LOW COST WATER QUALITY SENSORS

QA/QC SESSION

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GENERAL SOURCES OF ERROR

1. Drift

2. Fouling

3. Interference (Bubbles, sediment, etc.)

4. Malfunction

IMPORTANCE OF CALIBRATION AND CALIBRATION END CHECKS

- End checks cover drift, fouling and malfunction

- Its critical to check BEFORE cleaning and AFTER cleaning the probe to discern error due to fouling

- Slightly High or Low Readings from standard on a clean probe indicate drift

- Wrong readings on a clean probe

indicate malfunction

Search ID: cgan2953

Don't call the Nobel Committee just yet:
We forgot to calibrate the instruments
before the experiment...

CONTINUOUS DATA

- Don't assume that probes are always working

- Need to be monitored regularly

- Also routinely checked against traditional AAS methods under QA/QC

- Continuous monitoring does not eliminate the need for routine grab samples.

- Its important that the data "makes sense"

HOW OFTEN SHOULD YOU DOWNLOAD DATA?

- It's good practice/efficient to download data, calibrate, and grab QC samples at regular intervals,

- We recommend biweekly - this maybe adjusted later

- This may need to occur more often depending on weather

- And we recommend that these be regularly checked against traditional AAS methods

DATA INTEGRITY

- Again, check data against grab samples

- Multiple readings at exact numbers is A SIGN OF ERROR

- Large data sets may require data management software, or programs to (e.g. R) to scan or flag data

- Visually check data in Excel "does the data makes sense"

- Spikes can correspond to rain

BAD DATA IS...

Duplicate data

Missing data

Inaccurate data

Incorrect data

REFERENCES

- Guidelines and Standard Procedures for Continuous Water-Quality Monitors: Station Operation, Record Computation, and Data Reporting:

https://pubs.usgs.gov/tm/2006/tm1D3/pdf/TM1D3.pdf

Science and Ecosystem Support Division - Quality System and Technical Procedures for SESD Field Branches:

https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches