Reports

- Recent Calibration Activity (now)
- Searchable by System, Component, Date Range, etc. (TBD)

□ Email Notification?

- Weekly Summary?
- Per Individual Calibration? **High Volume Potential**
- Distribution?
 - Determined by OSS?
 - Opt-in? (not developed)
 - On request?

□ RSS Feed?

Action Items

We need to:

- Identify/Audit any Systems or Components marked as “Calibrated. **Given lists, the DBA can update the database.**
- Ensure components of same type are consistently marked as “Calibrated”.
- Consistently establish Calibration Intervals
- Update/Audit known “Last Calibration Date” for Systems and Components (or enter actual CCDB Calibration Record)

We Need Your Help

■ Provide Feedback

- ☐ Establish baseline (see previous page)
- ☐ On existing or desired reports
- ☐ Usability of Current Implementation
- ☐ File type restrictions
- ☐ Questions, Comments, Concerns
- ☐ **Thanks for all previous input!**

Resources

- OSS Production Site. <http://oss.arm.gov>
- OSS Development Site. CCDB under development.
 - http://dev.arm.gov/~perkins/ops_status/
 - Separate “development” OSS login required.
- EWO-00492
- CCDB Design Documentation
 - <http://dev.arm.gov/~perkins/CCDB/>
 - Links to supporting documents referenced here
 - Calibration Form Details (outdated)
 - “An Introduction To the CCDB”
 - CCDB Database Model evolution
- Questions?
 - Email: bperkins@lanl.gov