Meteorology Handbook Part 1: Our Philosophy of Updating Meteorological Measurements Guidance

Why and how we're updating Quality Assurance Handbook Volume IV

2024 National Ambient Air Monitoring Conference

August 14, 2024, New Orleans, LA

Why are we here? Why are we updating it?

- Dated 2008, the existing QAHB4 (2.0) is 16 years past the last update
- Other (newer) guidance references QAHB4, which *should* be updated to match
- PAMS added new meteorological parameters (3 not required previously)
- Technology and techniques have improved – we can do better
- PAMS comments emphasized the need for an update
- Some guidance may be outdated, no longer best practice
- Guidance can be streamlined!
- It's the right thing to do!

~~Whose fault is this?~~ Who's updating the guidance?

- The QAHB4 workgroup is a combination of EPA staff and volunteers from state and local air monitoring agencies with an interest in meteorology
- Primary authors for revision include:
  - EPA: Berkley Hillis, Greg Noah, Brannon Seay, Nealson Watkins
  - SCAQMD: Raul Dominguez
  - Clark County, NV: Paul Fransioli
  - Oregon DEQ: Ken Moody & Matt Shrensel
  - Other commenters/planners helped as well!

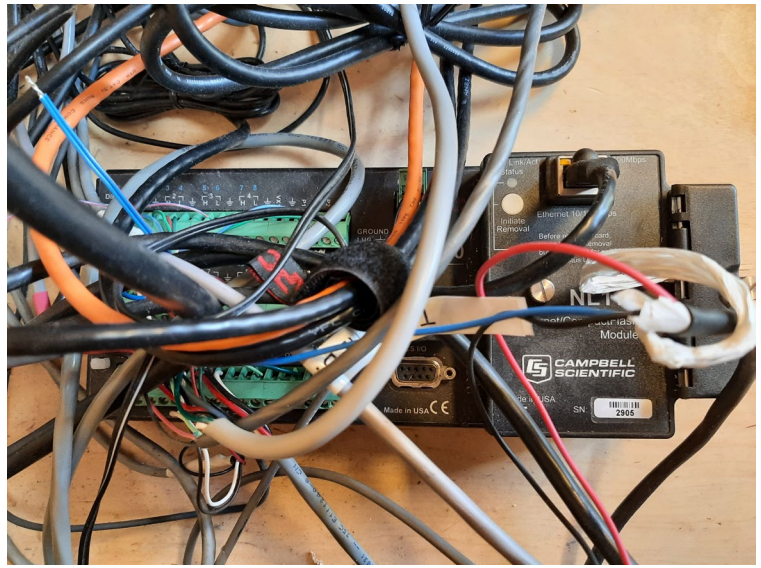
- Why us? The <u>interest</u>, *related expertise*, and **willingness to write text**

What do met data or QAHB4 users need or want?

- Addressed comments submitted in PAMS TAD revision and in response to request for comments on QAHB4
- Asked EPA modelers what was wanted or needed for accuracy or resolution: “What you have is fine”
- Trying to reach NWS Measurements Bureau for their opinions – no luck yet
- Asking for feedback on sections from vendors, academics - check for accuracy and reasonableness of recommendations and requirements

What should QAHB4 actually *do*? "Just guidance"??

- The intended audience (SLTs) and unintended (outside the US) use QAHB4 as *instructions* for meteorological measurements
- Readers may not have specific training or education in meteorology or meteorological measurements
- *Meteorologists* may not have *enough* practical measurements training
- QAHB4 should have enough information to enable SLTs to build and implement their own met monitoring sites, *or* start the research they need to do so
- QAHB4 should provide clear explanation of EPA recommendations and intentions



General improvements & updates

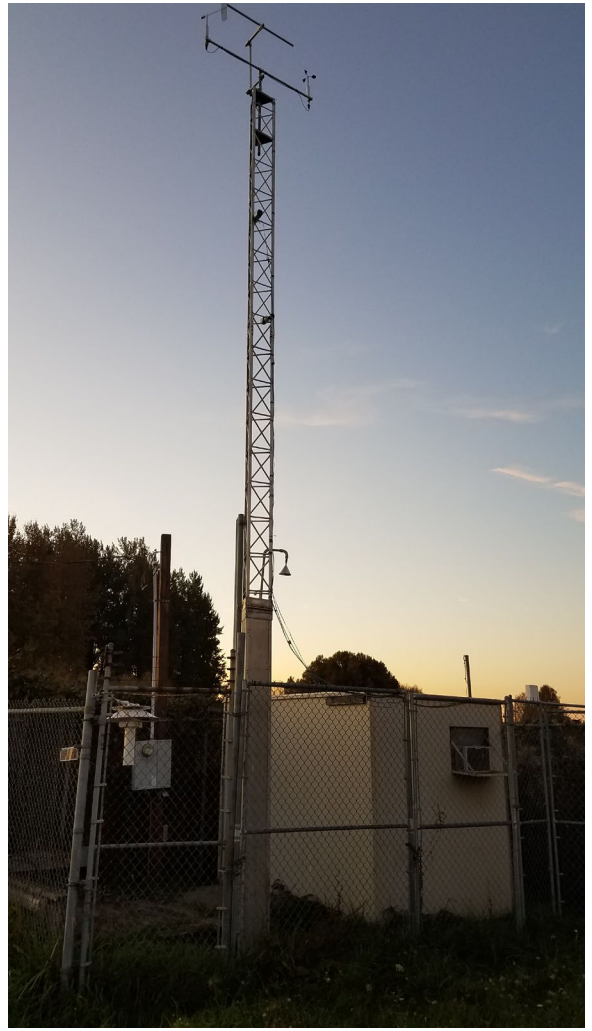
- Fixed details: streamlined sections to remove unnecessary/unhelpful detail, filled in detail in sections that didn't have *enough* detail
- Filled in gaps: Some measurement methods not covered in existing guidance, included them in the update
- Requirements: updates to tables to make criteria achievable and more reasonable, distances for sensors, etc.
- Updated to latest standards or nomenclature (for example, pyranometer classifications)
- Added detailed suggestions and guidance on performing audits, verification, calibration to all sections

Specific improvements & updates

- Ultrasonic anemometers and multiparameter meteorological sensors as “new technologies” – clearly no longer new: now commonly used
- Ultrasonic anemometers integrated into wind speed and direction and specific instructions on their use
- New section dedicated to multiparameter met sensors
- Section focused on ceilometers, doppler LiDAR
- UV Radiometers added to solar radiation section
- More explanation/detail and modernization for datalogging and data acquisition sections. Discussed averaging rate!

Acknowledgements – work not possible without…

- The entire QAHB4 review team
- ***everybody*** who sent in comments for QAHB4 and the PAMS TAD, and discussed met on the calls
- Everybody we asked for technical information & review
- EPA writers and editorial staff
- Previous QA Handbook authors



Questions?

Contact Info: Matthew Shrensel
matthew.shrensel@deq.Oregon.gov